

# **BEST***T***OO**L®



## **Cutting Tools Catalog**

[www.chinabesttools.com](http://www.chinabesttools.com)

**Catalog No.901B**

Welcome to BESTOOL !

We will try to be best supplier from China in  
Measuring Tools, Cutting Tools, Machinery and  
Accessories evaluated by customers.

Why should you choose BESTOOL?

|                  |                                                                     |
|------------------|---------------------------------------------------------------------|
| <b>Quality:</b>  | Top quality, try to be error free                                   |
| <b>Delivery:</b> | Speed up our delivery and ship in time                              |
| <b>Cost:</b>     | Competitive prices with market                                      |
| <b>Service:</b>  | Quick response to any questions<br>and provide value added services |



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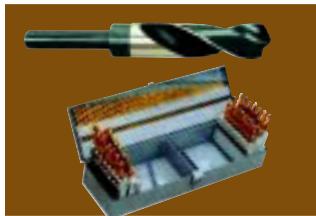
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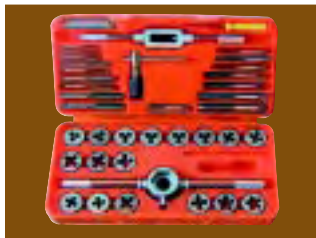
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## Jobber Length Drills

### High Speed Steel, 118° Point

- Right hand cutting direction.
- Suited for a wide range of materials.
- Features a standard helix.



### Fractional Sizes

| Size  | Flute Length | OAL   | Rolled Black Oxide Order No. | Rolled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|-------|--------------|-------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|
| 1/64" | 3/16"        | 3/4"  | 234-4001                     | 234-6001                  | 334-4001                     | 334-3001                | 334-5001                    |
| 1/32  | 1/2          | 1-3/8 | 234-4002                     | 234-6002                  | 334-4002                     | 334-3002                | 334-5002                    |
| 3/64  | 3/4          | 1-3/4 | 234-4003                     | 234-6003                  | 334-4003                     | 334-3003                | 334-5003                    |
| 1/16  | 7/8          | 1-7/8 | 234-4004                     | 234-6004                  | 334-4004                     | 334-3004                | 334-5004                    |
| 5/64  | 1            | 2     | 234-4005                     | 234-6005                  | 334-4005                     | 334-3005                | 334-5005                    |
| 3/32  | 1-1/4        | 2-1/4 | 234-4006                     | 234-6006                  | 334-4006                     | 334-3006                | 334-5006                    |
| 7/64  | 1-1/2        | 2-5/8 | 234-4007                     | 234-6007                  | 334-4007                     | 334-3007                | 334-5007                    |
| 1/8   | 1-5/8        | 2-3/4 | 234-4008                     | 234-6008                  | 334-4008                     | 334-3008                | 334-5008                    |
| 9/64  | 1-3/4        | 2-7/8 | 234-4009                     | 234-6009                  | 334-4009                     | 334-3009                | 334-5009                    |
| 5/32  | 2            | 3-1/8 | 234-4010                     | 234-6010                  | 334-4010                     | 334-3010                | 334-5010                    |
| 11/64 | 2-1/8        | 3-1/4 | 234-4011                     | 234-6011                  | 334-4011                     | 334-3011                | 334-5011                    |
| 3/16  | 2-5/16       | 3-1/2 | 234-4012                     | 234-6012                  | 334-4012                     | 334-3012                | 334-5012                    |
| 13/64 | 2-7/16       | 3-5/8 | 234-4013                     | 234-6013                  | 334-4013                     | 334-3013                | 334-5013                    |
| 7/32  | 2-1/2        | 3-3/4 | 234-4014                     | 234-6014                  | 334-4014                     | 334-3014                | 334-5014                    |
| 15/64 | 2-5/8        | 3-7/8 | 234-4015                     | 234-6015                  | 334-4015                     | 334-3015                | 334-5015                    |
| 1/4   | 2-3/4        | 4     | 234-4016                     | 234-6016                  | 334-4016                     | 334-3016                | 334-5016                    |
| 17/64 | 2-7/8        | 4-1/8 | 234-4017                     | 234-6017                  | 334-4017                     | 334-3017                | 334-5017                    |
| 9/32  | 2-5/16       | 4-1/4 | 234-4018                     | 234-6018                  | 334-4018                     | 334-3018                | 334-5018                    |
| 19/64 | 3-1/16       | 4-3/8 | 234-4019                     | 234-6019                  | 334-4019                     | 334-3019                | 334-5019                    |
| 5/16  | 3-3/16       | 4-1/2 | 234-4020                     | 234-6020                  | 334-4020                     | 334-3020                | 334-5020                    |
| 21/64 | 3-5/16       | 4-5/8 | 234-4021                     | 234-6021                  | 334-4021                     | 334-3021                | 334-5021                    |
| 11/32 | 3-7/16       | 4-3/4 | 234-4022                     | 234-6022                  | 334-4022                     | 334-3022                | 334-5022                    |
| 23/64 | 3-1/2        | 4-7/8 | 234-4023                     | 234-6023                  | 334-4023                     | 334-3023                | 334-5023                    |
| 3/8   | 3-5/8        | 5     | 234-4024                     | 234-6024                  | 334-4024                     | 334-3024                | 334-5024                    |
| 25/64 | 3-3/4        | 5-1/8 | 234-4025                     | 234-6025                  | 334-4025                     | 334-3025                | 334-5025                    |
| 13/32 | 3-7/8        | 5-1/4 | 234-4026                     | 234-6026                  | 334-4026                     | 334-3026                | 334-5026                    |
| 27/64 | 3-15/16      | 5-3/8 | 234-4027                     | 234-6027                  | 334-4027                     | 334-3027                | 334-5027                    |
| 7/16  | 4-1/16       | 5-1/2 | 234-4028                     | 234-6028                  | 334-4028                     | 334-3028                | 334-5028                    |
| 29/64 | 4-3/16       | 5-5/8 | 234-4029                     | 234-6029                  | 334-4029                     | 334-3029                | 334-5029                    |
| 15/32 | 4-5/16       | 5-3/4 | 234-4030                     | 234-6030                  | 334-4030                     | 334-3030                | 334-5030                    |
| 31/64 | 4-3/8        | 5-7/8 | 234-4031                     | 234-6031                  | 334-4031                     | 334-3031                | 334-5031                    |
| 1/2   | 4-1/2        | 6     | 234-4032                     | 234-6032                  | 334-4032                     | 334-3032                | 334-5032                    |
| 33/64 | 4-13/16      | 6-5/8 | 234-4033                     | 234-6033                  | 334-4033                     | 334-3033                | 334-5033                    |
| 17/32 | 4-13/16      | 6-5/8 | 234-4034                     | 234-6034                  | 334-4034                     | 334-3034                | 334-5034                    |
| 35/64 | 4-13/16      | 6-5/8 | 234-4035                     | 234-6035                  | 334-4035                     | 334-3035                | 334-5035                    |
| 9/16  | 4-13/16      | 6-5/8 | 234-4036                     | 234-6036                  | 334-4036                     | 334-3036                | 334-5036                    |
| 37/64 | 4-13/16      | 6-5/8 | 234-4037                     | 234-6037                  | 334-4037                     | 334-3037                | 334-5037                    |
| 19/32 | 5-3/16       | 7-1/8 | 234-4038                     | 234-6038                  | 334-4038                     | 334-3038                | 334-5038                    |
| 39/64 | 5-3/16       | 7-1/8 | 234-4039                     | 234-6039                  | 334-4039                     | 334-3039                | 334-5039                    |
| 5/8   | 5-3/16       | 7-1/8 | 234-4040                     | 234-6040                  | 334-4040                     | 334-3040                | 334-5040                    |
| 41/64 | 5-3/16       | 7-1/8 | 234-4041                     | 234-6041                  | 334-4041                     | 334-3041                | 334-5041                    |
| 21/32 | 5-3/16       | 7-1/8 | 234-4042                     | 234-6042                  | 334-4042                     | 334-3042                | 334-5042                    |
| 43/64 | 5-5/8        | 7-5/8 | 234-4043                     | 234-6043                  | 334-4043                     | 334-3043                | 334-5043                    |
| 11/16 | 5-5/8        | 7-5/8 | 234-4044                     | 234-6044                  | 334-4044                     | 334-3044                | 334-5044                    |

### Letter Sizes

| Size | Flute Length | OAL    | Rolled Black Oxide Order No. | Rolled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|------|--------------|--------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|
| A    | 2-5/8"       | 3-7/8" | 234-4201                     | 234-6201                  | 334-4201                     | 334-3201                | 334-5201                    |
| B    | 2-3/4        | 4      | 234-4202                     | 234-6202                  | 334-4202                     | 334-3202                | 334-5202                    |
| C    | 2-3/4        | 4      | 234-4203                     | 234-6203                  | 334-4203                     | 334-3203                | 334-5203                    |
| D    | 2-3/4        | 4      | 234-4204                     | 234-6204                  | 334-4204                     | 334-3204                | 334-5204                    |
| E    | 2-3/4        | 4      | 234-4205                     | 234-6205                  | 334-4205                     | 334-3205                | 334-5205                    |
| F    | 2-7/8        | 4-1/8  | 234-4206                     | 234-6206                  | 334-4206                     | 334-3206                | 334-5206                    |
| G    | 2-7/8        | 4-1/8  | 234-4207                     | 234-6207                  | 334-4207                     | 334-3207                | 334-5207                    |
| H    | 2-7/8        | 4-1/8  | 234-4208                     | 234-6208                  | 334-4208                     | 334-3208                | 334-5208                    |
| I    | 2-7/8        | 4-1/8  | 234-4209                     | 234-6209                  | 334-4209                     | 334-3209                | 334-5209                    |
| J    | 2-7/8        | 4-1/8  | 234-4210                     | 234-6210                  | 334-4210                     | 334-3210                | 334-5210                    |
| K    | 2-15/16      | 4-1/4  | 234-4211                     | 234-6211                  | 334-4211                     | 334-3211                | 334-5211                    |
| L    | 2-15/16      | 4-1/4  | 234-4212                     | 234-6212                  | 334-4212                     | 334-3212                | 334-5212                    |
| M    | 3-1/16       | 4-3/8  | 234-4213                     | 234-6213                  | 334-4213                     | 334-3213                | 334-5213                    |
| N    | 3-1/16       | 4-3/8  | 234-4214                     | 234-6214                  | 334-4214                     | 334-3214                | 334-5214                    |
| O    | 3-3/16       | 4-1/2  | 234-4215                     | 234-6215                  | 334-4215                     | 334-3215                | 334-5215                    |
| P    | 3-5/16       | 4-5/8  | 234-4216                     | 234-6216                  | 334-4216                     | 334-3216                | 334-5216                    |
| Q    | 3-7/16       | 4-3/4  | 234-4217                     | 234-6217                  | 334-4217                     | 334-3217                | 334-5217                    |
| R    | 3-7/16       | 4-3/4  | 234-4218                     | 234-6218                  | 334-4218                     | 334-3218                | 334-5218                    |
| S    | 3-1/2        | 4-7/8  | 234-4219                     | 234-6219                  | 334-4219                     | 334-3219                | 334-5219                    |
| T    | 3-1/2        | 4-7/8  | 234-4220                     | 234-6220                  | 334-4220                     | 334-3220                | 334-5220                    |
| U    | 3-5/8        | 5      | 234-4221                     | 234-6221                  | 334-4221                     | 334-3221                | 334-5221                    |
| V    | 3-5/8        | 5      | 234-4222                     | 234-6222                  | 334-4222                     | 334-3222                | 334-5222                    |
| W    | 3-3/4        | 5-1/8  | 234-4223                     | 234-6223                  | 334-4223                     | 334-3223                | 334-5223                    |
| X    | 3-3/4        | 5-1/8  | 234-4224                     | 234-6224                  | 334-4224                     | 334-3224                | 334-5224                    |
| Y    | 3-7/8        | 5-1/4  | 234-4225                     | 234-6225                  | 334-4225                     | 334-3225                | 334-5225                    |
| Z    | 3-7/8        | 5-1/4  | 234-4226                     | 234-6226                  | 334-4226                     | 334-3226                | 334-5226                    |

### Jobber Length Drills Continued

#### Number Sizes



| Size | Flute Length | OAL    | Rolled Black Oxide Order No. | Rolled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|------|--------------|--------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|
| #1   | 2-5/8"       | 3-7/8" | 234-4101                     | 234-6101                  | 334-4101                     | 334-3101                | 334-5101                    |
| #2   | 2-5/8"       | 3-7/8" | 234-4102                     | 234-6102                  | 334-4102                     | 334-3102                | 334-5102                    |
| #3   | 2-1/2"       | 3-3/4" | 234-4103                     | 234-6103                  | 334-4103                     | 334-3103                | 334-5103                    |
| #4   | 2-1/2"       | 3-3/4" | 234-4104                     | 234-6104                  | 334-4104                     | 334-3104                | 334-5104                    |
| #5   | 2-1/2"       | 3-3/4" | 234-4105                     | 234-6105                  | 334-4105                     | 334-3105                | 334-5105                    |
| #6   | 2-1/2"       | 3-3/4" | 234-4106                     | 234-6106                  | 334-4106                     | 334-3106                | 334-5106                    |
| #7   | 2-7/16"      | 3-5/8" | 234-4107                     | 234-6107                  | 334-4107                     | 334-3107                | 334-5107                    |
| #8   | 2-7/16"      | 3-5/8" | 234-4108                     | 234-6108                  | 334-4108                     | 334-3108                | 334-5108                    |
| #9   | 2-7/16"      | 3-5/8" | 234-4109                     | 234-6109                  | 334-4109                     | 334-3109                | 334-5109                    |
| #10  | 2-7/16"      | 3-5/8" | 234-4110                     | 234-6110                  | 334-4110                     | 334-3110                | 334-5110                    |
| #11  | 2-5/16"      | 3-1/2" | 234-4111                     | 234-6111                  | 334-4111                     | 334-3111                | 334-5111                    |
| #12  | 2-5/16"      | 3-1/2" | 234-4112                     | 234-6112                  | 334-4112                     | 334-3112                | 334-5112                    |
| #13  | 2-5/16"      | 3-1/2" | 234-4113                     | 234-6113                  | 334-4113                     | 334-3113                | 334-5113                    |
| #14  | 2-3/16"      | 3-3/8" | 234-4114                     | 234-6114                  | 334-4114                     | 334-3114                | 334-5114                    |
| #15  | 2-3/16"      | 3-3/8" | 234-4115                     | 234-6115                  | 334-4115                     | 334-3115                | 334-5115                    |
| #16  | 2-3/16"      | 3-3/8" | 234-4116                     | 234-6116                  | 334-4116                     | 334-3116                | 334-5116                    |
| #17  | 2-3/16"      | 3-3/8" | 234-4117                     | 234-6117                  | 334-4117                     | 334-3117                | 334-5117                    |
| #18  | 2-1/8"       | 3-1/4" | 234-4118                     | 234-6118                  | 334-4118                     | 334-3118                | 334-5118                    |
| #19  | 2-1/8"       | 3-1/4" | 234-4119                     | 234-6119                  | 334-4119                     | 334-3119                | 334-5119                    |
| #20  | 2-1/8"       | 3-1/4" | 234-4120                     | 234-6120                  | 334-4120                     | 334-3120                | 334-5120                    |
| #21  | 2-1/8"       | 3-1/4" | 234-4121                     | 234-6121                  | 334-4121                     | 334-3121                | 334-5121                    |
| #22  | 2"           | 3-1/8" | 234-4122                     | 234-6122                  | 334-4122                     | 334-3122                | 334-5122                    |
| #23  | 2"           | 3-1/8" | 234-4123                     | 234-6123                  | 334-4123                     | 334-3123                | 334-5123                    |
| #24  | 2"           | 3-1/8" | 234-4124                     | 234-6124                  | 334-4124                     | 334-3124                | 334-5124                    |
| #25  | 1-7/8"       | 3"     | 234-4125                     | 234-6125                  | 334-4125                     | 334-3125                | 334-5125                    |
| #26  | 1-7/8"       | 3"     | 234-4126                     | 234-6126                  | 334-4126                     | 334-3126                | 334-5126                    |
| #27  | 1-7/8"       | 3"     | 234-4127                     | 234-6127                  | 334-4127                     | 334-3127                | 334-5127                    |
| #28  | 1-3/4"       | 2-7/8" | 234-4128                     | 234-6128                  | 334-4128                     | 334-3128                | 334-5128                    |
| #29  | 1-3/4"       | 2-7/8" | 234-4129                     | 234-6129                  | 334-4129                     | 334-3129                | 334-5129                    |
| #30  | 1-5/8"       | 2-3/4" | 234-4130                     | 234-6130                  | 334-4130                     | 334-3130                | 334-5130                    |
| #31  | 1-5/8"       | 2-3/4" | 234-4131                     | 234-6131                  | 334-4131                     | 334-3131                | 334-5131                    |
| #32  | 1-5/8"       | 2-3/4" | 234-4132                     | 234-6132                  | 334-4132                     | 334-3132                | 334-5132                    |
| #33  | 1-1/2"       | 2-5/8" | 234-4133                     | 234-6133                  | 334-4133                     | 334-3133                | 334-5133                    |
| #34  | 1-1/2"       | 2-5/8" | 234-4134                     | 234-6134                  | 334-4134                     | 334-3134                | 334-5134                    |
| #35  | 1-1/2"       | 2-5/8" | 234-4135                     | 234-6135                  | 334-4135                     | 334-3135                | 334-5135                    |
| #36  | 1-7/16"      | 2-1/2" | 234-4136                     | 234-6136                  | 334-4136                     | 334-3136                | 334-5136                    |
| #37  | 1-7/16"      | 2-1/2" | 234-4137                     | 234-6137                  | 334-4137                     | 334-3137                | 334-5137                    |
| #38  | 1-7/16"      | 2-1/2" | 234-4138                     | 234-6138                  | 334-4138                     | 334-3138                | 334-5138                    |
| #39  | 1-3/8"       | 2-3/8" | 234-4139                     | 234-6139                  | 334-4139                     | 334-3139                | 334-5139                    |
| #40  | 1-3/8"       | 2-3/8" | 234-4140                     | 234-6140                  | 334-4140                     | 334-3140                | 334-5140                    |
| #41  | 1-3/8"       | 2-3/8" | 234-4141                     | 234-6141                  | 334-4141                     | 334-3141                | 334-5141                    |
| #42  | 1-1/4"       | 2-1/4" | 234-4142                     | 234-6142                  | 334-4142                     | 334-3142                | 334-5142                    |
| #43  | 1-1/4"       | 2-1/4" | 234-4143                     | 234-6143                  | 334-4143                     | 334-3143                | 334-5143                    |
| #44  | 1-1/8"       | 2-1/8" | 234-4144                     | 234-6144                  | 334-4144                     | 334-3144                | 334-5144                    |
| #45  | 1-1/8"       | 2-1/8" | 234-4145                     | 234-6145                  | 334-4145                     | 334-3145                | 334-5145                    |
| #46  | 1-1/8"       | 2-1/8" | 234-4146                     | 234-6146                  | 334-4146                     | 334-3146                | 334-5146                    |
| #47  | 1"           | 2"     | 234-4147                     | 234-6147                  | 334-4147                     | 334-3147                | 334-5147                    |
| #48  | 1"           | 2"     | 234-4148                     | 234-6148                  | 334-4148                     | 334-3148                | 334-5148                    |
| #49  | 1"           | 2"     | 234-4149                     | 234-6149                  | 334-4149                     | 334-3149                | 334-5149                    |
| #50  | 1"           | 2"     | 234-4150                     | 234-6150                  | 334-4150                     | 334-3150                | 334-5150                    |
| #51  | 1"           | 2"     | 234-4151                     | 234-6151                  | 334-4151                     | 334-3151                | 334-5151                    |
| #52  | 7/8"         | 1-7/8" | 234-4152                     | 234-6152                  | 334-4152                     | 334-3152                | 334-5152                    |
| #53  | 7/8"         | 1-7/8" | 234-4153                     | 234-6153                  | 334-4153                     | 334-3153                | 334-5153                    |
| #54  | 7/8"         | 1-7/8" | 234-4154                     | 234-6154                  | 334-4154                     | 334-3154                | 334-5154                    |
| #55  | 7/8"         | 1-7/8" | 234-4155                     | 234-6155                  | 334-4155                     | 334-3155                | 334-5155                    |
| #56  | 3/4"         | 1-3/4" | 234-4156                     | 234-6156                  | 334-4156                     | 334-3156                | 334-5156                    |
| #57  | 3/4"         | 1-3/4" | 234-4157                     | 234-6157                  | 334-4157                     | 334-3157                | 334-5157                    |
| #58  | 11/16"       | 1-5/8" | 234-4158                     | 234-6158                  | 334-4158                     | 334-3158                | 334-5158                    |
| #59  | 11/16"       | 1-5/8" | 234-4159                     | 234-6159                  | 334-4159                     | 334-3159                | 334-5159                    |
| #60  | 11/16"       | 1-5/8" | 234-4160                     | 234-6160                  | 334-4160                     | 334-3160                | 334-5160                    |
| #61  | 11/16"       | 1-5/8" | 234-4161                     | 234-6161                  | 334-4161                     | 334-3161                | 334-5161                    |
| #62  | 5/8"         | 1-1/2" | 234-4162                     | 234-6162                  | 334-4162                     | 334-3162                | 334-5162                    |
| #63  | 5/8"         | 1-1/2" | 234-4163                     | 234-6163                  | 334-4163                     | 334-3163                | 334-5163                    |
| #64  | 5/8"         | 1-1/2" | 234-4164                     | 234-6164                  | 334-4164                     | 334-3164                | 334-5164                    |
| #65  | 5/8"         | 1-1/2" | 234-4165                     | 234-6165                  | 334-4165                     | 334-3165                | 334-5165                    |
| #66  | 1/2"         | 1-3/8" | 234-4166                     | 234-6166                  | 334-4166                     | 334-3166                | 334-5166                    |
| #67  | 1/2"         | 1-3/8" | 234-4167                     | 234-6167                  | 334-4167                     | 334-3167                | 334-5167                    |
| #68  | 1/2"         | 1-3/8" | 234-4168                     | 234-6168                  | 334-4168                     | 334-3168                | 334-5168                    |
| #69  | 1/2"         | 1-3/8" | 234-4169                     | 234-6169                  | 334-4169                     | 334-3169                | 334-5169                    |
| #70  | 3/8"         | 1-1/4" | 234-4170                     | 234-6170                  | 334-4170                     | 334-3170                | 334-5170                    |
| #71  | 3/8"         | 1-1/4" | 234-4171                     | 234-6171                  | 334-4171                     | 334-3171                | 334-5171                    |
| #72  | 5/16"        | 1-1/8" | 234-4172                     | 234-6172                  | 334-4172                     | 334-3172                | 334-5172                    |
| #73  | 5/16"        | 1-1/8" | 234-4173                     | 234-6173                  | 334-4173                     | 334-3173                | 334-5173                    |
| #74  | 1/4"         | 1"     | 234-4174                     | 234-6174                  | 334-4174                     | 334-3174                | 334-5174                    |
| #75  | 1/4"         | 1"     | 234-4175                     | 234-6175                  | 334-4175                     | 334-3175                | 334-5175                    |
| #76  | 3/16"        | 7/8"   | 234-4176                     | 234-6176                  | 334-4176                     | 334-3176                | 334-5176                    |
| #77  | 3/16"        | 7/8"   | 234-4177                     | 234-6177                  | 334-4177                     | 334-3177                | 334-5177                    |
| #78  | 3/16"        | 7/8"   | 234-4178                     | 234-6178                  | 334-4178                     | 334-3178                | 334-5178                    |
| #79  | 1/8"         | 3/4"   | 234-4179                     | 234-6179                  | 334-4179                     | 334-3179                | 334-5179                    |
| #80  | 1/8"         | 3/4"   | 234-4180                     | 234-6180                  | 334-4180                     | 334-3180                | 334-5180                    |

## Extra Long Drills

### High Speed Steel, 118° Point



| Dia.  | Flute Length | OAL | Order No. |
|-------|--------------|-----|-----------|
| 1/8"  | 5"           | 8"  | 300-1008  |
| 9/64  | 5            | 8   | 300-1009  |
| 5/32  | 5            | 8   | 300-1010  |
| 11/64 | 5            | 8   | 300-1011  |
| 3/16  | 5            | 8   | 300-1012  |
| 13/64 | 5            | 8   | 300-1013  |
| 7/32  | 5            | 8   | 300-1014  |
| 15/64 | 5            | 8   | 300-1015  |
| 1/4   | 5            | 8   | 300-1016  |
| 17/64 | 5            | 8   | 300-1017  |
| 9/32  | 5            | 8   | 300-1018  |
| 19/64 | 5            | 8   | 300-1019  |
| 5/16  | 5            | 8   | 300-1020  |
| 21/64 | 5            | 8   | 300-1021  |
| 11/32 | 5            | 8   | 300-1022  |
| 23/64 | 5            | 8   | 300-1023  |
| 3/8   | 5            | 8   | 300-1024  |
| 25/64 | 5            | 8   | 300-1025  |
| 13/32 | 5            | 8   | 300-1026  |
| 27/64 | 5            | 8   | 300-1027  |
| 7/16  | 5            | 8   | 300-1028  |
| 29/64 | 5            | 8   | 300-1029  |
| 15/32 | 5            | 8   | 300-1030  |
| 31/64 | 5            | 8   | 300-1031  |
| 1/2   | 5            | 8   | 300-1032  |
| 1/8   | 7            | 10  | 300-1108  |
| 9/64  | 7            | 10  | 300-1109  |
| 5/32  | 7            | 10  | 300-1110  |
| 11/64 | 7            | 10  | 300-1111  |
| 3/16  | 7            | 10  | 300-1112  |
| 13/64 | 7            | 10  | 300-1113  |
| 7/32  | 7            | 10  | 300-1114  |
| 15/64 | 7            | 10  | 300-1115  |
| 1/4   | 7            | 10  | 300-1116  |
| 17/64 | 7            | 10  | 300-1117  |
| 9/32  | 7            | 10  | 300-1118  |
| 19/64 | 7            | 10  | 300-1119  |
| 5/16  | 7            | 10  | 300-1120  |
| 21/64 | 7            | 10  | 300-1121  |
| 11/32 | 7            | 10  | 300-1122  |
| 23/64 | 7            | 10  | 300-1123  |
| 3/8   | 7            | 10  | 300-1124  |
| 25/64 | 7            | 10  | 300-1125  |
| 13/32 | 7            | 10  | 300-1126  |
| 27/64 | 7            | 10  | 300-1127  |
| 7/16  | 7            | 10  | 300-1128  |
| 29/64 | 7            | 10  | 300-1129  |
| 15/32 | 7            | 10  | 300-1130  |
| 31/64 | 7            | 10  | 300-1131  |
| 1/2   | 7            | 10  | 300-1132  |
| 1/8   | 9            | 12  | 300-1208  |
| 9/64  | 9            | 12  | 300-1209  |
| 5/32  | 9            | 12  | 300-1210  |
| 11/64 | 9            | 12  | 300-1211  |
| 3/16  | 9            | 12  | 300-1212  |
| 13/64 | 9            | 12  | 300-1213  |
| 7/32  | 9            | 12  | 300-1214  |
| 15/64 | 9            | 12  | 300-1215  |
| 1/4   | 9            | 12  | 300-1216  |
| 17/64 | 9            | 12  | 300-1217  |
| 9/32  | 9            | 12  | 300-1218  |
| 19/64 | 9            | 12  | 300-1219  |
| 5/16  | 9            | 12  | 300-1220  |
| 21/64 | 9            | 12  | 300-1221  |
| 11/32 | 9            | 12  | 300-1222  |
| 23/64 | 9            | 12  | 300-1223  |
| 3/8   | 9            | 12  | 300-1224  |
| 25/64 | 9            | 12  | 300-1225  |
| 13/32 | 9            | 12  | 300-1226  |

| Dia.   | Flute Length | OAL | Order No. |
|--------|--------------|-----|-----------|
| 27/64  | 9            | 12  | 300-1227  |
| 7/16   | 9            | 12  | 300-1228  |
| 29/64  | 9            | 12  | 300-1229  |
| 15/32  | 9            | 12  | 300-1230  |
| 31/64  | 9            | 12  | 300-1231  |
| 1/2    | 9            | 12  | 300-1232  |
| 33/64  | 9            | 12  | 300-1233  |
| 17/32  | 9            | 12  | 300-1234  |
| 35/64  | 9            | 12  | 300-1235  |
| 9/16   | 9            | 12  | 300-1236  |
| 37/64  | 9            | 12  | 300-1237  |
| 19/32  | 9            | 12  | 300-1238  |
| 39/64  | 9            | 12  | 300-1239  |
| 5/8    | 9            | 12  | 300-1240  |
| 41/64  | 9            | 12  | 300-1241  |
| 21/32  | 9            | 12  | 300-1242  |
| 43/64  | 9            | 12  | 300-1243  |
| 11/16  | 9            | 12  | 300-1244  |
| 23/32  | 9            | 12  | 300-1246  |
| 3/4    | 9            | 12  | 300-1248  |
| 49/64  | 9            | 12  | 300-1249  |
| 25/32  | 9            | 12  | 300-1250  |
| 13/16  | 9            | 12  | 300-1252  |
| 27/32  | 9            | 12  | 300-1254  |
| 7/8    | 9            | 12  | 300-1256  |
| 29/32  | 9            | 12  | 300-1258  |
| 15/16  | 9            | 12  | 300-1260  |
| 31/32  | 9            | 12  | 300-1262  |
| 63/64  | 9            | 12  | 300-1263  |
| 1      | 9            | 12  | 300-1264  |
| 3/16   | 14           | 18  | 300-1812  |
| 13/64  | 14           | 18  | 300-1813  |
| 7/32   | 14           | 18  | 300-1814  |
| 15/64  | 14           | 18  | 300-1815  |
| 1/4    | 14           | 18  | 300-1816  |
| 17/64  | 14           | 18  | 300-1817  |
| 9/32   | 14           | 18  | 300-1818  |
| 19/64  | 14           | 18  | 300-1819  |
| 5/16   | 14           | 18  | 300-1820  |
| 21/64  | 14           | 18  | 300-1821  |
| 11/32  | 14           | 18  | 300-1822  |
| 23/64  | 14           | 18  | 300-1823  |
| 3/8    | 14           | 18  | 300-1824  |
| 25/64  | 14           | 18  | 300-1825  |
| 13/32  | 14           | 18  | 300-1826  |
| 27/64  | 14           | 18  | 300-1827  |
| 7/16   | 14           | 18  | 300-1828  |
| 29/64  | 14           | 18  | 300-1829  |
| 15/32  | 14           | 18  | 300-1830  |
| 31/64  | 14           | 18  | 300-1831  |
| 1/2    | 14           | 18  | 300-1832  |
| 33/64  | 14           | 18  | 300-1833  |
| 17/32  | 14           | 18  | 300-1834  |
| 35/64  | 14           | 18  | 300-1835  |
| 9/16   | 14           | 18  | 300-1836  |
| 37/64  | 14           | 18  | 300-1837  |
| 19/32  | 14           | 18  | 300-1838  |
| 39/64  | 14           | 18  | 300-1839  |
| 5/8    | 14           | 18  | 300-1840  |
| 21/32  | 14           | 18  | 300-1842  |
| 11/16  | 14           | 18  | 300-1844  |
| 3/8    | 18           | 24  | 300-2424  |
| 7/16   | 18           | 24  | 300-2428  |
| 1/2    | 18           | 24  | 300-2432  |
| 1      | 18           | 24  | 300-2464  |
| 1-1/8  | 18           | 24  | 300-2472  |
| 1-3/16 | 18           | 24  | 300-2476  |
| 1-1/4  | 18           | 24  | 300-2480  |

## Left Hand Jobber Drills

### High Speed Steel, 118° Point

- Used extensively in screw machine operations and close multiple spindle operations where the spindles operate alternately left hand and right hand.
- Use requires left hand spindle rotation

### Fractional Sizes

| Size (in.) | Flute Length | OAL   | Ground Bright Order No. | Ground Black Order No. |
|------------|--------------|-------|-------------------------|------------------------|
| 1/64"      | 3/16"        | 3/4   | 234-9301                | 234-0401               |
| 1/32       | 1/2          | 1-3/8 | 234-9302                | 234-0402               |
| 3/64       | 3/4          | 1-3/4 | 234-9303                | 234-0403               |
| 1/16       | 7/8          | 1-7/8 | 234-9304                | 234-0404               |
| 5/64       | 1            | 2     | 234-9305                | 234-0405               |
| 3/32       | 1-1/4        | 2-1/4 | 234-9306                | 234-0406               |
| 7/64       | 1-1/2        | 2-5/8 | 234-9307                | 234-0407               |
| 1/8        | 1-5/8        | 2-3/4 | 234-9308                | 234-0408               |
| 9/64       | 1-3/4        | 2-7/8 | 234-9309                | 234-0409               |
| 5/32       | 2            | 3-1/8 | 234-9310                | 234-0410               |
| 11/64      | 2-1/8        | 3-1/4 | 234-9311                | 234-0411               |
| 3/16       | 2-5/16       | 3-1/2 | 234-9312                | 234-0412               |
| 13/64      | 2-7/16       | 3-5/8 | 234-9313                | 234-0413               |
| 7/32       | 2-1/2        | 3-3/4 | 234-9314                | 234-0414               |
| 15/32      | 2-5/8        | 3-7/8 | 234-9315                | 234-0415               |
| 1/4        | 2-3/4        | 4     | 234-9316                | 234-0416               |
| 17/64      | 2-7/8        | 4-1/8 | 234-9317                | 234-0417               |
| 9/32       | 2-5/16       | 4-1/4 | 234-9318                | 234-0418               |
| 19/64      | 3-1/16       | 4-3/8 | 234-9319                | 234-0419               |
| 5/16       | 3-3/16       | 4-1/2 | 234-9320                | 234-0420               |
| 21/64      | 3-5/16       | 4-5/8 | 234-9321                | 234-0421               |
| 11/32      | 3-7/16       | 4-3/4 | 234-9322                | 234-0422               |
| 23/64      | 3-1/2        | 4-7/8 | 234-9323                | 234-0423               |
| 3/8        | 3-5/8        | 5     | 234-9324                | 234-0424               |
| 25/64      | 3-3/4        | 5-1/8 | 234-9325                | 234-0425               |
| 13/32      | 3-7/8        | 5-1/4 | 234-9326                | 234-0426               |
| 27/64      | 3-15/16      | 5-3/8 | 234-9327                | 234-0427               |
| 7/16       | 4-1/16       | 5-1/2 | 234-9328                | 234-0428               |
| 29/64      | 4-3/16       | 5-5/8 | 234-9329                | 234-0429               |
| 15/62      | 4-5/16       | 5-3/4 | 234-9330                | 234-0430               |
| 31/64      | 4-3/8        | 5-7/8 | 234-9331                | 234-0431               |
| 1/2        | 4-1/2        | 6     | 234-9332                | 234-0432               |

### Letter Sizes

| Size (in.) | Flute Length | OAL    | Ground Bright Order No. | Ground Black Order No. |
|------------|--------------|--------|-------------------------|------------------------|
| A          | 2-5/8"       | 3-7/8" | 234-9601                | 234-0601               |
| B          | 2-3/4        | 4      | 234-9602                | 234-0602               |
| C          | 2-3/4        | 4      | 234-9603                | 234-0603               |
| D          | 2-3/4        | 4      | 234-9604                | 234-0604               |
| E          | 2-3/4        | 4      | 234-9605                | 234-0605               |
| F          | 2-7/8        | 4-1/8  | 234-9606                | 234-0606               |
| G          | 2-7/8        | 4-1/8  | 234-9607                | 234-0607               |
| H          | 2-7/8        | 4-1/8  | 234-9608                | 234-0608               |
| I          | 2-7/8        | 4-1/8  | 234-9609                | 234-0609               |
| J          | 2-7/8        | 4-1/8  | 234-9610                | 234-0610               |
| K          | 2-15/16      | 4-1/4  | 234-9611                | 234-0611               |
| L          | 2-15/16      | 4-1/4  | 234-9612                | 234-0612               |
| M          | 3-1/16       | 4-3/8  | 234-9613                | 234-0613               |
| N          | 3-1/16       | 4-3/8  | 234-9614                | 234-0614               |
| O          | 3-3/16       | 4-1/2  | 234-9615                | 234-0615               |
| P          | 3-5/16       | 4-5/8  | 234-9616                | 234-0616               |
| Q          | 3-7/16       | 4-3/4  | 234-9617                | 234-0617               |
| R          | 3-7/16       | 4-3/4  | 234-9618                | 234-0618               |
| S          | 3-1/2        | 4-7/8  | 234-9619                | 234-0619               |
| T          | 3-1/2        | 4-7/8  | 234-9620                | 234-0620               |
| U          | 3-5/8        | 5      | 234-9621                | 234-0621               |
| V          | 3-5/8        | 5      | 234-9622                | 234-0622               |
| W          | 3-3/4        | 5-1/8  | 234-9623                | 234-0623               |
| X          | 3-3/4        | 5-1/8  | 234-9624                | 234-0624               |
| Y          | 3-7/8        | 5-1/4  | 234-9625                | 234-0625               |
| Z          | 3-7/8        | 5-1/4  | 234-9626                | 234-0626               |

### Number Sizes



| Size (in.) | Flute Length | OAL    | Ground Bright Order No. | Ground Black Order No. |
|------------|--------------|--------|-------------------------|------------------------|
| #1         | 2-5/8"       | 3-7/8" | 234-9501                | 234-0501               |
| #2         | 2-5/8        | 3-7/8  | 234-9502                | 234-0502               |
| #3         | 2-1/2        | 3-3/4  | 234-9503                | 234-0503               |
| #4         | 2-1/2        | 3-3/4  | 234-9504                | 234-0504               |
| #5         | 2-1/2        | 3-3/4  | 234-9505                | 234-0505               |
| #6         | 2-1/2        | 3-3/4  | 234-9506                | 234-0506               |
| #7         | 2-7/16       | 3-5/8  | 234-9507                | 234-0507               |
| #8         | 2-7/16       | 3-5/8  | 234-9508                | 234-0508               |
| #9         | 2-7/16       | 3-5/8  | 234-9509                | 234-0509               |
| #10        | 2-7/16       | 3-5/8  | 234-9510                | 234-0510               |
| #11        | 2-5/16       | 3-1/2  | 234-9511                | 234-0511               |
| #12        | 2-5/16       | 3-1/2  | 234-9512                | 234-0512               |
| #13        | 2-5/16       | 3-1/2  | 234-9513                | 234-0513               |
| #14        | 2-3/16       | 3-3/8  | 234-9514                | 234-0514               |
| #15        | 2-3/16       | 3-3/8  | 234-9515                | 234-0515               |
| #16        | 2-3/16       | 3-3/8  | 234-9516                | 234-0516               |
| #17        | 2-3/16       | 3-3/8  | 234-9517                | 234-0517               |
| #18        | 2-1/8        | 3-1/4  | 234-9518                | 234-0518               |
| #19        | 2-1/8        | 3-1/4  | 234-9519                | 234-0519               |
| #20        | 2-1/8        | 3-1/4  | 234-9520                | 234-0520               |
| #21        | 2-1/8        | 3-1/4  | 234-9521                | 234-0521               |
| #22        | 2            | 3-1/8  | 234-9522                | 234-0522               |
| #23        | 2            | 3-1/8  | 234-9523                | 234-0523               |
| #24        | 2            | 3-1/8  | 234-9524                | 234-0524               |
| #25        | 1-7/8        | 3      | 234-9525                | 234-0525               |
| #26        | 1-7/8        | 3      | 234-9526                | 234-0526               |
| #27        | 1-7/8        | 3      | 234-9527                | 234-0527               |
| #28        | 1-3/4        | 2-7/8  | 234-9528                | 234-0528               |
| #29        | 1-3/4        | 2-7/8  | 234-9529                | 234-0529               |
| #30        | 1-5/8        | 2-3/4  | 234-9530                | 234-0530               |
| #31        | 1-5/8        | 2-3/4  | 234-9531                | 234-0531               |
| #32        | 1-5/8        | 2-3/4  | 234-9532                | 234-0532               |
| #33        | 1-1/2        | 2-5/8  | 234-9533                | 234-0533               |
| #34        | 1-1/2        | 2-5/8  | 234-9534                | 234-0534               |
| #35        | 1-1/2        | 2-5/8  | 234-9535                | 234-0535               |
| #36        | 1-7/16       | 2-1/2  | 234-9536                | 234-0536               |
| #37        | 1-7/16       | 2-1/2  | 234-9537                | 234-0537               |
| #38        | 1-7/16       | 2-1/2  | 234-9538                | 234-0538               |
| #39        | 1-3/8        | 2-3/8  | 234-9539                | 234-0539               |
| #40        | 1-3/8        | 2-3/8  | 234-9540                | 234-0540               |
| #41        | 1-3/8        | 2-3/8  | 234-9541                | 234-0541               |
| #42        | 1-1/4        | 2-1/4  | 234-9542                | 234-0542               |
| #43        | 1-1/4        | 2-1/4  | 234-9543                | 234-0543               |
| #44        | 1-1/8        | 2-1/8  | 234-9544                | 234-0544               |
| #45        | 1-1/8        | 2-1/8  | 234-9545                | 234-0545               |
| #46        | 1-1/8        | 2-1/8  | 234-9546                | 234-0546               |
| #47        | 1            | 2      | 234-9547                | 234-0547               |
| #48        | 1            | 2      | 234-9548                | 234-0548               |
| #49        | 1            | 2      | 234-9549                | 234-0549               |
| #50        | 1            | 2      | 234-9550                | 234-0550               |
| #51        | 1            | 2      | 234-9551                | 234-0551               |
| #52        | 7/8          | 1-7/8  | 234-9552                | 234-0552               |
| #53        | 7/8          | 1-7/8  | 234-9553                | 234-0553               |
| #54        | 7/8          | 1-7/8  | 234-9554                | 234-0554               |
| #55        | 7/8          | 1-7/8  | 234-9555                | 234-0555               |
| #56        | 3/4          | 1-3/4  | 234-9556                | 234-0556               |
| #57        | 3/4          | 1-3/4  | 234-9557                | 234-0557               |
| #58        | 11/16        | 1-5/8  | 234-9558                | 234-0558               |
| #59        | 11/16        | 1-5/8  | 234-9559                | 234-0559               |
| #60        | 11/16        | 1-5/8  | 234-9560                | 234-0560               |
| #61        | 11/16        | 1-5/8  | 234-9561                | 234-0561               |
| #62        | 5/8          | 1-1/2  | 234-9562                | 234-0562               |
| #63        | 5/8          | 1-1/2  | 234-9563                | 234-0563               |
| #64        | 5/8          | 1-1/2  | 234-9564                | 234-0564               |
| #65        | 5/8          | 1-1/2  | 234-9565                | 234-0565               |
| #66        | 1/2          | 1-3/8  | 234-9566                | 234-0566               |
| #67        | 1/2          | 1-3/8  | 234-9567                | 234-0567               |
| #68        | 1/2          | 1-3/8  | 234-9568                | 234-0568               |
| #69        | 1/2          | 1-3/8  | 234-9569                | 234-0569               |
| #70        | 3/8          | 1-1/4  | 234-9570                | 234-0570               |
| #71        | 3/8          | 1-1/4  | 234-9571                | 234-0571               |
| #72        | 5/16         | 1-1/8  | 234-9572                | 234-0572               |
| #73        | 5/16         | 1-1/8  | 234-9573                | 234-0573               |
| #74        | 1/4          | 1      | 234-9574                | 234-0574               |
| #75        | 1/4          | 1      | 234-9575                | 234-0575               |
| #76        | 3/16         | 7/8    | 234-9576                | 234-0576               |
| #77        | 3/16         | 7/8    | 234-9577                | 234-0577               |
| #78        | 3/16         | 7/8    | 234-9578                | 234-0578               |
| #79        | 1/8          | 3/4    | 234-9579                | 234-0579               |
| #80        | 1/8          | 3/4    | 234-9580                | 234-0580               |

## Split Point Jobber Length Drills

High Speed Steel, 135° Point



### Fractional Sizes

| Size  | Flute Length | OAL   | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | Rolled Black Order No. |
|-------|--------------|-------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|------------------------|
| 1/64" | 3/16"        | 3/4"  | 134-4001                     | 134-5001                  | 134-2001                     | 134-3001                | 134-1001                    | 134-6001               |
| 1/32  | 1/2          | 1-3/8 | 134-4002                     | 134-5002                  | 134-2002                     | 134-3002                | 134-1002                    | 134-6002               |
| 3/64  | 3/4          | 1-3/4 | 134-4003                     | 134-5003                  | 134-2003                     | 134-3003                | 134-1003                    | 134-6003               |
| 1/16  | 7/8          | 1-7/8 | 134-4004                     | 134-5004                  | 134-2004                     | 134-3004                | 134-1004                    | 134-6004               |
| 5/64  | 1            | 2     | 134-4005                     | 134-5005                  | 134-2005                     | 134-3005                | 134-1005                    | 134-6005               |
| 3/32  | 1-1/4        | 2-1/4 | 134-4006                     | 134-5006                  | 134-2006                     | 134-3006                | 134-1006                    | 134-6006               |
| 7/64  | 1-1/2        | 2-5/8 | 134-4007                     | 134-5007                  | 134-2007                     | 134-3007                | 134-1007                    | 134-6007               |
| 1/8   | 1-5/8        | 2-3/4 | 134-4008                     | 134-5008                  | 134-2008                     | 134-3008                | 134-1008                    | 134-6008               |
| 9/64  | 1-3/4        | 2-7/8 | 134-4009                     | 134-5009                  | 134-2009                     | 134-3009                | 134-1009                    | 134-6009               |
| 5/32  | 2            | 3-1/8 | 134-4010                     | 134-5010                  | 134-2010                     | 134-3010                | 134-1010                    | 134-6010               |
| 11/64 | 2-1/8        | 3-1/4 | 134-4011                     | 134-5011                  | 134-2011                     | 134-3011                | 134-1011                    | 134-6011               |
| 3/16  | 2-5/16       | 3-1/2 | 134-4012                     | 134-5012                  | 134-2012                     | 134-3012                | 134-1012                    | 134-6012               |
| 13/64 | 2-7/16       | 3-5/8 | 134-4013                     | 134-5013                  | 134-2013                     | 134-3013                | 134-1013                    | 134-6013               |
| 7/32  | 2-1/2        | 3-3/4 | 134-4014                     | 134-5014                  | 134-2014                     | 134-3014                | 134-1014                    | 134-6014               |
| 15/64 | 2-5/8        | 3-7/8 | 134-4015                     | 134-5015                  | 134-2015                     | 134-3015                | 134-1015                    | 134-6015               |
| 1/4   | 2-3/4        | 4     | 134-4016                     | 134-5016                  | 134-2016                     | 134-3016                | 134-1016                    | 134-6016               |
| 17/64 | 2-7/8        | 4-1/8 | 134-4017                     | 134-5017                  | 134-2017                     | 134-3017                | 134-1017                    | 134-6017               |
| 9/32  | 2-5/16       | 4-1/4 | 134-4018                     | 134-5018                  | 134-2018                     | 134-3018                | 134-1018                    | 134-6018               |
| 19/64 | 3-1/16       | 4-3/8 | 134-4019                     | 134-5019                  | 134-2019                     | 134-3019                | 134-1019                    | 134-6019               |
| 5/16  | 3-3/16       | 4-1/2 | 134-4020                     | 134-5020                  | 134-2020                     | 134-3020                | 134-1020                    | 134-6020               |
| 21/64 | 3-5/16       | 4-5/8 | 134-4021                     | 134-5021                  | 134-2021                     | 134-3021                | 134-1021                    | 134-6021               |
| 11/32 | 3-7/16       | 4-3/4 | 134-4022                     | 134-5022                  | 134-2022                     | 134-3022                | 134-1022                    | 134-6022               |
| 23/64 | 3-1/2        | 4-7/8 | 134-4023                     | 134-5023                  | 134-2023                     | 134-3023                | 134-1023                    | 134-6023               |
| 3/8   | 3-5/8        | 5     | 134-4024                     | 134-5024                  | 134-2024                     | 134-3024                | 134-1024                    | 134-6024               |
| 25/64 | 3-3/4        | 5-1/8 | 134-4025                     | 134-5025                  | 134-2025                     | 134-3025                | 134-1025                    | 134-6025               |
| 13/32 | 3-7/8        | 5-1/4 | 134-4026                     | 134-5026                  | 134-2026                     | 134-3026                | 134-1026                    | 134-6026               |
| 27/64 | 3-15/16      | 5-3/8 | 134-4027                     | 134-5027                  | 134-2027                     | 134-3027                | 134-1027                    | 134-6027               |
| 7/16  | 4-1/16       | 5-1/2 | 134-4028                     | 134-5028                  | 134-2028                     | 134-3028                | 134-1028                    | 134-6028               |
| 29/64 | 4-3/16       | 5-5/8 | 134-4029                     | 134-5029                  | 134-2029                     | 134-3029                | 134-1029                    | 134-6029               |
| 15/32 | 4-5/16       | 5-3/4 | 134-4030                     | 134-5030                  | 134-2030                     | 134-3030                | 134-1030                    | 134-6030               |
| 31/64 | 4-3/8        | 5-7/8 | 134-4031                     | 134-5031                  | 134-2031                     | 134-3031                | 134-1031                    | 134-6031               |
| 1/2   | 4-1/2        | 6     | 134-4032                     | 134-5032                  | 134-2032                     | 134-3032                | 134-1032                    | 134-6032               |
| 33/64 | 4-13/16      | 6-5/8 | 134-4033                     | 134-5033                  | 134-2033                     | 134-3033                | 134-1033                    | 134-6033               |
| 17/32 | 4-13/16      | 6-5/8 | 134-4034                     | 134-5034                  | 134-2034                     | 134-3034                | 134-1034                    | 134-6034               |
| 35/64 | 4-13/16      | 6-5/8 | 134-4035                     | 134-5035                  | 134-2035                     | 134-3035                | 134-1035                    | 134-6035               |
| 9/16  | 4-13/16      | 6-5/8 | 134-4036                     | 134-5036                  | 134-2036                     | 134-3036                | 134-1036                    | 134-6036               |
| 37/64 | 4-13/16      | 6-5/8 | 134-4037                     | 134-5037                  | 134-2037                     | 134-3037                | 134-1037                    | 134-6037               |
| 19/32 | 5-3/16       | 7-1/8 | 134-4038                     | 134-5038                  | 134-2038                     | 134-3038                | 134-1038                    | 134-6038               |
| 39/64 | 5-3/16       | 7-1/8 | 134-4039                     | 134-5039                  | 134-2039                     | 134-3039                | 134-1039                    | 134-6039               |
| 5/8   | 5-3/16       | 7-1/8 | 134-4040                     | 134-5040                  | 134-2040                     | 134-3040                | 134-1040                    | 134-6040               |
| 41/64 | 5-3/16       | 7-1/8 | 134-4041                     | 134-5041                  | 134-2041                     | 134-3041                | 134-1041                    | 134-6041               |
| 21/32 | 5-3/16       | 7-1/8 | 134-4042                     | 134-5042                  | 134-2042                     | 134-3042                | 134-1042                    | 134-6042               |
| 43/64 | 5-5/8        | 7-5/8 | 134-4043                     | 134-5043                  | 134-2043                     | 134-3043                | 134-1043                    | 134-6043               |
| 11/16 | 5-5/8        | 7-5/8 | 134-4044                     | 134-5044                  | 134-2044                     | 134-3044                | 134-1044                    | 134-6044               |

### Letter Sizes

| Size | Flute Length | OAL    | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | Rolled Black Order No. |
|------|--------------|--------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|------------------------|
| A    | 2-5/8"       | 3-7/8" | 134-4201                     | 134-5201                  | 134-2201                     | 134-3201                | 134-1201                    | 134-6201               |
| B    | 2-3/4        | 4      | 134-4202                     | 134-5202                  | 134-2202                     | 134-3202                | 134-1202                    | 134-6202               |
| C    | 2-3/4        | 4      | 134-4203                     | 134-5203                  | 134-2203                     | 134-3203                | 134-1203                    | 134-6203               |
| D    | 2-3/4        | 4      | 134-4204                     | 134-5204                  | 134-2204                     | 134-3204                | 134-1204                    | 134-6204               |
| E    | 2-3/4        | 4      | 134-4205                     | 134-5205                  | 134-2205                     | 134-3205                | 134-1205                    | 134-6205               |
| F    | 2-7/8        | 4-1/8  | 134-4206                     | 134-5206                  | 134-2206                     | 134-3206                | 134-1206                    | 134-6206               |
| G    | 2-7/8        | 4-1/8  | 134-4207                     | 134-5207                  | 134-2207                     | 134-3207                | 134-1207                    | 134-6207               |
| H    | 2-7/8        | 4-1/8  | 134-4208                     | 134-5208                  | 134-2208                     | 134-3208                | 134-1208                    | 134-6208               |
| I    | 2-7/8        | 4-1/8  | 134-4209                     | 134-5209                  | 134-2209                     | 134-3209                | 134-1209                    | 134-6209               |
| J    | 2-7/8        | 4-1/8  | 134-4210                     | 134-5210                  | 134-2210                     | 134-3210                | 134-1210                    | 134-6210               |
| K    | 2-15/16      | 4-1/4  | 134-4211                     | 134-5211                  | 134-2211                     | 134-3211                | 134-1211                    | 134-6211               |
| L    | 2-15/16      | 4-1/4  | 134-4212                     | 134-5212                  | 134-2212                     | 134-3212                | 134-1212                    | 134-6212               |
| M    | 3-1/16       | 4-3/8  | 134-4213                     | 134-5213                  | 134-2213                     | 134-3213                | 134-1213                    | 134-6213               |
| N    | 3-1/16       | 4-3/8  | 134-4214                     | 134-5214                  | 134-2214                     | 134-3214                | 134-1214                    | 134-6214               |
| O    | 3-3/16       | 4-1/2  | 134-4215                     | 134-5215                  | 134-2215                     | 134-3215                | 134-1215                    | 134-6215               |
| P    | 3-3/16       | 4-5/8  | 134-4216                     | 134-5216                  | 134-2216                     | 134-3216                | 134-1216                    | 134-6216               |
| Q    | 3-7/16       | 4-3/4  | 134-4217                     | 134-5217                  | 134-2217                     | 134-3217                | 134-1217                    | 134-6217               |
| R    | 3-7/16       | 4-3/4  | 134-4218                     | 134-5218                  | 134-2218                     | 134-3218                | 134-1218                    | 134-6218               |
| S    | 3-1/2        | 4-7/8  | 134-4219                     | 134-5219                  | 134-2219                     | 134-3219                | 134-1219                    | 134-6219               |
| T    | 3-1/2        | 4-7/8  | 134-4220                     | 134-5220                  | 134-2220                     | 134-3220                | 134-1220                    | 134-6220               |
| U    | 3-5/8        | 5      | 134-4221                     | 134-5221                  | 134-2221                     | 134-3221                | 134-1221                    | 134-6221               |
| V    | 3-5/8        | 5      | 134-4222                     | 134-5222                  | 134-2222                     | 134-3222                | 134-1222                    | 134-6222               |
| W    | 3-3/4        | 5-1/8  | 134-4223                     | 134-5223                  | 134-2223                     | 134-3223                | 134-1223                    | 134-6223               |
| X    | 3-3/4        | 5-1/8  | 134-4224                     | 134-5224                  | 134-2224                     | 134-3224                | 134-1224                    | 134-6224               |
| Y    | 3-7/8        | 5-1/4  | 134-4225                     | 134-5225                  | 134-2225                     | 134-3225                | 134-1225                    | 134-6225               |
| Z    | 3-7/8        | 5-1/4  | 134-4226                     | 134-5226                  | 134-2226                     | 134-3226                | 134-1226                    | 134-6226               |

## Split Point Jobber Length Drills Continued

### Number Sizes



| Size | Flute Length | OAL    | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | Rolled Black Order No. |
|------|--------------|--------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|------------------------|
| #1   | 2-5/8"       | 3-7/8" | 134-4101                     | 134-5101                  | 134-2101                     | 134-3101                | 134-1101                    | 134-6101               |
| #2   | 2-5/8"       | 3-7/8" | 134-4102                     | 134-5102                  | 134-2102                     | 134-3102                | 134-1102                    | 134-6102               |
| #3   | 2-1/2"       | 3-3/4" | 134-4103                     | 134-5103                  | 134-2103                     | 134-3103                | 134-1103                    | 134-6103               |
| #4   | 2-1/2"       | 3-3/4" | 134-4104                     | 134-5104                  | 134-2104                     | 134-3104                | 134-1104                    | 134-6104               |
| #5   | 2-1/2"       | 3-3/4" | 134-4105                     | 134-5105                  | 134-2105                     | 134-3105                | 134-1105                    | 134-6105               |
| #6   | 2-1/2"       | 3-3/4" | 134-4106                     | 134-5106                  | 134-2106                     | 134-3106                | 134-1106                    | 134-6106               |
| #7   | 2-7/16"      | 3-5/8" | 134-4107                     | 134-5107                  | 134-2107                     | 134-3107                | 134-1107                    | 134-6107               |
| #8   | 2-7/16"      | 3-5/8" | 134-4108                     | 134-5108                  | 134-2108                     | 134-3108                | 134-1108                    | 134-6108               |
| #9   | 2-7/16"      | 3-5/8" | 134-4109                     | 134-5109                  | 134-2109                     | 134-3109                | 134-1109                    | 134-6109               |
| #10  | 2-7/16"      | 3-5/8" | 134-4110                     | 134-5110                  | 134-2110                     | 134-3110                | 134-1110                    | 134-6110               |
| #11  | 2-5/16"      | 3-1/2" | 134-4111                     | 134-5111                  | 134-2111                     | 134-3111                | 134-1111                    | 134-6111               |
| #12  | 2-5/16"      | 3-1/2" | 134-4112                     | 134-5112                  | 134-2112                     | 134-3112                | 134-1112                    | 134-6112               |
| #13  | 2-5/16"      | 3-1/2" | 134-4113                     | 134-5113                  | 134-2113                     | 134-3113                | 134-1113                    | 134-6113               |
| #14  | 2-3/16"      | 3-3/8" | 134-4114                     | 134-5114                  | 134-2114                     | 134-3114                | 134-1114                    | 134-6114               |
| #15  | 2-3/16"      | 3-3/8" | 134-4115                     | 134-5115                  | 134-2115                     | 134-3115                | 134-1115                    | 134-6115               |
| #16  | 2-3/16"      | 3-3/8" | 134-4116                     | 134-5116                  | 134-2116                     | 134-3116                | 134-1116                    | 134-6116               |
| #17  | 2-3/16"      | 3-3/8" | 134-4117                     | 134-5117                  | 134-2117                     | 134-3117                | 134-1117                    | 134-6117               |
| #18  | 2-1/8"       | 3-1/4" | 134-4118                     | 134-5118                  | 134-2118                     | 134-3118                | 134-1118                    | 134-6118               |
| #19  | 2-1/8"       | 3-1/4" | 134-4119                     | 134-5119                  | 134-2119                     | 134-3119                | 134-1119                    | 134-6119               |
| #20  | 2-1/8"       | 3-1/4" | 134-4120                     | 134-5120                  | 134-2120                     | 134-3120                | 134-1120                    | 134-6120               |
| #21  | 2-1/8"       | 3-1/4" | 134-4121                     | 134-5121                  | 134-2121                     | 134-3121                | 134-1121                    | 134-6121               |
| #22  | 2"           | 3-1/8" | 134-4122                     | 134-5122                  | 134-2122                     | 134-3122                | 134-1122                    | 134-6122               |
| #23  | 2"           | 3-1/8" | 134-4123                     | 134-5123                  | 134-2123                     | 134-3123                | 134-1123                    | 134-6123               |
| #24  | 2"           | 3-1/8" | 134-4124                     | 134-5124                  | 134-2124                     | 134-3124                | 134-1124                    | 134-6124               |
| #25  | 1-7/8"       | 3"     | 134-4125                     | 134-5125                  | 134-2125                     | 134-3125                | 134-1125                    | 134-6125               |
| #26  | 1-7/8"       | 3"     | 134-4126                     | 134-5126                  | 134-2126                     | 134-3126                | 134-1126                    | 134-6126               |
| #27  | 1-7/8"       | 3"     | 134-4127                     | 134-5127                  | 134-2127                     | 134-3127                | 134-1127                    | 134-6127               |
| #28  | 1-3/4"       | 2-7/8" | 134-4128                     | 134-5128                  | 134-2128                     | 134-3128                | 134-1128                    | 134-6128               |
| #29  | 1-3/4"       | 2-7/8" | 134-4129                     | 134-5129                  | 134-2129                     | 134-3129                | 134-1129                    | 134-6129               |
| #30  | 1-5/8"       | 2-3/4" | 134-4130                     | 134-5130                  | 134-2130                     | 134-3130                | 134-1130                    | 134-6130               |
| #31  | 1-5/8"       | 2-3/4" | 134-4131                     | 134-5131                  | 134-2131                     | 134-3131                | 134-1131                    | 134-6131               |
| #32  | 1-5/8"       | 2-3/4" | 134-4132                     | 134-5132                  | 134-2132                     | 134-3132                | 134-1132                    | 134-6132               |
| #33  | 1-1/2"       | 2-5/8" | 134-4133                     | 134-5133                  | 134-2133                     | 134-3133                | 134-1133                    | 134-6133               |
| #34  | 1-1/2"       | 2-5/8" | 134-4134                     | 134-5134                  | 134-2134                     | 134-3134                | 134-1134                    | 134-6134               |
| #35  | 1-1/2"       | 2-5/8" | 134-4135                     | 134-5135                  | 134-2135                     | 134-3135                | 134-1135                    | 134-6135               |
| #36  | 1-7/16"      | 2-1/2" | 134-4136                     | 134-5136                  | 134-2136                     | 134-3136                | 134-1136                    | 134-6136               |
| #37  | 1-7/16"      | 2-1/2" | 134-4137                     | 134-5137                  | 134-2137                     | 134-3137                | 134-1137                    | 134-6137               |
| #38  | 1-7/16"      | 2-1/2" | 134-4138                     | 134-5138                  | 134-2138                     | 134-3138                | 134-1138                    | 134-6138               |
| #39  | 1-3/8"       | 2-3/8" | 134-4139                     | 134-5139                  | 134-2139                     | 134-3139                | 134-1139                    | 134-6139               |
| #40  | 1-3/8"       | 2-3/8" | 134-4140                     | 134-5140                  | 134-2140                     | 134-3140                | 134-1140                    | 134-6140               |
| #41  | 1-3/8"       | 2-3/8" | 134-4141                     | 134-5141                  | 134-2141                     | 134-3141                | 134-1141                    | 134-6141               |
| #42  | 1-1/4"       | 2-1/4" | 134-4142                     | 134-5142                  | 134-2142                     | 134-3142                | 134-1142                    | 134-6142               |
| #43  | 1-1/4"       | 2-1/4" | 134-4143                     | 134-5143                  | 134-2143                     | 134-3143                | 134-1143                    | 134-6143               |
| #44  | 1-1/8"       | 2-1/8" | 134-4144                     | 134-5144                  | 134-2144                     | 134-3144                | 134-1144                    | 134-6144               |
| #45  | 1-1/8"       | 2-1/8" | 134-4145                     | 134-5145                  | 134-2145                     | 134-3145                | 134-1145                    | 134-6145               |
| #46  | 1-1/8"       | 2-1/8" | 134-4146                     | 134-5146                  | 134-2146                     | 134-3146                | 134-1146                    | 134-6146               |
| #47  | 1"           | 2"     | 134-4147                     | 134-5147                  | 134-2147                     | 134-3147                | 134-1147                    | 134-6147               |
| #48  | 1"           | 2"     | 134-4148                     | 134-5148                  | 134-2148                     | 134-3148                | 134-1148                    | 134-6148               |
| #49  | 1"           | 2"     | 134-4149                     | 134-5149                  | 134-2149                     | 134-3149                | 134-1149                    | 134-6149               |
| #50  | 1"           | 2"     | 134-4150                     | 134-5150                  | 134-2150                     | 134-3150                | 134-1150                    | 134-6150               |
| #51  | 1"           | 2"     | 134-4151                     | 134-5151                  | 134-2151                     | 134-3151                | 134-1151                    | 134-6151               |
| #52  | 7/8"         | 1-7/8" | 134-4152                     | 134-5152                  | 134-2152                     | 134-3152                | 134-1152                    | 134-6152               |
| #53  | 7/8"         | 1-7/8" | 134-4153                     | 134-5153                  | 134-2153                     | 134-3153                | 134-1153                    | 134-6153               |
| #54  | 7/8"         | 1-7/8" | 134-4154                     | 134-5154                  | 134-2154                     | 134-3154                | 134-1154                    | 134-6154               |
| #55  | 7/8"         | 1-7/8" | 134-4155                     | 134-5155                  | 134-2155                     | 134-3155                | 134-1155                    | 134-6155               |
| #56  | 3/4"         | 1-3/4" | 134-4156                     | 134-5156                  | 134-2156                     | 134-3156                | 134-1156                    | 134-6156               |
| #57  | 3/4"         | 1-3/4" | 134-4157                     | 134-5157                  | 134-2157                     | 134-3157                | 134-1157                    | 134-6157               |
| #58  | 11/16"       | 1-5/8" | 134-4158                     | 134-5158                  | 134-2158                     | 134-3158                | 134-1158                    | 134-6158               |
| #59  | 11/16"       | 1-5/8" | 134-4159                     | 134-5159                  | 134-2159                     | 134-3159                | 134-1159                    | 134-6159               |
| #60  | 11/16"       | 1-5/8" | 134-4160                     | 134-5160                  | 134-2160                     | 134-3160                | 134-1160                    | 134-6160               |
| #61  | 11/16"       | 1-5/8" | 134-4161                     | 134-5161                  | 134-2161                     | 134-3161                | 134-1161                    | 134-6161               |
| #62  | 5/8"         | 1-1/2" | 134-4162                     | 134-5162                  | 134-2162                     | 134-3162                | 134-1162                    | 134-6162               |
| #63  | 5/8"         | 1-1/2" | 134-4163                     | 134-5163                  | 134-2163                     | 134-3163                | 134-1163                    | 134-6163               |
| #64  | 5/8"         | 1-1/2" | 134-4164                     | 134-5164                  | 134-2164                     | 134-3164                | 134-1164                    | 134-6164               |
| #65  | 5/8"         | 1-1/2" | 134-4165                     | 134-5165                  | 134-2165                     | 134-3165                | 134-1165                    | 134-6165               |
| #66  | 1/2"         | 1-3/8" | 134-4166                     | 134-5166                  | 134-2166                     | 134-3166                | 134-1166                    | 134-6166               |
| #67  | 1/2"         | 1-3/8" | 134-4167                     | 134-5167                  | 134-2167                     | 134-3167                | 134-1167                    | 134-6167               |
| #68  | 1/2"         | 1-3/8" | 134-4168                     | 134-5168                  | 134-2168                     | 134-3168                | 134-1168                    | 134-6168               |
| #69  | 1/2"         | 1-3/8" | 134-4169                     | 134-5169                  | 134-2169                     | 134-3169                | 134-1169                    | 134-6169               |
| #70  | 3/8"         | 1-1/4" | 134-4170                     | 134-5170                  | 134-2170                     | 134-3170                | 134-1170                    | 134-6170               |
| #71  | 3/8"         | 1-1/4" | 134-4171                     | 134-5171                  | 134-2171                     | 134-3171                | 134-1171                    | 134-6171               |
| #72  | 5/16"        | 1-1/8" | 134-4172                     | 134-5172                  | 134-2172                     | 134-3172                | 134-1172                    | 134-6172               |
| #73  | 5/16"        | 1-1/8" | 134-4173                     | 134-5173                  | 134-2173                     | 134-3173                | 134-1173                    | 134-6173               |
| #74  | 1/4"         | 1-1/8" | 134-4174                     | 134-5174                  | 134-2174                     | 134-3174                | 134-1174                    | 134-6174               |
| #75  | 1/4"         | 1-1/8" | 134-4175                     | 134-5175                  | 134-2175                     | 134-3175                | 134-1175                    | 134-6175               |
| #76  | 3/16"        | 7/8"   | 134-4176                     | 134-5176                  | 134-2176                     | 134-3176                | 134-1176                    | 134-6176               |
| #77  | 3/16"        | 7/8"   | 134-4177                     | 134-5177                  | 134-2177                     | 134-3177                | 134-1177                    | 134-6177               |
| #78  | 3/16"        | 7/8"   | 134-4178                     | 134-5178                  | 134-2178                     | 134-3178                | 134-1178                    | 134-6178               |
| #79  | 1/8"         | 3/4"   | 134-4179                     | 134-5179                  | 134-2179                     | 134-3179                | 134-1179                    | 134-6179               |
| #80  | 1/8"         | 3/4"   | 134-4180                     |                           | 134-2180                     | 134-3180                | 134-1180                    | 134-6180               |

## M35 Cobalt Split Point Jobber Length Drills

### 135° Split Point, Fully Ground

- Right hand cutting direction.
- 135° Split point is self-centering and reduces thrust.
- Heavy duty operations in stainless steel, titanium, inconel, and other hard metals.



### Fractional Sizes

| Size  | Flute Length | OAL   | Order No. | Size  | Flute Length | OAL   | Order No. | Size  | Flute Length | OAL   | Order No. |
|-------|--------------|-------|-----------|-------|--------------|-------|-----------|-------|--------------|-------|-----------|
| 1/64" | 3/16"        | 3/4"  | 330-4001  | 3/16  | 2-5/16       | 3-1/2 | 330-4012  | 23/64 | 3-1/2        | 4-7/8 | 330-4023  |
| 1/32  | 1/2          | 1-3/8 | 330-4002  | 13/64 | 2-7/16       | 3-5/8 | 330-4013  | 3/8   | 3-5/8        | 5     | 330-4024  |
| 3/64  | 3/4          | 1-3/4 | 330-4003  | 7/32  | 2-1/2        | 3-3/4 | 330-4014  | 25/64 | 3-3/4        | 5-1/8 | 330-4025  |
| 1/16  | 7/8          | 1-7/8 | 330-4004  | 15/64 | 2-5/8        | 3-7/8 | 330-4015  | 13/32 | 3-7/8        | 5-1/4 | 330-4026  |
| 5/64  | 1            | 2     | 330-4005  | 1/4   | 2-3/4        | 4     | 330-4016  | 27/64 | 3-15/16      | 5-3/8 | 330-4027  |
| 3/32  | 1-1/4        | 2-1/4 | 330-4006  | 17/64 | 2-7/8        | 4-1/8 | 330-4017  | 7/16  | 4-1/16       | 5-1/2 | 330-4028  |
| 7/64  | 1-1/2        | 2-5/8 | 330-4007  | 9/32  | 2-15/16      | 4-1/4 | 330-4018  | 29/64 | 4-3/16       | 5-5/8 | 330-4029  |
| 1/8   | 1-5/8        | 2-3/4 | 330-4008  | 19/64 | 3-1/16       | 4-3/8 | 330-4019  | 15/32 | 4-5/16       | 5-3/4 | 330-4030  |
| 9/64  | 1-3/4        | 2-7/8 | 330-4009  | 5/16  | 3-3/16       | 4-1/2 | 330-4020  | 31/64 | 4-3/8        | 5-7/8 | 330-4031  |
| 5/32  | 2            | 3-1/8 | 330-4010  | 21/64 | 3-5/16       | 4-5/8 | 330-4021  | 1/2   | 4-1/2        | 6     | 330-4032  |
| 11/64 | 2-1/8        | 3-1/4 | 330-4011  | 11/32 | 3-7/16       | 4-3/4 | 330-4022  |       |              |       |           |

### Letter Sizes

| Size | Flute Length | OAL    | Order No. | Size | Flute Length | Overall Length | Order No. | Size | Flute Length | OAL   | Order No. |
|------|--------------|--------|-----------|------|--------------|----------------|-----------|------|--------------|-------|-----------|
| A    | 2-5/8"       | 3-7/8" | 330-4201  | J    | 2-7/8        | 4-1/8          | 330-4210  | S    | 3-1/2        | 4-7/8 | 330-4219  |
| B    | 2-3/4        | 4      | 330-4202  | K    | 2-15/16      | 4-1/4          | 330-4211  | T    | 3-1/2        | 4-7/8 | 330-4220  |
| C    | 2-3/4        | 4      | 330-4203  | L    | 2-15/16      | 4-1/4          | 330-4212  | U    | 3-5/8        | 5     | 330-4221  |
| D    | 2-3/4        | 4      | 330-4204  | M    | 3-1/16       | 4-3/8          | 330-4213  | V    | 3-5/8        | 5     | 330-4222  |
| E    | 2-3/4        | 4      | 330-4205  | N    | 3-1/16       | 4-3/8          | 330-4214  | W    | 3-3/4        | 5-1/8 | 330-4223  |
| F    | 2-7/8        | 4-1/8  | 330-4206  | O    | 3-3/16       | 4-1/2          | 330-4215  | X    | 3-3/4        | 5-1/8 | 330-4224  |
| G    | 2-7/8        | 4-1/8  | 330-4207  | P    | 3-5/16       | 4-5/8          | 330-4216  | Y    | 3-7/8        | 5-1/4 | 330-4225  |
| H    | 2-7/8        | 4-1/8  | 330-4208  | Q    | 3-7/16       | 4-3/4          | 330-4217  | Z    | 3-7/8        | 5-1/4 | 330-4226  |
| I    | 2-7/8        | 4-1/8  | 330-4209  | R    | 3-7/16       | 4-3/4          | 330-4218  |      |              |       |           |

### Number Sizes

| Size | Flute Length | OAL    | Order No. | Size | Flute Length | OAL   | Order No. | Size | Flute Length | OAL   | Order No. |
|------|--------------|--------|-----------|------|--------------|-------|-----------|------|--------------|-------|-----------|
| #1   | 2-5/8"       | 3-7/8" | 330-4101  | #28  | 1-3/4        | 2-7/8 | 330-4128  | #55  | 7/8          | 1-7/8 | 330-4155  |
| #2   | 2-5/8        | 3-7/8  | 330-4102  | #29  | 1-3/4        | 2-7/8 | 330-4129  | #56  | 3/4          | 1-3/4 | 330-4156  |
| #3   | 2-1/2        | 3-3/4  | 330-4103  | #30  | 1-5/8        | 2-3/4 | 330-4130  | #57  | 3/           | 1-3/4 | 330-4157  |
| #4   | 2-1/2        | 3-3/4  | 330-4104  | #31  | 1-5/8        | 2-3/4 | 330-4131  | #58  | 11/16        | 1-5/8 | 330-4158  |
| #5   | 2-1/2        | 3-3/4  | 330-4105  | #32  | 1-5/8        | 2-3/4 | 330-4132  | #59  | 11/16        | 1-5/8 | 330-4159  |
| #6   | 2-1/2        | 3-3/4  | 330-4106  | #33  | 1-1/2        | 2-5/8 | 330-4133  | #60  | 11/16        | 1-5/8 | 330-4160  |
| #7   | 2-7/16       | 3-5/8  | 330-4107  | #34  | 1-1/2        | 2-5/8 | 330-4134  | #61  | 11/16        | 1-5/8 | 330-4161  |
| #8   | 2-7/16       | 3-5/8  | 330-4108  | #35  | 1-1/2        | 2-5/8 | 330-4135  | #62  | 5/8          | 1-1/2 | 330-4162  |
| #9   | 2-7/16       | 3-5/8  | 330-4109  | #36  | 1-7/16       | 2-1/2 | 330-4136  | #63  | 5/8          | 1-1/2 | 330-4163  |
| #10  | 2-7/16       | 3-5/8  | 330-4110  | #37  | 1-7/16       | 2-1/2 | 330-4137  | #64  | 5/8          | 1-1/2 | 330-4164  |
| #11  | 2-5/16       | 3-1/2  | 330-4111  | #38  | 1-7/16       | 2-1/2 | 330-4138  | #65  | 5/8          | 1-1/2 | 330-4165  |
| #12  | 2-5/16       | 3-1/2  | 330-4112  | #39  | 1-3/8        | 2-3/8 | 330-4139  | #66  | 1/2          | 1-3/8 | 330-4166  |
| #13  | 2-5/16       | 3-1/2  | 330-4113  | #40  | 1-3/8        | 2-3/8 | 330-4140  | #67  | 1/2          | 1-3/8 | 330-4167  |
| #14  | 2-3/16       | 3-3/8  | 330-4114  | #41  | 1-3/8        | 2-3/8 | 330-4141  | #68  | 1/2          | 1-3/8 | 330-4168  |
| #15  | 2-3/16       | 3-3/8  | 330-4115  | #42  | 1-1/4        | 2-1/4 | 330-4142  | #69  | 1/2          | 1-3/8 | 330-4169  |
| #16  | 2-3/16       | 3-3/8  | 330-4116  | #43  | 1-1/4        | 2-1/4 | 330-4143  | #70  | 3/8          | 1-1/4 | 330-4170  |
| #17  | 2-3/16       | 3-3/8  | 330-4117  | #44  | 1-1/8        | 2-1/8 | 330-4144  | #71  | 3/8          | 1-1/4 | 330-4171  |
| #18  | 2-1/8        | 3-1/4  | 330-4118  | #45  | 1-1/8        | 2-1/8 | 330-4145  | #72  | 5/16         | 1-1/8 | 330-4172  |
| #19  | 2-1/8        | 3-1/4  | 330-4119  | #46  | 1-1/8        | 2-1/8 | 330-4146  | #73  | 5/16         | 1-1/8 | 330-4173  |
| #20  | 2-1/8        | 3-1/4  | 330-4120  | #47  | 1            | 2     | 330-4147  | #74  | 1/4          | 1     | 330-4174  |
| #21  | 2-1/8        | 3-1/4  | 330-4121  | #48  | 1            | 2     | 330-4148  | #75  | 1/4          | 1     | 330-4175  |
| #22  | 2            | 3-1/8  | 330-4122  | #49  | 1            | 2     | 330-4149  | #76  | 3/16         | 7/8   | 330-4176  |
| #23  | 2            | 3-1/8  | 330-4123  | #50  | 1            | 2     | 330-4150  | #77  | 3/16         | 7/8   | 330-4177  |
| #24  | 2            | 3-1/8  | 330-4124  | #51  | 1            | 2     | 330-4151  | #78  | 3/16         | 7/8   | 330-4178  |
| #25  | 1-7/8        | 3      | 330-4125  | #52  | 7/8          | 1-7/8 | 330-4152  | #79  | 1/8          | 3/4   | 330-4179  |
| #26  | 1-7/8        | 3      | 330-4126  | #53  | 7/8          | 1-7/8 | 330-4153  | #80  | 1/8          | 3/4   | 330-4180  |
| #27  | 1-7/8        | 3      | 330-4127  | #54  | 7/8          | 1-7/8 | 330-4154  |      |              |       |           |

### M35 Cobalt Jobber Length Drill Sets

| Piece of Drills | Specification                           | Order No. |
|-----------------|-----------------------------------------|-----------|
| 13              | 1/16-1/4" by 1/64" 135° split point     | 209-5004  |
| 21              | 1/16-3/8"x1/64" 135° split point        | 209-5006  |
| 26              | A-Z 135° split point                    | 209-5026  |
| 29              | 1/16-1/2" by 1/64" 135° split point     | 209-5008  |
| 60              | 1#-60# 135° split point                 | 209-5018  |
| 115             | 1/16-1/2", A-Z, 1#-60# 135° split point | 209-5010  |



## Screw Machine Drills

### High Speed Steel, 118° Point, Right Hand

- Primarily for use in screw machines.
- Ideal medium duty portable or machine drilling of low tensile strength materials.
- Heavy-duty-short length provides increased rigidity.



### Fractional Sizes

| Size    | Flute Length | OAL     | Rolled Black Oxide Order No. | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|---------|--------------|---------|------------------------------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|
| 3/64"   | 1/2"         | 1-3/8"  | 234-0003                     | 334-6003                     | 334-7003                  | 226-1003                     | 334-8003                | 334-2003                    |
| 1/16    | 5/8          | 1-5/8   | 234-0004                     | 334-6004                     | 334-7004                  | 226-1004                     | 334-8004                | 334-2004                    |
| 5/64    | 11/16        | 1-11/16 | 234-0005                     | 334-6005                     | 334-7005                  | 226-1005                     | 334-8005                | 334-2005                    |
| 3/32    | 3/4          | 1-3/4   | 234-0006                     | 334-6006                     | 334-7006                  | 226-1006                     | 334-8006                | 334-2006                    |
| 7/64    | 13/64        | 1-13/16 | 234-0007                     | 334-6007                     | 334-7007                  | 226-1007                     | 334-8007                | 334-2007                    |
| 1/8     | 7/8          | 1-7/8   | 234-0008                     | 334-6008                     | 334-7008                  | 226-1008                     | 334-8008                | 334-2008                    |
| 9/64    | 15/16        | 1-15/16 | 234-0009                     | 334-6009                     | 334-7009                  | 226-1009                     | 334-8009                | 334-2009                    |
| 5/32    | 1            | 2-1/16  | 234-0010                     | 334-6010                     | 334-7010                  | 226-1010                     | 334-8010                | 334-2010                    |
| 11/64   | 1-1/16       | 2-1/8   | 234-0011                     | 334-6011                     | 334-7011                  | 226-1011                     | 334-8011                | 334-2011                    |
| 3/16    | 1-1/8        | 2-3/16  | 234-0012                     | 334-6012                     | 334-7012                  | 226-1012                     | 334-8012                | 334-2012                    |
| 13/64   | 1-3/16       | 2-1/4   | 234-0013                     | 334-6013                     | 334-7013                  | 226-1013                     | 334-8013                | 334-2013                    |
| 7/32    | 1-1/4        | 2-3/8   | 234-0014                     | 334-6014                     | 334-7014                  | 226-1014                     | 334-8014                | 334-2014                    |
| 15/64   | 1-5/16       | 2-7/16  | 234-0015                     | 334-6015                     | 334-7015                  | 226-1015                     | 334-8015                | 334-2015                    |
| 1/4     | 1-3/8        | 2-1/2   | 234-0016                     | 334-6016                     | 334-7016                  | 226-1016                     | 334-8016                | 334-2016                    |
| 17/64   | 1-7/16       | 2-5/8   | 234-0017                     | 334-6017                     | 334-7017                  | 226-1017                     | 334-8017                | 334-2017                    |
| 9/32    | 1-1/2        | 2-11/16 | 234-0018                     | 334-6018                     | 334-7018                  | 226-1018                     | 334-8018                | 334-2018                    |
| 19/64   | 1-9/16       | 2-3/4   | 234-0019                     | 334-6019                     | 334-7019                  | 226-1019                     | 334-8019                | 334-2019                    |
| 5/16    | 1-5/8        | 2-13/16 | 234-0020                     | 334-6020                     | 334-7020                  | 226-1020                     | 334-8020                | 334-2020                    |
| 21/64   | 1-11/16      | 2-15/16 | 234-0021                     | 334-6021                     | 334-7021                  | 226-1021                     | 334-8021                | 334-2021                    |
| 11/32   | 1-11/16      | 3       | 234-0022                     | 334-6022                     | 334-7022                  | 226-1022                     | 334-8022                | 334-2022                    |
| 23/64   | 1-3/4        | 3-1/16  | 234-0023                     | 334-6023                     | 334-7023                  | 226-1023                     | 334-8023                | 334-2023                    |
| 3/8     | 1-13/16      | 3-1/8   | 234-0024                     | 334-6024                     | 334-7024                  | 226-1024                     | 334-8024                | 334-2024                    |
| 25/64   | 1-7/8        | 3-1/4   | 234-0025                     | 334-6025                     | 334-7025                  | 226-1025                     | 334-8025                | 334-2025                    |
| 13/32   | 1-15/16      | 3-5/16  | 234-0026                     | 334-6026                     | 334-7026                  | 226-1026                     | 334-8026                | 334-2026                    |
| 27/64   | 2            | 3-3/8   | 234-0027                     | 334-6027                     | 334-7027                  | 226-1027                     | 334-8027                | 334-2027                    |
| 7/16    | 2-1/16       | 3-7/16  | 234-0028                     | 334-6028                     | 334-7028                  | 226-1028                     | 334-8028                | 334-2028                    |
| 29/64   | 2-1/8        | 3-9/16  | 234-0029                     | 334-6029                     | 334-7029                  | 226-1029                     | 334-8029                | 334-2029                    |
| 15/32   | 2-1/8        | 3-5/8   | 234-0030                     | 334-6030                     | 334-7030                  | 226-1030                     | 334-8030                | 334-2030                    |
| 31/64   | 2-3/16       | 3-11/16 | 234-0031                     | 334-6031                     | 334-7031                  | 226-1031                     | 334-8031                | 334-2031                    |
| 1/2     | 2-1/4        | 3-3/4   | 234-0032                     | 334-6032                     | 334-7032                  | 226-1032                     | 334-8032                | 334-2032                    |
| 33/64   | 2-3/8        | 3-7/8   | 234-0033                     | 334-6033                     | 334-7033                  | 226-1033                     | 334-8033                | 334-2033                    |
| 17/32   | 2-3/8        | 3-7/8   | 234-0034                     | 334-6034                     | 334-7034                  | 226-1034                     | 334-8034                | 334-2034                    |
| 35/64   | 2-1/2        | 4       | 234-0035                     | 334-6035                     | 334-7035                  | 226-1035                     | 334-8035                | 334-2035                    |
| 9/16    | 2-1/2        | 4       | 234-0036                     | 334-6036                     | 334-7036                  | 226-1036                     | 334-8036                | 334-2036                    |
| 37/64   | 2-5/8        | 4-1/8   | 234-0037                     | 334-6037                     | 334-7037                  | 226-1037                     | 334-8037                | 334-2037                    |
| 19/32   | 2-5/8        | 4-1/8   | 234-0038                     | 334-6038                     | 334-7038                  | 226-1038                     | 334-8038                | 334-2038                    |
| 39/64   | 2-3/4        | 4-1/4   | 234-0039                     | 334-6039                     | 334-7039                  | 226-1039                     | 334-8039                | 334-2039                    |
| 5/8     | 2-3/4        | 4-1/4   | 234-0040                     | 334-6040                     | 334-7040                  | 226-1040                     | 334-8040                | 334-2040                    |
| 41/64   | 2-7/8        | 4-1/2   | 234-0041                     | 334-6041                     | 334-7041                  | 226-1041                     | 334-8041                | 334-2041                    |
| 21/32   | 2-7/8        | 4-1/2   | 234-0042                     | 334-6042                     | 334-7042                  | 226-1042                     | 334-8042                | 334-2042                    |
| 43/64   | 2-7/8        | 4-5/8   | 234-0043                     | 334-6043                     | 334-7043                  | 226-1043                     | 334-8043                | 334-2043                    |
| 11/16   | 2-7/8        | 4-5/8   | 234-0044                     | 334-6044                     | 334-7044                  | 226-1044                     | 334-8044                | 334-2044                    |
| 45/64   | 3            | 4-3/4   | 234-0045                     | 334-6045                     | 334-7045                  | 226-1045                     | 334-8045                | 334-2045                    |
| 23/32   | 3            | 4-3/4   | 234-0046                     | 334-6046                     | 334-7046                  | 226-1046                     | 334-8046                | 334-2046                    |
| 47/64   | 3-1/8        | 5       | 234-0047                     | 334-6047                     | 334-7047                  | 226-1047                     | 334-8047                | 334-2047                    |
| 3/4     | 3-1/8        | 5       | 234-0048                     | 334-6048                     | 334-7048                  | 226-1048                     | 334-8048                | 334-2048                    |
| 49/64   | 3-1/4        | 5-1/8   | 234-0049                     | 334-6049                     | 334-7049                  | 226-1049                     | 334-8049                | 334-2049                    |
| 25/32   | 3-1/4        | 5-1/8   | 234-0050                     | 334-6050                     | 334-7050                  | 226-1050                     | 334-8050                | 334-2050                    |
| 51/64   | 3-3/8        | 5-1/4   | 234-0051                     | 334-6051                     | 334-7051                  | 226-1051                     | 334-8051                | 334-2051                    |
| 13/16   | 3-3/8        | 5-1/4   | 234-0052                     | 334-6052                     | 334-7052                  | 226-1052                     | 334-8052                | 334-2052                    |
| 53/64   | 3-1/2        | 5-3/8   | 234-0053                     | 334-6053                     | 334-7053                  | 226-1053                     | 334-8053                | 334-2053                    |
| 27/32   | 3-1/2        | 5-3/8   | 234-0054                     | 334-6054                     | 334-7054                  | 226-1054                     | 334-8054                | 334-2054                    |
| 55/64   | 3-1/2        | 5-1/2   | 234-0055                     | 334-6055                     | 334-7055                  | 226-1055                     | 334-8055                | 334-2055                    |
| 7/8     | 3-1/2        | 5-1/2   | 234-0056                     | 334-6056                     | 334-7056                  | 226-1056                     | 334-8056                | 334-2056                    |
| 57/64   | 3-5/8        | 5-5/8   | 234-0057                     | 334-6057                     | 334-7057                  | 226-1057                     | 334-8057                | 334-2057                    |
| 29/32   | 3-5/8        | 5-5/8   | 234-0058                     | 334-6058                     | 334-7058                  | 226-1058                     | 334-8058                | 334-2058                    |
| 59/64   | 3-3/4        | 5-3/4   | 234-0059                     | 334-6059                     | 334-7059                  | 226-1059                     | 334-8059                | 334-2059                    |
| 15/16   | 3-3/4        | 5-3/4   | 234-0060                     | 334-6060                     | 334-7060                  | 226-1060                     | 334-8060                | 334-2060                    |
| 61/64   | 3-7/8        | 5-7/8   | 234-0061                     | 334-6061                     | 334-7061                  | 226-1061                     | 334-8061                | 334-2061                    |
| 31/32   | 3-7/8        | 5-7/8   | 234-0062                     | 334-6062                     | 334-7062                  | 226-1062                     | 334-8062                | 334-2062                    |
| 63/64   | 4            | 6       | 234-0063                     | 334-6063                     | 334-7063                  | 226-1063                     | 334-8063                | 334-2063                    |
| 1       | 4            | 6       | 234-0064                     | 334-6064                     | 334-7064                  | 226-1064                     | 334-8064                | 334-2064                    |
| 1-1/16  | 4            | 6-1/4   | 234-0104                     | 334-6104                     | 334-7104                  | 226-1104                     | 334-8104                | 334-2104                    |
| 1-1/8   | 4            | 6-3/8   | 234-0108                     | 334-6108                     | 334-7108                  | 226-1108                     | 334-8108                | 334-2108                    |
| 1-3/16  | 4-1/4        | 6-5/8   | 234-0112                     | 334-6112                     | 334-7112                  | 226-1112                     | 334-8112                | 334-2112                    |
| 1-1/4   | 4-3/8        | 6-3/4   | 234-0116                     | 334-6116                     | 334-7116                  | 226-1116                     | 334-8116                | 334-2116                    |
| 1-5/16  | 4-3/8        | 7       | 234-0120                     | 334-6120                     | 334-7120                  | 226-1120                     | 334-8120                | 334-2120                    |
| 1-3/8   | 4-1/2        | 7-1/8   | 234-0124                     | 334-6124                     | 334-7124                  | 226-1124                     | 334-8124                | 334-2124                    |
| 1-7/16  | 4-3/4        | 7-3/8   | 234-0128                     | 334-6128                     | 334-7128                  | 226-1128                     | 334-8128                | 334-2128                    |
| 1-1/2   | 4-7/8        | 7-1/2   | 234-0132                     | 334-6132                     | 334-7132                  | 226-1132                     | 334-8132                | 334-2132                    |
| 1-9/16  | 4-7/8        | 7-3/4   | 234-0136                     | 334-6136                     | 334-7136                  | 226-1136                     | 334-8136                | 334-2136                    |
| 1-5/8   | 4-7/8        | 7-3/4   | 234-0140                     | 334-6140                     | 334-7140                  | 226-1140                     | 334-8140                | 334-2140                    |
| 1-11/16 | 5-1/8        | 8       | 234-0144                     | 334-6144                     | 334-7144                  | 226-1144                     | 334-8144                | 334-2144                    |
| 1-3/4   | 5-1/8        | 8       | 234-0148                     | 334-6148                     | 334-7148                  | 226-1148                     | 334-8148                | 334-2148                    |
| 1-13/16 | 5-3/8        | 8-1/4   | 234-0152                     | 334-6152                     | 334-7152                  | 226-1152                     | 334-8152                | 334-2152                    |
| 1-7/8   | 5-3/8        | 8-1/4   | 234-0156                     | 334-6156                     | 334-7156                  | 226-1156                     | 334-8156                | 334-2156                    |
| 1-15/16 | 5-5/8        | 8-1/2   | 234-0160                     | 334-6160                     | 334-7160                  | 226-1160                     | 334-8160                | 334-2160                    |
| 2       | 5-5/8        | 8-1/2   | 234-0164                     | 334-6164                     | 334-7164                  | 226-1164                     | 334-8164                | 334-2164                    |

# Screw Machine Drills



## Screw Machine Drills Continued

High Speed Steel, 118° Point, Right Hand



### Number Sizes

| Size | Flute Length | OAL     | Rolled Black Oxide Order No. | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|------|--------------|---------|------------------------------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|
| #1   | 1-5/16"      | 2-7/16" | 234-0201                     | 334-6201                     | 334-7201                  | 226-1201                     | 334-8201                | 334-2201                    |
| #2   | 1-5/16       | 2-7/16  | 234-0202                     | 334-6202                     | 334-7202                  | 226-1202                     | 334-8202                | 334-2202                    |
| #3   | 1-1/4        | 2-3/8   | 234-0203                     | 334-6203                     | 334-7203                  | 226-1203                     | 334-8203                | 334-2203                    |
| #4   | 1-1/4        | 2-3/8   | 234-0204                     | 334-6204                     | 334-7204                  | 226-1204                     | 334-8204                | 334-2204                    |
| #5   | 1-1/4        | 2-3/8   | 234-0205                     | 334-6205                     | 334-7205                  | 226-1205                     | 334-8205                | 334-2205                    |
| #6   | 1-1/4        | 2-3/8   | 234-0206                     | 334-6206                     | 334-7206                  | 226-1206                     | 334-8206                | 334-2206                    |
| #7   | 1-3/16       | 2-1/4   | 234-0207                     | 334-6207                     | 334-7207                  | 226-1207                     | 334-8207                | 334-2207                    |
| #8   | 1-3/16       | 2-1/4   | 234-0208                     | 334-6208                     | 334-7208                  | 226-1208                     | 334-8208                | 334-2208                    |
| #9   | 1-3/16       | 2-1/4   | 234-0209                     | 334-6209                     | 334-7209                  | 226-1209                     | 334-8209                | 334-2209                    |
| #10  | 1-3/16       | 2-1/4   | 234-0210                     | 334-6210                     | 334-7210                  | 226-1210                     | 334-8210                | 334-2210                    |
| #11  | 1-3/16       | 2-1/4   | 234-0211                     | 334-6211                     | 334-7211                  | 226-1211                     | 334-8211                | 334-2211                    |
| #12  | 1-3/16       | 2-1/4   | 234-0212                     | 334-6212                     | 334-7212                  | 226-1212                     | 334-8212                | 334-2212                    |
| #13  | 1-1/8        | 2-3/16  | 234-0213                     | 334-6213                     | 334-7213                  | 226-1213                     | 334-8213                | 334-2213                    |
| #14  | 1-1/8        | 2-3/16  | 234-0214                     | 334-6214                     | 334-7214                  | 226-1214                     | 334-8214                | 334-2214                    |
| #15  | 1-1/8        | 2-3/16  | 234-0215                     | 334-6215                     | 334-7215                  | 226-1215                     | 334-8215                | 334-2215                    |
| #16  | 1-1/8        | 2-3/16  | 234-0216                     | 334-6216                     | 334-7216                  | 226-1216                     | 334-8216                | 334-2216                    |
| #17  | 1-1/8        | 2-3/16  | 234-0217                     | 334-6217                     | 334-7217                  | 226-1217                     | 334-8217                | 334-2217                    |
| #18  | 1-1/16       | 2-1/8   | 234-0218                     | 334-6218                     | 334-7218                  | 226-1218                     | 334-8218                | 334-2218                    |
| #19  | 1-1/16       | 2-1/8   | 234-0219                     | 334-6219                     | 334-7219                  | 226-1219                     | 334-8219                | 334-2219                    |
| #20  | 1-1/16       | 2-1/8   | 234-0220                     | 334-6220                     | 334-7220                  | 226-1220                     | 334-8220                | 334-2220                    |
| #21  | 1-1/16       | 2-1/8   | 234-0221                     | 334-6221                     | 334-7221                  | 226-1221                     | 334-8221                | 334-2221                    |
| #22  | 1-1/16       | 2-1/8   | 234-0222                     | 334-6222                     | 334-7222                  | 226-1222                     | 334-8222                | 334-2222                    |
| #23  | 1            | 2-1/16  | 234-0223                     | 334-6223                     | 334-7223                  | 226-1223                     | 334-8223                | 334-2223                    |
| #24  | 1            | 2-1/16  | 234-0224                     | 334-6224                     | 334-7224                  | 226-1224                     | 334-8224                | 334-2224                    |
| #25  | 1            | 2-1/16  | 234-0225                     | 334-6225                     | 334-7225                  | 226-1225                     | 334-8225                | 334-2225                    |
| #26  | 1            | 2-1/16  | 234-0226                     | 334-6226                     | 334-7226                  | 226-1226                     | 334-8226                | 334-2226                    |
| #27  | 1            | 2-1/16  | 234-0227                     | 334-6227                     | 334-7227                  | 226-1227                     | 334-8227                | 334-2227                    |
| #28  | 15/16        | 1-15/16 | 234-0228                     | 334-6228                     | 334-7228                  | 226-1228                     | 334-8228                | 334-2228                    |
| #29  | 15/16        | 1-15/16 | 234-0229                     | 334-6229                     | 334-7229                  | 226-1229                     | 334-8229                | 334-2229                    |
| #30  | 15/16        | 1-15/16 | 234-0230                     | 334-6230                     | 334-7230                  | 226-1230                     | 334-8230                | 334-2230                    |
| #31  | 7/8          | 1-7/8   | 234-0231                     | 334-6231                     | 334-7231                  | 226-1231                     | 334-8231                | 334-2231                    |
| #32  | 7/8          | 1-7/8   | 234-0232                     | 334-6232                     | 334-7232                  | 226-1232                     | 334-8232                | 334-2232                    |
| #33  | 7/8          | 1-7/8   | 234-0233                     | 334-6233                     | 334-7233                  | 226-1233                     | 334-8233                | 334-2233                    |
| #34  | 7/8          | 1-7/8   | 234-0234                     | 334-6234                     | 334-7234                  | 226-1234                     | 334-8234                | 334-2234                    |
| #35  | 7/8          | 1-7/8   | 234-0235                     | 334-6235                     | 334-7235                  | 226-1235                     | 334-8235                | 334-2235                    |
| #36  | 13/16        | 1-13/16 | 234-0236                     | 334-6236                     | 334-7236                  | 226-1236                     | 334-8236                | 334-2236                    |
| #37  | 13/16        | 1-13/16 | 234-0237                     | 334-6237                     | 334-7237                  | 226-1237                     | 334-8237                | 334-2237                    |
| #38  | 13/16        | 1-13/16 | 234-0238                     | 334-6238                     | 334-7238                  | 226-1238                     | 334-8238                | 334-2238                    |
| #39  | 13/16        | 1-13/16 | 234-0239                     | 334-6239                     | 334-7239                  | 226-1239                     | 334-8239                | 334-2239                    |
| #40  | 13/16        | 1-13/16 | 234-0240                     | 334-6240                     | 334-7240                  | 226-1240                     | 334-8240                | 334-2240                    |
| #41  | 13/16        | 1-13/16 | 234-0241                     | 334-6241                     | 334-7241                  | 226-1241                     | 334-8241                | 334-2241                    |
| #42  | 3/4          | 1-3/4   | 234-0242                     | 334-6242                     | 334-7242                  | 226-1242                     | 334-8242                | 334-2242                    |
| #43  | 3/4          | 1-3/4   | 234-0243                     | 334-6243                     | 334-7243                  | 226-1243                     | 334-8243                | 334-2243                    |
| #44  | 3/4          | 1-3/4   | 234-0244                     | 334-6244                     | 334-7244                  | 226-1244                     | 334-8244                | 334-2244                    |
| #45  | 3/4          | 1-3/4   | 234-0245                     | 334-6245                     | 334-7245                  | 226-1245                     | 334-8245                | 334-2245                    |
| #46  | 3/4          | 1-3/4   | 234-0246                     | 334-6246                     | 334-7246                  | 226-1246                     | 334-8246                | 334-2246                    |
| #47  | 3/4          | 1-3/4   | 234-0247                     | 334-6247                     | 334-7247                  | 226-1247                     | 334-8247                | 334-2247                    |
| #48  | 11/16        | 1-11/16 | 234-0248                     | 334-6248                     | 334-7248                  | 226-1248                     | 334-8248                | 334-2248                    |
| #49  | 11/16        | 1-11/16 | 234-0249                     | 334-6249                     | 334-7249                  | 226-1249                     | 334-8249                | 334-2249                    |
| #50  | 11/16        | 1-11/16 | 234-0250                     | 334-6250                     | 334-7250                  | 226-1250                     | 334-8250                | 334-2250                    |
| #51  | 11/16        | 1-11/16 | 234-0251                     | 334-6251                     | 334-7251                  | 226-1251                     | 334-8251                | 334-2251                    |
| #52  | 11/16        | 1-11/16 | 234-0252                     | 334-6252                     | 334-7252                  | 226-1252                     | 334-8252                | 334-2252                    |
| #53  | 5/8          | 1-5/8   | 234-0253                     | 334-6253                     | 334-7253                  | 226-1253                     | 334-8253                | 334-2253                    |
| #54  | 5/8          | 1-5/8   | 234-0254                     | 334-6254                     | 334-7254                  | 226-1254                     | 334-8254                | 334-2254                    |
| #55  | 5/8          | 1-5/8   | 234-0255                     | 334-6255                     | 334-7255                  | 226-1255                     | 334-8255                | 334-2255                    |
| #56  | 1/2          | 1-3/8   | 234-0256                     | 334-6256                     | 334-7256                  | 226-1256                     | 334-8256                | 334-2256                    |
| #57  | 1/2          | 1-3/8   | 234-0257                     | 334-6257                     | 334-7257                  | 226-1257                     | 334-8257                | 334-2257                    |
| #58  | 1/2          | 1-3/8   | 234-0258                     | 334-6258                     | 334-7258                  | 226-1258                     | 334-8258                | 334-2258                    |
| #59  | 1/2          | 1-3/8   | 234-0259                     | 334-6259                     | 334-7259                  | 226-1259                     | 334-8259                | 334-2259                    |
| #60  | 1/2          | 1-3/8   | 234-0260                     | 334-6260                     | 334-7260                  | 226-1260                     | 334-8260                | 334-2260                    |

### Screw Machine Drills Continued

#### High Speed Steel, 118° Point, Right Hand

- Primarily for use in screw machines.
- Ideal medium duty portable or machine drilling of low tensile strength materials.
- Heavy-duty-short length provides increased rigidity.



#### Letter Sizes

| Size | Flute Length | OAL     | Rolled Black Oxide Order No. | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|------|--------------|---------|------------------------------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|
| A    | 1-5/16"      | 2-7/16" | 234-0301                     | 334-6301                     | 334-7301                  | 226-1301                     | 334-8301                | 334-2301                    |
| B    | 1-3/8        | 2-1/2   | 234-0302                     | 334-6302                     | 334-7302                  | 226-1302                     | 334-8302                | 334-2302                    |
| C    | 1-3/8        | 2-1/2   | 234-0303                     | 334-6303                     | 334-7303                  | 226-1303                     | 334-8303                | 334-2303                    |
| D    | 1-3/8        | 2-1/2   | 234-0304                     | 334-6304                     | 334-7304                  | 226-1304                     | 334-8304                | 334-2304                    |
| E    | 1-3/8        | 2-1/2   | 234-0305                     | 334-6305                     | 334-7305                  | 226-1305                     | 334-8305                | 334-2305                    |
| F    | 1-7/16       | 2-5/8   | 234-0306                     | 334-6306                     | 334-7306                  | 226-1306                     | 334-8306                | 334-2306                    |
| G    | 1-7/16       | 2-5/8   | 234-0307                     | 334-6307                     | 334-7307                  | 226-1307                     | 334-8307                | 334-2307                    |
| H    | 1-1/2        | 2-11/16 | 234-0308                     | 334-6308                     | 334-7308                  | 226-1308                     | 334-8308                | 334-2308                    |
| I    | 1-1/2        | 2-11/16 | 234-0309                     | 334-6309                     | 334-7309                  | 226-1309                     | 334-8309                | 334-2309                    |
| J    | 1-1/2        | 2-11/16 | 234-0310                     | 334-6310                     | 334-7310                  | 226-1310                     | 334-8310                | 334-2310                    |
| K    | 1-1/2        | 2-11/16 | 234-0311                     | 334-6311                     | 334-7311                  | 226-1311                     | 334-8311                | 334-2311                    |
| L    | 1-9/16       | 2-3/4   | 234-0312                     | 334-6312                     | 334-7312                  | 226-1312                     | 334-8312                | 334-2312                    |
| M    | 1-9/16       | 2-3/4   | 234-0313                     | 334-6313                     | 334-7313                  | 226-1313                     | 334-8313                | 334-2313                    |
| N    | 1-5/8        | 2-13/16 | 234-0314                     | 334-6314                     | 334-7314                  | 226-1314                     | 334-8314                | 334-2314                    |
| O    | 1-11/16      | 2-15/16 | 234-0315                     | 334-6315                     | 334-7315                  | 226-1315                     | 334-8315                | 334-2315                    |
| P    | 1-11/16      | 2-15/16 | 234-0316                     | 334-6316                     | 334-7316                  | 226-1316                     | 334-8316                | 334-2316                    |
| Q    | 1-11/16      | 3       | 234-0317                     | 334-6317                     | 334-7317                  | 226-1317                     | 334-8317                | 334-2317                    |
| R    | 1-11/16      | 3       | 234-0318                     | 334-6318                     | 334-7318                  | 226-1318                     | 334-8318                | 334-2318                    |
| S    | 1-3/4        | 3-1/16  | 234-0319                     | 334-6319                     | 334-7319                  | 226-1319                     | 334-8319                | 334-2319                    |
| T    | 1-3/4        | 3-1/16  | 234-0320                     | 334-6320                     | 334-7320                  | 226-1320                     | 334-8320                | 334-2320                    |
| U    | 1-13/16      | 3-1/8   | 234-0321                     | 334-6321                     | 334-7321                  | 226-1321                     | 334-8321                | 334-2321                    |
| V    | 1-7/8        | 3-1/4   | 234-0322                     | 334-6322                     | 334-7322                  | 226-1322                     | 334-8322                | 334-2322                    |
| W    | 1-7/8        | 3-1/4   | 234-0323                     | 334-6323                     | 334-7323                  | 226-1323                     | 334-8323                | 334-2323                    |
| X    | 1-15/16      | 3-5/16  | 234-0324                     | 334-6324                     | 334-7324                  | 226-1324                     | 334-8324                | 334-2324                    |
| Y    | 1-15/16      | 3-5/16  | 234-0325                     | 334-6325                     | 334-7325                  | 226-1325                     | 334-8325                | 334-2325                    |
| Z    | 2            | 3-3/8   | 234-0326                     | 334-6326                     | 334-7326                  | 226-1326                     | 334-8326                | 334-2326                    |

## Cobalt HSS Screw Machine Drills

High Speed Steel & 5% Cobalt HSS, 135° Split Point, Right Hand

- Primarily for use in screw machines.
- Ideal medium duty portable or machine drilling of low tensile strength materials.
- 135 deg split point drills are self-centering and reduce "walking" at the drill point.
- Heavy-duty-short length provides increased rigidity.



### Fractional Sizes

| Size  | Flute Length | OAL     | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | M35 Cobalt Ground Order No. |
|-------|--------------|---------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|-----------------------------|
| 3/64" | 1/2"         | 1-3/8"  | 227-6003                     | 227-7003                  | 334-1003                     | 227-8003                | 227-2003                    | 330-1003                    |
| 1/16  | 5/8          | 1-5/8   | 227-6004                     | 227-7004                  | 334-1004                     | 227-8004                | 227-2004                    | 330-1004                    |
| 5/64  | 11/16        | 1-11/16 | 227-6005                     | 227-7005                  | 334-1005                     | 227-8005                | 227-2005                    | 330-1005                    |
| 3/32  | 3/4          | 1-3/4   | 227-6006                     | 227-7006                  | 334-1006                     | 227-8006                | 227-2006                    | 330-1006                    |
| 7/64  | 13/64a       | 1-13/16 | 227-6007                     | 227-7007                  | 334-1007                     | 227-8007                | 227-2007                    | 330-1007                    |
| 1/8   | 7/8          | 1-7/8   | 227-6008                     | 227-7008                  | 334-1008                     | 227-8008                | 227-2008                    | 330-1008                    |
| 9/64  | 15/16        | 1-15/16 | 227-6009                     | 227-7009                  | 334-1009                     | 227-8009                | 227-2009                    | 330-1009                    |
| 5/32  | 1            | 2-1/16  | 227-6010                     | 227-7010                  | 334-1010                     | 227-8010                | 227-2010                    | 330-1010                    |
| 11/64 | 1-1/16       | 2-1/8   | 227-6011                     | 227-7011                  | 334-1011                     | 227-8011                | 227-2011                    | 330-1011                    |
| 3/16  | 1-1/8        | 2-3/16  | 227-6012                     | 227-7012                  | 334-1012                     | 227-8012                | 227-2012                    | 330-1012                    |
| 13/64 | 1-3/16       | 2-1/4   | 227-6013                     | 227-7013                  | 334-1013                     | 227-8013                | 227-2013                    | 330-1013                    |
| 7/32  | 1-1/4        | 2-3/8   | 227-6014                     | 227-7014                  | 334-1014                     | 227-8014                | 227-2014                    | 330-1014                    |
| 15/64 | 1-5/16       | 2-7/16  | 227-6015                     | 227-7015                  | 334-1015                     | 227-8015                | 227-2015                    | 330-1015                    |
| 1/4   | 1-3/8        | 2-1/2   | 227-6016                     | 227-7016                  | 334-1016                     | 227-8016                | 227-2016                    | 330-1016                    |
| 17/64 | 1-7/16       | 2-5/8   | 227-6017                     | 227-7017                  | 334-1017                     | 227-8017                | 227-2017                    | 330-1017                    |
| 9/32  | 1-1/2        | 2-11/16 | 227-6018                     | 227-7018                  | 334-1018                     | 227-8018                | 227-2018                    | 330-1018                    |
| 19/64 | 1-9/16       | 2-3/4   | 227-6019                     | 227-7019                  | 334-1019                     | 227-8019                | 227-2019                    | 330-1019                    |
| 5/16  | 1-5/8        | 2-13/16 | 227-6020                     | 227-7020                  | 334-1020                     | 227-8020                | 227-2020                    | 330-1020                    |
| 21/64 | 1-11/16      | 2-15/16 | 227-6021                     | 227-7021                  | 334-1021                     | 227-8021                | 227-2021                    | 330-1021                    |
| 11/32 | 1-11/16      | 3       | 227-6022                     | 227-7022                  | 334-1022                     | 227-8022                | 227-2022                    | 330-1022                    |
| 23/64 | 1-3/4        | 3-1/16  | 227-6023                     | 227-7023                  | 334-1023                     | 227-8023                | 227-2023                    | 330-1023                    |
| 3/8   | 1-13/16      | 3-1/8   | 227-6024                     | 227-7024                  | 334-1024                     | 227-8024                | 227-2024                    | 330-1024                    |
| 25/64 | 1-7/8        | 3-1/4   | 227-6025                     | 227-7025                  | 334-1025                     | 227-8025                | 227-2025                    | 330-1025                    |
| 13/32 | 1-15/16      | 3-5/16  | 227-6026                     | 227-7026                  | 334-1026                     | 227-8026                | 227-2026                    | 330-1026                    |
| 27/64 | 2            | 3-3/8   | 227-6027                     | 227-7027                  | 334-1027                     | 227-8027                | 227-2027                    | 330-1027                    |
| 7/16  | 2-1/16       | 3-7/16  | 227-6028                     | 227-7028                  | 334-1028                     | 227-8028                | 227-2028                    | 330-1028                    |
| 29/64 | 2-1/8        | 3-9/16  | 227-6029                     | 227-7029                  | 334-1029                     | 227-8029                | 227-2029                    | 330-1029                    |
| 15/32 | 2-1/8        | 3-5/8   | 227-6030                     | 227-7030                  | 334-1030                     | 227-8030                | 227-2030                    | 330-1030                    |
| 31/64 | 2-3/16       | 3-11/16 | 227-6031                     | 227-7031                  | 334-1031                     | 227-8031                | 227-2031                    | 330-1031                    |
| 1/2   | 2-1/4        | 3-3/4   | 227-6032                     | 227-7032                  | 334-1032                     | 227-8032                | 227-2032                    | 330-1032                    |
| 33/64 | 2-3/8        | 3-7/8   | 227-6033                     | 227-7033                  | 334-1033                     | 227-8033                | 227-2033                    | 330-1033                    |
| 17/32 | 2-3/8        | 3-7/8   | 227-6034                     | 227-7034                  | 334-1034                     | 227-8034                | 227-2034                    | 330-1034                    |
| 35/64 | 2-1/2        | 4       | 227-6035                     | 227-7035                  | 334-1035                     | 227-8035                | 227-2035                    | 330-1035                    |
| 9/16  | 2-1/2        | 4       | 227-6036                     | 227-7036                  | 334-1036                     | 227-8036                | 227-2036                    | 330-1036                    |
| 37/64 | 2-5/8        | 4-1/8   | 227-6037                     | 227-7037                  | 334-1037                     | 227-8037                | 227-2037                    | 330-1037                    |
| 19/32 | 2-5/8        | 4-1/8   | 227-6038                     | 227-7038                  | 334-1038                     | 227-8038                | 227-2038                    | 330-1038                    |
| 39/64 | 2-3/4        | 4-1/4   | 227-6039                     | 227-7039                  | 334-1039                     | 227-8039                | 227-2039                    | 330-1039                    |
| 5/8   | 2-3/4        | 4-1/4   | 227-6040                     | 227-7040                  | 334-1040                     | 227-8040                | 227-2040                    | 330-1040                    |
| 41/64 | 2-7/8        | 4-1/2   | 227-6041                     | 227-7041                  | 334-1041                     | 227-8041                | 227-2041                    | 330-1041                    |
| 21/32 | 2-7/8        | 4-1/2   | 227-6042                     | 227-7042                  | 334-1042                     | 227-8042                | 227-2042                    | 330-1042                    |
| 43/64 | 2-7/8        | 4-5/8   | 227-6043                     | 227-7043                  | 334-1043                     | 227-8043                | 227-2043                    | 330-1043                    |
| 11/16 | 2-7/8        | 4-5/8   | 227-6044                     | 227-7044                  | 334-1044                     | 227-8044                | 227-2044                    | 330-1044                    |
| 45/64 | 3            | 4-3/4   | 227-6045                     | 227-7045                  | 334-1045                     | 227-8045                | 227-2045                    | 330-1045                    |
| 23/32 | 3            | 4-3/4   | 227-6046                     | 227-7046                  | 334-1046                     | 227-8046                | 227-2046                    | 330-1046                    |
| 47/64 | 3-1/8        | 5       | 227-6047                     | 227-7047                  | 334-1047                     | 227-8047                | 227-2047                    | 330-1047                    |
| 3/4   | 3-1/8        | 5       | 227-6048                     | 227-7048                  | 334-1048                     | 227-8048                | 227-2048                    | 330-1048                    |
| 49/64 | 3-1/4        | 5-1/8   | 227-6049                     | 227-7049                  | 334-1049                     | 227-8049                | 227-2049                    | 330-1049                    |
| 25/32 | 3-1/4        | 5-1/8   | 227-6050                     | 227-7050                  | 334-1050                     | 227-8050                | 227-2050                    | 330-1050                    |
| 51/64 | 3-3/8        | 5-1/4   | 227-6051                     | 227-7051                  | 334-1051                     | 227-8051                | 227-2051                    | 330-1051                    |
| 13/16 | 3-3/8        | 5-1/4   | 227-6052                     | 227-7052                  | 334-1052                     | 227-8052                | 227-2052                    | 330-1052                    |
| 53/64 | 3-1/2        | 5-3/8   | 227-6053                     | 227-7053                  | 334-1053                     | 227-8053                | 227-2053                    | 330-1053                    |

### Cobalt HSS Screw Machine Drills Continued

High Speed Steel & 5% Cobalt HSS, 135° Split Point, Right Hand



#### Fractional Sizes

| Size    | Flute Length | OAL    | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | M35 Cobalt Ground Order No. |
|---------|--------------|--------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|-----------------------------|
| 27/32"  | 3-1/2"       | 5-3/8" | 227-6054                     | 227-7054                  | 334-1054                     | 227-8054                | 227-2054                    | 330-1054                    |
| 55/64   | 3-1/2        | 5-1/2  | 227-6055                     | 227-7055                  | 334-1055                     | 227-8055                | 227-2055                    | 330-1055                    |
| 7/8     | 3-1/2        | 5-1/2  | 227-6056                     | 227-7056                  | 334-1056                     | 227-8056                | 227-2056                    | 330-1056                    |
| 57/64   | 3-5/8        | 5-5/8  | 227-6057                     | 227-7057                  | 334-1057                     | 227-8057                | 227-2057                    | 330-1057                    |
| 29/32   | 3-5/8        | 5-5/8  | 227-6058                     | 227-7058                  | 334-1058                     | 227-8058                | 227-2058                    | 330-1058                    |
| 59/64   | 3-3/4        | 5-3/4  | 227-6059                     | 227-7059                  | 334-1059                     | 227-8059                | 227-2059                    | 330-1059                    |
| 15/16   | 3-3/4        | 5-3/4  | 227-6060                     | 227-7060                  | 334-1060                     | 227-8060                | 227-2060                    | 330-1060                    |
| 61/64   | 3-7/8        | 5-7/8  | 227-6061                     | 227-7061                  | 334-1061                     | 227-8061                | 227-2061                    | 330-1061                    |
| 31/32   | 3-7/8        | 5-7/8  | 227-6062                     | 227-7062                  | 334-1062                     | 227-8062                | 227-2062                    | 330-1062                    |
| 63/64   | 4            | 6      | 227-6063                     | 227-7063                  | 334-1063                     | 227-8063                | 227-2063                    | 330-1063                    |
| 1       | 4            | 6      | 227-6064                     | 227-7064                  | 334-2100                     | 227-8064                | 227-2064                    | 330-1064                    |
| 1-1/16  | 4            | 6-1/4  | 227-6104                     | 227-7104                  | 334-1104                     | 227-8104                | 227-2104                    | 330-1104                    |
| 1-1/8   | 4            | 6-3/8  | 227-6108                     | 227-7108                  | 334-1108                     | 227-8108                | 227-2108                    | 330-1108                    |
| 1-3/16  | 4-1/4        | 6-5/8  | 227-6112                     | 227-7112                  | 334-1112                     | 227-8112                | 227-2112                    | 330-1112                    |
| 1-1/4   | 4-3/8        | 6-3/4  | 227-6116                     | 227-7116                  | 334-1116                     | 227-8116                | 227-2116                    | 330-1116                    |
| 1-5/16  | 4-3/8        | 7      | 227-6120                     | 227-7120                  | 334-1120                     | 227-8120                | 227-2120                    | 330-1120                    |
| 1-3/8   | 4-1/2        | 7-1/8  | 227-6124                     | 227-7124                  | 334-1124                     | 227-8124                | 227-2124                    | 330-1124                    |
| 1-7/16  | 4-3/4        | 7-3/8  | 227-6128                     | 227-7128                  | 334-1128                     | 227-8128                | 227-2128                    | 330-1128                    |
| 1-1/2   | 4-7/8        | 7-1/2  | 227-6132                     | 227-7132                  | 334-1132                     | 227-8132                | 227-2132                    | 330-1132                    |
| 1-9/16  | 4-7/8        | 7-3/4  | 227-6136                     | 227-7136                  | 334-1136                     | 227-8136                | 227-2136                    | 330-1136                    |
| 1-5/8   | 4-7/8        | 7-3/4  | 227-6140                     | 227-7140                  | 334-1140                     | 227-8140                | 227-2140                    | 330-1140                    |
| 1-11/16 | 5-1/8        | 8      | 227-6144                     | 227-7144                  | 334-1144                     | 227-8144                | 227-2144                    | 330-1144                    |
| 1-3/4   | 5-1/8        | 8      | 227-6148                     | 227-7148                  | 334-1148                     | 227-8148                | 227-2148                    | 330-1148                    |
| 1-13/16 | 5-3/8        | 8-1/4  | 227-6152                     | 227-7152                  | 334-1152                     | 227-8152                | 227-2152                    | 330-1152                    |
| 1-7/8   | 5-3/8        | 8-1/4  | 227-6156                     | 227-7156                  | 334-1156                     | 227-8156                | 227-2156                    | 330-1156                    |
| 1-15/16 | 5-5/8        | 8-1/2  | 227-6160                     | 227-7160                  | 334-1160                     | 227-8160                | 227-2160                    | 330-1160                    |
| 2       | 5-5/8        | 8-1/2  | 227-6164                     | 227-7164                  | 334-1164                     | 227-8164                | 227-2164                    | 330-1164                    |

#### Letter Sizes

| Size | Flute Length | OAL     | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | M35 Cobalt Order No. |
|------|--------------|---------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|----------------------|
| A    | 1-5/16"      | 2-7/16" | 227-6301                     | 227-7301                  | 334-1301                     | 227-8301                | 227-2301                    | 330-1301             |
| B    | 1-3/8        | 2-1/2   | 227-6302                     | 227-7302                  | 334-1302                     | 227-8302                | 227-2302                    | 330-1302             |
| C    | 1-3/8        | 2-1/2   | 227-6303                     | 227-7303                  | 334-1303                     | 227-8303                | 227-2303                    | 330-1303             |
| D    | 1-3/8        | 2-1/2   | 227-6304                     | 227-7304                  | 334-1304                     | 227-8304                | 227-2304                    | 330-1304             |
| E    | 1-3/8        | 2-1/2   | 227-6305                     | 227-7305                  | 334-1305                     | 227-8305                | 227-2305                    | 330-1305             |
| F    | 1-7/16       | 2-5/8   | 227-6306                     | 227-7306                  | 334-1306                     | 227-8306                | 227-2306                    | 330-1306             |
| G    | 1-7/16       | 2-5/8   | 227-6307                     | 227-7307                  | 334-1307                     | 227-8307                | 227-2307                    | 330-1307             |
| H    | 1-1/2        | 2-11/16 | 227-6308                     | 227-7308                  | 334-1308                     | 227-8308                | 227-2308                    | 330-1308             |
| I    | 1-1/2        | 2-11/16 | 227-6309                     | 227-7309                  | 334-1309                     | 227-8309                | 227-2309                    | 330-1309             |
| J    | 1-1/2        | 2-11/16 | 227-6310                     | 227-7310                  | 334-1310                     | 227-8310                | 227-2310                    | 330-1310             |
| K    | 1-1/2        | 2-11/16 | 227-6311                     | 227-7311                  | 334-1311                     | 227-8311                | 227-2311                    | 330-1311             |
| L    | 1-9/16       | 2-3/4   | 227-6312                     | 227-7312                  | 334-1312                     | 227-8312                | 227-2312                    | 330-1312             |
| M    | 1-9/16       | 2-3/4   | 227-6313                     | 227-7313                  | 334-1313                     | 227-8313                | 227-2313                    | 330-1313             |
| N    | 1-5/8        | 2-13/16 | 227-6314                     | 227-7314                  | 334-1314                     | 227-8314                | 227-2314                    | 330-1314             |
| O    | 1-11/16      | 2-15/16 | 227-6315                     | 227-7315                  | 334-1315                     | 227-8315                | 227-2315                    | 330-1315             |
| P    | 1-11/16      | 2-15/16 | 227-6316                     | 227-7316                  | 334-1316                     | 227-8316                | 227-2316                    | 330-1316             |
| Q    | 1-11/16      | 3       | 227-6317                     | 227-7317                  | 334-1317                     | 227-8317                | 227-2317                    | 330-1317             |
| R    | 1-11/16      | 3       | 227-6318                     | 227-7318                  | 334-1318                     | 227-8318                | 227-2318                    | 330-1318             |
| S    | 1-3/4        | 3-1/16  | 227-6319                     | 227-7319                  | 334-1319                     | 227-8319                | 227-2319                    | 330-1319             |
| T    | 1-3/4        | 3-1/16  | 227-6320                     | 227-7320                  | 334-1320                     | 227-8320                | 227-2320                    | 330-1320             |
| U    | 1-13/16      | 3-1/8   | 227-6321                     | 227-7321                  | 334-1321                     | 227-8321                | 227-2321                    | 330-1321             |
| V    | 1-7/8        | 3-1/4   | 227-6322                     | 227-7322                  | 334-1322                     | 227-8322                | 227-2322                    | 330-1322             |
| W    | 1-7/8        | 3-1/4   | 227-6323                     | 227-7323                  | 334-1323                     | 227-8323                | 227-2323                    | 330-1323             |
| X    | 1-15/16      | 3-5/16  | 227-6324                     | 227-7324                  | 334-1324                     | 227-8324                | 227-2324                    | 330-1324             |
| Y    | 1-15/16      | 3-5/16  | 227-6325                     | 227-7325                  | 334-1325                     | 227-8325                | 227-2325                    | 330-1325             |
| Z    | 2            | 3-3/8   | 227-6326                     | 227-7326                  | 334-1326                     | 227-8326                | 227-2326                    | 330-1326             |

## Cobalt HSS Screw Machine Drills Continued

High Speed Steel & 5% Cobalt HSS, 135° Split Point, Right Hand

Number Sizes



| Size | Flute Length | OAL     | Milled Black Oxide Order No. | Milled Polished Order No. | Ground Black Oxide Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | M35 Cobalt Ground Order No. |
|------|--------------|---------|------------------------------|---------------------------|------------------------------|-------------------------|-----------------------------|-----------------------------|
| #1   | 1-5/16"      | 2-7/16" | 227-6201                     | 227-7201                  | 334-1201                     | 227-8201                | 227-2201                    | 330-1201                    |
| #2   | 1-5/16       | 2-7/16  | 227-6202                     | 227-7202                  | 334-1202                     | 227-8202                | 227-2202                    | 330-1202                    |
| #3   | 1-1/4        | 2-3/8   | 227-6203                     | 227-7203                  | 334-1203                     | 227-8203                | 227-2203                    | 330-1203                    |
| #4   | 1-1/4        | 2-3/8   | 227-6204                     | 227-7204                  | 334-1204                     | 227-8204                | 227-2204                    | 330-1204                    |
| #5   | 1-1/4        | 2-3/8   | 227-6205                     | 227-7205                  | 334-1205                     | 227-8205                | 227-2205                    | 330-1205                    |
| #6   | 1-1/4        | 2-3/8   | 227-6206                     | 227-7206                  | 334-1206                     | 227-8206                | 227-2206                    | 330-1206                    |
| #7   | 1-3/16       | 2-1/4   | 227-6207                     | 227-7207                  | 334-1207                     | 227-8207                | 227-2207                    | 330-1207                    |
| #8   | 1-3/16       | 2-1/4   | 227-6208                     | 227-7208                  | 334-1208                     | 227-8208                | 227-2208                    | 330-1208                    |
| #9   | 1-3/16       | 2-1/4   | 227-6209                     | 227-7209                  | 334-1209                     | 227-8209                | 227-2209                    | 330-1209                    |
| #10  | 1-3/16       | 2-1/4   | 227-6210                     | 227-7210                  | 334-1210                     | 227-8210                | 227-2210                    | 330-1210                    |
| #11  | 1-3/16       | 2-1/4   | 227-6211                     | 227-7211                  | 334-1211                     | 227-8211                | 227-2211                    | 330-1211                    |
| #12  | 1-3/16       | 2-1/4   | 227-6212                     | 227-7212                  | 334-1212                     | 227-8212                | 227-2212                    | 330-1212                    |
| #13  | 1-1/8        | -3/16   | 227-6213                     | 227-7213                  | 334-1213                     | 227-8213                | 227-2213                    | 330-1213                    |
| #14  | 1-1/8        | 2-3/16  | 227-6214                     | 227-7214                  | 334-1214                     | 227-8214                | 227-2214                    | 330-1214                    |
| #15  | 1-1/8        | 2-3/16  | 227-6215                     | 227-7215                  | 334-1215                     | 227-8215                | 227-2215                    | 330-1215                    |
| #16  | 1-1/8        | 2-3/16  | 227-6216                     | 227-7216                  | 334-1216                     | 227-8216                | 227-2216                    | 330-1216                    |
| #17  | 1-1/8        | 2-3/16  | 227-6217                     | 227-7217                  | 334-1217                     | 227-8217                | 227-2217                    | 330-1217                    |
| #18  | 1-1/16       | 2-1/8   | 227-6218                     | 227-7218                  | 334-1218                     | 227-8218                | 227-2218                    | 330-1218                    |
| #19  | 1-1/16       | 2-1/8   | 227-6219                     | 227-7219                  | 334-1219                     | 227-8219                | 227-2219                    | 330-1219                    |
| #20  | 1-1/16       | 2-1/8   | 227-6220                     | 227-7220                  | 334-1220                     | 227-8220                | 227-2220                    | 330-1220                    |
| #21  | 1-1/16       | 2-1/8   | 227-6221                     | 227-7221                  | 334-1221                     | 227-8221                | 227-2221                    | 330-1221                    |
| #22  | 1-1/16       | 2-1/8   | 227-6222                     | 227-7222                  | 334-1222                     | 227-8222                | 227-2222                    | 330-1222                    |
| #23  | 1            | 2-1/16  | 227-6223                     | 227-7223                  | 334-1223                     | 227-8223                | 227-2223                    | 330-1223                    |
| #24  | 1            | 2-1/16  | 227-6224                     | 227-7224                  | 334-1224                     | 227-8224                | 227-2224                    | 330-1224                    |
| #25  | 1            | 2-1/16  | 227-6225                     | 227-7225                  | 334-1225                     | 227-8225                | 227-2225                    | 330-1225                    |
| #26  | 1            | 2-1/16  | 227-6226                     | 227-7226                  | 334-1226                     | 227-8226                | 227-2226                    | 330-1226                    |
| #27  | 1            | 2-1/16  | 227-6227                     | 227-7227                  | 334-1227                     | 227-8227                | 227-2227                    | 330-1227                    |
| #28  | 15/16        | 1-15/16 | 227-6228                     | 227-7228                  | 334-1228                     | 227-8228                | 227-2228                    | 330-1228                    |
| #29  | 15/16        | 1-15/16 | 227-6229                     | 227-7229                  | 334-1229                     | 227-8229                | 227-2229                    | 330-1229                    |
| #30  | 15/16        | 1-15/16 | 227-6230                     | 227-7230                  | 334-1230                     | 227-8230                | 227-2230                    | 330-1230                    |
| #31  | 7/8          | 1-7/8   | 227-6231                     | 227-7231                  | 334-1231                     | 227-8231                | 227-2231                    | 330-1231                    |
| #32  | 7/8          | 1-7/8   | 227-6232                     | 227-7232                  | 334-1232                     | 227-8232                | 227-2232                    | 330-1232                    |
| #33  | 7/8          | 1-7/8   | 227-6233                     | 227-7233                  | 334-1233                     | 227-8233                | 227-2233                    | 330-1233                    |
| #34  | 7/8          | 1-7/8   | 227-6234                     | 227-7234                  | 334-1234                     | 227-8234                | 227-2234                    | 330-1234                    |
| #35  | 7/8          | 1-7/8   | 227-6235                     | 227-7235                  | 334-1235                     | 227-8235                | 227-2235                    | 330-1235                    |
| #36  | 13/16        | 1-13/16 | 227-6236                     | 227-7236                  | 334-1236                     | 227-8236                | 227-2236                    | 330-1236                    |
| #37  | 13/16        | 1-13/16 | 227-6237                     | 227-7237                  | 334-1237                     | 227-8237                | 227-2237                    | 330-1237                    |
| #38  | 13/16        | 1-13/16 | 227-6238                     | 227-7238                  | 334-1238                     | 227-8238                | 227-2238                    | 330-1238                    |
| #39  | 13/16        | 1-13/16 | 227-6239                     | 227-7239                  | 334-1239                     | 227-8239                | 227-2239                    | 330-1239                    |
| #40  | 13/16        | 1-13/16 | 227-6240                     | 227-7240                  | 334-1240                     | 227-8240                | 227-2240                    | 330-1240                    |
| #41  | 13/16        | 1-13/16 | 227-6241                     | 227-7241                  | 334-1241                     | 227-8241                | 227-2241                    | 330-1241                    |
| #42  | 3/4          | 1-3/4   | 227-6242                     | 227-7242                  | 334-1242                     | 227-8242                | 227-2242                    | 330-1242                    |
| #43  | 3/4          | 1-3/4   | 227-6243                     | 227-7243                  | 334-1243                     | 227-8243                | 227-2243                    | 330-1243                    |
| #44  | 3/4          | 1-3/4   | 227-6244                     | 227-7244                  | 334-1244                     | 227-8244                | 227-2244                    | 330-1244                    |
| #45  | 3/4          | 1-3/4   | 227-6245                     | 227-7245                  | 334-1245                     | 227-8245                | 227-2245                    | 330-1245                    |
| #46  | 3/4          | 1-3/4   | 227-6246                     | 227-7246                  | 334-1246                     | 227-8246                | 227-2246                    | 330-1246                    |
| #47  | 3/4          | 1-3/4   | 227-6247                     | 227-7247                  | 334-1247                     | 227-8247                | 227-2247                    | 330-1247                    |
| #48  | 11/16        | 1-11/16 | 227-6248                     | 227-7248                  | 334-1248                     | 227-8248                | 227-2248                    | 330-1248                    |
| #49  | 11/16        | 1-11/16 | 227-6249                     | 227-7249                  | 334-1249                     | 227-8249                | 227-2249                    | 330-1249                    |
| #50  | 11/16        | 1-11/16 | 227-6250                     | 227-7250                  | 334-1250                     | 227-8250                | 227-2250                    | 330-1250                    |
| #51  | 11/16        | 1-11/16 | 227-6251                     | 227-7251                  | 334-1251                     | 227-8251                | 227-2251                    | 330-1251                    |
| #52  | 11/16        | 1-11/16 | 227-6252                     | 227-7252                  | 334-1252                     | 227-8252                | 227-2252                    | 330-1252                    |
| #53  | 5/8          | 1-5/8   | 227-6253                     | 227-7253                  | 334-1253                     | 227-8253                | 227-2253                    | 330-1253                    |
| #54  | 5/8          | 1-5/8   | 227-6254                     | 227-7254                  | 334-1254                     | 227-8254                | 227-2254                    | 330-1254                    |
| #55  | 5/8          | 1-5/8   | 227-6255                     | 227-7255                  | 334-1255                     | 227-8255                | 227-2255                    | 330-1255                    |
| #56  | 1/2          | 1-3/8   | 227-6256                     | 227-7256                  | 334-1256                     | 227-8256                | 227-2256                    | 330-1256                    |
| #57  | 1/2          | 1-3/8   | 227-6257                     | 227-7257                  | 334-1257                     | 227-8257                | 227-2257                    | 330-1257                    |
| #58  | 1/2          | 1-3/8   | 227-6258                     | 227-7258                  | 334-1258                     | 227-8258                | 227-2258                    | 330-1258                    |
| #59  | 1/2          | 1-3/8   | 227-6259                     | 227-7259                  | 334-1259                     | 227-8259                | 227-2259                    | 330-1259                    |
| #60  | 1/2          | 1-3/8   | 227-6260                     | 227-7260                  | 334-1260                     | 227-8260                | 227-2260                    | 330-1260                    |

## Slow Spiral Jobber Drills

### HSS Ground, 118° Point, Bright Finish

- The helix angle(10° -12° ) and wider flute design promotes better chip flow and ejection.
- The slow spiral helix also reduces the tendency for the drill to grab on entering or exiting the hole.



### Number Sizes

| Dia. | Flute Length | OAL    | Order No. |
|------|--------------|--------|-----------|
| #1   | 2-5/8"       | 3-7/8" | 334-4601  |
| #2   | 2-5/8        | 3-7/8  | 334-4602  |
| #3   | 2-1/2        | 3-3/4  | 334-4603  |
| #4   | 2-1/2        | 3-3/4  | 334-4604  |
| #5   | 2-1/2        | 3-3/4  | 334-4605  |
| #6   | 2-1/2        | 3-3/4  | 334-4606  |
| #7   | 2-7/16       | 3-5/8  | 334-4607  |
| #8   | 2-7/16       | 3-5/8  | 334-4608  |
| #9   | 2-7/16       | 3-5/8  | 334-4609  |
| #10  | 2-7/16       | 3-5/8  | 334-4610  |
| #11  | 2-5/16       | 3-1/2  | 334-4611  |
| #12  | 2-5/16       | 3-1/2  | 334-4612  |
| #13  | 2-5/16       | 3-1/2  | 334-4613  |
| #14  | 2-3/16       | 3-3/8  | 334-4614  |
| #15  | 2-3/16       | 3-3/8  | 334-4615  |
| #16  | 2-3/16       | 3-3/8  | 334-4616  |
| #17  | 2-3/16       | 3-3/8  | 334-4617  |
| #18  | 2-1/8        | 3-1/4  | 334-4618  |
| #19  | 2-1/8        | 3-1/4  | 334-4619  |
| #20  | 2-1/8        | 3-1/4  | 334-4620  |
| #21  | 2-1/8        | 3-1/4  | 334-4621  |
| #22  | 2            | 3-1/8  | 334-4622  |
| #23  | 2            | 3-1/8  | 334-4623  |
| #24  | 2            | 3-1/8  | 334-4624  |
| #25  | 1-7/8        | 3      | 334-4625  |
| #26  | 1-7/8        | 3      | 334-4626  |
| #27  | 1-7/8        | 3      | 334-4627  |
| #28  | 1-3/4        | 2-7/8  | 334-4628  |
| #29  | 1-3/4        | 2-7/8  | 334-4629  |
| #30  | 1-5/8        | 2-3/4  | 334-4630  |
| #31  | 1-5/8        | 2-3/4  | 334-4631  |
| #32  | 1-5/8        | 2-3/4  | 334-4632  |
| #33  | 1-1/2        | 2-5/8  | 334-4633  |
| #34  | 1-1/2        | 2-5/8  | 334-4634  |
| #35  | 1-1/2        | 2-5/8  | 334-4635  |
| #36  | 1-7/16       | 2-1/2  | 334-4636  |
| #37  | 1-7/16       | 2-1/2  | 334-4637  |
| #38  | 1-7/16       | 2-1/2  | 334-4638  |
| #39  | 1-3/8        | 2-3/8  | 334-4639  |
| #40  | 1-3/8        | 2-3/8  | 334-4640  |
| #41  | 1-3/8        | 2-3/8  | 334-4641  |
| #42  | 1-1/4        | 2-1/4  | 334-4642  |
| #43  | 1-1/4        | 2-1/4  | 334-4643  |
| #44  | 1-1/8        | 2-1/8  | 334-4644  |
| #45  | 1-1/8        | 2-1/8  | 334-4645  |
| #46  | 1-1/8        | 2-1/8  | 334-4646  |
| #47  | 1            | 2      | 334-4647  |
| #48  | 1            | 2      | 334-4648  |
| #49  | 1            | 2      | 334-4649  |
| #50  | 1            | 2      | 334-4650  |
| #51  | 1            | 2      | 334-4651  |
| #52  | 7/8          | 1-7/8  | 334-4652  |
| #53  | 7/8          | 1-7/8  | 334-4653  |
| #54  | 7/8          | 1-7/8  | 334-4654  |
| #55  | 7/8          | 1-7/8  | 334-4655  |
| #56  | 3/4          | 1-3/4  | 334-4656  |
| #57  | 3/4          | 1-3/4  | 334-4657  |
| #58  | 11/16        | 1-5/8  | 334-4658  |
| #59  | 11/16        | 1-5/8  | 334-4659  |
| #60  | 11/16        | 1-5/8  | 334-4660  |
| #61  | 11/16        | 1-5/8  | 334-4661  |
| #62  | 5/8          | 1-1/2  | 334-4662  |
| #63  | 5/8          | 1-1/2  | 334-4663  |
| #64  | 5/8          | 1-1/2  | 334-4664  |

| Dia. | Flute Length | OAL   | Order No. |
|------|--------------|-------|-----------|
| #65  | 5/8          | 1-1/2 | 334-4665  |
| #66  | 1/2          | 1-3/8 | 334-4666  |
| #67  | 1/2          | 1-3/8 | 334-4667  |
| #68  | 1/2          | 1-3/8 | 334-4668  |
| #69  | 1/2          | 1-3/8 | 334-4669  |
| #70  | 3/8          | 1-1/4 | 334-4670  |
| #71  | 3/8          | 1-1/4 | 334-4671  |
| #72  | 5/16         | 1-1/8 | 334-4672  |
| #73  | 5/16         | 1-1/8 | 334-4673  |
| #74  | 1/4          | 1     | 334-4674  |
| #75  | 1/4          | 1     | 334-4675  |
| #76  | 3/16         | 7/8   | 334-4676  |
| #77  | 3/16         | 7/8   | 334-4677  |
| #78  | 3/16         | 7/8   | 334-4678  |
| #79  | 1/8          | 3/4   | 334-4679  |
| #80  | 1/8          | 3/4   | 334-4680  |

### Fractional Sizes

| Dia.  | Flute Length | OAL   | Order No. |
|-------|--------------|-------|-----------|
| 1/64" | 3/16"        | 3/4"  | 334-4501  |
| 1/32  | 1/2          | 1-3/8 | 334-4502  |
| 3/64  | 3/4          | 1-3/4 | 334-4503  |
| 1/16  | 7/8          | 1-7/8 | 334-4504  |
| 5/64  | 1            | 2     | 334-4505  |
| 3/32  | 1-1/4        | 2-1/4 | 334-4506  |
| 7/64  | 1-1/2        | 2-5/8 | 334-4507  |
| 1/8   | 1-5/8        | 2-3/4 | 334-4508  |
| 9/64  | 1-3/4        | 2-7/8 | 334-4509  |
| 5/32  | 2            | 3-1/8 | 334-4510  |
| 11/64 | 2-1/8        | 3-1/4 | 334-4511  |
| 3/16  | 2-5/16       | 3-1/2 | 334-4512  |
| 13/64 | 2-7/16       | 3-5/8 | 334-4513  |
| 7/32  | 2-1/2        | 3-3/4 | 334-4514  |
| 15/64 | 2-5/8        | 3-7/8 | 334-4515  |
| 1/4   | 2-3/4        | 4     | 334-4516  |
| 17/64 | 2-7/8        | 4-1/8 | 334-4517  |
| 9/32  | 2-15/16      | 4-1/4 | 334-4518  |
| 19/64 | 3-1/16       | 4-3/8 | 334-4519  |
| 5/16  | 3-3/16       | 4-1/2 | 334-4520  |
| 21/64 | 3-5/16       | 4-5/8 | 334-4521  |
| 11/32 | 3-7/16       | 4-3/4 | 334-4522  |
| 23/64 | 3-1/2        | 4-7/8 | 334-4523  |
| 3/8x5 | 3-5/8        | 5     | 334-4524  |
| 25/64 | 3-3/4        | 5-1/8 | 334-4525  |
| 13/32 | 3-7/8        | 5-1/4 | 334-4526  |
| 27/64 | 3-15/16      | 5-3/8 | 334-4527  |
| 7/16  | 4-1/16       | 5-1/2 | 334-4528  |
| 29/64 | 4-3/16       | 5-5/8 | 334-4529  |
| 15/32 | 4-5/16       | 5-3/4 | 334-4530  |
| 31/64 | 4-3/8        | 5-7/8 | 334-4531  |
| 1/2x6 | 4-1/2        | 6     | 334-4532  |
| 33/64 | 4-13/16      | 6-5/8 | 334-4533  |
| 17/32 | 4-13/16      | 6-5/8 | 334-4534  |
| 35/64 | 4-13/16      | 6-5/8 | 334-4535  |
| 9/16  | 4-13/16      | 6-5/8 | 334-4536  |
| 37/64 | 4-13/16      | 6-5/8 | 334-4537  |
| 19/32 | 5-3/16       | 7-1/8 | 334-4538  |
| 39/64 | 5-3/16       | 7-1/8 | 334-4539  |
| 5/8   | 5-3/16       | 7-1/8 | 334-4540  |
| 41/64 | 5-3/16       | 7-1/8 | 334-4541  |
| 21/32 | 5-3/16       | 7-1/8 | 334-4542  |
| 43/64 | 5-5/8        | 7-5/8 | 334-4543  |
| 11/16 | 5-5/8        | 7-5/8 | 334-4544  |

## Fast Spiral Jobber Length Drills

### High Speed Steel, 118° Point

- Right hand cutting direction.
- The combination of fast spiral and high helix angle as well as the wider flutes provide very efficient chip movement and ejection.
- Suited for soft nonferrous materials and alloys, such as magnesium, zinc alloys.

### Letter Sizes

| Size | Flute Length | OAL    | Ground Black Oxide Order No. |
|------|--------------|--------|------------------------------|
| A    | 2-5/8"       | 3-7/8" | 334-3701                     |
| B    | 2-3/4        | 4      | 334-3702                     |
| C    | 2-3/4        | 4      | 334-3703                     |
| D    | 2-3/4        | 4      | 334-3704                     |
| E    | 2-3/4        | 4      | 334-3705                     |
| F    | 2-7/8        | 4-1/8  | 334-3706                     |
| G    | 2-7/8        | 4-1/8  | 334-3707                     |
| H    | 2-7/8        | 4-1/8  | 334-3708                     |
| I    | 2-7/8        | 4-1/8  | 334-3709                     |
| J    | 2-7/8        | 4-1/8  | 334-3710                     |
| K    | 2-15/16      | 4-1/4  | 334-3711                     |
| L    | 2-15/16      | 4-1/4  | 334-3712                     |
| M    | 3-1/16       | 4-3/8  | 334-3713                     |
| N    | 3-1/16       | 4-3/8  | 334-3714                     |
| O    | 3-3/16       | 4-1/2  | 334-3715                     |
| P    | 3-5/16       | 4-5/8  | 334-3716                     |
| Q    | 3-7/16       | 4-3/4  | 334-3717                     |
| R    | 3-7/16       | 4-3/4  | 334-3718                     |
| S    | 3-1/2        | 4-7/8  | 334-3719                     |
| T    | 3-1/2        | 4-7/8  | 334-3720                     |
| U    | 3-5/8        | 5      | 334-3721                     |
| V    | 3-5/8        | 5      | 334-3722                     |
| W    | 3-3/4        | 5-1/8  | 334-3723                     |
| X    | 3-3/4        | 5-1/8  | 334-3724                     |
| Y    | 3-7/8        | 5-1/4  | 334-3725                     |
| Z    | 3-7/8        | 5-1/4  | 334-3726                     |

### Fractional Sizes

| Size  | Flute Length | OAL   | Ground Black Oxide Order No. |
|-------|--------------|-------|------------------------------|
| 1/64" | 3/16"        | 3/4"  | 334-3501                     |
| 1/32  | 1/2          | 1-3/8 | 334-3502                     |
| 3/64  | 3/4          | 1-3/4 | 334-3503                     |
| 1/16  | 7/8          | 1-7/8 | 334-3504                     |
| 5/64  | 1            | 2     | 334-3505                     |
| 3/32  | 1-1/4        | 2-1/4 | 334-3506                     |
| 7/64  | 1-1/2        | 2-5/8 | 334-3507                     |
| 1/8   | 1-5/8        | 2-3/4 | 334-3508                     |
| 9/64  | 1-3/4        | 2-7/8 | 334-3509                     |
| 5/32  | 2            | 3-1/8 | 334-3510                     |
| 11/64 | 2-1/8        | 3-1/4 | 334-3511                     |
| 3/16  | 2-5/16       | 3-1/2 | 334-3512                     |
| 13/64 | 2-7/16       | 3-5/8 | 334-3513                     |
| 7/32  | 2-1/2        | 3-3/4 | 334-3514                     |
| 15/64 | 2-5/8        | 3-7/8 | 334-3515                     |
| 1/4   | 2-3/4        | 4     | 334-3516                     |
| 17/64 | 2-7/8        | 4-1/8 | 334-3517                     |
| 9/32  | 2-5/16       | 4-1/4 | 334-3518                     |
| 19/64 | 3-1/16       | 4-3/8 | 334-3519                     |
| 5/16  | 3-3/16       | 4-1/2 | 334-3520                     |
| 21/64 | 3-5/16       | 4-5/8 | 334-3521                     |
| 11/32 | 3-7/16       | 4-3/4 | 334-3522                     |
| 23/64 | 3-1/2        | 4-7/8 | 334-3523                     |
| 3/8   | 3-5/8        | 5     | 334-3524                     |
| 25/64 | 3-3/4        | 5-1/8 | 334-3525                     |
| 13/32 | 3-7/8        | 5-1/4 | 334-3526                     |
| 27/64 | 3-15/16      | 5-3/8 | 334-3527                     |
| 7/16  | 4-1/16       | 5-1/2 | 334-3528                     |
| 29/64 | 4-3/16       | 5-5/8 | 334-3529                     |
| 15/32 | 4-5/16       | 5-3/4 | 334-3530                     |
| 31/64 | 4-3/8        | 5-7/8 | 334-3531                     |
| 1/2   | 4-1/2        | 6     | 334-3532                     |
| 33/64 | 4-13/16      | 6-5/8 | 334-3533                     |
| 17/32 | 4-13/16      | 6-5/8 | 334-3534                     |
| 35/64 | 4-13/16      | 6-5/8 | 334-3535                     |
| 9/16  | 4-13/16      | 6-5/8 | 334-3536                     |
| 37/64 | 4-13/16      | 6-5/8 | 334-3537                     |
| 19/32 | 5-3/16       | 7-1/8 | 334-3538                     |
| 39/64 | 5-3/16       | 7-1/8 | 334-3539                     |
| 5/8   | 5-3/16       | 7-1/8 | 334-3540                     |
| 41/64 | 5-3/16       | 7-1/8 | 334-3541                     |
| 21/32 | 5-3/16       | 7-1/8 | 334-3542                     |
| 43/64 | 5-5/8        | 7-5/8 | 334-3543                     |
| 11/16 | 5-5/8        | 7-5/8 | 334-3544                     |

### Number Sizes

| Size | Flute Length | OAL    | Ground Black Oxide Order No. |
|------|--------------|--------|------------------------------|
| #1   | 2-5/8"       | 3-7/8" | 334-3601                     |
| #2   | 2-5/8        | 3-7/8  | 334-3602                     |
| #3   | 2-1/2        | 3-3/4  | 334-3603                     |
| #4   | 2-1/2        | 3-3/4  | 334-3604                     |
| #5   | 2-1/2        | 3-3/4  | 334-3605                     |
| #6   | 2-1/2        | 3-3/4  | 334-3606                     |
| #7   | 2-7/16       | 3-5/8  | 334-3607                     |
| #8   | 2-7/16       | 3-5/8  | 334-3608                     |
| #9   | 2-7/16       | 3-5/8  | 334-3609                     |
| #10  | 2-7/16       | 3-5/8  | 334-3610                     |
| #11  | 2-5/16       | 3-1/2  | 334-3611                     |
| #12  | 2-5/16       | 3-1/2  | 334-3612                     |
| #13  | 2-5/16       | 3-1/2  | 334-3613                     |
| #14  | 2-3/16       | 3-3/8  | 334-3614                     |
| #15  | 2-3/16       | 3-3/8  | 334-3615                     |
| #16  | 2-3/16       | 3-3/8  | 334-3616                     |
| #17  | 2-3/16       | 3-3/8  | 334-3617                     |
| #18  | 2-1/8        | 3-1/4  | 334-3618                     |
| #9   | 2-1/8        | 3-1/4  | 334-3619                     |
| #20  | 2-1/8        | 3-1/4  | 334-3620                     |
| #21  | 2-1/8        | 3-1/4  | 334-3621                     |
| #22  | 2            | 3-1/8  | 334-3622                     |
| #23  | 2            | 3-1/8  | 334-3623                     |
| #24  | 2            | 3-1/8  | 334-3624                     |
| #25  | 1-7/8        | 3      | 334-3625                     |
| #26  | 1-7/8        | 3      | 334-3626                     |
| #27  | 1-7/8        | 3      | 334-3627                     |
| #28  | 1-3/4        | 2-7/8  | 334-3628                     |
| #29  | 1-3/4        | 2-7/8  | 334-3629                     |
| #30  | 1-5/8        | 2-3/4  | 334-3630                     |
| #31  | 1-5/8        | 2-3/4  | 334-3631                     |
| #32  | 1-5/8        | 2-3/4  | 334-3632                     |
| #33  | 1-1/2        | 2-5/8  | 334-3633                     |
| #34  | 1-1/2        | 2-5/8  | 334-3634                     |
| #35  | 1-1/2        | 2-5/8  | 334-3635                     |
| #36  | 1-7/16       | 2-1/2  | 334-3636                     |
| #37  | 1-7/16       | 2-1/2  | 334-3637                     |
| #38  | 1-7/16       | 2-1/2  | 334-3638                     |
| #39  | 1-3/8        | 2-3/8  | 334-3639                     |
| #40  | 1-3/8        | 2-3/8  | 334-3640                     |
| #41  | 1-3/8        | 2-3/8  | 334-3641                     |
| #42  | 1-1/4        | 2-1/4  | 334-3642                     |
| #43  | 1-1/4        | 2-1/4  | 334-3643                     |
| #44  | 1-1/8        | 2-1/8  | 334-3644                     |
| #45  | 1-1/8        | 2-1/8  | 334-3645                     |
| #46  | 1-1/8        | 2-1/8  | 334-3646                     |
| #47  | 1            | 2      | 334-3647                     |
| #48  | 1            | 2      | 334-3648                     |
| #49  | 1            | 2      | 334-3649                     |
| #50  | 1            | 2      | 334-3650                     |
| #51  | 1            | 2      | 334-3651                     |
| #52  | 7/8          | 1-7/8  | 334-3652                     |
| #53  | 7/8          | 1-7/8  | 334-3653                     |
| #54  | 7/8          | 1-7/8  | 334-3654                     |
| #55  | 7/8          | 1-7/8  | 334-3655                     |
| #56  | 3/4          | 1-3/4  | 334-3656                     |
| #57  | 3/4          | 1-3/4  | 334-3657                     |
| #58  | 11/16        | 1-5/8  | 334-3658                     |
| #59  | 11/16        | 1-5/8  | 334-3659                     |
| #60  | 11/16        | 1-5/8  | 334-3660                     |
| #61  | 11/16        | 1-5/8  | 334-3661                     |
| #62  | 5/8          | 1-1/2  | 334-3662                     |
| #63  | 5/8          | 1-1/2  | 334-3663                     |
| #64  | 5/8          | 1-1/2  | 334-3664                     |
| #65  | 5/8          | 1-1/2  | 334-3665                     |
| #66  | 1/2          | 1-3/8  | 334-3666                     |
| #67  | 1/2          | 1-3/8  | 334-3667                     |
| #68  | 1/2          | 1-3/8  | 334-3668                     |
| #69  | 1/2          | 1-3/8  | 334-3669                     |
| #70  | 3/8          | 1-1/4  | 334-3670                     |
| #71  | 3/8          | 1-1/4  | 334-3671                     |
| #72  | 5/16         | 1-1/8  | 334-3672                     |
| #73  | 5/16         | 1-1/8  | 334-3673                     |
| #74  | 1/4          | 1      | 334-3674                     |
| #75  | 1/4          | 1      | 334-3675                     |
| #76  | 3/16         | 7/8    | 334-3676                     |
| #77  | 3/16         | 7/8    | 334-3677                     |
| #78  | 3/16         | 7/8    | 334-3678                     |
| #79  | 1/8          | 3/4    | 334-3679                     |
| #80  | 1/8          | 3/4    | 334-3680                     |

### Split Point Parabolic Jobber Drills

#### HSS, 135° Point, Ground

- Drill holes to 15 diameters holes
- Eliminate peck feeding
- Rapid chip disposal
- Increased coolant flow



#### Fractional Sizes

| Size  | Flute Length | OAL   | Ground Bright Order No. | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|-------|--------------|-------|-------------------------|------------------------------|-----------------------------|
| 1/64" | 3/16"        | 3/4"  | 134-8301                | 134-8001                     | 134-9001                    |
| 1/32  | 1/2          | 1-3/8 | 134-8302                | 134-8002                     | 134-9002                    |
| 3/64  | 3/4          | 1-3/4 | 134-8303                | 134-8003                     | 134-9003                    |
| 1/16  | 7/8          | 1-7/8 | 134-8304                | 134-8004                     | 134-9004                    |
| 5/64  | 1            | 2     | 134-8305                | 134-8005                     | 134-9005                    |
| 3/32  | 1-1/4        | 2-1/4 | 134-8306                | 134-8006                     | 134-9006                    |
| 7/64  | 1-1/2        | 2-5/8 | 134-8307                | 134-8007                     | 134-9007                    |
| 1/8   | 1-5/8        | 2-3/4 | 134-8308                | 134-8008                     | 134-9008                    |
| 9/64  | 1-3/4        | 2-7/8 | 134-8309                | 134-8009                     | 134-9009                    |
| 5/32  | 2            | 3-1/8 | 134-8310                | 134-8010                     | 134-9010                    |
| 11/64 | 2-1/8        | 3-1/4 | 134-8311                | 134-8011                     | 134-9011                    |
| 3/16  | 2-5/16       | 3-1/2 | 134-8312                | 134-8012                     | 134-9012                    |
| 13/64 | 2-7/16       | 3-5/8 | 134-8313                | 134-8013                     | 134-9013                    |
| 7/32  | 2-1/2        | 3-3/4 | 134-8314                | 134-8014                     | 134-9014                    |
| 15/64 | 2-5/8        | 3-7/8 | 134-8315                | 134-8015                     | 134-9015                    |
| 1/4   | 2-3/4        | 4     | 134-8316                | 134-8016                     | 134-9016                    |
| 17/64 | 2-7/8        | 4-1/8 | 134-8317                | 134-8017                     | 134-9017                    |
| 9/32  | 2-5/16       | 4-1/4 | 134-8318                | 134-8018                     | 134-9018                    |
| 19/64 | 3-1/16       | 4-3/8 | 134-8319                | 134-8019                     | 134-9019                    |
| 5/16  | 3-3/16       | 4-1/2 | 134-8320                | 134-8020                     | 134-9020                    |
| 21/64 | 3-5/16       | 4-5/8 | 134-8321                | 134-8021                     | 134-9021                    |
| 11/32 | 3-7/16       | 4-3/4 | 134-8322                | 134-8022                     | 134-9022                    |
| 23/64 | 3-1/2        | 4-7/8 | 134-8323                | 134-8023                     | 134-9023                    |
| 3/8   | 3-5/8        | 5     | 134-8324                | 134-8024                     | 134-9024                    |
| 25/64 | 3-3/4        | 5-1/8 | 134-8325                | 134-8025                     | 134-9025                    |
| 13/32 | 3-7/8        | 5-1/4 | 134-8326                | 134-8026                     | 134-9026                    |
| 27/64 | 3-15/16      | 5-3/8 | 134-8327                | 134-8027                     | 134-9027                    |
| 7/16  | 4-1/16       | 5-1/2 | 134-8328                | 134-8028                     | 134-9028                    |
| 29/64 | 4-3/16       | 5-5/8 | 134-8329                | 134-8029                     | 134-9029                    |
| 15/32 | 4-5/16       | 5-3/4 | 134-8330                | 134-8030                     | 134-9030                    |
| 31/64 | 4-3/8        | 5-7/8 | 134-8331                | 134-8031                     | 134-9031                    |
| 1/2   | 4-1/2        | 6     | 134-8332                | 134-8032                     | 134-9032                    |
| 33/64 | 4-13/16      | 6-5/8 | 134-8333                | 134-8033                     | 134-9033                    |
| 17/32 | 4-13/16      | 6-5/8 | 134-8334                | 134-8034                     | 134-9034                    |
| 35/64 | 4-13/16      | 6-5/8 | 134-8335                | 134-8035                     | 134-9035                    |
| 9/16  | 4-13/16      | 6-5/8 | 134-8336                | 134-8036                     | 134-9036                    |
| 37/64 | 4-13/16      | 6-5/8 | 134-8337                | 134-8037                     | 134-9037                    |
| 19/32 | 5-3/16       | 7-1/8 | 134-8338                | 134-8038                     | 134-9038                    |
| 39/64 | 5-3/16       | 7-1/8 | 134-8339                | 134-8039                     | 134-9039                    |
| 5/8   | 5-3/16       | 7-1/8 | 134-8340                | 134-8040                     | 134-9040                    |
| 41/64 | 5-3/16       | 7-1/8 | 134-8341                | 134-8041                     | 134-9041                    |
| 21/32 | 5-3/16       | 7-1/8 | 134-8342                | 134-8042                     | 134-9042                    |
| 43/64 | 5-5/8        | 7-5/8 | 134-8343                | 134-8043                     | 134-9043                    |
| 11/16 | 5-5/8        | 7-5/8 | 134-8344                | 134-8044                     | 134-9044                    |

#### Number Sizes

| Size | Flute Length | OAL    | Ground Bright Order No. | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|------|--------------|--------|-------------------------|------------------------------|-----------------------------|
| #1   | 2-5/8"       | 3-7/8" | 134-8401                | 134-8101                     | 134-9101                    |
| #2   | 2-5/8        | 3-7/8  | 134-8402                | 134-8102                     | 134-9102                    |
| #3   | 2-1/2        | 3-3/4  | 134-8403                | 134-8103                     | 134-9103                    |
| #4   | 2-1/2        | 3-3/4  | 134-8404                | 134-8104                     | 134-9104                    |
| #5   | 2-1/2        | 3-3/4  | 134-8405                | 134-8105                     | 134-9105                    |
| #6   | 2-1/2        | 3-3/4  | 134-8406                | 134-8106                     | 134-9106                    |
| #7   | 2-7/16       | 3-5/8  | 134-8407                | 134-8107                     | 134-9107                    |
| #8   | 2-7/16       | 3-5/8  | 134-8408                | 134-8108                     | 134-9108                    |
| #9   | 2-7/16       | 3-5/8  | 134-8409                | 134-8109                     | 134-9109                    |
| #10  | 2-7/16       | 3-5/8  | 134-8410                | 134-8110                     | 134-9110                    |
| #11  | 2-5/16       | 3-1/2  | 134-8411                | 134-8111                     | 134-9111                    |
| #12  | 2-5/16       | 3-1/2  | 134-8412                | 134-8112                     | 134-9112                    |
| #13  | 2-5/16       | 3-1/2  | 134-8413                | 134-8113                     | 134-9113                    |
| #14  | 2-3/16       | 3-3/8  | 134-8414                | 134-8114                     | 134-9114                    |
| #15  | 2-3/16       | 3-3/8  | 134-8415                | 134-8115                     | 134-9115                    |
| #16  | 2-3/16       | 3-3/8  | 134-8416                | 134-8116                     | 134-9116                    |
| #17  | 2-3/16       | 3-3/8  | 134-8417                | 134-8117                     | 134-9117                    |
| #18  | 2-1/8        | 3-1/4  | 134-8418                | 134-8118                     | 134-9118                    |
| #19  | 2-1/8        | 3-1/4  | 134-8419                | 134-8119                     | 134-9119                    |
| #20  | 2-1/8        | 3-1/4  | 134-8420                | 134-8120                     | 134-9120                    |
| #21  | 2-1/8        | 3-1/4  | 134-8421                | 134-8121                     | 134-9121                    |
| #22  | 2            | 3-1/8  | 134-8422                | 134-8122                     | 134-9122                    |
| #23  | 2            | 3-1/8  | 134-8423                | 134-8123                     | 134-9123                    |
| #24  | 2            | 3-1/8  | 134-8424                | 134-8124                     | 134-9124                    |
| #25  | 1-7/8        | 3      | 134-8425                | 134-8125                     | 134-9125                    |
| #26  | 1-7/8        | 3      | 134-8426                | 134-8126                     | 134-9126                    |
| #27  | 1-7/8        | 3      | 134-8427                | 134-8127                     | 134-9127                    |
| #28  | 1-3/4        | 2-7/8  | 134-8428                | 134-8128                     | 134-9128                    |
| #29  | 1-3/4        | 2-7/8  | 134-8429                | 134-8129                     | 134-9129                    |
| #30  | 1-5/8        | 2-3/4  | 134-8430                | 134-8130                     | 134-9130                    |
| #31  | 1-5/8        | 2-3/4  | 134-8431                | 134-8131                     | 134-9131                    |
| #32  | 1-5/8        | 2-3/4  | 134-8432                | 134-8132                     | 134-9132                    |
| #33  | 1-1/2        | 2-5/8  | 134-8433                | 134-8133                     | 134-9133                    |
| #34  | 1-1/2        | 2-5/8  | 134-8434                | 134-8134                     | 134-9134                    |
| #35  | 1-1/2        | 2-5/8  | 134-8435                | 134-8135                     | 134-9135                    |
| #36  | 1-7/16       | 2-1/2  | 134-8436                | 134-8136                     | 134-9136                    |
| #37  | 1-7/16       | 2-1/2  | 134-8437                | 134-8137                     | 134-9137                    |
| #38  | 1-7/16       | 2-1/2  | 134-8438                | 134-8138                     | 134-9138                    |
| #39  | 1-3/8        | 2-3/8  | 134-8439                | 134-8139                     | 134-9139                    |
| #40  | 1-3/8        | 2-3/8  | 134-8440                | 134-8140                     | 134-9140                    |
| #41  | 1-3/8        | 2-3/8  | 134-8441                | 134-8141                     | 134-9141                    |
| #42  | 1-1/4        | 2-1/4  | 134-8442                | 134-8142                     | 134-9142                    |
| #43  | 1-1/4        | 2-1/4  | 134-8443                | 134-8143                     | 134-9143                    |
| #44  | 1-1/8        | 2-1/8  | 134-8444                | 134-8144                     | 134-9144                    |

# Parabolic Taper Length Drills

## Split Point Parabolic Jobber Drills Continued



### Number Sizes

| Size | Flute Length | OAL   | Ground Bright Order No. | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|------|--------------|-------|-------------------------|------------------------------|-----------------------------|
| #45  | 1-1/8        | 2-1/8 | 134-8445                | 134-8145                     | 134-9145                    |
| #46  | 1-1/8        | 2-1/8 | 134-8446                | 134-8146                     | 134-9146                    |
| #47  | 1            | 2     | 134-8447                | 134-8147                     | 134-9147                    |
| #48  | 1            | 2     | 134-8448                | 134-8148                     | 134-9148                    |
| #49  | 1            | 2     | 134-8449                | 134-8149                     | 134-9149                    |
| #50  | 1            | 2     | 134-8450                | 134-8150                     | 134-9150                    |
| #51  | 1            | 2     | 134-8451                | 134-8151                     | 134-9151                    |
| #52  | 7/8          | 1-7/8 | 134-8452                | 134-8152                     | 134-9152                    |
| #53  | 7/8          | 1-7/8 | 134-8453                | 134-8153                     | 134-9153                    |
| #54  | 7/8          | 1-7/8 | 134-8454                | 134-8154                     | 134-9154                    |
| #55  | 7/8          | 1-7/8 | 134-8455                | 134-8155                     | 134-9155                    |
| #56  | 3/4          | 1-3/4 | 134-8456                | 134-8156                     | 134-9156                    |
| #57  | 3/4          | 1-3/4 | 134-8457                | 134-8157                     | 134-9157                    |
| #58  | 11/16        | 1-5/8 | 134-8458                | 134-8158                     | 134-9158                    |
| #59  | 11/16        | 1-5/8 | 134-8459                | 134-8159                     | 134-9159                    |
| #60  | 11/16        | 1-5/8 | 134-8460                | 134-8160                     | 134-9160                    |

### Letter Sizes

| Size | Flute Length | OAL    | Ground Bright Order No. | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|------|--------------|--------|-------------------------|------------------------------|-----------------------------|
| A    | 2-5/8"       | 3-7/8" | 134-8801                | 134-8201                     | 134-9201                    |
| B    | 2-3/4        | 4      | 134-8802                | 134-8202                     | 134-9202                    |
| C    | 2-3/4        | 4      | 134-8803                | 134-8203                     | 134-9203                    |
| D    | 2-3/4        | 4      | 134-8804                | 134-8204                     | 134-9204                    |
| E    | 2-3/4        | 4      | 134-8805                | 134-8205                     | 134-9205                    |
| F    | 2-7/8        | 4-1/8  | 134-8806                | 134-8206                     | 134-9206                    |
| G    | 2-7/8        | 4-1/8  | 134-8807                | 134-8207                     | 134-9207                    |
| H    | 2-7/8        | 4-1/8  | 134-8808                | 134-8208                     | 134-9208                    |
| I    | 2-7/8        | 4-1/8  | 134-8809                | 134-8209                     | 134-9209                    |
| J    | 2-7/8        | 4-1/8  | 134-8810                | 134-8210                     | 134-9210                    |
| K    | 2-15/16      | 4-1/4  | 134-8811                | 134-8211                     | 134-9211                    |
| L    | 2-15/16      | 4-1/4  | 134-8812                | 134-8212                     | 134-9212                    |
| M    | 3-1/16       | 4-3/8  | 134-8813                | 134-8213                     | 134-9213                    |
| N    | 3-1/16       | 4-3/8  | 134-8814                | 134-8214                     | 134-9214                    |
| O    | 3-3/16       | 4-1/2  | 134-8815                | 134-8215                     | 134-9215                    |
| P    | 3-5/16       | 4-5/8  | 134-8816                | 134-8216                     | 134-9216                    |
| Q    | 3-7/16       | 4-3/4  | 134-8817                | 134-8217                     | 134-9217                    |
| R    | 3-7/16       | 4-3/4  | 134-8818                | 134-8218                     | 134-9218                    |
| S    | 3-1/2        | 4-7/8  | 134-8819                | 134-8219                     | 134-9219                    |
| T    | 3-1/2        | 4-7/8  | 134-8820                | 134-8220                     | 134-9220                    |
| U    | 3-5/8        | 5      | 134-8821                | 134-8221                     | 134-9221                    |
| V    | 3-5/8        | 5      | 134-8822                | 134-8222                     | 134-9222                    |
| W    | 3-3/4        | 5-1/8  | 134-8823                | 134-8223                     | 134-9223                    |
| X    | 3-3/4        | 5-1/8  | 134-8824                | 134-8224                     | 134-9224                    |
| Y    | 3-7/8        | 5-1/4  | 134-8825                | 134-8225                     | 134-9225                    |
| Z    | 3-7/8        | 5-1/4  | 134-8826                | 134-8226                     | 134-9226                    |

## Split Point Parabolic Drills-Taper Length

### HSS, 135° Point, Ground

- The wide land parabolic flute design provides superior performance in a greater range of materials and applications
- Unique flute form produces closer tolerances due to improved chip and coolant flow, and higher torsional rigidity  
135° Self-centering split point reduces thrust
- Taper length(longer flute and overall length) improves reach and deep hole drilling capability



### Letter Sizes

| Size | Flute Length | OAL    | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|------|--------------|--------|------------------------------|-----------------------------|
| A    | 3-3/4"       | 6-1/8" | 134-8701                     | 134-9701                    |
| B    | 3-3/4        | 6-1/8  | 134-8702                     | 134-9702                    |
| C    | 3-3/4        | 6-1/8  | 134-8703                     | 134-9703                    |
| D    | 3-3/4        | 6-1/8  | 134-8704                     | 134-9704                    |
| E    | 3-3/4        | 6-1/8  | 134-8705                     | 134-9705                    |
| F    | 3-7/8        | 6-1/4  | 134-8706                     | 134-9706                    |
| G    | 3-7/8        | 6-1/4  | 134-8707                     | 134-9707                    |
| H    | 3-7/8        | 6-1/4  | 134-8708                     | 134-9708                    |
| I    | 3-7/8        | 6-1/4  | 134-8709                     | 134-9709                    |
| J    | 3-7/8        | 6-1/4  | 134-8710                     | 134-9710                    |
| K    | 3-7/8        | 6-1/4  | 134-8711                     | 134-9711                    |
| L    | 4            | 6-3/8  | 134-8712                     | 134-9712                    |
| M    | 4            | 6-3/8  | 134-8713                     | 134-9713                    |
| N    | 4            | 6-3/8  | 134-8714                     | 134-9714                    |
| O    | 4-1/8        | 6-1/2  | 134-8715                     | 134-9715                    |
| P    | 4-1/8        | 6-1/2  | 134-8716                     | 134-9716                    |
| Q    | 4-1/8        | 6-1/2  | 134-8717                     | 134-9717                    |
| R    | 4-1/8        | 6-1/2  | 134-8718                     | 134-9718                    |
| S    | 4-1/4        | 6-3/4  | 134-8719                     | 134-9719                    |
| T    | 4-1/4        | 6-3/4  | 134-8720                     | 134-9720                    |
| U    | 4-1/4        | 6-3/4  | 134-8721                     | 134-9721                    |
| V    | 4-3/8        | 7      | 134-8722                     | 134-9722                    |
| W    | 4-3/8        | 7      | 134-8723                     | 134-9723                    |
| X    | 4-3/8        | 7      | 134-8724                     | 134-9724                    |
| Y    | 4-3/8        | 7      | 134-8725                     | 134-9725                    |
| Z    | 4-5/8        | 7-1/4  | 134-8726                     | 134-9726                    |

## Split Point Parabolic Drills-Taper Length Continued

### Fractional Sizes

| Size  | Flute Length | OAL    | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|-------|--------------|--------|------------------------------|-----------------------------|
| 1/64" | 5/16"        | 1-1/2" | 134-8501                     | 134-9501                    |
| 1/32  | 3/4          | 2      | 134-8502                     | 134-9502                    |
| 3/64  | 1-1/8"       | 2-1/4  | 134-8503                     | 134-9503                    |
| 1/16  | 1-3/4        | 3      | 134-8504                     | 134-9504                    |
| 5/64  | 2            | 3-3/4  | 134-8505                     | 134-9505                    |
| 3/32  | 2-1/4        | 4-1/4  | 134-8506                     | 134-9506                    |
| 7/64  | 2-1/2        | 4-5/8  | 134-8507                     | 134-9507                    |
| 1/8   | 2-3/4        | 5-1/8  | 134-8508                     | 134-9508                    |
| 9/64  | 3            | 5-3/8  | 134-8509                     | 134-9509                    |
| 5/32  | 3            | 5-3/8  | 134-8510                     | 134-9510                    |
| 11/64 | 3-3/8        | 5-3/4  | 134-8511                     | 134-9511                    |
| 3/16  | 3-3/8        | 5-3/4  | 134-8512                     | 134-9512                    |
| 13/64 | 3-5/8        | 6      | 134-8513                     | 134-9513                    |
| 7/32  | 3-5/8        | 6      | 134-8514                     | 134-9514                    |
| 15/64 | 3-3/4        | 6-1/8  | 134-8515                     | 134-9515                    |
| 1/4   | 3-3/4        | 6-1/8  | 134-8516                     | 134-9516                    |
| 17/16 | 3-7/8        | 6-1/4  | 134-8517                     | 134-9517                    |
| 9/32  | 3-7/8        | 6-1/4  | 134-8518                     | 134-9518                    |
| 19/64 | 4            | 6-3/8  | 134-8519                     | 134-9519                    |
| 5/16  | 4            | 6-3/8  | 134-8520                     | 134-9520                    |
| 21/64 | 4-1/8        | 6-1/2  | 134-8521                     | 134-9521                    |
| 11/32 | 4-1/8        | 6-1/2  | 134-8522                     | 134-9522                    |
| 23/64 | 4-1/4        | 6-3/4  | 134-8523                     | 134-9523                    |
| 3/8   | 4-1/4        | 6-3/4  | 134-8524                     | 134-9524                    |
| 25/64 | 4-3/8        | 7      | 134-8525                     | 134-9525                    |
| 13/32 | 4-3/8        | 7      | 134-8526                     | 134-9526                    |
| 27/64 | 4-5/8        | 7-1/4  | 134-8527                     | 134-9527                    |
| 7/16  | 4-5/8        | 7-1/4  | 134-8528                     | 134-9528                    |
| 29/64 | 4-3/4        | 7-1/2  | 134-8529                     | 134-9529                    |
| 15/32 | 4-3/4        | 7-1/2  | 134-8530                     | 134-9530                    |
| 31/64 | 4-3/4        | 7-3/4  | 134-8531                     | 134-9531                    |
| 1/2   | 4-3/4        | 7-3/4  | 134-8532                     | 134-9532                    |
| 33/64 | 4-3/4        | 8      | 134-8533                     | 134-9533                    |
| 17/32 | 4-3/4        | 8      | 134-8534                     | 134-9534                    |
| 35/64 | 4-7/8        | 8-1/4  | 134-8535                     | 134-9535                    |
| 9/16  | 4-7/8        | 8-1/4  | 134-8536                     | 134-9536                    |
| 37/64 | 4-7/8        | 8-3/4  | 134-8537                     | 134-9537                    |
| 19/32 | 4-7/8        | 8-3/4  | 134-8538                     | 134-9538                    |
| 39/64 | 4-7/8        | 8-3/4  | 134-8539                     | 134-9539                    |
| 5/8   | 4-7/8        | 8-3/4  | 134-8540                     | 134-9540                    |
| 41/64 | 5-1/8        | 9      | 134-8541                     | 134-9541                    |
| 21/32 | 5-1/8        | 9      | 134-8542                     | 134-9542                    |
| 43/64 | 5-3/8        | 9-1/4  | 134-8543                     | 134-9543                    |
| 11/16 | 5-3/8        | 9-1/4  | 134-8544                     | 134-9544                    |
| 45/64 | 5-5/8        | 9-1/2  | 134-8545                     | 134-9545                    |
| 23/32 | 5-5/8        | 9-1/2  | 134-8546                     | 134-9546                    |
| 47/64 | 5-7/8        | 9-3/4  | 134-8547                     | 134-9547                    |
| 3/4   | 5-7/8        | 9-3/4  | 134-8548                     | 134-9548                    |
| 49/64 | 6            | 9-7/8  | 134-8549                     | 134-9549                    |
| 25/32 | 6            | 9-7/8  | 134-8550                     | 134-9550                    |
| 51/64 | 6-1/8"       | 10     | 134-8551                     | 134-9551                    |
| 13/16 | 6-1/8        | 10     | 134-8552                     | 134-9552                    |
| 53/64 | 6-1/8        | 10     | 134-8553                     | 134-9553                    |
| 27/32 | 6-1/8        | 10     | 134-8554                     | 134-9554                    |
| 55/64 | 6-1/8        | 10     | 134-8555                     | 134-9555                    |
| 7/8   | 6-1/8        | 10     | 134-8556                     | 134-9556                    |
| 57/64 | 6-1/8        | 10     | 134-8557                     | 134-9557                    |
| 29/32 | 6-1/8        | 10     | 134-8558                     | 134-9558                    |
| 59/64 | 6-1/8        | 10-3/4 | 134-8559                     | 134-9559                    |
| 15/16 | 6-1/8        | 10-3/4 | 134-8560                     | 134-9560                    |
| 61/64 | 6-3/8        | 11     | 134-8561                     | 134-9561                    |
| 31/32 | 6-3/8        | 11     | 134-8562                     | 134-9562                    |
| 63/64 | 6-3/8        | 11     | 134-8563                     | 134-9563                    |
| 1     | 6-3/8        | 11     | 134-8564                     | 134-9564                    |

### Number Sizes

| Size | Flute Length | OAL    | Ground Black Oxide Order No. | Ground TiN-Coated Order No. |
|------|--------------|--------|------------------------------|-----------------------------|
| #1   | 3-3/4"       | 6-1/8" | 134-8601                     | 134-9601                    |
| #2   | 3-3/4        | 6-1/8  | 134-8602                     | 134-9602                    |
| #3   | 3-5/8        | 6      | 134-8603                     | 134-9603                    |
| #4   | 3-5/8        | 6      | 134-8604                     | 134-9604                    |
| #5   | 3-5/8        | 6      | 134-8605                     | 134-9605                    |
| #6   | 3-5/8        | 6      | 134-8606                     | 134-9606                    |
| #7   | 3-5/8        | 6      | 134-8607                     | 134-9607                    |
| #8   | 3-5/8        | 6      | 134-8608                     | 134-9608                    |
| #9   | 3-5/8        | 6      | 134-8609                     | 134-9609                    |
| #10  | 3-5/8        | 6      | 134-8610                     | 134-9610                    |
| #11  | 3-5/8        | 6      | 134-8611                     | 134-9611                    |
| #12  | 3-5/8        | 6      | 134-8612                     | 134-9612                    |
| #13  | 3-3/8        | 5-3/4  | 134-8613                     | 134-9613                    |
| #14  | 3-3/8        | 5-3/4  | 134-8614                     | 134-9614                    |
| #15  | 3-3/8        | 5-3/4  | 134-8615                     | 134-9615                    |
| #16  | 3-3/8        | 5-3/4  | 134-8616                     | 134-9616                    |
| #17  | 3-3/8        | 5-3/4  | 134-8617                     | 134-9617                    |
| #18  | 3-3/8        | 5-3/4  | 134-8618                     | 134-9618                    |
| #19  | 3-3/8        | 5-3/4  | 134-8619                     | 134-9619                    |
| #20  | 3-3/8        | 5-3/4  | 134-8620                     | 134-9620                    |
| #21  | 3-3/8        | 5-3/4  | 134-8621                     | 134-9621                    |
| #22  | 3-3/8        | 5-3/4  | 134-8622                     | 134-9622                    |
| #23  | 3            | 5-3/8  | 134-8623                     | 134-9623                    |
| #24  | 3            | 5-3/8  | 134-8624                     | 134-9624                    |
| #25  | 3            | 5-3/8  | 134-8625                     | 134-9625                    |
| #26  | 3            | 5-3/8  | 134-8626                     | 134-9626                    |
| #27  | 3            | 5-3/8  | 134-8627                     | 134-9627                    |
| #28  | 3            | 5-3/8  | 134-8628                     | 134-9628                    |
| #29  | 3            | 5-3/8  | 134-8629                     | 134-9629                    |
| #30  | 3            | 5-3/8  | 134-8630                     | 134-9630                    |
| #31  | 2-3/4        | 5-1/8  | 134-8631                     | 134-9631                    |
| #32  | 2-3/4        | 5-1/8  | 134-8632                     | 134-9632                    |
| #33  | 2-3/4        | 5-1/8  | 134-8633                     | 134-9633                    |
| #34  | 2-3/4        | 5-1/8  | 134-8634                     | 134-9634                    |
| #35  | 2-3/4        | 5-1/8  | 134-8635                     | 134-9635                    |
| #36  | 2-1/2        | 4-5/8  | 134-8636                     | 134-9636                    |
| #37  | 2-1/2        | 4-5/8  | 134-8637                     | 134-9637                    |
| #38  | 2-1/2        | 4-5/8  | 134-8638                     | 134-9638                    |
| #39  | 2-1/2        | 4-5/8  | 134-8639                     | 134-9639                    |
| #40  | 2-1/2        | 4-5/8  | 134-8640                     | 134-9640                    |
| #41  | 2-1/2        | 4-5/8  | 134-8641                     | 134-9641                    |
| #42  | 2-1/4        | 4-1/4  | 134-8642                     | 134-9642                    |
| #43  | 2-1/4        | 4-1/4  | 134-8643                     | 134-9643                    |
| #44  | 2-1/4        | 4-1/4  | 134-8644                     | 134-9644                    |
| #45  | 2-1/4        | 4-1/4  | 134-8645                     | 134-9645                    |
| #46  | 2-1/4        | 4-1/4  | 134-8646                     | 134-9646                    |
| #47  | 2-1/4        | 4-1/4  | 134-8647                     | 134-9647                    |
| #48  | 2            | 3-3/4  | 134-8648                     | 134-9648                    |
| #49  | 2            | 3-3/4  | 134-8649                     | 134-9649                    |
| #50  | 2            | 3-3/4  | 134-8650                     | 134-9650                    |
| #51  | 2            | 3-3/4  | 134-8651                     | 134-9651                    |
| #52  | 2            | 3-3/4  | 134-8652                     | 134-9652                    |
| #53  | 1-3/4        | 3      | 134-8653                     | 134-9653                    |
| #54  | 1-3/4        | 3      | 134-8654                     | 134-9654                    |
| #55  | 1-3/4        | 3      | 134-8655                     | 134-9655                    |
| #56  | 1-1/8        | 2-1/4  | 134-8656                     | 134-9656                    |
| #57  | 1-1/8        | 2-1/4  | 134-8657                     | 134-9657                    |
| #58  | 1-1/8        | 2-1/4  | 134-8658                     | 134-9658                    |
| #59  | 1-1/8        | 2-1/4  | 134-8659                     | 134-9659                    |
| #60  | 1-1/8        | 2-1/4  | 134-8660                     | 134-9660                    |

## Taper Length Drills-Black Oxide

### High Speed Steel, 118° Point, Right Hand

- Designed for general purpose drilling where a length longer than jobber drill length is required.
- Performs very well in a wide range of materials.
- 118° standard point.
- Shank diameter is the same as drill diameter.



### Fractional Sizes

| Size  | Flute Length | OAL    | Milled Order No. | Ground Order No. |
|-------|--------------|--------|------------------|------------------|
| 1/64" | 5/16"        | 1-1/2" | 310-6001         | 310-2001         |
| 1/32  | 3/4          | 2      | 310-6002         | 310-2002         |
| 3/64  | 1-1/8        | 2-1/4  | 310-6003         | 310-2003         |
| 1/16  | 1-3/4        | 3      | 310-6004         | 310-2004         |
| 5/64  | 2            | 3-3/4  | 310-6005         | 310-2005         |
| 3/32  | 2-1/4        | 4-1/4  | 310-6006         | 310-2006         |
| 7/64  | 2-1/2        | 4-5/8  | 310-6007         | 310-2007         |
| 1/8   | 2-3/4        | 5-1/8  | 310-6008         | 310-2008         |
| 9/64  | 3            | 5-3/8  | 310-6009         | 310-2009         |
| 5/32  | 3            | 5-3/8  | 310-6010         | 310-2010         |
| 11/64 | 3-3/8        | 5-3/4  | 310-6011         | 310-2011         |
| 3/16  | 3-3/8        | 5-3/4  | 310-6012         | 310-2012         |
| 13/64 | 3-5/8        | 6      | 310-6013         | 310-2013         |
| 7/32  | 3-5/8        | 6      | 310-6014         | 310-2014         |
| 15/64 | 3-3/4        | 6-1/8  | 310-6015         | 310-2015         |
| 1/4   | 3-3/4        | 6-1/8  | 310-6016         | 310-2016         |
| 17/64 | 3-7/8        | 6-1/4  | 310-6017         | 310-2017         |
| 9/32  | 3-7/8        | 6-1/4  | 310-6018         | 310-2018         |
| 19/64 | 4            | 6-3/8  | 310-6019         | 310-2019         |
| 5/16  | 4            | 6-3/8  | 310-6020         | 310-2020         |
| 21/64 | 4-1/8        | 6-1/2  | 310-6021         | 310-2021         |
| 11/32 | 4-1/8        | 6-1/2  | 310-6022         | 310-2022         |
| 23/64 | 4-1/4        | 6-3/4  | 310-6023         | 310-2023         |
| 3/8   | 4-1/4        | 6-3/4  | 310-6024         | 310-2024         |
| 25/64 | 4-3/8        | 7      | 310-6025         | 310-2025         |
| 13/32 | 4-3/8        | 7      | 310-6026         | 310-2026         |
| 27/64 | 4-5/8        | 7-1/4  | 310-6027         | 310-2027         |
| 7/16  | 4-5/8        | 7-1/4  | 310-6028         | 310-2028         |
| 29/64 | 4-3/4        | 7-1/2  | 310-6029         | 310-2029         |
| 15/32 | 4-3/4        | 7-1/2  | 310-6030         | 310-2030         |
| 31/64 | 4-3/4        | 7-3/4  | 310-6031         | 310-2031         |
| 1/2"  | 4-3/4        | 7-3/4  | 310-6032         | 310-2032         |
| 33/64 | 4-3/4        | 8      | 310-6033         | 310-2033         |
| 17/32 | 4-3/4        | 8      | 310-6034         | 310-2034         |
| 35/64 | 4-7/8        | 8-1/4  | 310-6035         | 310-2035         |
| 9/16  | 4-7/8        | 8-1/4  | 310-6036         | 310-2036         |
| 37/64 | 4-7/8        | 8-3/4  | 310-6037         | 310-2037         |
| 19/32 | 4-7/8        | 8-3/4  | 310-6038         | 310-2038         |
| 39/64 | 4-7/8        | 8-3/4  | 310-6039         | 310-2039         |
| 5/8   | 4-7/8        | 8-3/4  | 310-6040         | 310-2040         |
| 41/64 | 5-1/8        | 9      | 310-6041         | 310-2041         |
| 21/32 | 5-1/8        | 9      | 310-6042         | 310-2042         |
| 43/64 | 5-3/8        | 9-1/4  | 310-6043         | 310-2043         |
| 11/16 | 5-3/8        | 9-1/4  | 310-6044         | 310-2044         |
| 45/64 | 5-5/8        | 9-1/2  | 310-6045         | 310-2045         |
| 23/32 | 5-5/8        | 9-1/2  | 310-6046         | 310-2046         |
| 47/64 | 5-7/8        | 9-3/4  | 310-6047         | 310-2047         |

| Size    | Flute Length | OAL    | Milled Order No. | Ground Order No. |
|---------|--------------|--------|------------------|------------------|
| 3/4     | 5-7/8        | 9-3/4  | 310-6048         | 310-2048         |
| 49/64   | 6            | 9-7/8  | 310-6049         | 310-2049         |
| 25/32   | 6            | 9-7/8  | 310-6050         | 310-2050         |
| 51/64   | 6-1/8"       | 10     | 310-6051         | 310-2051         |
| 13/16   | 6-1/8        | 10     | 310-6052         | 310-2052         |
| 53/64   | 6-1/8        | 10     | 310-6053         | 310-2053         |
| 27/32   | 6-1/8        | 10     | 310-6054         | 310-2054         |
| 55/64   | 6-1/8        | 10     | 310-6055         | 310-2055         |
| 7/8     | 6-1/8        | 10     | 310-6056         | 310-2056         |
| 57/64   | 6-1/8        | 10     | 310-6057         | 310-2057         |
| 29/32   | 6-1/8        | 10     | 310-6058         | 310-2058         |
| 59/64   | 6-1/8        | 10-3/4 | 310-6059         | 310-2059         |
| 15/16   | 6-1/8        | 10-3/4 | 310-6060         | 310-2060         |
| 61/64   | 6-3/8        | 11     | 310-6061         | 310-2061         |
| 31/32   | 6-3/8        | 11     | 310-6062         | 310-2062         |
| 63/64"  | 6-3/8        | 11     | 310-6063         | 310-2063         |
| 1       | 6-3/8        | 11     | 310-6064         | 310-2064         |
| 1-1/32  | 6-1/2        | 11-1/8 | 310-6102         | 310-2102         |
| 1-3/64  | 6-5/8        | 11-1/4 | 310-6103         | 310-2103         |
| 1-1/16  | 6-5/8        | 11-1/4 | 310-6104         | 310-2104         |
| 1-5/64  | 6-7/8        | 11-1/2 | 310-6105         | 310-2105         |
| 1-3/32  | 6-7/8        | 11-1/2 | 310-6106         | 310-2106         |
| 1-1/8   | 7-1/8        | 11-3/4 | 310-6108         | 310-2108         |
| 1-5/32  | 7-1/4        | 11-7/8 | 310-6110         | 310-2110         |
| 1-11/64 | 7-3/8        | 12     | 310-6111         | 310-2111         |
| 1-3/16  | 7-3/8        | 12     | 310-6112         | 310-2112         |
| 1-13/64 | 7-1/2        | 12-1/8 | 310-6113         | 310-2113         |
| 1-7/32  | 7-1/2        | 12-1/8 | 310-6114         | 310-2114         |
| 1-1/4   | 7-7/8        | 12-1/2 | 310-6116         | 310-2116         |
| 1-9/32  | 8-1/2        | 14-1/8 | 310-6118         | 310-2118         |
| 1-5/16  | 8-5/8        | 14-1/4 | 310-6120         | 310-2120         |
| 1-11/32 | 8-3/4        | 14-3/8 | 310-6122         | 310-2122         |
| 1-3/8   | 8-7/8        | 14-1/2 | 310-6124         | 310-2124         |
| 1-13/32 | 9            | 14-5/8 | 310-6126         | 310-2126         |
| 1-7/16  | 9-1/8        | 14-3/4 | 310-6128         | 310-2128         |
| 1-15/32 | 9-1/4        | 14-7/8 | 310-6130         | 310-2130         |
| 1-1/2   | 9-3/8        | 15     | 310-6132         | 310-2132         |
| 1-9/16  | 9-5/8        | 15-1/4 | 310-6136         | 310-2136         |
| 1-5/8   | 9-7/8        | 15-5/8 | 310-6140         | 310-2140         |
| 1-21/32 | 9-7/8        | 15-5/8 | 310-6142         | 310-2142         |
| 1-11/16 | 10           | 15-3/8 | 310-6144         | 310-2144         |
| 1-3/4   | 10-1/2       | 16-1/4 | 310-6148         | 310-2148         |
| 1-13/16 | 10-1/2       | 16-1/4 | 310-6152         | 310-2152         |
| 1-7/8   | 10-3/4       | 16-1/2 | 310-6156         | 310-2156         |
| 1-15/16 | 10-3/4       | 16-5/8 | 310-6160         | 310-2160         |
| 2       | 10-3/4       | 16-5/8 | 310-6164         | 310-2164         |

## Taper Length Drills-Black Oxide Continued

**High Speed Steel, 118° Point,  
Right Hand**

- Designed for general purpose drilling where a length longer than jobber drill length is required.
- Performs very well in a wide range of materials.
- 118° standard point.
- Shank diameter is the same as drill diameter.



### Number Sizes

| Size | Flute Length | OAL    | Milled Order No. | Ground Order No. |
|------|--------------|--------|------------------|------------------|
| #1   | 3-3/4"       | 6-1/8" | 310-6401         | 310-2401         |
| #2   | 3-3/4        | 6-1/8  | 310-6402         | 310-2402         |
| #3   | 3-5/8        | 6      | 310-6403         | 310-2403         |
| #4   | 3-5/8        | 6      | 310-6404         | 310-2404         |
| #5   | 3-5/8        | 6      | 310-6405         | 310-2405         |
| #6   | 3-5/8        | 6      | 310-6406         | 310-2406         |
| #7   | 3-5/8        | 6      | 310-6407         | 310-2407         |
| #8   | 3-5/8        | 6      | 310-6408         | 310-2408         |
| #9   | 3-5/8        | 6      | 310-6409         | 310-2409         |
| #10  | 3-5/8        | 6      | 310-6410         | 310-2410         |
| #11  | 3-5/8        | 6      | 310-6411         | 310-2411         |
| #12  | 3-5/8        | 6      | 310-6412         | 310-2412         |
| #13  | 3-3/8        | 5-3/4  | 310-6413         | 310-2413         |
| #14  | 3-3/8        | 5-3/4  | 310-6414         | 310-2414         |
| #15  | 3-3/8        | 5-3/4  | 310-6415         | 310-2415         |
| #16  | 3-3/8        | 5-3/4  | 310-6416         | 310-2416         |
| #17  | 3-3/8        | 5-3/4  | 310-6417         | 310-2417         |
| #18  | 3-3/8        | 5-3/4  | 310-6418         | 310-2418         |
| #19  | 3-3/8        | 5-3/4  | 310-6419         | 310-2419         |
| #20  | 3-3/8        | 5-3/4  | 310-6420         | 310-2420         |
| #21  | 3-3/8        | 5-3/4  | 310-6421         | 310-2421         |
| #22  | 3-3/8        | 5-3/4  | 310-6422         | 310-2422         |
| #23  | 3            | 5-3/8  | 310-6423         | 310-2423         |
| #24  | 3            | 5-3/8  | 310-6424         | 310-2424         |
| #25  | 3            | 5-3/8  | 310-6425         | 310-2425         |
| #26  | 3            | 5-3/8  | 310-6426         | 310-2426         |
| #27  | 3            | 5-3/8  | 310-6427         | 310-2427         |
| #28  | 3            | 5-3/8  | 310-6428         | 310-2428         |
| #29  | 3            | 5-3/8  | 310-6429         | 310-2429         |
| #30  | 3            | 5-3/8  | 310-6430         | 310-2430         |
| #31  | 2-3/4        | 5-1/8  | 310-6431         | 310-2431         |
| #32  | 2-3/4        | 5-1/8  | 310-6432         | 310-2432         |
| #33  | 2-3/4        | 5-1/8  | 310-6433         | 310-2433         |
| #34  | 2-3/4        | 5-1/8  | 310-6434         | 310-2434         |
| #35  | 2-3/4        | 5-1/8  | 310-6435         | 310-2435         |
| #36  | 2-1/2        | 4-5/8  | 310-6436         | 310-2436         |
| #37  | 2-1/2        | 4-5/8  | 310-6437         | 310-2437         |
| #38  | 2-1/2        | 4-5/8  | 310-6438         | 310-2438         |
| #39  | 2-1/2        | 4-5/8  | 310-6439         | 310-2439         |
| #40  | 2-1/2        | 4-5/8  | 310-6440         | 310-2440         |
| #41  | 2-1/2        | 4-5/8  | 310-6441         | 310-2441         |
| #42  | 2-1/4        | 4-1/4  | 310-6442         | 310-2442         |
| #43  | 2-1/4        | 4-1/4  | 310-6443         | 310-2443         |
| #44  | 2-1/4        | 4-1/4  | 310-6444         | 310-2444         |
| #45  | 2-1/4        | 4-1/4  | 310-6445         | 310-2445         |
| #46  | 2-1/4        | 4-1/4  | 310-6446         | 310-2446         |

| Size | Flute Length | OAL   | Milled Order No. | Ground Order No. |
|------|--------------|-------|------------------|------------------|
| #47  | 2-1/4        | 4-1/4 | 310-6447         | 310-2447         |
| #48  | 2            | 3-3/4 | 310-6448         | 310-2448         |
| #49  | 2            | 3-3/4 | 310-6449         | 310-2449         |
| #50  | 2            | 3-3/4 | 310-6450         | 310-2450         |
| #51  | 2            | 3-3/4 | 310-6451         | 310-2451         |
| #52  | 2            | 3-3/4 | 310-6452         | 310-2452         |
| #53  | 1-3/4        | 3     | 310-6453         | 310-2453         |
| #54  | 1-3/4        | 3     | 310-6454         | 310-2454         |
| #55  | 1-3/4        | 3     | 310-6455         | 310-2455         |
| #56  | 1-1/8        | 2-1/4 | 310-6456         | 310-2456         |
| #57  | 1-1/8        | 2-1/4 | 310-6457         | 310-2457         |
| #58  | 1-1/8        | 2-1/4 | 310-6458         | 310-2458         |
| #59  | 1-1/8        | 2-1/4 | 310-6459         | 310-2459         |
| #60  | 1-1/8        | 2-1/4 | 310-6460         | 310-2460         |

### Letter Sizes

| Size | Flute Length | OAL    | Milled Order No. | Ground Order No. |
|------|--------------|--------|------------------|------------------|
| A    | 3-3/4"       | 6-1/8" | 310-6301         | 310-2301         |
| B    | 3-3/4        | 6-1/8  | 310-6302         | 310-2302         |
| C    | 3-3/4        | 6-1/8  | 310-6303         | 310-2303         |
| D    | 3-3/4        | 6-1/8  | 310-6304         | 310-2304         |
| E    | 3-3/4        | 6-1/8  | 310-6305         | 310-2305         |
| F    | 3-7/8        | 6-1/4  | 310-6306         | 310-2306         |
| G    | 3-7/8        | 6-1/4  | 310-6307         | 310-2307         |
| H    | 3-7/8        | 6-1/4  | 310-6308         | 310-2308         |
| I    | 3-7/8        | 6-1/4  | 310-6309         | 310-2309         |
| J    | 3-7/8        | 6-1/4  | 310-6310         | 310-2310         |
| K    | 3-7/8        | 6-1/4  | 310-6311         | 310-2311         |
| L    | 4            | 6-3/8  | 310-6312         | 310-2312         |
| M    | 4            | 6-3/8  | 310-6313         | 310-2313         |
| N    | 4            | 6-3/8  | 310-6314         | 310-2314         |
| O    | 4-1/8        | 6-1/2  | 310-6315         | 310-2315         |
| P    | 4-1/8        | 6-1/2  | 310-6316         | 310-2316         |
| Q    | 4-1/8        | 6-1/2  | 310-6317         | 310-2317         |
| R    | 4-1/8        | 6-1/2  | 310-6318         | 310-2318         |
| S    | 4-1/4        | 6-3/4  | 310-6319         | 310-2319         |
| T    | 4-1/4        | 6-3/4  | 310-6320         | 310-2320         |
| U    | 4-1/4        | 6-3/4  | 310-6321         | 310-2321         |
| V    | 4-3/8        | 7      | 310-6322         | 310-2322         |
| W    | 4-3/8        | 7      | 310-6323         | 310-2323         |
| X    | 4-3/8        | 7      | 310-6324         | 310-2324         |
| Y    | 4-3/8        | 7      | 310-6325         | 310-2325         |
| Z    | 4-5/8        | 7-1/4  | 310-6326         | 310-2326         |

# Taper Length Drills

## Fast Spiral Taper Length Drills

**High Speed Steel, 118° Point, Right Hand, Ground**

- Designed for drilling deeper holes.
- The high helix angle and wide flute improve ejection of chip further.



### Fractional Sizes

| Flute |        |        | Order No.       | Flute   |        |        | Order No.       |
|-------|--------|--------|-----------------|---------|--------|--------|-----------------|
| Size  | Length | OAL    |                 | Size    | Length | OAL    |                 |
| 3/64" | 1-1/8" | 2-1/4" | <b>310-5003</b> | 51/64"  | 6-1/8" | 10"    | <b>310-5051</b> |
| 1/16  | 1-3/4  | 3      | <b>310-5004</b> | 13/16   | 6-1/8  | 10     | <b>310-5052</b> |
| 5/64  | 2      | 3-3/4  | <b>310-5005</b> | 53/64   | 6-1/8  | 10     | <b>310-5053</b> |
| 3/32  | 2-1/4  | 4-1/4  | <b>310-5006</b> | 27/32   | 6-1/8  | 10     | <b>310-5054</b> |
| 7/64  | 2-1/2  | 4-5/8  | <b>310-5007</b> | 55/64   | 6-1/8  | 10     | <b>310-5055</b> |
| 1/8   | 2-3/4  | 5-1/8  | <b>310-5008</b> | 7/8     | 6-1/8  | 10     | <b>310-5056</b> |
| 9/64  | 3      | 5-3/8  | <b>310-5009</b> | 57/64   | 6-1/8  | 10     | <b>310-5057</b> |
| 5/32  | 3      | 5-3/8  | <b>310-5010</b> | 29/32   | 6-1/8  | 10     | <b>310-5058</b> |
| 11/64 | 3-3/8  | 5-3/4  | <b>310-5011</b> | 59/64   | 6-1/8  | 10-3/4 | <b>310-5059</b> |
| 3/16  | 3-3/8  | 5-3/4  | <b>310-5012</b> | 15/16   | 6-1/8  | 10-3/4 | <b>310-5060</b> |
| 13/64 | 3-5/8  | 6      | <b>310-5013</b> | 61/64   | 6-3/8  | 11     | <b>310-5061</b> |
| 7/32  | 3-5/8  | 6      | <b>310-5014</b> | 31/32   | 6-3/8  | 11     | <b>310-5062</b> |
| 15/64 | 3-3/4  | 6-1/8  | <b>310-5015</b> | 63/64   | 6-3/8  | 11     | <b>310-5063</b> |
| 1/4   | 3-3/4  | 6-1/8  | <b>310-5016</b> | 1       | 6-3/8  | 11     | <b>310-5064</b> |
| 17/64 | 3-7/8  | 6-1/4  | <b>310-5017</b> | 1-1/64  | 6-1/2  | 11-1/8 | <b>310-5101</b> |
| 9/32  | 3-7/8  | 6-1/4  | <b>310-5018</b> | 1-1/32  | 6-1/2  | 11-1/8 | <b>310-5102</b> |
| 19/64 | 4      | 6-3/8  | <b>310-5019</b> | 1-3/64  | 6-5/8  | 11-1/4 | <b>310-5103</b> |
| 5/16  | 4      | 6-3/8  | <b>310-5020</b> | 1-1/16  | 6-5/8  | 11-1/4 | <b>310-5104</b> |
| 21/64 | 4-1/8  | 6-1/2  | <b>310-5021</b> | 1-5/64  | 6-7/8  | 11-1/2 | <b>310-5105</b> |
| 11/32 | 4-1/8  | 6-1/2  | <b>310-5022</b> | 1-3/32  | 6-7/8  | 11-1/2 | <b>310-5106</b> |
| 23/64 | 4-1/4  | 6-3/4  | <b>310-5023</b> | 1-7/64  | 7-1/8  | 11-3/4 | <b>310-5107</b> |
| 3/8   | 4-1/4  | 6-3/4  | <b>310-5024</b> | 1-1/8   | 7-1/8  | 11-3/4 | <b>310-5108</b> |
| 25/64 | 4-3/8  | 7      | <b>310-5025</b> | 1-9/64  | 7-1/4  | 11-7/8 | <b>310-5109</b> |
| 13/32 | 4-3/8  | 7      | <b>310-5026</b> | 1-5/32  | 7-1/4  | 11-7/8 | <b>310-5110</b> |
| 27/64 | 4-5/8  | 7-1/4  | <b>310-5027</b> | 1-11/64 | 7-3/8  | 12     | <b>310-5111</b> |
| 7/16  | 4-5/8  | 7-1/4  | <b>310-5028</b> | 1-3/16  | 7-3/8  | 12     | <b>310-5112</b> |
| 29/64 | 4-3/4  | 7-1/2  | <b>310-5029</b> | 1-13/64 | 7-1/2  | 12-1/8 | <b>310-5113</b> |
| 15/32 | 4-3/4  | 7-1/2  | <b>310-5030</b> | 1-7/32  | 7-1/2  | 12-1/8 | <b>310-5114</b> |
| 31/64 | 4-3/4  | 7-3/4  | <b>310-5031</b> | 1-15/64 | 7-7/8  | 12-1/2 | <b>310-5115</b> |
| 1/2   | 4-3/4  | 7-3/4  | <b>310-5032</b> | 1-1/4   | 7-7/8  | 12-1/2 | <b>310-5116</b> |
| 33/64 | 4-3/4  | 8      | <b>310-5033</b> | 1-17/64 | 8-1/2  | 14     | <b>310-5117</b> |
| 17/32 | 4-3/4  | 8      | <b>310-5034</b> | 1-9/32  | 8-1/2  | 14-1/8 | <b>310-5118</b> |
| 35/64 | 4-7/8  | 8-1/4  | <b>310-5035</b> | 1-5/16  | 8-5/8  | 14-1/4 | <b>310-5120</b> |
| 9/16  | 4-7/8  | 8-1/4  | <b>310-5036</b> | 1-11/32 | 8-3/4  | 14-3/8 | <b>310-5122</b> |
| 37/64 | 4-7/8  | 8-3/4  | <b>310-5037</b> | 1-3/8   | 8-7/8  | 14-1/2 | <b>310-5124</b> |
| 19/32 | 4-7/8  | 8-3/4  | <b>310-5038</b> | 1-13/32 | 9      | 14-5/8 | <b>310-5126</b> |
| 39/64 | 4-7/8  | 8-3/4  | <b>310-5039</b> | 1-7/16  | 9-1/8  | 14-3/4 | <b>310-5128</b> |
| 5/8   | 4-7/8  | 8-3/4  | <b>310-5040</b> | 1-15/32 | 9-1/4  | 14-7/8 | <b>310-5130</b> |
| 41/64 | 5-1/8  | 9      | <b>310-5041</b> | 1-1/2   | 9-3/8  | 15     | <b>310-5132</b> |
| 21/32 | 5-1/8  | 9      | <b>310-5042</b> | 1-35/64 | 9-5/8  | 14-3/4 | <b>310-5135</b> |
| 43/64 | 5-3/8  | 9-1/4  | <b>310-5043</b> | 1-9/16  | 9-5/8  | 15-1/4 | <b>310-5136</b> |
| 11/16 | 5-3/8  | 9-1/4  | <b>310-5044</b> | 1-5/8   | 9-7/8  | 15-5/8 | <b>310-5140</b> |
| 45/64 | 5-5/8  | 9-1/2  | <b>310-5045</b> | 1-21/32 | 9-7/8  | 15-3/4 | <b>310-5142</b> |
| 23/32 | 5-5/8  | 9-1/2  | <b>310-5046</b> | 1-11/16 | 10     | 15-3/4 | <b>310-5144</b> |
| 47/64 | 5-7/8  | 9-3/4  | <b>310-5047</b> | 1-3/4   | 10-1/2 | 16-1/4 | <b>310-5148</b> |
| 3/4   | 5-7/8  | 9-3/4  | <b>310-5048</b> | 1-13/16 | 10-1/2 | 16-1/4 | <b>310-5152</b> |
| 49/64 | 6      | 9-7/8  | <b>310-5049</b> | 1-7/8   | 10-3/4 | 16-1/2 | <b>310-5156</b> |
| 25/32 | 6      | 9-7/8  | <b>310-5050</b> |         | 10-3/4 | 16-5/8 | <b>310-5160</b> |

### Letter Sizes

| Flute |        |        | Order No.       | Flute |        |        | Order No.       |
|-------|--------|--------|-----------------|-------|--------|--------|-----------------|
| Size  | Length | OAL    |                 | Size  | Length | OAL    |                 |
| A     | 3-3/4" | 6-1/8" | <b>310-5301</b> | N     | 4"     | 6-3/8" | <b>310-5314</b> |
| B     | 3-3/4  | 6-1/8  | <b>310-5302</b> | O     | 4-1/8  | 6-1/2  | <b>310-5315</b> |
| C     | 3-3/4  | 6-1/8  | <b>310-5303</b> | P     | 4-1/8  | 6-1/2  | <b>310-5316</b> |
| D     | 3-3/4  | 6-1/8  | <b>310-5304</b> | Q     | 4-1/8  | 6-1/2  | <b>310-5317</b> |
| E     | 3-3/4  | 6-1/8  | <b>310-5305</b> | R     | 4-1/8  | 6-1/2  | <b>310-5318</b> |
| F     | 3-7/8  | 6-1/4  | <b>310-5306</b> | S     | 4-1/4  | 6-3/4  | <b>310-5319</b> |
| G     | 3-7/8  | 6-1/4  | <b>310-5307</b> | T     | 4-1/4  | 6-3/4  | <b>310-5320</b> |
| H     | 3-7/8  | 6-1/4  | <b>310-5308</b> | U     | 4-1/4  | 6-3/4  | <b>310-5321</b> |
| I     | 3-7/8  | 6-1/4  | <b>310-5309</b> | V     | 4-3/8  | 7      | <b>310-5322</b> |
| J     | 3-7/8  | 6-1/4  | <b>310-5310</b> | W     | 4-3/8  | 7      | <b>310-5323</b> |
| K     | 3-7/8  | 6-1/4  | <b>310-5311</b> | X     | 4-3/8  | 7      | <b>310-5324</b> |
| L     | 4      | 6-3/8  | <b>310-5312</b> | Y     | 4-3/8  | 7      | <b>310-5325</b> |
| M     | 4      | 6-3/8  | <b>310-5313</b> | Z     | 4-5/8  | 7-1/4  | <b>310-5326</b> |

### Number Sizes

| Flute |        |        | Order No.       | Flute |        |        | Order No.       |
|-------|--------|--------|-----------------|-------|--------|--------|-----------------|
| Size  | Length | OAL    |                 | Size  | Length | OAL    |                 |
| #1    | 3-3/4" | 6-1/8" | <b>310-5401</b> | #31   | 2-3/4" | 5-1/8" | <b>310-5431</b> |
| #2    | 3-3/4  | 6-1/8  | <b>310-5402</b> | #32   | 2-3/4  | 5-1/8  | <b>310-5432</b> |
| #3    | 3-5/8  | 6      | <b>310-5403</b> | #33   | 2-3/4  | 5-1/8  | <b>310-5433</b> |
| #4    | 3-5/8  | 6      | <b>310-5404</b> | #34   | 2-3/4  | 5-1/8  | <b>310-5434</b> |
| #5    | 3-5/8  | 6      | <b>310-5405</b> | #35   | 2-3/4  | 5-1/8  | <b>310-5435</b> |
| #6    | 3-5/8  | 6      | <b>310-5406</b> | #36   | 2-1/2  | 4-5/8  | <b>310-5436</b> |
| #7    | 3-5/8  | 6      | <b>310-5407</b> | #37   | 2-1/2  | 4-5/8  | <b>310-5437</b> |
| #8    | 3-5/8  | 6      | <b>310-5408</b> | #38   | 2-1/2  | 4-5/8  | <b>310-5438</b> |
| #9    | 3-5/8  | 6      | <b>310-5409</b> | #39   | 2-1/2  | 4-5/8  | <b>310-5439</b> |
| #10   | 3-5/8  | 6      | <b>310-5410</b> | #40   | 2-1/2  | 4-5/8  | <b>310-5440</b> |
| #11   | 3-5/8  | 6      | <b>310-5411</b> | #41   | 2-1/2  | 4-5/8  | <b>310-5441</b> |
| #12   | 3-5/8  | 6      | <b>310-5412</b> | #42   | 2-1/4  | 4-1/4  | <b>310-5442</b> |
| #13   | 3-3/8  | 5-3/4  | <b>310-5413</b> | #43   | 2-1/4  | 4-1/4  | <b>310-5443</b> |
| #14   | 3-3/8  | 5-3/4  | <b>310-5414</b> | #44   | 2-1/4  | 4-1/4  | <b>310-5444</b> |
| #15   | 3-3/8  | 5-3/4  | <b>310-5415</b> | #45   | 2-1/4  | 4-1/4  | <b>310-5445</b> |
| #16   | 3-3/8  | 5-3/4  | <b>310-5416</b> | #46   | 2-1/4  | 4-1/4  | <b>310-5446</b> |
| #17   | 3-3/8  | 5-3/4  | <b>310-5417</b> | #47   | 2-1/4  | 4-1/4  | <b>310-5447</b> |
| #18   | 3-3/8  | 5-3/4  | <b>310-5418</b> | #48   | 2      | 3-3/4  | <b>310-5448</b> |
| #19   | 3-3/8  | 5-3/4  | <b>310-5419</b> | #49   | 2      | 3-3/4  | <b>310-5449</b> |
| #20   | 3-3/8  | 5-3/4  | <b>310-5420</b> | #50   | 2      | 3-3/4  | <b>310-5450</b> |
| #21   | 3-3/8  | 5-3/4  | <b>310-5421</b> | #51   | 2      | 3-3/4  | <b>310-5451</b> |
| #22   | 3-3/8  | 5-3/4  | <b>310-5422</b> | #52   | 2      | 3-3/4  | <b>310-5452</b> |
| #23   | 3      | 5-3/8  | <b>310-5423</b> | #53   | 1-3/4  | 3      | <b>310-5453</b> |
| #24   | 3      | 5-3/8  | <b>310-5424</b> | #54   | 1-3/4  | 3      | <b>310-5454</b> |
| #25   | 3      | 5-3/8  | <b>310-5425</b> | #55   | 1-3/4  | 3      | <b>310-5455</b> |
| #26   | 3      | 5-3/8  | <b>310-5426</b> | #56   | 1-1/8  | 2-1/4  | <b>310-5456</b> |
| #27   | 3      | 5-3/8  | <b>310-5427</b> | #57   | 1-1/8  | 2-1/4  | <b>310-5457</b> |
| #28   | 3      | 5-3/8  | <b>310-5428</b> | #58   | 1-1/8  | 2-1/4  | <b>310-5458</b> |
| #29   | 3      | 5-3/8  | <b>310-5429</b> | #59   | 1-1/8  | 2-1/4  | <b>310-5459</b> |
| #30   | 3      | -3/8   | <b>310-5430</b> | #60   | 1-1/8  | 2-1/4  | <b>310-5460</b> |

### 135° Taper Length Drills

#### High Speed Steel, Right Hand, Ground

- 135° point is recommended for heavy duty applications, which drill stainless steel, hard steel, titanium etc.
- Designed for drilling deeper holes.



#### Number Sizes

| Size | Flute Length | OAL    | Order No. |
|------|--------------|--------|-----------|
| #1   | 3-3/4"       | 6-1/8" | 310-3401  |
| #2   | 3-3/4        | 6-1/8  | 310-3402  |
| #3   | 3-5/8        | 6      | 310-3403  |
| #4   | 3-5/8        | 6      | 310-3404  |
| #5   | 3-5/8        | 6      | 310-3405  |
| #6   | 3-5/8        | 6      | 310-3406  |
| #7   | 3-5/8        | 6      | 310-3407  |
| #8   | 3-5/8        | 6      | 310-3408  |
| #9   | 3-5/8        | 6      | 310-3409  |
| #10  | 3-5/8        | 6      | 310-3410  |
| #11  | 3-5/8        | 6      | 310-3411  |
| #12  | 3-5/8        | 6      | 310-3412  |
| #13  | 3-3/8        | 5-3/4  | 310-3413  |
| #14  | 3-3/8        | 5-3/4  | 310-3414  |
| #15  | 3-3/8        | 5-3/4  | 310-3415  |
| #16  | 3-3/8        | 5-3/4  | 310-3416  |
| #17  | 3-3/8        | 5-3/4  | 310-3417  |
| #18  | 3-3/8        | 5-3/4  | 310-3418  |
| #19  | 3-3/8        | 5-3/4  | 310-3419  |
| #20  | 3-3/8        | 5-3/4  | 310-3420  |
| #21  | 3-3/8        | 5-3/4" | 310-3421  |
| #22  | 3-3/8        | 5-3/4  | 310-3422  |
| #23  | 3            | 5-3/8  | 310-3423  |
| #24  | 3            | 5-3/8  | 310-3424  |
| #25  | 3            | 5-3/8  | 310-3425  |
| #26  | 3            | 5-3/8  | 310-3426  |
| #27  | 3            | 5-3/8  | 310-3427  |
| #28  | 3            | 5-3/8  | 310-3428  |
| #29  | 3            | 5-3/8  | 310-3429  |
| #30  | 3            | 5-3/8  | 310-3430  |
| #31  | 2-3/4        | 5-1/8  | 310-3431  |
| #32  | 2-3/4        | 5-1/8  | 310-3432  |
| #33  | 2-3/4        | 5-1/8  | 310-3433  |
| #34  | 2-3/4        | 5-1/8  | 310-3434  |
| #35  | 2-3/4        | 5-1/8  | 310-3435  |
| #36  | 2-1/2        | 4-5/8  | 310-3436  |
| #37  | 2-1/2        | 4-5/8  | 310-3437  |
| #38  | 2-1/2        | 4-5/8  | 310-3438  |
| #39  | 2-1/2        | 4-5/8  | 310-3439  |
| #40  | 2-1/2        | 4-5/8  | 310-3440  |
| #41  | 2-1/2        | -5/8   | 310-3441  |
| #42  | 2-1/4        | 4-1/4  | 310-3442  |
| #43  | 2-1/4        | 4-1/4  | 310-3443  |
| #44  | 2-1/4        | 4-1/4  | 310-3444  |
| #45  | 2-1/4        | 4-1/4  | 310-3445  |
| #46  | 2-1/4        | 4-1/4  | 310-3446  |
| #47  | 2-1/4        | 4-1/4  | 310-3447  |
| #48  | 2            | 3-3/4  | 310-3448  |
| #49  | 2            | 3-3/4  | 310-3449  |
| #50  | 2            | 3-3/4  | 310-3450  |
| #51  | 2            | 3-3/4  | 310-3451  |
| #52  | 2            | 3-3/4  | 310-3452  |
| #53  | 1-3/4        | 3      | 310-3453  |
| #54  | 1-3/4        | 3      | 310-3454  |
| #55  | 1-3/4        | 3      | 310-3455  |
| #56  | 1-1/8        | 2-1/4  | 310-3456  |
| #57  | 1-1/8        | 2-1/4  | 310-3457  |
| #58  | 1-1/8        | 2-1/4  | 310-3458  |
| #59  | 1-1/8        | 2-1/4  | 310-3459  |
| #60  | 1-1/8        | 2-1/4  | 310-3460  |

#### Fractional Sizes

| Size  | Flute Length | OAL    | Order No. |
|-------|--------------|--------|-----------|
| 3/64" | 1-1/8"       | 2-1/4" | 310-3003  |
| 1/16  | 1-3/4        | 3      | 310-3004  |
| 5/64  | 2            | 3-3/4  | 310-3005  |
| 3/32  | 2-1/4        | 4-1/4  | 310-3006  |
| 7/64  | 2-1/2        | 4-5/8  | 310-3007  |
| 1/8   | 2-3/4        | 5-1/8  | 310-3008  |
| 9/64  | 3            | 5-3/8  | 310-3009  |
| 5/32  | 3            | 5-3/8  | 310-3010  |
| 11/64 | 3-3/8        | 5-3/4  | 310-3011  |
| 3/16  | 3-3/8        | 5-3/4  | 310-3012  |
| 13/64 | 3-5/8        | 6      | 310-3013  |
| 7/32  | 3-5/8        | 6      | 310-3014  |
| 15/64 | 3-3/4        | 6-1/8  | 310-3015  |
| 1/4   | 3-3/4        | 6-1/8  | 310-3016  |
| 17/64 | 3-7/8        | 6-1/4  | 310-3017  |
| 9/32  | 3-7/8        | 6-1/4  | 310-3018  |
| 19/64 | 4            | 6-3/8  | 310-3019  |
| 5/16  | 4            | 6-3/8  | 310-3020  |
| 21/64 | 4-1/8        | 6-1/2  | 310-3021  |
| 11/32 | 4-1/8        | 6-1/2  | 310-3022  |
| 23/64 | 4-1/4        | 6-3/4  | 310-3023  |
| 3/8   | 4-1/4        | 6-3/4  | 310-3024  |
| 25/64 | 4-3/8        | 7      | 310-3025  |
| 13/32 | 4-3/8        | 7      | 310-3026  |
| 27/64 | 4-5/8        | 7-1/4  | 310-3027  |
| 7/16  | 4-5/8        | 7-1/4  | 310-3028  |
| 29/64 | 4-3/4        | 7-1/2  | 310-3029  |
| 15/32 | 4-3/4        | 7-1/2  | 310-3030  |
| 31/64 | 4-3/4        | 7-3/4  | 310-3031  |
| 1/2   | 4-3/4        | 7-3/4  | 310-3032  |
| 33/64 | 4-3/4        | 8      | 310-3033  |
| 17/32 | 4-3/4        | 8      | 310-3034  |
| 35/64 | 4-7/8        | 8-1/4  | 310-3035  |
| 9/16  | 4-7/8        | 8-1/4  | 310-3036  |
| 37/64 | 4-7/8        | 8-3/4  | 310-3037  |
| 19/32 | 4-7/8        | 8-3/4  | 310-3038  |
| 39/64 | 4-7/8        | 8-3/4  | 310-3039  |
| 5/8   | 4-7/8        | 8-3/4  | 310-3040  |
| 41/64 | 5-1/8        | 9      | 310-3041  |
| 21/32 | 5-1/8        | 9      | 310-3042  |
| 43/64 | 5-3/8        | 9-1/4  | 310-3043  |
| 11/16 | 5-3/8        | 9-1/4  | 310-3044  |
| 45/64 | 5-5/8        | 9-1/2  | 310-3045  |
| 23/32 | 5-5/8        | 9-1/2  | 310-3046  |
| 47/64 | 5-7/8        | 9-3/4  | 310-3047  |
| 3/4   | 5-7/8        | 9-3/4  | 310-3048  |

#### Letter Sizes

| Size | Flute Length | OAL    | Order No. |
|------|--------------|--------|-----------|
| A    | 3-3/4"       | 6-1/8" | 310-3701  |
| B    | 3-3/4        | 6-1/8  | 310-3702  |
| C    | 3-3/4        | 6-1/8  | 310-3703  |
| D    | 3-3/4        | 6-1/8  | 310-3704  |
| E    | 3-3/4        | 6-1/8  | 310-3705  |
| F    | 3-7/8        | 6-1/4  | 310-3706  |
| G    | 3-7/8        | 6-1/4  | 310-3707  |
| H    | 3-7/8        | 6-1/4  | 310-3708  |
| I    | 3-7/8        | 6-1/4  | 310-3709  |
| J    | 3-7/8        | 6-1/4  | 310-3710  |
| K    | 3-7/8        | 6-1/4  | 310-3711  |
| L    | 4            | 6-3/8  | 310-3712  |
| M    | 4            | 6-3/8  | 310-3713  |
| N    | 4            | 6-3/8  | 310-3714  |
| O    | 4-1/8        | 6-1/2  | 310-3715  |
| P    | 4-1/8        | 6-1/2  | 310-3716  |
| Q    | 4-1/8        | 6-1/2  | 310-3717  |
| R    | 4-1/8        | 6-1/2  | 310-3718  |
| S    | 4-1/4        | 6-3/4  | 310-3719  |
| T    | 4-1/4        | 6-3/4  | 310-3720  |
| U    | 4-1/4        | 6-3/4  | 310-3721  |
| V    | 4-3/8        | 7      | 310-3722  |
| W    | 4-3/8        | 7      | 310-3723  |
| X    | 4-3/8        | 7      | 310-3724  |
| Y    | 4-3/8        | 7      | 310-3725  |
| Z    | 4-5/8        | 7-1/4  | 310-3726  |

## Aircraft Extension Drills - 6", 12" Lengths

HSS, Ground/Bright, 118° Point, Right Hand

### Fractional Sizes

| Size  | Flute Length | OAL          |               |
|-------|--------------|--------------|---------------|
|       |              | 6" Order No. | 12" Order No. |
| 1/16" | 7/8"         | 434-0004     | 434-1004      |
| 5/64  | 1            | 434-0005     | 434-1005      |
| 3/32  | 1-1/4        | 434-0006     | 434-1006      |
| 7/64  | 1-1/2        | 434-0007     | 434-1007      |
| 1/8   | 1-5/8        | 434-0008     | 434-1008      |
| 9/64  | 1-3/4        | 434-0009     | 434-1009      |
| 5/32  | 2            | 434-0010     | 434-1010      |
| 11/64 | 2-1/8        | 434-0011     | 434-1011      |
| 3/16  | 2-5/16       | 434-0012     | 434-1012      |
| 13/64 | 2-7/16       | 434-0013     | 434-1013      |
| 7/32  | 2-1/2        | 434-0014     | 434-1014      |
| 15/64 | 2-5/8        | 434-0015     | 434-1015      |
| 1/4   | 2-3/4        | 434-0016     | 434-1016      |
| 17/64 | 2-7/8        | 434-0017     | 434-1017      |
| 9/32  | 2-15/16      | 434-0018     | 434-1018      |
| 19/64 | 3-1/16       | 434-0019     | 434-1019      |
| 5/16  | 3-3/16       | 434-0020     | 434-1020      |
| 21/64 | 3-5/16       | 434-0021     | 434-1021      |
| 11/32 | 3-7/16       | 434-0022     | 434-1022      |
| 23/64 | 3-1/2        | 434-0023     | 434-1023      |
| 3/8   | 3-5/8        | 434-0024     | 434-1024      |
| 25/64 | 3-3/4        | 434-0025     | 434-1025      |
| 13/32 | 3-7/8        | 434-0026     | 434-1026      |
| 27/64 | 3-15/16      | 434-0027     | 434-1027      |
| 7/16  | 4-1/16       | 434-0028     | 434-1028      |
| 29/64 | 4-3/16       | 434-0029     | 434-1029      |
| 15/32 | 4-5/16       | 434-0030     | 434-1030      |
| 31/64 | 4-3/8        | 434-0031     | 434-1031      |
| 1/2   | 4-1/2        | 434-0032     | 434-1032      |

### Letter Sizes

| Size | Flute Length | OAL          |               |
|------|--------------|--------------|---------------|
|      |              | 6" Order No. | 12" Order No. |
| A    | 2-5/8"       | 434-0201     | 434-1201      |
| B    | 2-3/4        | 434-0202     | 434-1202      |
| C    | 2-3/4        | 434-0203     | 434-1203      |
| D    | 2-3/4        | 434-0204     | 434-1204      |
| E    | 2-3/4        | 434-0205     | 434-1205      |
| F    | 2-7/8        | 434-0206     | 434-1206      |
| G    | 2-7/8        | 434-0207     | 434-1207      |
| H    | 2-7/8        | 434-0208     | 434-1208      |
| I    | 2-7/8        | 434-0209     | 434-1209      |
| J    | 2-7/8        | 434-0210     | 434-1210      |
| K    | 2-15/16      | 434-0211     | 434-1211      |
| L    | 2-15/16      | 434-0212     | 434-1212      |
| M    | 3-1/16       | 434-0213     | 434-1213      |
| N    | 3-1/16       | 434-0214     | 434-1214      |
| O    | 3-1/16       | 434-0215     | 434-1215      |
| P    | 3-5/16       | 434-0216     | 434-1216      |
| Q    | 3-7/16       | 434-0217     | 434-1217      |
| R    | 3-7/16       | 434-0218     | 434-1218      |
| S    | 3-1/2        | 434-0219     | 434-1219      |
| T    | 3-1/2        | 434-0220     | 434-1220      |
| U    | 3-5/8        | 434-0221     | 434-1221      |
| V    | 3-5/8        | 434-0222     | 434-1222      |
| W    | 3-3/4        | 434-0223     | 434-1223      |
| X    | 3-3/4        | 434-0224     | 434-1224      |
| Y    | 3-7/8        | 434-0225     | 434-1225      |
| Z    | 3-7/8        | 434-0226     | 434-1226      |

### Number Sizes

| Size | Flute Length | OAL          |               |
|------|--------------|--------------|---------------|
|      |              | 6" Order No. | 12" Order No. |
| #1   | 2-5/8"       | 434-0101     | 434-1101      |
| #2   | 2-5/8        | 434-0102     | 434-1102      |
| #3   | 2-1/2        | 434-0103     | 434-1103      |
| #4   | 2-1/2        | 434-0104     | 434-1104      |
| #5   | 2-1/2        | 434-0105     | 434-1105      |
| #6   | 2-1/2        | 434-0106     | 434-1106      |
| #7   | 2-7/16       | 434-0107     | 434-1107      |
| #8   | 2-7/16       | 434-0108     | 434-1108      |
| #9   | 2-7/16       | 434-0109     | 434-1109      |
| #10  | 2-7/16       | 434-0110     | 434-1110      |
| #11  | 2-5/16       | 434-0111     | 434-1111      |
| #12  | 2-5/16       | 434-0112     | 434-1112      |
| #13  | 2-5/16       | 434-0113     | 434-1113      |
| #14  | 2-3/16       | 434-0114     | 434-1114      |
| #15  | 2-3/16       | 434-0115     | 434-1115      |
| #16  | 2-3/16       | 434-0116     | 434-1116      |
| #17  | 2-3/16       | 434-0117     | 434-1117      |
| #18  | 2-1/8        | 434-0118     | 434-1118      |
| #19  | 2-1/8        | 434-0119     | 434-1119      |
| #20  | 2-1/8        | 434-0120     | 434-1120      |
| #21  | 2-1/8        | 434-0121     | 434-1121      |
| #22  | 2            | 434-0122     | 434-1122      |
| #23  | 2            | 434-0123     | 434-1123      |
| #24  | 2            | 434-0124     | 434-1124      |
| #25  | 1-7/8        | 434-0125     | 434-1125      |
| #26  | 1-7/8        | 434-0126     | 434-1126      |
| #27  | 1-7/8        | 434-0127     | 434-1127      |
| #28  | 1-3/4        | 434-0128     | 434-1128      |
| #29  | 1-3/4        | 434-0129     | 434-1129      |
| #30  | 1-5/8        | 434-0130     | 434-1130      |

| Size | Flute Length | OAL          |               |
|------|--------------|--------------|---------------|
|      |              | 6" Order No. | 12" Order No. |
| #31  | 1-5/8"       | 434-0131     | 434-1131      |
| #32  | 1-5/8        | 434-0132     | 434-1132      |
| #33  | 1-1/2        | 434-0133     | 434-1133      |
| #34  | 1-1/2        | 434-0134     | 434-1134      |
| #35  | 1-1/2        | 434-0135     | 434-1135      |
| #36  | 1-7/16       | 434-0136     | 434-1136      |
| #37  | 1-7/16       | 434-0137     | 434-1137      |
| #38  | 1-7/16       | 434-0138     | 434-1138      |
| #39  | 1-3/8        | 434-0139     | 434-1139      |
| #40  | 1-3/8        | 434-0140     | 434-1140      |
| #41  | 1-3/8        | 434-0141     | 434-1141      |
| #42  | 1-1/4        | 434-0142     | 434-1142      |
| #43  | 1-1/4        | 434-0143     | 434-1143      |
| #44  | 1-1/8        | 434-0144     | 434-1144      |
| #45  | 1-1/8        | 434-0145     | 434-1145      |
| #46  | 1-1/8        | 434-0146     | 434-1146      |
| #47  | 1            | 434-0147     | 434-1147      |
| #48  | 1            | 434-0148     | 434-1148      |
| #49  | 1            | 434-0149     | 434-1149      |
| #50  | 1            | 434-0150     | 434-1150      |
| #51  | 1            | 434-0151     | 434-1151      |
| #52  | 7/8          | 434-0152     | 434-1152      |
| #53  | 7/8          | 434-0153     | 434-1153      |
| #54  | 7/8          | 434-0154     | 434-1154      |
| #55  | 7/8          | 434-0155     | 434-1155      |
| #56  | 3/4          | 434-0156     | 434-1156      |
| #57  | 3/4          | 434-0157     | 434-1157      |
| #58  | 11/16        | 434-0158     | 434-1158      |
| #59  | 11/16        | 434-0159     | 434-1159      |
| #60  | 11/16        | 434-0160     | 434-1160      |

### Aircraft Extension Drill Sets

| Pieces | Specification                     | Order No. |
|--------|-----------------------------------|-----------|
| 13     | 1/16" to 1/4" by 64ths, 6" length | 434-0301  |
| 29     | 1/16 to 1/2" by 64ths, 12"length  | 434-0302  |
| 60     | No.1 to 60, 6" length             | 434-0303  |
| 60     | No.1 to 60, 12"length             | 434-0304  |



### Aircraft Drills - 6", 12" Lengths

#### Ground, 135° Split Point

Used to drill normal depth holes in hard to reach places, such as in airframe work, pulley hubs, etc.



#### Fractional Sizes

| Size      | Flute Length | M2 HSS    |           | M35       |           |
|-----------|--------------|-----------|-----------|-----------|-----------|
|           |              | 6"        | 12"       | 6"        | 12"       |
| Order No. | Order No.    | Order No. | Order No. | Order No. | Order No. |
| 3/64"     | 3/4"         | 434-2003  | 434-3003  | 434-7003  | 434-8003  |
| 1/16      | 7/8          | 434-2004  | 434-3004  | 434-7004  | 434-8004  |
| 5/64      | 1            | 434-2005  | 434-3005  | 434-7005  | 434-8005  |
| 3/32      | 1-1/4        | 434-2006  | 434-3006  | 434-7006  | 434-8006  |
| 7/64      | 1-1/2        | 434-2007  | 434-3007  | 434-7007  | 434-8007  |
| 1/8       | 1-5/8        | 434-2008  | 434-3008  | 434-7008  | 434-8008  |
| 9/64      | 1-3/4        | 434-2009  | 434-3009  | 434-7009  | 434-8009  |
| 5/32      | 2            | 434-2010  | 434-3010  | 434-7010  | 434-8010  |
| 11/64     | 2-1/8        | 434-2011  | 434-3011  | 434-7011  | 434-8011  |
| 3/16      | 2-5/16       | 434-2012  | 434-3012  | 434-7012  | 434-8012  |
| 13-64     | 2-7/16       | 434-2013  | 434-3013  | 434-7013  | 434-8013  |
| 7/32      | 2-1/2        | 434-2014  | 434-3014  | 434-7014  | 434-8014  |
| 15/34     | 2-5/8        | 434-2015  | 434-3015  | 434-7015  | 434-8015  |
| 1/4       | 2-3/4        | 434-2016  | 434-3016  | 434-7016  | 434-8016  |
| 17/64     | 2-7/8        | 434-2017  | 434-3017  | 434-7017  | 434-8017  |
| 9/32      | 2-15/16      | 434-2018  | 434-3018  | 434-7018  | 434-8018  |
| 19/64     | 3-1/16       | 434-2019  | 434-3019  | 434-7019  | 434-8019  |
| 5/16      | 3-3/16       | 434-2020  | 434-3020  | 434-7020  | 434-8020  |
| 21/64     | 3-5/16       | 434-2021  | 434-3021  | 434-7021  | 434-8021  |
| 11/32     | 3-7/16       | 434-2022  | 434-3022  | 434-7022  | 434-8022  |
| 23/64     | 3-1/2        | 434-2023  | 434-3023  | 434-7023  | 434-8023  |
| 3/8       | 3-5/8        | 434-2024  | 434-3024  | 434-7024  | 434-8024  |
| 25/64     | 3-3/4        | 434-2025  | 434-3025  | 434-7025  | 434-8025  |
| 13/32     | 3-7/8        | 434-2026  | 434-3026  | 434-7026  | 434-8026  |
| 27/64     | 3-15/16      | 434-2027  | 434-3027  | 434-7027  | 434-8027  |
| 7/16      | 4-1/16       | 434-2028  | 434-3028  | 434-7028  | 434-8028  |
| 29/64     | 4-3/16       | 434-2029  | 434-3029  | 434-7029  | 434-8029  |
| 15/62     | 4-5/16       | 434-2030  | 434-3030  | 434-7030  | 434-8030  |
| 31/64     | 4-3/8        | 434-2031  | 434-3031  | 434-7031  | 434-8031  |
| 1/2       | 4-1/2        | 434-2032  | 434-3032  | 434-7032  | 434-8032  |

#### Letter Sizes

| Size      | Flute Length | M2 HSS    |           | M35       |           |
|-----------|--------------|-----------|-----------|-----------|-----------|
|           |              | 6"        | 12"       | 6"        | 12"       |
| Order No. | Order No.    | Order No. | Order No. | Order No. | Order No. |
| A         | 2-5/8"       | 434-2201  | 434-3201  | 434-7201  | 434-8201  |
| B         | 2-3/4        | 434-2202  | 434-3202  | 434-7202  | 434-8202  |
| C         | 2-3/4        | 434-2203  | 434-3203  | 434-7203  | 434-8203  |
| D         | 2-3/4        | 434-2204  | 434-3204  | 434-7204  | 434-8204  |
| E         | 2-3/4        | 434-2205  | 434-3205  | 434-7205  | 434-8205  |
| F         | 2-3/4        | 434-2206  | 434-3206  | 434-7206  | 434-8206  |
| G         | 2-7/8        | 434-2207  | 434-3207  | 434-7207  | 434-8207  |
| H         | 2-7/8        | 434-2208  | 434-3208  | 434-7208  | 434-8208  |
| I         | 2-7/8        | 434-2209  | 434-3209  | 434-7209  | 434-8209  |
| J         | 2-7/8        | 434-2210  | 434-3210  | 434-7210  | 434-8210  |
| K         | 2-15/16      | 434-2211  | 434-3211  | 434-7211  | 434-8211  |
| L         | 2-15/16      | 434-2212  | 434-3212  | 434-7212  | 434-8212  |
| M         | 3-1/16       | 434-2213  | 434-3213  | 434-7213  | 434-8213  |
| N         | 3-1/16       | 434-2214  | 434-3214  | 434-7214  | 434-8214  |
| O         | 3-3/16       | 434-2215  | 434-3215  | 434-7215  | 434-8215  |
| P         | 3-5/16       | 434-2216  | 434-3216  | 434-7216  | 434-8216  |
| Q         | 3-7/16       | 434-2217  | 434-3217  | 434-7217  | 434-8217  |
| R         | 3-7/16       | 434-2218  | 434-3218  | 434-7218  | 434-8218  |
| S         | 3-1/2        | 434-2219  | 434-3219  | 434-7219  | 434-8219  |
| T         | 3-1/2        | 434-2220  | 434-3220  | 434-7220  | 434-8220  |
| U         | 3-5/8        | 434-2221  | 434-3221  | 434-7221  | 434-8221  |
| V         | 3-5/8        | 434-2222  | 434-3222  | 434-7222  | 434-8222  |
| W         | 3-3/4        | 434-2223  | 434-3223  | 434-7223  | 434-8223  |
| X         | 3-3/4        | 434-2224  | 434-3224  | 434-7224  | 434-8224  |
| Y         | 3-7/8        | 434-2225  | 434-3225  | 434-7225  | 434-8225  |
| Z         | 3-7/8        | 434-2226  | 434-3226  | 434-7226  | 434-8226  |

#### Number Sizes

| Size      | Flute Length | M2 HSS    |           | M35       |           |
|-----------|--------------|-----------|-----------|-----------|-----------|
|           |              | 6"        | 12"       | 6"        | 12"       |
| Order No. | Order No.    | Order No. | Order No. | Order No. | Order No. |
| #1        | 2-5/8        | 434-2101  | 434-3101  | 434-7101  | 434-8101  |
| #2        | 2-5/8        | 434-2102  | 434-3102  | 434-7102  | 434-8102  |
| #3        | 2-1/2        | 434-2103  | 434-3103  | 434-7103  | 434-8103  |
| #4        | 2-1/2        | 434-2104  | 434-3104  | 434-7104  | 434-8104  |
| #5        | 2-1/2        | 434-2105  | 434-3105  | 434-7105  | 434-8105  |
| #6        | 2-1/2        | 434-2105  | 434-3105  | 434-7105  | 434-8105  |
| #7        | 2-7/16       | 434-2106  | 434-3106  | 434-7106  | 434-8106  |
| #8        | 2-7/16       | 434-2107  | 434-3107  | 434-7107  | 434-8107  |
| #9        | 2-7/16       | 434-2108  | 434-3108  | 434-7108  | 434-8108  |
| #10       | 2-7/16       | 434-2109  | 434-3109  | 434-7109  | 434-8109  |
| #11       | 2-5/16       | 434-2111  | 434-3111  | 434-7111  | 434-8111  |
| #12       | 2-5/16       | 434-2112  | 434-3112  | 434-7112  | 434-8112  |
| #13       | 2-5/16       | 434-2113  | 434-3113  | 434-7113  | 434-8113  |
| #14       | 2-3/16       | 434-2114  | 434-3114  | 434-7114  | 434-8114  |
| #15       | 2-3/16       | 434-2115  | 434-3115  | 434-7115  | 434-8115  |
| #16       | 2-3/16       | 434-2116  | 434-3116  | 434-7116  | 434-8116  |
| #17       | 2-3/16       | 434-2117  | 434-3117  | 434-7117  | 434-8117  |
| #18       | 2-1/8        | 434-2118  | 434-3118  | 434-7118  | 434-8118  |
| #19       | 2-1/8        | 434-2119  | 434-3119  | 434-7119  | 434-8119  |
| #20       | 2-1/8        | 434-2120  | 434-3120  | 434-7120  | 434-8120  |
| #21       | 2-1/8        | 434-2121  | 434-3121  | 434-7121  | 434-8121  |
| #22       | 2            | 434-2122  | 434-3122  | 434-7122  | 434-8122  |
| #23       | 2            | 434-2123  | 434-3123  | 434-7123  | 434-8123  |
| #24       | 2            | 434-2124  | 434-3124  | 434-7124  | 434-8124  |
| #25       | 1-7/8        | 434-2125  | 434-3125  | 434-7125  | 434-8125  |
| #26       | 1-7/8        | 434-2126  | 434-3126  | 434-7126  | 434-8126  |
| #27       | 1-7/8        | 434-2127  | 434-3127  | 434-7127  | 434-8127  |
| #28       | 1-3/4        | 434-2128  | 434-3128  | 434-7128  | 434-8128  |
| #29       | 1-3/4        | 434-2129  | 434-3129  | 434-7129  | 434-8129  |
| #30       | 1-5/8        | 434-2130  | 434-3130  | 434-7130  | 434-8130  |
| #31       | 1-5/8        | 434-2131  | 434-3131  | 434-7131  | 434-8131  |
| #32       | 1-5/8        | 434-2132  | 434-3132  | 434-7132  | 434-8132  |
| #33       | 1-1/2        | 434-2133  | 434-3133  | 434-7133  | 434-8133  |
| #34       | 1-1/2        | 434-2134  | 434-3134  | 434-7134  | 434-8134  |
| #35       | 1-1/2        | 434-2135  | 434-3135  | 434-7135  | 434-8135  |
| #36       | 1-7/16       | 434-2136  | 434-3136  | 434-7136  | 434-8136  |
| #37       | 1-7/16       | 434-2137  | 434-3137  | 434-7137  | 434-8137  |
| #38       | 1-7/16       | 434-2138  | 434-3138  | 434-7138  | 434-8138  |
| #39       | 1-3/8        | 434-2139  | 434-3139  | 434-7139  | 434-8139  |
| #40       | 1-3/8        | 434-2140  | 434-3140  | 434-7140  | 434-8140  |
| #41       | 1-3/8        | 434-2141  | 434-3141  | 434-7141  | 434-8141  |
| #42       | 1-1/4        | 434-2142  | 434-3142  | 434-7142  | 434-8142  |
| #43       | 1-1/4        | 434-2143  | 434-3143  | 434-7143  | 434-8143  |
| #44       | 1-1/8        | 434-2144  | 434-3144  | 434-7144  | 434-8144  |
| #45       | 1-1/8        | 434-2145  | 434-3145  | 434-7145  | 434-8145  |
| #46       | 1-1/8        | 434-2146  | 434-3146  | 434-7146  | 434-8146  |
| #47       | 1            | 434-2147  | 434-3147  | 434-7147  | 434-8147  |
| #48       | 1            | 434-2148  | 434-3148  | 434-7148  | 434-8148  |
| #49       | 1            | 434-2149  | 434-3149  | 434-7149  | 434-8149  |
| #50       | 1            | 434-2150  | 434-3150  | 434-7150  | 434-8150  |
| #51       | 1            | 434-2151  | 434-3151  | 434-7151  | 434-8151  |
| #52       | 7/8          | 434-2152  | 434-3152  | 434-7152  | 434-8152  |
| #53       | 7/8          | 434-2153  | 434-3153  | 434-7153  | 434-8153  |
| #54       | 7/8          | 434-2154  | 434-3154  | 434-7154  | 434-8154  |
| #55       | 7/8          | 434-2155  | 434-3155  | 434-7155  | 434-8155  |
| #56       | 3/4          | 434-2156  | 434-3156  | 434-7156  | 434-8156  |
| #57       | 3/4          | 434-2157  | 434-3157  | 434-7157  | 434-8157  |
| #58       | 11/16        | 434-2158  | 434-3158  | 434-7158  | 434-8158  |
| #59       | 11/16        | 434-2159  | 434-3159  | 434-7159  | 434-8159  |
| #60       | 11/16        | 434-2160  | 434-3160  | 434-7160  | 434-8160  |

# Drill Blanks

**BESTOOL®**

## HSS Ground Drill Blanks

- Used for punches, gages, pins or special tools.
- Made of hardened high speed steel and ground.
- Fully hardened to HRC 63-65.

### Tolerance limits

|                 |                   |
|-----------------|-------------------|
| 0" - .2500"     | + .0000" - .0005" |
| .251" - .3906"  | + .0000" - .0009" |
| .391" - 1.0000" | + .0000" - .0010" |

### Fractional Sizes

| Size  | OAL   | Order No. | Size  | OAL   | Order No. | Size  | OAL | Order No. |
|-------|-------|-----------|-------|-------|-----------|-------|-----|-----------|
| 1/64" | 3/4"  | 305-8101  | 23/64 | 4-7/8 | 305-8123  | 45/64 | 6   | 305-8145  |
| 1/32  | 1-3/8 | 305-8102  | 3/8   | 5     | 305-8124  | 23/32 | 6   | 305-8146  |
| 3/64  | 1-3/4 | 305-8103  | 25/64 | 5-1/8 | 305-8125  | 47/64 | 6   | 305-8147  |
| 1/16  | 1-7/8 | 305-8104  | 13/32 | 5-1/4 | 305-8126  | 3/4   | 6   | 305-8148  |
| 5/64  | 2     | 305-8105  | 27/64 | 5-3/8 | 305-8127  | 49/64 | 6   | 305-8149  |
| 3/32  | 2-1/4 | 305-8106  | 7/16  | 5-1/2 | 305-8128  | 25/32 | 6   | 305-8150  |
| 7/64  | 2-5/8 | 305-8107  | 29/64 | 5-5/8 | 305-8129  | 51/64 | 6   | 305-8151  |
| 1/8   | 2-3/4 | 305-8108  | 15/32 | 5-3/4 | 305-8130  | 13/16 | 6   | 305-8152  |
| 9/64  | 2-7/8 | 305-8109  | 31/64 | 5-7/8 | 305-8131  | 53/64 | 6   | 305-8153  |
| 5/32  | 3-1/8 | 305-8110  | 1/2   | 6     | 305-8132  | 27/32 | 6   | 305-8154  |
| 11/64 | 3-1/4 | 305-8111  | 3/64  | 6     | 305-8133  | 55/64 | 6   | 305-8155  |
| 3/16  | 3-1/2 | 305-8112  | 17/32 | 6     | 305-8134  | 7/8   | 6   | 305-8156  |
| 13/64 | 3-5/8 | 305-8113  | 35/64 | 6     | 305-8135  | 57/64 | 6   | 305-8157  |
| 7/32  | 3-3/4 | 305-8114  | 9/16  | 6     | 305-8136  | 29/32 | 6   | 305-8158  |
| 15/64 | 3-7/8 | 305-8115  | 37/64 | 6     | 305-8137  | 59/64 | 6   | 305-8159  |
| 1/4   | 4     | 305-8116  | 19/32 | 6     | 305-8138  | 15/16 | 6   | 305-8160  |
| 17/64 | 4-1/8 | 305-8117  | 39/64 | 6     | 305-8139  | 61/64 | 6   | 305-8161  |
| 9/32  | 4-1/4 | 305-8118  | 5/8   | 6     | 305-8140  | 31/32 | 6   | 305-8162  |
| 19/64 | 4-3/8 | 305-8119  | 41/64 | 6     | 305-8141  | 63/64 | 6   | 305-8163  |
| 5/16  | 4-1/2 | 305-8120  | 21/32 | 6     | 305-8142  | 1     | 6   | 305-8164  |
| 11/64 | 4-5/8 | 305-8121  | 43/64 | 6     | 305-8143  |       |     |           |
| 11/32 | 4-3/4 | 305-8122  | 11/16 | 6     | 305-8144  |       |     |           |

### Number Sizes

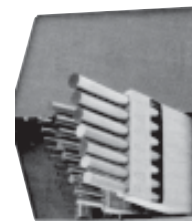
| Size | OAL    | Order No. | Size | OAL    | Order No. | Size | OAL   | Order No. |
|------|--------|-----------|------|--------|-----------|------|-------|-----------|
| #1   | 3-7/8" | 305-8001  | #28  | 2-7/8  | 305-8028  | #55  | 1-7/8 | 305-8055  |
| #2   | 3-7/8  | 305-8002  | #29  | 2-7/8  | 305-8029  | #56  | 1-3/4 | 305-8056  |
| #3   | 3-3/4  | 305-8003  | #30  | 2-3/4  | 305-8030  | #57  | 1-3/4 | 305-8057  |
| #4   | 3-3/4  | 305-8004  | #31  | 2-3/4  | 305-8031  | #58  | 1-5/8 | 305-8058  |
| #5   | 3-3/4  | 305-8005  | #32  | 2-3/4  | 305-8032  | #59  | 1-5/8 | 305-8059  |
| #6   | 3-3/4  | 305-8006  | #33  | 2-5/8  | 305-8033  | #60  | 1-5/8 | 305-8060  |
| #7   | 3-5/8  | 305-8007  | #34  | 2-5/8  | 305-8034  | #61  | 1-5/8 | 305-8061  |
| #8   | 3-5/8  | 305-8008  | #35  | 2-5/8  | 305-8035  | #62  | 1-1/2 | 305-8062  |
| #9   | 3-5/8  | 305-8009  | #36  | 2-1/2  | 305-8036  | #63  | 1-1/2 | 305-8063  |
| #10  | 3-5/8  | 305-8010  | #37  | 2-1/2  | 305-8037  | #64  | 1-1/2 | 305-8064  |
| #11  | 3-1/2  | 305-8011  | #38  | 2-1/2  | 305-8038  | #65  | 1-1/2 | 305-8065  |
| #12  | 3-1/2  | 305-8012  | #39  | 2-3/8  | 305-8039  | #66  | 1-3/8 | 305-8066  |
| #13  | 3-1/2  | 305-8013  | #40  | 2-3/8  | 305-8040  | #67  | 1-3/8 | 305-8067  |
| #14  | 3-3/8  | 305-8014  | #41  | 2-3/8" | 305-8041  | #68  | 1-3/8 | 305-8068  |
| #15  | 3-3/8  | 305-8015  | #42  | 2-1/4  | 305-8042  | #69  | 1-3/8 | 305-8069  |
| #16  | 3-3/8  | 305-8016  | #43  | 2-1/4  | 305-8043  | #70  | 1-1/4 | 305-8070  |
| #17  | 3-3/8  | 305-8017  | #44  | 2-1/8  | 305-8044  | #71  | 1-1/4 | 305-8071  |
| #18  | 3-1/4  | 305-8018  | #45  | 2-1/8  | 305-8045  | #72  | 1-1/8 | 305-8072  |
| #19  | 3-1/4  | 305-8019  | #46  | 2-1/8  | 305-8046  | #73  | 1-1/8 | 305-8073  |
| #20  | 3-1/4  | 305-8020  | #47  | 2      | 305-8047  | #74  | 1-1/8 | 305-8074  |
| #21  | 3-1/4  | 305-8021  | #48  | 2      | 305-8048  | #75  | 1-1/8 | 305-8075  |
| #22  | 3-1/8  | 305-8022  | #49  | 2      | 305-8049  | #76  | 7/8   | 305-8076  |
| #23  | 3-1/8  | 305-8023  | #50  | 2      | 305-8050  | #77  | 7/8   | 305-8077  |
| #24  | 3-1/8  | 305-8024  | #51  | 2      | 305-8051  | #78  | 7/8   | 305-8078  |
| #25  | 3      | 305-8025  | #52  | 1-7/8  | 305-8052  | #79  | 3/4   | 305-8079  |
| #26  | 3      | 305-8026  | #53  | 1-7/8  | 305-8053  | #80  | 3/4   | 305-8080  |
| #27  | 3      | 305-8027  | #54  | 1-7/8  | 305-8054  |      |       |           |

### Letter Sizes

| Size | OAL    | Order No. | Size | OAL   | Order No. | Size | OAL   | Order No. |
|------|--------|-----------|------|-------|-----------|------|-------|-----------|
| A    | 3-7/8" | 305-8201  | J    | 4-1/8 | 305-8210  | S    | 4-7/8 | 305-8219  |
| B    | 4      | 305-8202  | K    | 4-1/4 | 305-8211  | T    | 4-7/8 | 305-8220  |
| C    | 4      | 305-8203  | L    | 4-1/4 | 305-8212  | U    | 5     | 305-8221  |
| D    | 4      | 305-8204  | M    | 4-3/8 | 305-8213  | V    | 5     | 305-8222  |
| E    | 4      | 305-8205  | N    | 4-3/8 | 305-8214  | W    | 5-1/8 | 305-8223  |
| F    | 4-1/8  | 305-8206  | O    | 4-1/2 | 305-8215  | X    | 5-1/8 | 305-8224  |
| G    | 4-1/8  | 305-8207  | P    | 4-5/8 | 305-8216  | Y    | 5-1/4 | 305-8225  |
| H    | 4-1/8  | 305-8208  | Q    | 4-3/4 | 305-8217  | Z    | 5-1/4 | 305-8226  |
| I    | 4-1/8  | 305-8209  | R    | 4-3/4 | 305-8218  |      |       |           |

### Drill Blank Sets, High Speed Steel, Ground

| Pieces | Specification                                         | Order No. |
|--------|-------------------------------------------------------|-----------|
| 115    | (1/16-1/2" by 1/64ths, A-Z, # 1-#60) with metal index | 305-8315  |
| 20     | wire size blanks #61-80                               | 305-8320  |
| 26     | letter size blanks A to Z                             | 305-8326  |
| 29     | blanks 1/16" to 1/2" by 64ths                         | 305-8329  |
| 60     | wire size blanks #1 to #60                            | 305-8360  |



### Metric Twist Drills

DIN 338, High Speed Steel



| Size (mm) | Flute Length (mm) | OAL (mm) | Rolled Black Oxide Order No. | Rolled Polished Order No. | Milled Polished Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | Size (mm) | Flute Length (mm) | OAL (mm) | Rolled Black Oxide Order No. | Rolled Polished Order No. | Milled Polished Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|-----------|-------------------|----------|------------------------------|---------------------------|---------------------------|-------------------------|-----------------------------|-----------|-------------------|----------|------------------------------|---------------------------|---------------------------|-------------------------|-----------------------------|
| 0.20      | 2.5               | 19       | 201-0020                     | 215-0020                  | 205-0020                  | 206-0020                | 207-0020                    | 4.00      | 43                | 75       | 201-0400                     | 215-0400                  | 205-0400                  | 206-0400                | 207-0400                    |
| 0.30      | 3                 | 19       | 201-0030                     | 215-0030                  | 205-0030                  | 206-0030                | 207-0030                    | 4.05      | 43                | 75       | 201-0405                     | 215-0405                  | 205-0405                  | 206-0405                | 207-0405                    |
| 0.50      | 6                 | 22       | 201-0050                     | 215-0050                  | 205-0050                  | 206-0050                | 207-0050                    | 4.10      | 43                | 75       | 201-0410                     | 215-0410                  | 205-0410                  | 206-0410                | 207-0410                    |
| 0.55      | 7                 | 24       | 201-0055                     | 215-0055                  | 205-0055                  | 206-0055                | 207-0055                    | 4.15      | 43                | 75       | 201-0415                     | 215-0415                  | 205-0415                  | 206-0415                | 207-0415                    |
| 0.60      | 7                 | 24       | 201-0060                     | 215-0060                  | 205-0060                  | 206-0060                | 207-0060                    | 4.20      | 43                | 75       | 201-0420                     | 215-0420                  | 205-0420                  | 206-0420                | 207-0420                    |
| 0.65      | 8                 | 26       | 201-0065                     | 215-0065                  | 205-0065                  | 206-0065                | 207-0065                    | 4.25      | 43                | 75       | 201-0425                     | 215-0425                  | 205-0425                  | 206-0425                | 207-0425                    |
| 0.70      | 9                 | 28       | 201-0070                     | 215-0070                  | 205-0070                  | 206-0070                | 207-0070                    | 4.30      | 47                | 80       | 201-0430                     | 215-0430                  | 205-0430                  | 206-0430                | 207-0430                    |
| 0.75      | 9                 | 28       | 201-0075                     | 215-0075                  | 205-0075                  | 206-0075                | 207-0075                    | 4.35      | 47                | 80       | 201-0435                     | 215-0435                  | 205-0435                  | 206-0435                | 207-0435                    |
| 0.80      | 10                | 30       | 201-0080                     | 215-0080                  | 205-0080                  | 206-0080                | 207-0080                    | 4.40      | 47                | 80       | 201-0440                     | 215-0440                  | 205-0440                  | 206-0440                | 207-0440                    |
| 0.85      | 11                | 32       | 201-0085                     | 215-0085                  | 205-0085                  | 206-0085                | 207-0085                    | 4.45      | 47                | 80       | 201-0445                     | 215-0445                  | 205-0445                  | 206-0445                | 207-0445                    |
| 0.90      | 11                | 32       | 201-0090                     | 215-0090                  | 205-0090                  | 206-0090                | 207-0090                    | 4.50      | 47                | 80       | 201-0450                     | 215-0450                  | 205-0450                  | 206-0450                | 207-0450                    |
| 0.95      | 11                | 32       | 201-0095                     | 215-0095                  | 205-0095                  | 206-0095                | 207-0095                    | 4.55      | 47                | 80       | 201-0455                     | 215-0455                  | 205-0455                  | 206-0455                | 207-0455                    |
| 0.98      | 12                | 34       | 201-0098                     | 215-0098                  | 205-0098                  | 206-0098                | 207-0098                    | 4.60      | 47                | 80       | 201-0460                     | 215-0460                  | 205-0460                  | 206-0460                | 207-0460                    |
| 1.00      | 12                | 34       | 201-0100                     | 215-0100                  | 205-0100                  | 206-0100                | 207-0100                    | 4.65      | 47                | 80       | 201-0465                     | 215-0465                  | 205-0465                  | 206-0465                | 207-0465                    |
| 1.05      | 12                | 34       | 201-0105                     | 215-0105                  | 205-0105                  | 206-0105                | 207-0105                    | 4.70      | 47                | 80       | 201-0470                     | 215-0470                  | 205-0470                  | 206-0470                | 207-0470                    |
| 1.10      | 14                | 36       | 201-0110                     | 215-0110                  | 205-0110                  | 206-0110                | 207-0110                    | 4.75      | 47                | 80       | 201-0475                     | 215-0475                  | 205-0475                  | 206-0475                | 207-0475                    |
| 1.15      | 14                | 36       | 201-0115                     | 215-0115                  | 205-0115                  | 206-0115                | 207-0115                    | 4.80      | 52                | 86       | 201-0480                     | 215-0480                  | 205-0480                  | 206-0480                | 207-0480                    |
| 1.20      | 16                | 38       | 201-0120                     | 215-0120                  | 205-0120                  | 206-0120                | 207-0120                    | 4.85      | 52                | 86       | 201-0485                     | 215-0485                  | 205-0485                  | 206-0485                | 207-0485                    |
| 1.25      | 16                | 38       | 201-0125                     | 215-0125                  | 205-0125                  | 206-0125                | 207-0125                    | 4.90      | 52                | 86       | 201-0490                     | 215-0490                  | 205-0490                  | 206-0490                | 207-0490                    |
| 1.30      | 16                | 38       | 201-0130                     | 215-0130                  | 205-0130                  | 206-0130                | 207-0130                    | 4.95      | 52                | 86       | 201-0495                     | 215-0495                  | 205-0495                  | 206-0495                | 207-0495                    |
| 1.35      | 18                | 40       | 201-0135                     | 215-0135                  | 205-0135                  | 206-0135                | 207-0135                    | 5.00      | 52                | 86       | 201-0500                     | 215-0500                  | 205-0500                  | 206-0500                | 207-0500                    |
| 1.40      | 18                | 40       | 201-0140                     | 215-0140                  | 205-0140                  | 206-0140                | 207-0140                    | 5.10      | 52                | 86       | 201-0510                     | 215-0510                  | 205-0510                  | 206-0510                | 207-0510                    |
| 1.45      | 18                | 40       | 201-0145                     | 215-0145                  | 205-0145                  | 206-0145                | 207-0145                    | 5.20      | 52                | 86       | 201-0520                     | 215-0520                  | 205-0520                  | 206-0520                | 207-0520                    |
| 1.50      | 18                | 40       | 201-0150                     | 215-0150                  | 205-0150                  | 206-0150                | 207-0150                    | 5.25      | 52                | 86       | 201-0525                     | 215-0525                  | 205-0525                  | 206-0525                | 207-0525                    |
| 1.55      | 20                | 43       | 201-0155                     | 215-0155                  | 205-0155                  | 206-0155                | 207-0155                    | 5.30      | 52                | 86       | 201-0530                     | 215-0530                  | 205-0530                  | 206-0530                | 207-0530                    |
| 1.60      | 20                | 43       | 201-0160                     | 215-0160                  | 205-0160                  | 206-0160                | 207-0160                    | 5.40      | 57                | 93       | 201-0540                     | 215-0540                  | 205-0540                  | 206-0540                | 207-0540                    |
| 1.65      | 20                | 43       | 201-0165                     | 215-0165                  | 205-0165                  | 206-0165                | 207-0165                    | 5.50      | 57                | 93       | 201-0550                     | 215-0550                  | 205-0550                  | 206-0550                | 207-0550                    |
| 1.70      | 20                | 43       | 201-0170                     | 215-0170                  | 205-0170                  | 206-0170                | 207-0170                    | 5.60      | 57                | 93       | 201-0560                     | 215-0560                  | 205-0560                  | 206-0560                | 207-0560                    |
| 1.75      | 22                | 48       | 201-0175                     | 215-0175                  | 205-0175                  | 206-0175                | 207-0175                    | 5.70      | 57                | 93       | 201-0570                     | 215-0570                  | 205-0570                  | 206-0570                | 207-0570                    |
| 1.80      | 22                | 48       | 201-0180                     | 215-0180                  | 205-0180                  | 206-0180                | 207-0180                    | 5.75      | 57                | 93       | 201-0575                     | 215-0575                  | 205-0575                  | 206-0575                | 207-0575                    |
| 1.85      | 22                | 48       | 201-0185                     | 215-0185                  | 205-0185                  | 206-0185                | 207-0185                    | 5.80      | 57                | 93       | 201-0580                     | 215-0580                  | 205-0580                  | 206-0580                | 207-0580                    |
| 1.90      | 22                | 48       | 201-0190                     | 215-0190                  | 205-0190                  | 206-0190                | 207-0190                    | 5.90      | 57                | 93       | 201-0590                     | 215-0590                  | 205-0590                  | 206-0590                | 207-0590                    |
| 1.95      | 24                | 49       | 201-0195                     | 215-0195                  | 205-0195                  | 206-0195                | 207-0195                    | 6.00      | 57                | 93       | 201-0600                     | 215-0600                  | 205-0600                  | 206-0600                | 207-0600                    |
| 2.00      | 24                | 49       | 201-0200                     | 215-0200                  | 205-0200                  | 206-0200                | 207-0200                    | 6.10      | 63                | 101      | 201-0610                     | 215-0610                  | 205-0610                  | 206-0610                | 207-0610                    |
| 2.05      | 24                | 49       | 201-0205                     | 215-0205                  | 205-0205                  | 206-0205                | 207-0205                    | 6.20      | 63                | 101      | 201-0620                     | 215-0620                  | 205-0620                  | 206-0620                | 207-0620                    |
| 2.10      | 24                | 49       | 201-0210                     | 215-0210                  | 205-0210                  | 206-0210                | 207-0210                    | 6.25      | 63                | 101      | 201-0625                     | 215-0625                  | 205-0625                  | 206-0625                | 207-0625                    |
| 2.15      | 27                | 53       | 201-0215                     | 215-0215                  | 205-0215                  | 206-0215                | 207-0215                    | 6.30      | 63                | 101      | 201-0630                     | 215-0630                  | 205-0630                  | 206-0630                | 207-0630                    |
| 2.20      | 27                | 53       | 201-0220                     | 215-0220                  | 205-0220                  | 206-0220                | 207-0220                    | 6.35      | 63                | 101      | 201-0635                     | 215-0635                  | 205-0635                  | 206-0635                | 207-0635                    |
| 2.25      | 27                | 53       | 201-0225                     | 215-0225                  | 205-0225                  | 206-0225                | 207-0225                    | 6.40      | 63                | 101      | 201-0640                     | 215-0640                  | 205-0640                  | 206-0640                | 207-0640                    |
| 2.30      | 27                | 53       | 201-0230                     | 215-0230                  | 205-0230                  | 206-0230                | 207-0230                    | 6.50      | 63                | 101      | 201-0650                     | 215-0650                  | 205-0650                  | 206-0650                | 207-0650                    |
| 2.35      | 27                | 53       | 201-0235                     | 215-0235                  | 205-0235                  | 206-0235                | 207-0235                    | 6.60      | 63                | 101      | 201-0660                     | 215-0660                  | 205-0660                  | 206-0660                | 207-0660                    |
| 2.40      | 30                | 57       | 201-0240                     | 215-0240                  | 205-0240                  | 206-0240                | 207-0240                    | 6.70      | 63                | 101      | 201-0670                     | 215-0670                  | 205-0670                  | 206-0670                | 207-0670                    |
| 2.45      | 30                | 57       | 201-0245                     | 215-0245                  | 205-0245                  | 206-0245                | 207-0245                    | 6.75      | 69                | 109      | 201-0675                     | 215-0675                  | 205-0675                  | 206-0675                | 207-0675                    |
| 2.50      | 30                | 57       | 201-0250                     | 215-0250                  | 205-0250                  | 206-0250                | 207-0250                    | 6.80      | 69                | 109      | 201-0680                     | 215-0680                  | 205-0680                  | 206-0680                | 207-0680                    |
| 2.55      | 30                | 57       | 201-0255                     | 215-0255                  | 205-0255                  | 206-0255                | 207-0255                    | 6.90      | 69                | 109      | 201-0690                     | 215-0690                  | 205-0690                  | 206-0690                | 207-0690                    |
| 2.60      | 30                | 57       | 201-0260                     | 215-0260                  | 205-0260                  | 206-0260                | 207-0260                    | 7.00      | 69                | 109      | 201-0700                     | 215-0700                  | 205-0700                  | 206-0700                | 207-0700                    |
| 2.65      | 30                | 57       | 201-0265                     | 215-0265                  | 205-0265                  | 206-0265                | 207-0265                    | 7.10      | 69                | 109      | 201-0710                     | 215-0710                  | 205-0710                  | 206-0710                | 207-0710                    |
| 2.70      | 33                | 61       | 201-0270                     | 215-0270                  | 205-0270                  | 206-0270                | 207-0270                    | 7.20      | 69                | 109      | 201-0720                     | 215-0720                  | 205-0720                  | 206-0720                | 207-0720                    |
| 2.75      | 33                | 61       | 201-0275                     | 215-0275                  | 205-0275                  | 206-0275                | 207-0275                    | 7.25      | 69                | 109      | 201-0725                     | 215-0725                  | 205-0725                  | 206-0725                | 207-0725                    |
| 2.80      | 33                | 61       | 201-0280                     | 215-0280                  | 205-0280                  | 206-0280                | 207-0280                    | 7.30      | 69                | 109      | 201-0730                     | 215-0730                  | 205-0730                  | 206-0730                | 207-0730                    |
| 2.85      | 33                | 61       | 201-0285                     | 215-0285                  | 205-0285                  | 206-0285                | 207-0285                    | 7.40      | 69                | 109      | 201-0740                     | 215-0740                  | 205-0740                  | 206-0740                | 207-0740                    |
| 2.90      | 33                | 61       | 201-0290                     | 215-0290                  | 205-0290                  | 206-0290                | 207-0290                    | 7.50      | 69                | 109      | 201-0750                     | 215-0750                  | 205-0750                  | 206-0750                | 207-0750                    |
| 2.95      | 33                | 61       | 201-0295                     | 215-0295                  | 205-0295                  | 206-0295                | 207-0295                    | 7.60      | 75                | 117      | 201-0760                     | 215-0760                  | 205-0760                  | 206-0760                | 207-0760                    |
| 3.00      | 33                | 61       | 201-0300                     | 215-0300                  | 205-0300                  | 206-0300                | 207-0300                    | 7.70      | 75                | 117      | 201-0770                     | 215-0770                  | 205-0770                  | 206-0770                | 207-0770                    |
| 3.05      | 36                | 65       | 201-0305                     | 215-0305                  | 205-0305                  | 206-0305                | 207-0305                    | 7.75      | 75                | 117      | 201-0775                     | 215-0775                  | 205-0775                  | 206-0775                | 207-0775                    |
| 3.10      | 36                | 65       | 201-0310                     | 215-0310                  | 205-0310                  | 206-0310                | 207-0310                    | 7.80      | 75                | 117      | 201-0780                     | 215-0780                  | 205-0780                  | 206-0780                | 207-0780                    |
| 3.15      | 36                | 65       | 201-0315                     | 215-0315                  | 205-0315                  | 206-0315                | 207-0315                    | 7.90      | 75                | 117      | 201-0790                     | 215-0790                  | 205-0790                  | 206-0790                | 207-0790                    |
| 3.20      | 36                | 65       | 201-0320                     | 215-0320                  | 205-0320                  | 206-0320                | 207-0320                    | 8.00      | 75                | 117      | 201-0800                     | 215-0800                  | 205-0800                  | 206-0800                | 207-0800                    |
| 3.25      | 36                | 65       | 201-0325                     | 215-0325                  | 205-0325                  | 206-0325                | 207-0325                    | 8.10      | 75                | 117      | 201-0810                     | 215-0810                  | 205-0810                  | 206-0810                | 207-0810                    |
| 3.30      | 36                | 65       | 201-0330                     | 215-0330                  | 205-0330                  | 206-0330                | 207-0330                    | 8.20      | 75                | 117      | 201-0820                     | 215-0820                  | 205-0820                  | 206-0820                | 207-0820                    |
| 3.35      | 36                | 65       | 201-0335                     | 215-0335                  | 205-0335                  | 206-0335                | 207-0335                    | 8.25      | 75                | 117      | 201-0825                     | 215-0825                  | 205-0825                  | 206-0825                | 207-0825                    |
| 3.40      | 39                | 70       | 201-0340                     | 215-0340                  | 205-0340                  | 206-0340                | 207-0340                    | 8.30      | 75                | 117      | 201-0830                     | 215-0830                  | 205-0830                  | 206-0830                | 207-0830                    |
| 3.45      | 39                | 70       | 201-0345                     | 215-0345                  | 205-0345                  | 206-0345                | 207-0345                    | 8.40      | 75                | 117      | 201-0840                     | 215-0840                  | 205-0840                  | 206-0840                | 207-0840                    |
| 3.50      | 39                | 70       | 201-0350                     | 215-0350                  | 205-0350                  | 206-0350                | 207-0350                    | 8.50      | 75                | 117      | 201-0850                     | 215-0850                  | 205-0850                  | 206-0850                | 207-0850                    |
| 3.55      | 39                | 70       | 201-0355                     | 215-0355                  | 205-0355                  | 206-0355                | 207-0355                    | 8.60      | 81                | 125      | 201-0860                     | 215-0860                  | 205-0860                  | 206-0860                | 207-0860                    |
| 3.60      | 39                | 70       | 201-0360                     | 215-0360                  | 205-0360                  | 206-0360                | 207-0360                    | 8.70      | 81                | 125      | 201-0870                     | 215-0870                  | 205-0870                  | 206-087                 |                             |

## Metric Twist Drills

**BESTOOL®**

### Metric Twist Drills Continued

#### DIN 338, High Speed Steel



| Size<br>(mm) | Flute<br>Length<br>(mm) | OAL<br>(mm) | Rolled         |                    |                    |                  |                      | Size<br>(mm) | Flute<br>Length<br>(mm) | OAL<br>(mm) | Rolled         |                    |                    |                  |                      |
|--------------|-------------------------|-------------|----------------|--------------------|--------------------|------------------|----------------------|--------------|-------------------------|-------------|----------------|--------------------|--------------------|------------------|----------------------|
|              |                         |             | Black<br>Oxide | Rolled<br>Polished | Milled<br>Polished | Ground<br>Bright | Ground<br>TiN-Coated |              |                         |             | Black<br>Oxide | Rolled<br>Polished | Milled<br>Polished | Ground<br>Bright | Ground<br>TiN-Coated |
| Order No.    | Order No.               | Order No.   | Order No.      | Order No.          | Order No.          | Order No.        | Order No.            | Order No.    | Order No.               | Order No.   | Order No.      | Order No.          | Order No.          | Order No.        | Order No.            |
| 9.30         | 81                      | 125         | 201-0930       | 215-0930           | 205-0930           | 206-0930         | 207-0930             | 12.40        | 101                     | 151         | 201-1240       | 215-1240           | 205-1240           | 206-1240         | 207-1240             |
| 9.40         | 81                      | 125         | 201-0940       | 215-0940           | 205-0940           | 206-0940         | 207-0940             | 12.50        | 101                     | 151         | 201-1250       | 215-1250           | 205-1250           | 206-1250         | 207-1250             |
| 9.50         | 81                      | 125         | 201-0950       | 215-0950           | 205-0950           | 206-0950         | 207-0950             | 12.60        | 101                     | 151         | 201-1260       | 215-1260           | 205-1260           | 206-1260         | 207-1260             |
| 9.60         | 87                      | 133         | 201-0960       | 215-0960           | 205-0960           | 206-0960         | 207-0960             | 12.70        | 101                     | 151         | 201-1270       | 215-1270           | 205-1270           | 206-1270         | 207-1270             |
| 9.70         | 87                      | 133         | 201-0970       | 215-0970           | 205-0970           | 206-0970         | 207-0970             | 12.75        | 101                     | 151         | 201-1275       | 215-1275           | 205-1275           | 206-1275         | 207-1275             |
| 9.75         | 87                      | 133         | 201-0975       | 215-0975           | 205-0975           | 206-0975         | 207-0975             | 12.80        | 101                     | 151         | 201-1280       | 215-1280           | 205-1280           | 206-1280         | 207-1280             |
| 9.80         | 87                      | 133         | 201-0980       | 215-0980           | 205-0980           | 206-0980         | 207-0980             | 12.90        | 101                     | 151         | 201-1290       | 215-1290           | 205-1290           | 206-1290         | 207-1290             |
| 9.90         | 87                      | 133         | 201-0990       | 215-0990           | 205-0990           | 206-0990         | 207-0990             | 13.00        | 101                     | 151         | 201-1300       | 215-1300           | 205-1300           | 206-1300         | 207-1300             |
| 10.00        | 87                      | 133         | 201-1000       | 215-1000           | 205-1000           | 206-1000         | 207-1000             | 13.10        | 101                     | 151         | 201-1310       | 215-1310           | 205-1310           | 206-1310         | 207-1310             |
| 10.10        | 87                      | 133         | 201-1010       | 215-1010           | 205-1010           | 206-1010         | 207-1010             | 13.20        | 101                     | 151         | 201-1320       | 215-1320           | 205-1320           | 206-1320         | 207-1320             |
| 10.20        | 87                      | 133         | 201-1020       | 215-1020           | 205-1020           | 206-1020         | 207-1020             | 13.25        | 108                     | 160         | 201-1325       | 215-1325           | 205-1325           | 206-1325         | 207-1325             |
| 10.25        | 87                      | 133         | 201-1025       | 215-1025           | 205-1025           | 206-1025         | 207-1025             | 13.30        | 108                     | 160         | 201-1330       | 215-1330           | 205-1330           | 206-1330         | 207-1330             |
| 10.30        | 87                      | 133         | 201-1030       | 215-1030           | 205-1030           | 206-1030         | 207-1030             | 13.40        | 108                     | 160         | 201-1340       | 215-1340           | 205-1340           | 206-1340         | 207-1340             |
| 10.40        | 87                      | 133         | 201-1040       | 215-1040           | 205-1040           | 206-1040         | 207-1040             | 13.50        | 108                     | 160         | 201-1350       | 215-1350           | 205-1350           | 206-1350         | 207-1350             |
| 10.50        | 87                      | 133         | 201-1050       | 215-1050           | 205-1050           | 206-1050         | 207-1050             | 13.60        | 108                     | 160         | 201-1360       | 215-1360           | 205-1360           | 206-1360         | 207-1360             |
| 10.60        | 94                      | 142         | 201-1060       | 215-1060           | 205-1060           | 206-1060         | 207-1060             | 13.70        | 108                     | 160         | 201-1370       | 215-1370           | 205-1370           | 206-1370         | 207-1370             |
| 10.70        | 94                      | 142         | 201-1070       | 215-1070           | 205-1070           | 206-1070         | 207-1070             | 13.75        | 108                     | 160         | 201-1375       | 215-1375           | 205-1375           | 206-1375         | 207-1375             |
| 10.75        | 94                      | 142         | 201-1075       | 215-1075           | 205-1075           | 206-1075         | 207-1075             | 13.80        | 108                     | 160         | 201-1380       | 215-1380           | 205-1380           | 206-1380         | 207-1380             |
| 10.80        | 94                      | 142         | 201-1080       | 215-1080           | 205-1080           | 206-1080         | 207-1080             | 13.90        | 108                     | 160         | 201-1390       | 215-1390           | 205-1390           | 206-1390         | 207-1390             |
| 10.90        | 94                      | 142         | 201-1090       | 215-1090           | 205-1090           | 206-1090         | 207-1090             | 14.00        | 108                     | 160         | 201-1400       | 215-1400           | 205-1400           | 206-1400         | 207-1400             |
| 11.00        | 94                      | 142         | 201-1100       | 215-1100           | 205-1100           | 206-1100         | 207-1100             | 14.25        | 114                     | 169         | 201-1425       | 215-1425           | 205-1425           | 206-1425         | 207-1425             |
| 11.10        | 94                      | 142         | 201-1110       | 215-1110           | 205-1110           | 206-1110         | 207-1110             | 14.50        | 114                     | 169         | 201-1450       | 215-1450           | 205-1450           | 206-1450         | 207-1450             |
| 11.20        | 94                      | 142         | 201-1120       | 215-1120           | 205-1120           | 206-1120         | 207-1120             | 14.75        | 114                     | 169         | 201-1475       | 215-1475           | 205-1475           | 206-1475         | 207-1475             |
| 11.25        | 94                      | 142         | 201-1125       | 215-1125           | 205-1125           | 206-1125         | 207-1125             | 15.00        | 114                     | 169         | 201-1500       | 215-1500           | 205-1500           | 206-1500         | 207-1500             |
| 11.30        | 94                      | 142         | 201-1130       | 215-1130           | 205-1130           | 206-1130         | 207-1130             | 15.25        | 120                     | 178         | 201-1525       | 215-1525           | 205-1525           | 206-1525         | 207-1525             |
| 11.40        | 94                      | 142         | 201-1140       | 215-1140           | 205-1140           | 206-1140         | 207-1140             | 15.50        | 120                     | 178         | 201-1550       | 215-1550           | 205-1550           | 206-1550         | 207-1550             |
| 11.50        | 94                      | 142         | 201-1150       | 215-1150           | 205-1150           | 206-1150         | 207-1150             | 15.75        | 120                     | 178         | 201-1575       | 215-1575           | 205-1575           | 206-1575         | 207-1575             |
| 11.60        | 94                      | 142         | 201-1160       | 215-1160           | 205-1160           | 206-1160         | 207-1160             | 16.00        | 120                     | 178         | 201-1600       | 215-1600           | 205-1600           | 206-1600         | 207-1600             |
| 11.70        | 94                      | 142         | 201-1170       | 215-1170           | 205-1170           | 206-1170         | 207-1170             | 16.50        | 125                     | 187         | 201-1650       | 215-1650           | 205-1650           | 206-1650         | 207-1650             |
| 11.75        | 94                      | 142         | 201-1175       | 215-1175           | 205-1175           | 206-1175         | 207-1175             | 17.00        | 125                     | 187         | 201-1700       | 215-1700           | 205-1700           | 206-1700         | 207-1700             |
| 11.80        | 94                      | 142         | 201-1180       | 215-1180           | 205-1180           | 206-1180         | 207-1180             | 17.50        | 130                     | 191         | 201-1750       | 215-1750           | 205-1750           | 206-1750         | 207-1750             |
| 11.90        | 101                     | 151         | 201-1190       | 215-1190           | 205-1190           | 206-1190         | 207-1190             | 18.00        | 130                     | 191         | 201-1800       | 215-1800           | 205-1800           | 206-1800         | 207-1800             |
| 12.00        | 101                     | 151         | 201-1200       | 215-1200           | 205-1200           | 206-1200         | 207-1200             | 18.50        | 135                     | 198         | 201-1850       | 215-1850           | 205-1850           | 206-1850         | 207-1850             |
| 12.10        | 101                     | 151         | 201-1210       | 215-1210           | 205-1210           | 206-1210         | 207-1210             | 19.00        | 135                     | 198         | 201-1900       | 215-1900           | 205-1900           | 206-1900         | 207-1900             |
| 12.20        | 101                     | 151         | 201-1220       | 215-1220           | 205-1220           | 206-1220         | 207-1220             | 19.50        | 140                     | 205         | 201-1950       | 215-1950           | 205-1950           | 206-1950         | 207-1950             |
| 12.25        | 101                     | 151         | 201-1225       | 215-1225           | 205-1225           | 206-1225         | 207-1225             | 20.00        | 140                     | 205         | 201-2000       | 215-2000           | 205-2000           | 206-2000         | 207-2000             |
| 12.30        | 101                     | 151         | 201-1230       | 215-1230           | 205-1230           | 206-1230         | 207-1230             |              |                         |             |                |                    |                    |                  |                      |

### Drill Guide

For drilling perfect pocket holes in face frames quickly and easily.



Order No. 830-2020

### Drill Stop Sets

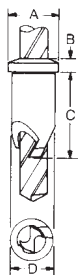
Allows drilling to exact depth. Locks onto the bit for drill press depth precision.



| Pieces | Specification                                | Order No. |
|--------|----------------------------------------------|-----------|
| 7      | 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2". | 300-0007  |
| 4      | 5/8", 3/4", 7/8", 1"                         | 300-0004  |

### Chamfer Bit

Drill and chamfer and deburr in one operation.

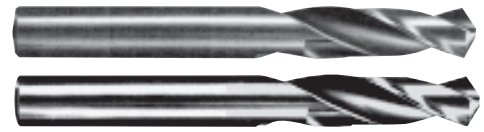


- Positioning for drill length can be varied instantly.
- Single point cutter assures concentricity.
- Drill acts as a pilot to reduce chatter.
- Easily resharpened on any drill grinder without damage to the drill.
- Can provide an additional chamfer diameter to a multi-diameter drill.
- 90° Included angle.
- Drill bit not included.

| Drill<br>Size | Dimensions |      |     |       | Order No. |
|---------------|------------|------|-----|-------|-----------|
|               | A          | B    | C   | D     |           |
| 1/8"          | 7/16"      | 1/4" | 5/8 | 5/16" | 830-2030  |

### Metric Twist Drills

DIN 1897, High Speed Steel



| Size<br>(mm) | Flute<br>Length<br>(mm) | OAL<br>(mm) | Rolled<br>Black<br>Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. | Size<br>(mm) | Flute<br>Length<br>(mm) | OAL<br>(mm) | Rolled<br>Black<br>Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|--------------|-------------------------|-------------|---------------------------------------|---------------------------------|-------------------------------|-----------------------------------|--------------|-------------------------|-------------|---------------------------------------|---------------------------------|-------------------------------|-----------------------------------|
| 1.00         | 6                       | 26          | 202-0010                              | 202-1010                        | 202-4010                      | 202-5010                          | 8.0          | 37                      | 79          | 202-0080                              | 202-1080                        | 202-4080                      | 202-5080                          |
| 1.10         | 7                       | 28          | 202-0011                              | 202-1011                        | 202-4011                      | 202-5011                          | 8.5          | 37                      | 79          | 202-0085                              | 202-1085                        | 202-4085                      | 202-5085                          |
| 1.20         | 8                       | 30          | 202-0012                              | 202-1012                        | 202-4012                      | 202-5012                          | 9.0          | 40                      | 84          | 202-0090                              | 202-1090                        | 202-4090                      | 202-5090                          |
| 1.30         | 8                       | 30          | 202-0013                              | 202-1013                        | 202-4013                      | 202-5013                          | 9.5          | 40                      | 84          | 202-0095                              | 202-1095                        | 202-4095                      | 202-5095                          |
| 1.40         | 9                       | 32          | 202-0014                              | 202-1014                        | 202-4014                      | 202-5014                          | 10.0         | 43                      | 89          | 202-0100                              | 202-1100                        | 202-4100                      | 202-5100                          |
| 1.50         | 9                       | 32          | 202-0015                              | 202-1015                        | 202-4015                      | 202-5015                          | 10.10        | 43                      | 89          | 202-0101                              | 202-1101                        | 202-4101                      | 202-5101                          |
| 1.60         | 10                      | 34          | 202-0016                              | 202-1016                        | 202-4016                      | 202-5016                          | 10.20        | 43                      | 89          | 202-0102                              | 202-1102                        | 202-4102                      | 202-5102                          |
| 1.70         | 10                      | 34          | 202-0017                              | 202-1017                        | 202-4017                      | 202-5017                          | 10.30        | 43                      | 89          | 202-0103                              | 202-1103                        | 202-4103                      | 202-5103                          |
| 1.80         | 11                      | 36          | 202-0018                              | 202-1018                        | 202-4018                      | 202-5018                          | 10.40        | 43                      | 89          | 202-0104                              | 202-1104                        | 202-4104                      | 202-5104                          |
| 1.90         | 11                      | 36          | 202-0019                              | 202-1019                        | 202-4019                      | 202-5019                          | 10.50        | 43                      | 89          | 202-0105                              | 202-1105                        | 202-4105                      | 202-5105                          |
| 2.0          | 12                      | 38          | 202-0020                              | 202-1020                        | 202-4020                      | 202-5020                          | 10.60        | 43                      | 89          | 202-0106                              | 202-1106                        | 202-4106                      | 202-5106                          |
| 2.1          | 12                      | 38          | 202-0021                              | 202-1021                        | 202-4021                      | 202-5021                          | 10.70        | 47                      | 95          | 202-0107                              | 202-1107                        | 202-4107                      | 202-5107                          |
| 2.2          | 13                      | 40          | 202-0022                              | 202-1022                        | 202-4022                      | 202-5022                          | 10.80        | 47                      | 95          | 202-0108                              | 202-1108                        | 202-4108                      | 202-5108                          |
| 2.3          | 13                      | 40          | 202-0023                              | 202-1023                        | 202-4023                      | 202-5023                          | 10.90        | 47                      | 95          | 202-0109                              | 202-1109                        | 202-4109                      | 202-5109                          |
| 2.4          | 14                      | 43          | 202-0024                              | 202-1024                        | 202-4024                      | 202-5024                          | 11.00        | 47                      | 95          | 202-0110                              | 202-1110                        | 202-4110                      | 202-5110                          |
| 2.5          | 14                      | 43          | 202-0025                              | 202-1025                        | 202-4025                      | 202-5025                          | 11.10        | 47                      | 95          | 202-0111                              | 202-1111                        | 202-4111                      | 202-5111                          |
| 2.6          | 14                      | 43          | 202-0026                              | 202-1026                        | 202-4026                      | 202-5026                          | 11.20        | 47                      | 95          | 202-0112                              | 202-1112                        | 202-4112                      | 202-5112                          |
| 2.7          | 16                      | 46          | 202-0027                              | 202-1027                        | 202-4027                      | 202-5027                          | 11.30        | 47                      | 95          | 202-0113                              | 202-1113                        | 202-4113                      | 202-5113                          |
| 2.8          | 16                      | 46          | 202-0028                              | 202-1028                        | 202-4028                      | 202-5028                          | 11.40        | 47                      | 95          | 202-0114                              | 202-1114                        | 202-4114                      | 202-5114                          |
| 2.9          | 16                      | 46          | 202-0029                              | 202-1029                        | 202-4029                      | 202-5029                          | 11.50        | 47                      | 95          | 202-0115                              | 202-1115                        | 202-4115                      | 202-5115                          |
| 3.0          | 16                      | 46          | 202-0030                              | 202-1030                        | 202-4030                      | 202-5030                          | 11.60        | 47                      | 95          | 202-0116                              | 202-1116                        | 202-4116                      | 202-5116                          |
| 3.1          | 18                      | 49          | 202-0031                              | 202-1031                        | 202-4031                      | 202-5031                          | 11.70        | 47                      | 95          | 202-0117                              | 202-1117                        | 202-4117                      | 202-5117                          |
| 3.2          | 18                      | 49          | 202-0032                              | 202-1032                        | 202-4032                      | 202-5032                          | 11.80        | 47                      | 95          | 202-0118                              | 202-1118                        | 202-4118                      | 202-5118                          |
| 3.3          | 18                      | 49          | 202-0033                              | 202-1033                        | 202-4033                      | 202-5033                          | 11.90        | 51                      | 102         | 202-0119                              | 202-1119                        | 202-4119                      | 202-5119                          |
| 3.4          | 20                      | 52          | 202-0034                              | 202-1034                        | 202-4034                      | 202-5034                          | 12.00        | 51                      | 102         | 202-0120                              | 202-1120                        | 202-4120                      | 202-5120                          |
| 3.5          | 20                      | 52          | 202-0035                              | 202-1035                        | 202-4035                      | 202-5035                          | 12.10        | 51                      | 102         | 202-0121                              | 202-1121                        | 202-4121                      | 202-5121                          |
| 3.6          | 20                      | 52          | 202-0036                              | 202-1036                        | 202-4036                      | 202-5036                          | 12.20        | 51                      | 102         | 202-0122                              | 202-1122                        | 202-4122                      | 202-5122                          |
| 3.7          | 20                      | 52          | 202-0037                              | 202-1037                        | 202-4037                      | 202-5037                          | 12.30        | 51                      | 102         | 202-0123                              | 202-1123                        | 202-4123                      | 202-5123                          |
| 3.8          | 22                      | 55          | 202-0038                              | 202-1038                        | 202-4038                      | 202-5038                          | 12.40        | 51                      | 102         | 202-0124                              | 202-1124                        | 202-4124                      | 202-5124                          |
| 3.9          | 22                      | 55          | 202-0039                              | 202-1039                        | 202-4039                      | 202-5039                          | 12.50        | 51                      | 102         | 202-0125                              | 202-1125                        | 202-4125                      | 202-5125                          |
| 4.0          | 22                      | 55          | 202-0040                              | 202-1040                        | 202-4040                      | 202-5040                          | 12.60        | 51                      | 102         | 202-0126                              | 202-1126                        | 202-4126                      | 202-5126                          |
| 4.1          | 22                      | 55          | 202-0041                              | 202-1041                        | 202-4041                      | 202-5041                          | 12.70        | 51                      | 102         | 202-0127                              | 202-1127                        | 202-4127                      | 202-5127                          |
| 4.2          | 22                      | 55          | 202-0042                              | 202-1042                        | 202-4042                      | 202-5042                          | 12.80        | 51                      | 102         | 202-0128                              | 202-1128                        | 202-4128                      | 202-5128                          |
| 4.3          | 24                      | 58          | 202-0043                              | 202-1043                        | 202-4043                      | 202-5043                          | 12.90        | 51                      | 102         | 202-0129                              | 202-1129                        | 202-4129                      | 202-5129                          |
| 4.4          | 24                      | 58          | 202-0044                              | 202-1044                        | 202-4044                      | 202-5044                          | 13.00        | 51                      | 102         | 202-0130                              | 202-1130                        | 202-4130                      | 202-5130                          |
| 4.5          | 24                      | 58          | 202-0045                              | 202-1045                        | 202-4045                      | 202-5045                          | 13.10        | 51                      | 102         | 202-0131                              | 202-1131                        | 202-4131                      | 202-5131                          |
| 4.6          | 24                      | 58          | 202-0046                              | 202-1046                        | 202-4046                      | 202-5046                          | 13.20        | 51                      | 102         | 202-0132                              | 202-1132                        | 202-4132                      | 202-5132                          |
| 4.7          | 24                      | 58          | 202-0047                              | 202-1047                        | 202-4047                      | 202-5047                          | 13.30        | 54                      | 107         | 202-0133                              | 202-1133                        | 202-4133                      | 202-5133                          |
| 4.8          | 26                      | 62          | 202-0048                              | 202-1048                        | 202-4048                      | 202-5048                          | 13.40        | 54                      | 107         | 202-0134                              | 202-1134                        | 202-4134                      | 202-5134                          |
| 4.9          | 26                      | 62          | 202-0049                              | 202-1049                        | 202-4049                      | 202-5049                          | 13.50        | 54                      | 107         | 202-0135                              | 202-1135                        | 202-4135                      | 202-5135                          |
| 5.0          | 26                      | 62          | 202-0050                              | 202-1050                        | 202-4050                      | 202-5050                          | 13.60        | 54                      | 107         | 202-0136                              | 202-1136                        | 202-4136                      | 202-5136                          |
| 5.1          | 26                      | 62          | 202-0051                              | 202-1051                        | 202-4051                      | 202-5051                          | 13.70        | 54                      | 107         | 202-0137                              | 202-1137                        | 202-4137                      | 202-5137                          |
| 5.2          | 26                      | 62          | 202-0052                              | 202-1052                        | 202-4052                      | 202-5052                          | 13.80        | 54                      | 107         | 202-0138                              | 202-1138                        | 202-4138                      | 202-5138                          |
| 5.3          | 28                      | 66          | 202-0053                              | 202-1053                        | 202-4053                      | 202-5053                          | 13.90        | 54                      | 107         | 202-0139                              | 202-1139                        | 202-4139                      | 202-5139                          |
| 5.4          | 28                      | 66          | 202-0054                              | 202-1054                        | 202-4054                      | 202-5054                          | 14.00        | 54                      | 107         | 202-0140                              | 202-1140                        | 202-4140                      | 202-5140                          |
| 5.5          | 28                      | 66          | 202-0055                              | 202-1055                        | 202-4055                      | 202-5055                          | 14.25        | 56                      | 111         | 202-0142                              | 202-1142                        | 202-4142                      | 202-5142                          |
| 5.6          | 28                      | 66          | 202-0056                              | 202-1056                        | 202-4056                      | 202-5056                          | 14.50        | 56                      | 111         | 202-0145                              | 202-1145                        | 202-4145                      | 202-5145                          |
| 5.7          | 28                      | 66          | 202-0057                              | 202-1057                        | 202-4057                      | 202-5057                          | 14.75        | 56                      | 111         | 202-0147                              | 202-1147                        | 202-4147                      | 202-5147                          |
| 5.8          | 28                      | 66          | 202-0058                              | 202-1058                        | 202-4058                      | 202-5058                          | 15.00        | 56                      | 111         | 202-0150                              | 202-1150                        | 202-4150                      | 202-5150                          |
| 5.9          | 28                      | 66          | 202-0059                              | 202-1059                        | 202-4059                      | 202-5059                          | 15.25        | 58                      | 115         | 202-0152                              | 202-1152                        | 202-4152                      | 202-5152                          |
| 6.0          | 28                      | 66          | 202-0060                              | 202-1060                        | 202-4060                      | 202-5060                          | 15.50        | 58                      | 115         | 202-0155                              | 202-1155                        | 202-4155                      | 202-5155                          |
| 6.1          | 31                      | 70          | 202-0061                              | 202-1061                        | 202-4061                      | 202-5061                          | 15.75        | 58                      | 115         | 202-0157                              | 202-1157                        | 202-4157                      | 202-5157                          |
| 6.2          | 31                      | 70          | 202-0062                              | 202-1062                        | 202-4062                      | 202-5062                          | 16.00        | 58                      | 115         | 202-0160                              | 202-1160                        | 202-4160                      | 202-5160                          |
| 6.3          | 31                      | 70          | 202-0063                              | 202-1063                        | 202-4063                      | 202-5063                          | 16.25        | 60                      | 119         | 202-0162                              | 202-1162                        | 202-4162                      | 202-5162                          |
| 6.4          | 31                      | 70          | 202-0064                              | 202-1064                        | 202-4064                      | 202-5064                          | 16.50        | 60                      | 119         | 202-0165                              | 202-1165                        | 202-4165                      | 202-5165                          |
| 6.5          | 31                      | 70          | 202-0065                              | 202-1065                        | 202-4065                      | 202-5065                          | 16.75        | 60                      | 119         | 202-0167                              | 202-1167                        | 202-4167                      | 202-5167                          |
| 6.6          | 31                      | 70          | 202-0066                              | 202-1066                        | 202-4066                      | 202-5066                          | 17.00        | 60                      | 119         | 202-0170                              | 202-1170                        | 202-4170                      | 202-5170                          |
| 6.7          | 31                      | 70          | 202-0067                              | 202-1067                        | 202-4067                      | 202-5067                          | 17.25        | 62                      | 123         | 202-0172                              | 202-1172                        | 202-4172                      | 202-5172                          |
| 6.8          | 34                      | 74          | 202-0068                              | 202-1068                        | 202-4068                      | 202-5068                          | 17.50        | 62                      | 123         | 202-0175                              | 202-1175                        | 202-4175                      | 202-5175                          |
| 6.9          | 34                      | 74          | 202-0069                              | 202-1069                        | 202-4069                      | 202-5069                          | 17.75        | 62                      | 123         | 202-0177                              | 202-1177                        | 202-4177                      | 202-5177                          |
| 7.0          | 34                      | 74          | 202-0070                              | 202-1070                        | 202-4070                      | 202-5070                          | 18.00        | 62                      | 123         | 202-0180                              | 202-1180                        | 202-4180                      | 202-5180                          |
| 7.1          | 34                      | 74          | 202-0071                              | 202-1071                        | 202-4071                      | 202-5071                          | 18.25        | 64                      | 127         | 202-0182                              | 202-1182                        | 202-4182                      | 202-5182                          |
| 7.2          | 34                      | 74          | 202-0072                              | 202-1072                        | 202-4072                      | 202-5072                          | 18.50        | 64                      | 127         | 202-0185                              | 202-1185                        | 202-4185                      | 202-5185                          |
| 7.3          | 34                      | 74          | 202-0073                              | 202-1073                        | 202-4073                      | 202-5073                          | 18.75        | 64                      | 127         | 202-0187                              | 202-1187                        | 202-4187                      | 202-5187                          |
| 7.4          | 34                      | 74          | 202-0074                              | 202-1074                        | 202-4074                      | 202-5074                          | 19.00        | 64                      | 127         | 202-0190                              | 202-1190                        | 202-4190                      | 202-5190                          |
| 7.5          | 34                      | 74          | 202-0075                              | 202-1075                        | 202-4075                      | 202-5075                          | 19.25        | 66                      | 131         | 202-0192                              | 202-1192                        | 202-4192                      | 202-5192                          |
| 7.6          | 37                      | 79          | 202-0076                              | 202-1076                        | 202-4076                      | 202-5076                          | 19.50        | 66                      | 131         | 202-0195                              | 202-1195                        | 202-4195                      | 202-5195                          |
| 7.7          | 37                      | 79          | 202-0077                              | 202-1077                        | 202-4077                      | 202-5077                          | 19.75        | 66                      | 131         | 202-0197                              | 202-1197                        | 202-4197                      | 202-5197                          |
| 7.8          | 37                      | 79          | 202-0078                              | 202-1078                        | 202-4078                      | 202-5078                          | 20.00        | 66                      | 131         | 202-0200                              | 202-1200                        | 202-4200                      | 202-5200                          |
| 7.9          | 37                      | 79          | 202-0079                              | 202-1079                        | 202-4079                      | 202-5079                          |              |                         |             |                                       |                                 |                               |                                   |

## Metric Twist Drills

### DIN 1897, 5% Cobalt HSS, 135° Split Point, Ground

- Primarily for use in screw machines.
- Ideal medium duty portable or machine drilling of low tensile strength materials.
- 135° split point drills are self-centering and reduce "walking" at the drill point.
- Heavy-duty-short length provides increased rigidity.



| Flute |        |      |           | Flute |        |      |           | Flute |        |      |           | Flute |        |      |           |
|-------|--------|------|-----------|-------|--------|------|-----------|-------|--------|------|-----------|-------|--------|------|-----------|
| Size  | Length | OAL  | Order No. | Size  | Length | OAL  | Order No. | Size  | Length | OAL  | Order No. | Size  | Length | OAL  | Order No. |
| (mm)  | (mm)   | (mm) |           | (mm)  | (mm)   | (mm) |           | (mm)  | (mm)   | (mm) |           | (mm)  | (mm)   | (mm) |           |
| 1.0   | 6      | 26   | 330-6010  | 3.4   | 20     | 52   | 330-6034  | 5.9   | 28     | 66   | 330-6059  | 9.0   | 40     | 84   | 330-6090  |
| 1.1   | 7      | 28   | 330-6011  | 3.5   | 20     | 52   | 330-6035  | 6.0   | 28     | 66   | 330-6060  | 9.3   | 40     | 84   | 330-6093  |
| 1.2   | 8      | 30   | 330-6012  | 3.6   | 20     | 52   | 330-6036  | 6.1   | 31     | 70   | 330-6061  | 9.4   | 40     | 84   | 330-6094  |
| 1.3   | 8      | 30   | 330-6013  | 3.7   | 20     | 52   | 330-6037  | 6.2   | 31     | 70   | 330-6062  | 9.5   | 43     | 89   | 330-6095  |
| 1.4   | 9      | 32   | 330-6014  | 3.8   | 22     | 55   | 330-6038  | 6.3   | 31     | 70   | 330-6063  | 9.6   | 43     | 89   | 330-6096  |
| 1.5   | 9      | 32   | 330-6015  | 3.9   | 22     | 55   | 330-6039  | 6.4   | 31     | 70   | 330-6064  | 9.8   | 43     | 89   | 330-6098  |
| 1.6   | 10     | 34   | 330-6016  | 4.0   | 22     | 55   | 330-6040  | 6.5   | 31     | 70   | 330-6065  | 9.9   | 43     | 89   | 330-6099  |
| 1.7   | 10     | 34   | 330-6017  | 4.1   | 22     | 55   | 330-6041  | 6.6   | 34     | 74   | 330-6066  | 10.0  | 43     | 89   | 330-6100  |
| 1.8   | 11     | 36   | 330-6018  | 4.2   | 22     | 55   | 330-6042  | 6.7   | 34     | 74   | 330-6067  | 10.1  | 43     | 89   | 330-6101  |
| 1.9   | 11     | 36   | 330-6019  | 4.3   | 24     | 58   | 330-6043  | 6.8   | 34     | 74   | 330-6068  | 10.2  | 43     | 89   | 330-6102  |
| 2.0   | 12     | 38   | 330-6020  | 4.4   | 24     | 58   | 330-6044  | 6.9   | 34     | 74   | 330-6069  | 10.4  | 43     | 89   | 330-6104  |
| 2.1   | 12     | 38   | 330-6021  | 4.5   | 24     | 58   | 330-6045  | 7.0   | 34     | 74   | 330-6070  | 10.5  | 43     | 89   | 330-6105  |
| 2.2   | 13     | 40   | 330-6022  | 4.6   | 24     | 58   | 330-6046  | 7.1   | 34     | 74   | 330-6071  | 10.7  | 47     | 95   | 330-6107  |
| 2.3   | 13     | 40   | 330-6023  | 4.7   | 24     | 58   | 330-6047  | 7.2   | 34     | 74   | 330-6072  | 11.0  | 47     | 95   | 330-6110  |
| 2.4   | 14     | 43   | 330-6024  | 4.8   | 26     | 62   | 330-6048  | 7.3   | 34     | 74   | 330-6073  | 11.1  | 47     | 95   | 330-6111  |
| 2.5   | 14     | 43   | 330-6025  | 4.9   | 26     | 62   | 330-6049  | 7.4   | 34     | 74   | 330-6074  | 11.5  | 47     | 95   | 330-6115  |
| 2.6   | 14     | 43   | 330-6026  | 5.0   | 26     | 62   | 330-6050  | 7.5   | 34     | 74   | 330-6075  | 11.9  | 47     | 95   | 330-6119  |
| 2.7   | 16     | 46   | 330-6027  | 5.1   | 26     | 62   | 330-6051  | 7.6   | 37     | 79   | 330-6076  | 12.0  | 51     | 102  | 330-6120  |
| 2.8   | 16     | 46   | 330-6028  | 5.2   | 26     | 62   | 330-6052  | 7.7   | 37     | 79   | 330-6077  | 12.3  | 51     | 102  | 330-6123  |
| 2.9   | 16     | 46   | 330-6029  | 5.3   | 26     | 62   | 330-6053  | 7.8   | 37     | 79   | 330-6078  | 12.4  | 51     | 102  | 330-6124  |
| 3.0   | 16     | 46   | 330-6030  | 5.4   | 28     | 66   | 330-6054  | 7.9   | 37     | 79   | 330-6079  | 12.5  | 51     | 102  | 330-6125  |
| 3.1   | 18     | 49   | 330-6031  | 5.5   | 28     | 66   | 330-6055  | 8.0   | 37     | 79   | 330-6080  | 13.0  | 51     | 102  | 330-6130  |
| 3.2   | 18     | 49   | 330-6032  | 5.6   | 28     | 66   | 330-6056  | 8.25  | 37     | 79   | 330-6082  | 13.5  | 54     | 107  | 330-6135  |
| 3.25  | 18     | 49   | 330-6133  | 5.7   | 28     | 66   | 330-6057  | 8.5   | 37     | 79   | 330-6085  | 14.0  | 54     | 107  | 330-6140  |
| 3.3   | 18     | 49   | 330-6033  | 5.8   | 28     | 66   | 330-6058  | 8.7   | 40     | 84   | 330-6087  |       |        |      |           |

### Metric Twist Drills

DIN340, High Speed Steel



| Size (mm) | Flute Length (mm) | OAL (mm) | Rolled Black Oxide Order No. | Rolled Polished Order No. | Ground Black Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. | Size (mm) | Flute Length (mm) | OAL (mm) | Rolled Black Oxide Order No. | Rolled Polished Order No. | Ground Black Order No. | Ground Bright Order No. | Ground TiN-Coated Order No. |
|-----------|-------------------|----------|------------------------------|---------------------------|------------------------|-------------------------|-----------------------------|-----------|-------------------|----------|------------------------------|---------------------------|------------------------|-------------------------|-----------------------------|
| 1.0       | 33                | 56       | 203-0010                     | 203-1010                  | 203-2010               | 203-3010                | 203-4010                    | 8.2       | 109               | 165      | 203-0082                     | 203-1082                  | 203-2082               | 203-3082                | 203-4082                    |
| 1.1       | 37                | 60       | 203-0011                     | 203-1011                  | 203-2011               | 203-3011                | 203-4011                    | 8.3       | 109               | 165      | 203-0083                     | 203-1083                  | 203-2083               | 203-3083                | 203-4083                    |
| 1.2       | 41                | 65       | 203-0012                     | 203-1012                  | 203-2012               | 203-3012                | 203-4012                    | 8.4       | 109               | 165      | 203-0084                     | 203-1084                  | 203-2084               | 203-3084                | 203-4084                    |
| 1.3       | 41                | 65       | 203-0013                     | 203-1013                  | 203-2013               | 203-3013                | 203-4013                    | 8.5       | 109               | 165      | 203-0085                     | 203-1085                  | 203-2085               | 203-3085                | 203-4085                    |
| 1.4       | 45                | 70       | 203-0014                     | 203-1014                  | 203-2014               | 203-3014                | 203-4014                    | 8.6       | 115               | 175      | 203-0086                     | 203-1086                  | 203-2086               | 203-3086                | 203-4086                    |
| 1.5       | 45                | 70       | 203-0015                     | 203-1015                  | 203-2015               | 203-3015                | 203-4015                    | 8.7       | 115               | 175      | 203-0087                     | 203-1087                  | 203-2087               | 203-3087                | 203-4087                    |
| 1.6       | 50                | 76       | 203-0016                     | 203-1016                  | 203-2016               | 203-3016                | 203-4016                    | 8.8       | 115               | 175      | 203-0088                     | 203-1088                  | 203-2088               | 203-3088                | 203-4088                    |
| 1.7       | 50                | 76       | 203-0017                     | 203-1017                  | 203-2017               | 203-3017                | 203-4017                    | 8.9       | 115               | 175      | 203-0089                     | 203-1089                  | 203-2089               | 203-3089                | 203-4089                    |
| 1.8       | 53                | 80       | 203-0018                     | 203-1018                  | 203-2018               | 203-3018                | 203-4018                    | 9.0       | 115               | 175      | 203-0090                     | 203-1090                  | 203-2090               | 203-3090                | 203-4090                    |
| 1.9       | 53                | 80       | 203-0019                     | 203-1019                  | 203-2019               | 203-3019                | 203-4019                    | 9.1       | 115               | 175      | 203-0091                     | 203-1091                  | 203-2091               | 203-3091                | 203-4091                    |
| 2.0       | 56                | 85       | 203-0020                     | 203-1020                  | 203-2020               | 203-3020                | 203-4020                    | 9.2       | 115               | 175      | 203-0092                     | 203-1092                  | 203-2092               | 203-3092                | 203-4092                    |
| 2.1       | 56                | 85       | 203-0021                     | 203-1021                  | 203-2021               | 203-3021                | 203-4021                    | 9.3       | 115               | 175      | 203-0093                     | 203-1093                  | 203-2093               | 203-3093                | 203-4093                    |
| 2.2       | 56                | 90       | 203-0022                     | 203-1022                  | 203-2022               | 203-3022                | 203-4022                    | 9.4       | 115               | 175      | 203-0094                     | 203-1094                  | 203-2094               | 203-3094                | 203-4094                    |
| 2.3       | 56                | 90       | 203-0023                     | 203-1023                  | 203-2023               | 203-3023                | 203-4023                    | 9.5       | 115               | 175      | 203-0095                     | 203-1095                  | 203-2095               | 203-3095                | 203-4095                    |
| 2.4       | 62                | 95       | 203-0024                     | 203-1024                  | 203-2024               | 203-3024                | 203-4024                    | 9.6       | 121               | 184      | 203-0096                     | 203-1096                  | 203-2096               | 203-3096                | 203-4096                    |
| 2.5       | 62                | 95       | 203-0025                     | 203-1025                  | 203-2025               | 203-3025                | 203-4025                    | 9.7       | 121               | 184      | 203-0097                     | 203-1097                  | 203-2097               | 203-3097                | 203-4097                    |
| 3.0       | 66                | 100      | 203-0030                     | 203-1030                  | 203-2030               | 203-3030                | 203-4030                    | 9.8       | 121               | 184      | 203-0098                     | 203-1098                  | 203-2098               | 203-3098                | 203-4098                    |
| 3.1       | 69                | 106      | 203-0031                     | 203-1031                  | 203-2031               | 203-3031                | 203-4031                    | 9.9       | 121               | 184      | 203-0099                     | 203-1099                  | 203-2099               | 203-3099                | 203-4099                    |
| 3.2       | 69                | 106      | 203-0032                     | 203-1032                  | 203-2032               | 203-3032                | 203-4032                    | 10.0      | 121               | 184      | 203-0100                     | 203-1100                  | 203-2100               | 203-3100                | 203-4100                    |
| 3.3       | 69                | 106      | 203-0033                     | 203-1033                  | 203-2033               | 203-3033                | 203-4033                    | 10.5      | 121               | 184      | 203-0105                     | 203-1105                  | 203-2105               | 203-3105                | 203-4105                    |
| 3.4       | 73                | 110      | 203-0034                     | 203-1034                  | 203-2034               | 203-3034                | 203-4034                    | 11.0      | 128               | 195      | 203-0110                     | 203-1110                  | 203-2110               | 203-3110                | 203-4110                    |
| 3.5       | 73                | 110      | 203-0035                     | 203-1035                  | 203-2035               | 203-3035                | 203-4035                    | 11.5      | 128               | 195      | 203-0115                     | 203-1115                  | 203-2115               | 203-3115                | 203-4115                    |
| 3.6       | 73                | 110      | 203-0036                     | 203-1036                  | 203-2036               | 203-3036                | 203-4036                    | 12.0      | 134               | 205      | 203-0120                     | 203-1120                  | 203-2120               | 203-3120                | 203-4120                    |
| 3.7       | 73                | 110      | 203-0037                     | 203-1037                  | 203-2037               | 203-3037                | 203-4037                    | 12.1      | 134               | 205      | 203-0121                     | 203-1121                  | 203-2121               | 203-3121                | 203-4121                    |
| 3.8       | 78                | 119      | 203-0038                     | 203-1038                  | 203-2038               | 203-3038                | 203-4038                    | 12.2      | 134               | 205      | 203-0122                     | 203-1122                  | 203-2122               | 203-3122                | 203-4122                    |
| 3.9       | 78                | 119      | 203-0039                     | 203-1039                  | 203-2039               | 203-3039                | 203-4039                    | 12.3      | 134               | 205      | 203-0123                     | 203-1123                  | 203-2123               | 203-3123                | 203-4123                    |
| 4.0       | 78                | 119      | 203-0040                     | 203-1040                  | 203-2040               | 203-3040                | 203-4040                    | 12.4      | 134               | 205      | 203-0124                     | 203-1124                  | 203-2124               | 203-3124                | 203-4124                    |
| 4.1       | 78                | 119      | 203-0041                     | 203-1041                  | 203-2041               | 203-3041                | 203-4041                    | 12.5      | 134               | 205      | 203-0125                     | 203-1125                  | 203-2125               | 203-3125                | 203-4125                    |
| 4.2       | 78                | 119      | 203-0042                     | 203-1042                  | 203-2042               | 203-3042                | 203-4042                    | 12.6      | 134               | 205      | 203-0126                     | 203-1126                  | 203-2126               | 203-3126                | 203-4126                    |
| 4.3       | 82                | 126      | 203-0043                     | 203-1043                  | 203-2043               | 203-3043                | 203-4043                    | 12.7      | 134               | 205      | 203-0127                     | 203-1127                  | 203-2127               | 203-3127                | 203-4127                    |
| 4.4       | 82                | 126      | 203-0044                     | 203-1044                  | 203-2044               | 203-3044                | 203-4044                    | 12.8      | 134               | 205      | 203-0128                     | 203-1128                  | 203-2128               | 203-3128                | 203-4128                    |
| 4.5       | 82                | 126      | 203-0045                     | 203-1045                  | 203-2045               | 203-3045                | 203-4045                    | 12.9      | 134               | 205      | 203-0129                     | 203-1129                  | 203-2129               | 203-3129                | 203-4129                    |
| 4.6       | 82                | 126      | 203-0046                     | 203-1046                  | 203-2046               | 203-3046                | 203-4046                    | 13.0      | 134               | 205      | 203-0130                     | 203-1130                  | 203-2130               | 203-3130                | 203-4130                    |
| 4.7       | 82                | 126      | 203-0047                     | 203-1047                  | 203-2047               | 203-3047                | 203-4047                    | 13.1      | 134               | 205      | 203-0131                     | 203-1131                  | 203-2131               | 203-3131                | 203-4131                    |
| 4.8       | 87                | 132      | 203-0048                     | 203-1048                  | 203-2048               | 203-3048                | 203-4048                    | 13.2      | 134               | 205      | 203-0132                     | 203-1132                  | 203-2132               | 203-3132                | 203-4132                    |
| 4.9       | 87                | 132      | 203-0049                     | 203-1049                  | 203-2049               | 203-3049                | 203-4049                    | 13.3      | 140               | 214      | 203-0133                     | 203-1133                  | 203-2133               | 203-3133                | 203-4133                    |
| 5.0       | 87                | 132      | 203-0050                     | 203-1050                  | 203-2050               | 203-3050                | 203-4050                    | 13.4      | 140               | 214      | 203-0134                     | 203-1134                  | 203-2134               | 203-3134                | 203-4134                    |
| 5.1       | 87                | 132      | 203-0051                     | 203-1051                  | 203-2051               | 203-3051                | 203-4051                    | 13.5      | 140               | 214      | 203-0135                     | 203-1135                  | 203-2135               | 203-3135                | 203-4135                    |
| 5.2       | 87                | 132      | 203-0052                     | 203-1052                  | 203-2052               | 203-3052                | 203-4052                    | 13.6      | 140               | 214      | 203-0136                     | 203-1136                  | 203-2136               | 203-3136                | 203-4136                    |
| 5.3       | 87                | 132      | 203-0053                     | 203-1053                  | 203-2053               | 203-3053                | 203-4053                    | 13.7      | 140               | 214      | 203-0137                     | 203-1137                  | 203-2137               | 203-3137                | 203-4137                    |
| 5.4       | 91                | 139      | 203-0054                     | 203-1054                  | 203-2054               | 203-3054                | 203-4054                    | 13.8      | 140               | 214      | 203-0138                     | 203-1138                  | 203-2138               | 203-3138                | 203-4138                    |
| 5.5       | 91                | 139      | 203-0055                     | 203-1055                  | 203-2055               | 203-3055                | 203-4055                    | 13.9      | 140               | 214      | 203-0139                     | 203-1139                  | 203-2139               | 203-3139                | 203-4139                    |
| 5.6       | 91                | 139      | 203-0056                     | 203-1056                  | 203-2056               | 203-3056                | 203-4056                    | 14.0      | 140               | 214      | 203-0140                     | 203-1140                  | 203-2140               | 203-3140                | 203-4140                    |
| 5.7       | 91                | 139      | 203-0057                     | 203-1057                  | 203-2057               | 203-3057                | 203-4057                    | 14.25     | 144               | 220      | 203-0142                     | 203-1142                  | 203-2142               | 203-3142                | 203-4142                    |
| 5.8       | 91                | 139      | 203-0058                     | 203-1058                  | 203-2058               | 203-3058                | 203-4058                    | 14.5      | 144               | 220      | 203-0145                     | 203-1145                  | 203-2145               | 203-3145                | 203-4145                    |
| 5.9       | 91                | 139      | 203-0059                     | 203-1059                  | 203-2059               | 203-3059                | 203-4059                    | 14.75     | 144               | 220      | 203-0147                     | 203-1147                  | 203-2147               | 203-3147                | 203-4147                    |
| 6.0       | 91                | 139      | 203-0060                     | 203-1060                  | 203-2060               | 203-3060                | 203-4060                    | 15.0      | 144               | 220      | 203-0150                     | 203-1150                  | 203-2150               | 203-3150                | 203-4150                    |
| 6.1       | 97                | 148      | 203-0061                     | 203-1061                  | 203-2061               | 203-3061                | 203-4061                    | 15.25     | 149               | 227      | 203-0152                     | 203-1152                  | 203-2152               | 203-3152                | 203-4152                    |
| 6.2       | 97                | 148      | 203-0062                     | 203-1062                  | 203-2062               | 203-3062                | 203-4062                    | 15.50     | 149               | 227      | 203-0155                     | 203-1155                  | 203-2155               | 203-3155                | 203-4155                    |
| 6.3       | 97                | 148      | 203-0063                     | 203-1063                  | 203-2063               | 203-3063                | 203-4063                    | 15.75     | 149               | 227      | 203-0157                     | 203-1157                  | 203-2157               | 203-3157                | 203-4157                    |
| 6.4       | 97                | 148      | 203-0064                     | 203-1064                  | 203-2064               | 203-3064                | 203-4064                    | 16.0      | 149               | 227      | 203-0160                     | 203-1160                  | 203-2160               | 203-3160                | 203-4160                    |
| 6.5       | 97                | 148      | 203-0065                     | 203-1065                  | 203-2065               | 203-3065                | 203-4065                    | 16.25     | 154               | 235      | 203-0162                     | 203-1162                  | 203-2162               | 203-3162                | 203-4162                    |
| 6.6       | 97                | 148      | 203-0066                     | 203-1066                  | 203-2066               | 203-3066                | 203-4066                    | 16.5      | 154               | 235      | 203-0165                     | 203-1165                  | 203-2165               | 203-3165                | 203-4165                    |
| 6.7       | 97                | 148      | 203-0067                     | 203-1067                  | 203-2067               | 203-3067                | 203-4067                    | 16.75     | 154               | 235      | 203-0167                     | 203-1167                  | 203-2167               | 203-3167                | 203-4167                    |
| 6.8       | 102               | 156      | 203-0068                     | 203-1068                  | 203-2068               | 203-3068                | 203-4068                    | 17.0      | 154               | 235      | 203-0170                     | 203-1170                  | 203-2170               | 203-3170                | 203-4170                    |
| 6.9       | 102               | 156      | 203-0069                     | 203-1069                  | 203-2069               | 203-3069                | 203-4069                    | 17.25     | 158               | 241      | 203-0172                     | 203-1172                  | 203-2172               | 203-3172                | 203-4172                    |
| 7.0       | 102               | 156      | 203-0070                     | 203-1070                  | 203-2070               | 203-3070                | 203-4070                    | 17.5      | 158               | 241      | 203-0175                     | 203-1175                  | 203-2175               | 203-3175                | 203-4175                    |
| 7.1       | 102               | 156      | 203-0071                     | 203-1071                  | 203-2071               | 203-3071                | 203-4071                    | 17.75     | 158               | 241      | 203-0177                     | 203-1177                  | 203-2177               | 203-3177                | 203-4177                    |
| 7.2       | 102               | 156      | 203-0072                     | 203-1072                  | 203-2072               | 203-3072                | 203-4072                    | 18.0      | 158               | 241      | 203-0180                     | 203-1180                  | 203-2180               | 203-3180                | 203-4180                    |
| 7.3       | 102               | 156      | 203-0073                     | 203-1073                  | 203-2073               | 203-3073                | 203-4073                    | 18.25     | 162               | 247      | 203-0182                     | 203-1182                  | 203-2182               | 203-3182                | 203-4182                    |
| 7.4       | 102               | 156      | 203-0074                     | 203-1074                  | 203-2074               | 203-3074                | 203-4074                    | 18.5      | 162               | 247      | 203-0185                     | 203-1185                  | 203-2185               | 203-3185                | 203-4185                    |
| 7.5       | 102               | 156      | 203-0075                     | 203-1075                  | 203-2075               | 203-3075                | 203-4075                    | 18.75     | 162               | 247      | 203-0187                     | 203-1187                  | 203-2187               | 203-3187                | 203-4187                    |
| 7.6       | 109               | 165      | 203-0076                     | 203-1076                  | 203-2076               | 203-3076                | 203-4076                    | 19.0      | 162               | 247      | 203-0190                     | 203-1190                  | 203-2190               | 203-3190                | 203-4190                    |
| 7.7       | 109               | 165      | 203-0077                     | 203-1077                  | 203-2077               | 203-3077                | 203-4077                    | 19.25     | 166               | 254      | 203-0192                     | 203-1192                  | 203-2192               | 203-3192                | 203-4192                    |
| 7.8       | 109               | 165      | 203-0078                     | 203-1078                  | 203-2078               | 203-3078                | 203-4078                    | 19.5      | 166               | 254      | 203-0195                     | 203-1195                  | 203-2195               | 203-3195                | 203-4195                    |
| 7.9       | 109               | 165      | 203-0079                     | 203-1079                  | 203-2079               | 203-3079                | 203                         |           |                   |          |                              |                           |                        |                         |                             |

## Metric Ground HSS Drill Blanks

### Tolerance limits

- Used for punches, gages, pins or special tools.
- Made of hardened high speed steel and ground.
- Fully hardened to HRC63-65.

|                 |                   |
|-----------------|-------------------|
| 0" - .2500"     | + .0000" - .0005" |
| .251" - .3906"  | + .0000" - .0009" |
| .391" - 1.0000" | + .0000" - .0010" |



### Metric

| Size   | Decimal Equivalent | OAL  | Order No. | Size   | Decimal Equivalent | OAL  | Order No. | Size   | Decimal Equivalent | OAL   | Order No. |
|--------|--------------------|------|-----------|--------|--------------------|------|-----------|--------|--------------------|-------|-----------|
| 0.35mm | 0.0138(in)         | 19mm | 305-6035  | 2.80mm | 0.1102(in)         | 61mm | 305-6280  | 6.75mm | 0.2657(in)         | 109mm | 305-6675  |
| 0.40   | 0.0157             | 20   | 305-6040  | 2.90   | 0.1142             | 61   | 305-6290  | 6.80   | 0.2677             | 109   | 305-6680  |
| 0.45   | 0.0177             | 20   | 305-6045  | 3.00   | 0.1181             | 61   | 305-6300  | 6.90   | 0.2717             | 109   | 305-6690  |
| 0.50   | 0.0197             | 22   | 305-6050  | 3.10   | 0.1220             | 65   | 305-6310  | 7.00   | 0.2756             | 109   | 305-6700  |
| 0.55   | 0.0217             | 24   | 305-6055  | 3.20   | 0.1260             | 65   | 305-6320  | 7.10   | 0.2795             | 109   | 305-6710  |
| 0.60   | 0.0236             | 24   | 305-6060  | 3.25   | 0.1280             | 65   | 305-6325  | 7.20   | 0.2835             | 109   | 305-6720  |
| 0.65   | 0.0256             | 26   | 305-6065  | 3.30   | 0.1299             | 65   | 305-6330  | 7.25   | 0.2854             | 109   | 305-6725  |
| 0.70   | 0.0276             | 28   | 305-6070  | 3.40   | 0.1339             | 70   | 305-6340  | 7.30   | 0.2874             | 109   | 305-6730  |
| 0.75   | 0.0295             | 28   | 305-6075  | 3.50   | 0.1378             | 70   | 305-6350  | 7.40   | 0.2913             | 109   | 305-6740  |
| 0.80   | 0.0315             | 30   | 305-6080  | 3.60   | 0.1417             | 70   | 305-6360  | 7.50   | 0.2953             | 109   | 305-6750  |
| 0.85   | 0.0335             | 30   | 305-6085  | 3.70   | 0.1457             | 70   | 305-6370  | 7.60   | 0.2992             | 117   | 305-6760  |
| 0.90   | 0.0354             | 32   | 305-6090  | 3.75   | 0.1476             | 70   | 305-6375  | 7.70   | 0.3031             | 117   | 305-6770  |
| 0.95   | 0.0374             | 32   | 305-6095  | 3.80   | 0.1496             | 75   | 305-6380  | 7.75   | 0.3051             | 117   | 305-6775  |
| 1.00   | 0.0394             | 34   | 305-6100  | 3.90   | 0.1535             | 75   | 305-6390  | 7.80   | 0.3071             | 117   | 305-6780  |
| 1.05   | 0.0413             | 34   | 305-6105  | 4.00   | 0.1575             | 75   | 305-6400  | 7.90   | 0.3110             | 117   | 305-6790  |
| 1.10   | 0.0433             | 36   | 305-6110  | 4.10   | 0.1614             | 75   | 305-6410  | 8.00   | 0.3150             | 117   | 305-6800  |
| 1.15   | 0.0453             | 36   | 305-6115  | 4.20   | 0.1654             | 75   | 305-6420  | 8.10   | 0.3189             | 117   | 305-6810  |
| 1.20   | 0.0472             | 38   | 305-6120  | 4.25   | 0.1673             | 75   | 305-6425  | 8.20   | 0.3228             | 117   | 305-6820  |
| 1.25   | 0.0492             | 38   | 305-6125  | 4.30   | 0.1693             | 80   | 305-6430  | 8.25   | 0.3248             | 117   | 305-6825  |
| 1.30   | 0.0512             | 38   | 305-6130  | 4.40   | 0.1732             | 80   | 305-6440  | 8.30   | 0.3268             | 117   | 305-6830  |
| 1.35   | 0.0531             | 40   | 305-6135  | 4.50   | 0.1772             | 80   | 305-6450  | 8.40   | 0.3307             | 117   | 305-6840  |
| 1.40   | 0.0551             | 40   | 305-6140  | 4.60   | 0.1811             | 80   | 305-6460  | 8.50   | 0.3346             | 117   | 305-6850  |
| 1.45   | 0.0571             | 40   | 305-6145  | 4.70   | 0.1850             | 80   | 305-6470  | 8.60   | 0.3386             | 125   | 305-6860  |
| 1.50   | 0.0591             | 40   | 305-6150  | 4.75   | 0.1870             | 80   | 305-6475  | 8.70   | 0.3425             | 125   | 305-6870  |
| 1.55   | 0.0610             | 43   | 305-6155  | 4.80   | 0.1890             | 86   | 305-6480  | 8.75   | 0.3445             | 125   | 305-6875  |
| 1.60   | 0.0630             | 43   | 305-6160  | 4.90   | 0.1929             | 86   | 305-6490  | 8.80   | 0.3465             | 125   | 305-6880  |
| 1.65   | 0.0650             | 43   | 305-6165  | 5.00   | 0.1969             | 86   | 305-6500  | 8.90   | 0.3504             | 125   | 305-6890  |
| 1.70   | 0.0669             | 43   | 305-6170  | 5.10   | 0.2008             | 86   | 305-6510  | 9.00   | 0.3543             | 125   | 305-6900  |
| 1.75   | 0.0689             | 46   | 305-6175  | 5.20   | 0.2047             | 86   | 305-6520  | 9.10   | 0.3583             | 125   | 305-6910  |
| 1.80   | 0.0709             | 46   | 305-6180  | 5.25   | 0.2067             | 86   | 305-6525  | 9.20   | 0.3622             | 125   | 305-6920  |
| 1.85   | 0.0728             | 46   | 305-6185  | 5.30   | 0.2087             | 86   | 305-6530  | 9.25   | 0.3642             | 125   | 305-6925  |
| 1.90   | 0.0748             | 46   | 305-6190  | 5.40   | 0.2126             | 93   | 305-6540  | 9.30   | 0.3661             | 125   | 305-6930  |
| 1.95   | 0.0768             | 49   | 305-6195  | 5.50   | 0.2165             | 93   | 305-6555  | 9.40   | 0.3701             | 125   | 305-6940  |
| 2.00   | 0.0787             | 49   | 305-6200  | 5.60   | 0.2205             | 93   | 305-6560  | 9.50   | 0.3740             | 125   | 305-6950  |
| 2.05   | 0.0807             | 49   | 305-6205  | 5.70   | 0.2244             | 93   | 305-6570  | 9.60   | 0.3780             | 133   | 305-6960  |
| 2.10   | 0.0827             | 49   | 305-6210  | 5.75   | 0.2264             | 93   | 305-6575  | 9.70   | 0.3819             | 133   | 305-6970  |
| 2.15   | 0.0846             | 53   | 305-6215  | 5.80   | 0.2283             | 93   | 305-6580  | 9.75   | 0.3839             | 133   | 305-6975  |
| 2.20   | 0.0866             | 53   | 305-6220  | 5.90   | 0.2323             | 93   | 305-6590  | 9.80   | 0.3858             | 133   | 305-6980  |
| 2.25   | 0.0886             | 53   | 305-6225  | 6.00   | 0.2362             | 93   | 305-6600  | 9.90   | 0.3898             | 133   | 305-6990  |
| 2.30   | 0.0906             | 53   | 305-6230  | 6.10   | 0.2402             | 101  | 305-6610  | 10.00  | 0.3937             | 133   | 305-7000  |
| 2.35   | 0.0925             | 53   | 305-6235  | 6.20   | 0.2441             | 101  | 305-6620  | 10.50  | 0.4134             | 136   | 305-7050  |
| 2.40   | 0.0945             | 57   | 305-6240  | 6.25   | 0.2461             | 101  | 305-6625  | 11.00  | 0.4331             | 140   | 305-7100  |
| 2.45   | 0.0965             | 57   | 305-6245  | 6.30   | 0.2480             | 101  | 305-6630  | 11.50  | 0.4528             | 142   | 305-7150  |
| 2.50   | 0.0984             | 57   | 305-6250  | 6.40   | 0.2520             | 101  | 305-6640  | 12.00  | 0.4724             | 149   | 305-7200  |
| 2.60   | 0.1024             | 57   | 305-6260  | 6.50   | 0.2559             | 101  | 305-6650  | 12.50  | 0.4921             | 152   | 305-7250  |
| 2.70   | 0.1063             | 61   | 305-6270  | 6.60   | 0.2598             | 101  | 305-6660  |        |                    |       |           |
| 2.75   | 0.1083             | 61   | 305-6275  | 6.70   | 0.2638             | 101  | 305-6670  |        |                    |       |           |

## Solid Carbide Jobber Length Twist Drills

### 118° Point, Right Hand

- Precision ground to close diameter tolerances.
- Recommended for general purpose drilling in Cast Iron, Aluminum, Magnesium, Bronze, Masonite and Resin-Fiberglass Laminates.



### Fractional Sizes

| Size  | Flute Length | OAL    | Order No. | Size   | Flute Length | OAL   | Order No. | Size   | Flute Length | OAL   | Order No. |
|-------|--------------|--------|-----------|--------|--------------|-------|-----------|--------|--------------|-------|-----------|
| 1/32" | 3/8"         | 1-1/8" | 342-0002  | 13/64" | 1-3/4"       | 3"    | 342-0013  | 23/64" | 2-1/2"       | 4"    | 342-0023  |
| 3/64  | 3/4          | 1-1/2  | 342-0003  | 7/32   | 1-3/4        | 3     | 342-0014  | 3/8    | 2-3/4        | 4-1/4 | 342-0024  |
| 1/16  | 3/4          | 1-1/2  | 342-0004  | 15/64  | 2            | 3-1/4 | 342-0015  | 25/64  | 2-7/8        | 4-1/2 | 342-0025  |
| 5/64  | 7/8          | 1-3/4  | 342-0005  | 1/4    | 2            | 3-1/4 | 342-0016  | 13/32  | 2-7/8        | 4-1/2 | 342-0026  |
| 3/32  | 1            | 2      | 342-0006  | 17/64  | 2-1/8        | 3-1/2 | 342-0017  | 27/64  | 2-7/8        | 4-1/2 | 342-0027  |
| 7/64  | 1-1/4        | 2-1/4  | 342-0007  | 9/32   | 2-1/8        | 3-1/2 | 342-0018  | 7/16   | 2-7/8        | 4-1/2 | 342-0028  |
| 1/8   | 1-1/4        | 2-1/4  | 342-0008  | 19/64  | 2-3/8        | 3-3/4 | 342-0019  | 29/64  | 3            | 4-3/4 | 342-0029  |
| 9/64  | 1-3/8        | 2-1/2  | 342-0009  | 5/16   | 2-3/8        | 3-3/4 | 342-0020  | 15/32  | 3            | 4-3/4 | 342-0030  |
| 5/32  | 1-3/8        | 2-1/2  | 342-0010  | 21/64  | 2-1/2        | 4     | 342-0021  | 31/64  | 3            | 4-3/4 | 342-0031  |
| 11/64 | 1-5/8        | 2-3/4  | 342-0011  | 11/32  | 2-1/2        | 4     | 342-0022  | 1/2    | 3            | 4-3/4 | 342-0032  |
| 3/16  | 1-5/8        | 2-3/4  | 342-0012  |        |              |       |           |        |              |       |           |

### Number Sizes

| Size | Flute Length | OAL   | Order No. | Size | Flute Length | OAL    | Order No. | Size | Flute Length | OAL    | Order No. |
|------|--------------|-------|-----------|------|--------------|--------|-----------|------|--------------|--------|-----------|
| #1   | 1-3/4"       | 3"    | 342-0101  | #28  | 1-3/8"       | 2-1/2" | 342-0128  | #55  | 3/4"         | 1-1/2" | 342-0155  |
| #2   | 1-3/4        | 3     | 342-0102  | #29  | 1-3/8        | 2-1/2  | 342-0129  | #56  | 3/4          | 1-1/2  | 342-0156  |
| #3   | 1-3/4        | 3     | 342-0103  | #30  | 1-1/4        | 2-1/4  | 342-0130  | #57  | 3/4          | 1-1/2  | 342-0157  |
| #4   | 1-3/4        | 3     | 342-0104  | #31  | 1-1/4        | 2-1/4  | 342-0131  | #58  | 3/4          | 1-1/2  | 342-0158  |
| #5   | 1-3/4        | 3     | 342-0105  | #32  | 1-1/4        | 2-1/4  | 342-0132  | #59  | 3/4          | 1-1/2  | 342-0159  |
| #6   | 1-3/4        | 3     | 342-0106  | #33  | 1-1/4        | 2-1/4  | 342-0133  | #60  | 3/4          | 1-1/2  | 342-0160  |
| #7   | 1-3/4        | 3     | 342-0107  | #34  | 1-1/4        | 2-1/4  | 342-0134  | #61  | 1/2          | 1-1/4  | 342-0161  |
| #8   | 1-3/4        | 3     | 342-0108  | #35  | 1-1/4        | 2-1/4  | 342-0135  | #62  | 1/2          | 1-1/4  | 342-0162  |
| #9   | 1-3/4        | 3     | 342-0109  | #36  | 1-1/4        | 2-1/4  | 342-0136  | #63  | 1/2          | 1-1/4  | 342-0163  |
| #10  | 1-5/8        | 2-3/4 | 342-0110  | #37  | 1-1/4        | 2-1/4  | 342-0137  | #64  | 1/2          | 1-1/4  | 342-0164  |
| #11  | 1-5/8        | 2-3/4 | 342-0111  | #38  | 1-1/4        | 2-1/4  | 342-0138  | #65  | 3/8          | 1-1/8  | 342-0165  |
| #12  | 1-5/8        | 2-3/4 | 342-0112  | #39  | 1-1/4        | 2-1/4  | 342-0139  | #66  | 3/8          | 1-1/8  | 342-0166  |
| #13  | 1-5/8        | 2-3/4 | 342-0113  | #40  | 1            | 2      | 342-0140  | #67  | 3/8          | 1-1/8  | 342-0167  |
| #14  | 1-5/8        | 2-3/4 | 342-0114  | #41  | 1            | 2      | 342-0141  | #68  | 3/8          | 1-1/8  | 342-0168  |
| #15  | 1-5/8        | 2-3/4 | 342-0115  | #42  | 1            | 2      | 342-0142  | #69  | 5/16         | 1      | 342-0169  |
| #16  | 1-5/8        | 2-3/4 | 342-0116  | #43  | 1            | 2      | 342-0143  | #70  | 5/16         | 1      | 342-0170  |
| #17  | 1-5/8        | 2-3/4 | 342-0117  | #44  | 1            | 2      | 342-0144  | #71  | 5/16         | 1      | 342-0171  |
| #18  | 1-5/8        | 2-3/4 | 342-0118  | #45  | 7/8          | 1-3/4  | 342-0145  | #72  | 5/16         | 1      | 342-0172  |
| #19  | 1-5/8        | 2-3/4 | 342-0119  | #46  | 7/8          | 1-3/4  | 342-0146  | #73  | 1/4          | 7/8    | 342-0173  |
| #20  | 1-3/8        | 2-1/2 | 342-0120  | #47  | 7/8          | 1-3/4  | 342-0147  | #74  | 1/4          | 7/8    | 342-0174  |
| #21  | 1-3/8        | 2-1/2 | 342-0121  | #48  | 7/8          | 1-3/4  | 342-0148  | #75  | 1/4          | 7/8    | 342-0175  |
| #22  | 1-3/8        | 2-1/2 | 342-0122  | #49  | 7/8          | 1-3/4  | 342-0149  | #76  | 1/4          | 7/8    | 342-0176  |
| #23  | 1-3/8        | 2-1/2 | 342-0123  | #50  | 7/8          | 1-3/4  | 342-0150  | #77  | 3/16         | 3/4    | 342-0177  |
| #24  | 1-3/8        | 2-1/2 | 342-0124  | #51  | 3/4          | 1-1/2  | 342-0151  | #78  | 3/16         | 3/4    | 342-0178  |
| #25  | 1-3/8        | 2-1/2 | 342-0125  | #52  | 3/4          | 1-1/2  | 342-0152  | #79  | 3/16         | 3/4    | 342-0179  |
| #26  | 1-3/8        | 2-1/2 | 342-0126  | #53  | 3/4          | 1-1/2  | 342-0153  | #80  | 3/16         | 3/4    | 342-0180  |
| #27  | 1-3/8        | 2-1/2 | 342-0127  | #54  | 3/4          | 1-1/2  | 342-0154  |      |              |        |           |

### Letter Sizes

| Size | Flute Length | OAL    | Order No. | Size | Flute Length | OAL    | Order No. | Size | Flute Length | OAL   | Order No. |
|------|--------------|--------|-----------|------|--------------|--------|-----------|------|--------------|-------|-----------|
| A    | 2"           | 3-1/4" | 342-0201  | J    | 2-1/8"       | 3-1/2" | 342-0210  | S    | 2-1/2"       | 4"    | 342-0219  |
| B    | 2            | 3-1/4  | 342-0202  | K    | 2-1/8        | 3-1/2  | 342-0211  | T    | 2-1/2        | 4     | 342-0220  |
| C    | 2            | 3-1/4  | 342-0203  | L    | 2-1/8        | 3-1/2  | 342-0212  | U    | 2-3/4        | 4-1/4 | 342-0221  |
| D    | 2            | 3-1/4  | 342-0204  | M    | 2-3/8        | 3-3/4  | 342-0213  | V    | 2-3/4        | 4-1/4 | 342-0222  |
| E    | 2            | 3-1/4  | 342-0205  | N    | 2-3/8        | 3-3/4  | 342-0214  | W    | 2-7/8        | 4-1/2 | 342-0223  |
| F    | 2            | 3-1/4  | 342-0206  | O    | 2-3/8        | 3-3/4  | 342-0215  | X    | 2-7/8        | 4-1/2 | 342-0224  |
| G    | 2-1/8        | 3-1/2  | 342-0207  | P    | 2-3/8        | 3-3/4  | 342-0216  | Y    | 2-7/8        | 4-1/2 | 342-0225  |
| H    | 2-1/8        | 3-1/2  | 342-0208  | Q    | 2-1/2        | 4      | 342-0217  | Z    | 2-7/8        | 4-1/2 | 342-0226  |
| I    | 2-1/8        | 3-1/2  | 342-0209  | R    | 2-1/2        | 4      | 342-0218  |      |              |       |           |

### Metric Sizes

| Size (mm) | Flute Length (mm) | OAL (mm) | Order No. | Size (mm) | Flute Length (mm) | OAL (mm) | Order No. | Size (mm) | Flute Length (mm) | OAL (mm) | Order No. |
|-----------|-------------------|----------|-----------|-----------|-------------------|----------|-----------|-----------|-------------------|----------|-----------|
| 2         | 22                | 44       | 342-0301  | 5.5       | 44                | 75       | 342-0308  | 9         | 70                | 100      | 342-0315  |
| 2.5       | 25                | 50       | 342-0302  | 6         | 50                | 82       | 342-0309  | 9.5       | 70                | 108      | 342-0316  |
| 3         | 32                | 57       | 342-0303  | 6.5       | 50                | 82       | 342-0310  | 10        | 73                | 114      | 342-0317  |
| 3.5       | 35                | 63       | 342-0304  | 7         | 54                | 89       | 342-0311  | 10.5      | 73                | 114      | 342-0318  |
| 4         | 35                | 63       | 342-0305  | 7.5       | 60                | 95       | 342-0312  | 11        | 73                | 114      | 342-0319  |
| 4.5       | 41                | 70       | 342-0306  | 8         | 60                | 95       | 342-0313  | 11.5      | 76                | 120      | 342-0320  |
| 5         | 44                | 75       | 342-0307  | 8.5       | 63                | 100      | 342-0314  | 12        | 76                | 120      | 342-0321  |

## Carbide Tipped Jobber Drills

- For Cast Iron, or non-ferrous materials.



### Fractional Sizes

| Size  | Flute Length | OAL    | Order No. |
|-------|--------------|--------|-----------|
| 1/8"  | 1-5/8"       | 2-3/4" | 343-0008  |
| 9/64  | 1-3/4        | 2-7/8  | 343-0009  |
| 5/32  | 2            | 3-1/8  | 343-0010  |
| 11/64 | 2-1/8        | 3-1/4  | 343-0011  |
| 3/16  | 2-5/16       | 3-1/2  | 343-0012  |
| 13/64 | 2-7/16       | 3-5/8  | 343-0013  |
| 7/32  | 2-1/2        | 3-3/4  | 343-0014  |
| 15/64 | 2-5/8        | 3-7/8  | 343-0015  |
| 1/4   | 2-3/4        | 4      | 343-0016  |
| 17/64 | 2-7/8        | 4-1/8  | 343-0017  |
| 9/32  | 2-15/16      | 4-1/4  | 343-0018  |
| 19/64 | 3-1/16       | 4-3/8  | 343-0019  |
| 5/16  | 3-3/16       | 4-1/2  | 343-0020  |
| 21/64 | 3-5/16       | 4-5/8  | 343-0021  |
| 11/32 | 3-7/16       | 4-3/4  | 343-0022  |
| 23/64 | 3-1/2        | 4-7/8  | 343-0023  |
| 3/8   | 3-5/8        | 5      | 343-0024  |
| 25/64 | 3-3/4        | 5-1/8  | 343-0025  |
| 13/32 | 3-7/8        | 5-1/4  | 343-0026  |
| 27/64 | 3-15/16      | 5-3/8  | 343-0027  |
| 7/16  | 4-1/16       | 5-1/2  | 343-0028  |
| 29/64 | 4-3/16       | 5-5/8  | 343-0029  |
| 15/32 | 4-5/16       | 5-3/4  | 343-0030  |
| 31/64 | 4-3/8        | 5-7/8  | 343-0031  |
| 1/2   | 4-1/2        | 6      | 343-0032  |

### Letter Sizes

| Size | Flute Length | OAL    | Order No. |
|------|--------------|--------|-----------|
| A    | 2-5/8"       | 3-7/8" | 343-0201  |
| B    | 2-3/4        | 4      | 343-0202  |
| C    | 2-3/4        | 4      | 343-0203  |
| D    | 2-3/4        | 4      | 343-0204  |
| E    | 2-3/4        | 4      | 343-0205  |
| F    | 2-7/8        | 4-1/8  | 343-0206  |
| G    | 2-7/8        | 4-1/8  | 343-0207  |
| H    | 2-7/8        | 4-1/8  | 343-0208  |
| I    | 2-7/8        | 4-1/8  | 343-0209  |
| J    | 2-7/8        | 4-1/8  | 343-0210  |
| K    | 2-15/16      | 4-1/4  | 343-0211  |
| L    | 2-15/16      | 4-1/4  | 343-0212  |
| M    | 3-1/16       | 4-3/8  | 343-0213  |
| N    | 3-1/16       | 4-3/8  | 343-0214  |
| O    | 3-3/16       | 4-1/2  | 343-0215  |
| P    | 3-5/16       | 4-5/8  | 343-0216  |
| Q    | 3-7/16       | 4-3/4  | 343-0217  |
| R    | 3-7/16       | 4-3/4  | 343-0218  |
| S    | 3-1/2        | 4-7/8  | 343-0219  |
| T    | 3-1/2        | 4-7/8  | 343-0220  |
| U    | 3-5/8        | 5      | 343-0221  |
| V    | 3-5/8        | 5      | 343-0222  |
| W    | 3-3/4        | 5-1/8  | 343-0223  |
| X    | 3-3/4        | 5-1/8  | 343-0224  |
| Y    | 3-7/8        | 5-1/4  | 343-0225  |
| Z    | 3-7/8        | 5-1/4  | 343-0226  |

### Number Sizes

| Size | Flute Length | OAL    | Order No. |
|------|--------------|--------|-----------|
| #1   | 2-5/8"       | 3-7/8" | 343-0101  |
| #2   | 2-5/8        | 3-7/8  | 343-0102  |
| #3   | 2-1/2        | 3-3/4  | 343-0103  |
| #4   | 2-1/2        | 3-3/4  | 343-0104  |
| #5   | 2-1/2        | 3-3/4  | 343-0105  |
| #6   | 2-1/2        | 3-3/4  | 343-0106  |
| #7   | 2-7/16       | 3-5/8  | 343-0107  |
| #8   | 2-7/16       | 3-5/8  | 343-0108  |
| #9   | 2-7/16       | 3-5/8  | 343-0109  |
| #10  | 2-7/16       | 3-5/8  | 343-0110  |
| #11  | 2-5/16       | 3-1/2  | 343-0111  |
| #12  | 2-5/16       | 3-1/2  | 343-0112  |
| #13  | 2-5/16       | 3-1/2  | 343-0113  |
| #14  | 2-3/16       | 3-3/8  | 343-0114  |
| #15  | 2-3/16       | 3-3/8  | 343-0115  |
| #16  | 2-3/16       | 3-3/8  | 343-0116  |
| #17  | 2-3/16       | 3-3/8  | 343-0117  |
| #18  | 2-1/8        | 3-1/4  | 343-0118  |
| #19  | 2-1/8        | 3-1/4  | 343-0119  |
| #20  | 2-1/8        | 3-1/4  | 343-0120  |
| #21  | 2-1/8        | 3-1/4  | 343-0121  |
| #22  | 2            | 3-1/8  | 343-0122  |
| #23  | 2            | 3-1/8  | 343-0123  |
| #24  | 2            | 3-1/8  | 343-0124  |
| #25  | 1-7/8        | 3      | 343-0125  |
| #26  | 1-7/8        | 3      | 343-0126  |
| #27  | 1-7/8        | 3      | 343-0127  |
| #28  | 1-3/4        | 2-7/8  | 343-0128  |
| #29  | 1-3/4        | 2-7/8  | 343-0129  |
| #30  | 1-5/8        | 2-3/4  | 343-0130  |
| #31  | 1-5/8        | 2-3/4  | 343-0131  |
| #32  | 1-5/8        | 2-3/4  | 343-0132  |

## Solid Carbide Circuit Board Drills

Use for drilling epoxy resin-glass fiber circuit boards.

- Solid carbide construction offers great rigidity.
- 1/8" shank 1-1/2" overall length.
- 130° included angle drill point.
- Recommended for use under high drill temperatures and when the drill body must withstand continuous abrasion.



### Fractional Sizes

| Size  | Flute Length | Order No. |
|-------|--------------|-----------|
| 1/64" | 3/16"        | 534-0001  |
| 1/32  | 1/4          | 534-0002  |
| 3/64  | 3/8          | 534-0003  |
| 1/16  | 3/8          | 534-0004  |
| 5/64  | 3/8          | 534-0005  |
| 3/32  | 3/8          | 534-0006  |
| 7/64  | 3/8          | 534-0007  |
| 1/8   | 3/8          | 534-0008  |
| 9/64  | .49          | 534-0009  |
| 5/32  | .49          | 534-0010  |
| 11/4  | .49          | 534-0011  |
| 3/16  | .49          | 534-0012  |
| 13/64 | .49          | 534-0013  |
| 7/32  | .49          | 534-0014  |
| 15/64 | .49          | 534-0015  |
| 1/4   | .49          | 534-0016  |

### Number Sizes

| Size | Flute Length | Order No. | Size | Flute Length | Order No. | Size | Flute Length | Order No. |
|------|--------------|-----------|------|--------------|-----------|------|--------------|-----------|
| 31#  | 3/8"         | 534-0131  | 48#  | 3/8"         | 534-0148  | 65#  | 3/8"         | 534-0165  |
| 32#  | 3/8          | 534-0132  | 49#  | 3/8          | 534-0149  | 66#  | 1/4          | 534-0166  |
| 33#  | 3/8          | 534-0133  | 50#  | 3/8          | 534-0150  | 67#  | 1/4          | 534-0167  |
| 34#  | 3/8          | 534-0134  | 51#  | 3/8          | 534-0151  | 68#  | 1/4          | 534-0168  |
| 35#  | 3/8          | 534-0135  | 52#  | 3/8          | 534-0152  | 69#  | 1/4          | 534-0169  |
| 36#  | 3/8          | 534-0136  | 53#  | 3/8          | 534-0153  | 70#  | 3/16         | 534-0170  |
| 37#  | 3/8          | 534-0137  | 54#  | 3/8          | 534-0154  | 71#  | 3/16         | 534-0171  |
| 38#  | 3/8          | 534-0138  | 55#  | 3/8          | 534-0155  | 72#  | 3/16         | 534-0172  |
| 39#  | 3/8          | 534-0139  | 56#  | 3/8          | 534-0156  | 73#  | 3/16         | 534-0173  |
| 40#  | 3/8          | 534-0140  | 57#  | 3/8          | 534-0157  | 74#  | 3/16         | 534-0174  |
| 41#  | 3/8          | 534-0141  | 58#  | 3/8          | 534-0158  | 75#  | 3/16         | 534-0175  |
| 42#  | 3/8          | 534-0142  | 59#  | 3/8          | 534-0159  | 76#  | 3/16         | 534-0176  |
| 43#  | 3/8          | 534-0143  | 60#  | 3/8          | 534-0160  | 77#  | 3/16         | 534-0177  |
| 44#  | 3/8          | 534-0144  | 61#  | 3/8          | 534-0161  | 78#  | 3/16         | 534-0178  |
| 45#  | 3/8          | 534-0145  | 62#  | 3/8          | 534-0162  | 79#  | 3/16         | 534-0179  |
| 46#  | 3/8          | 534-0146  | 63#  | 3/8          | 534-0163  | 80#  | 3/16         | 534-0180  |
| 47#  | 3/8          | 534-0147  | 64#  | 3/8          | 534-0164  |      |              |           |

### Metric Sizes

| Size (mm) | Flute Length | Order No. |
|-----------|--------------|-----------|
| .30       | 5.0mm        | 534-0200  |
| .35       | 5.0          | 534-0202  |
| .40       | 5.0          | 534-0204  |
| .45       | 5.0          | 534-0206  |
| .50       | 5.0          | 534-0210  |
| .75       | 6.5          | 534-0212  |
| 1.00      | 9.5          | 534-0214  |
| 1.25      | 9.5          | 534-0216  |
| 1.50      | 9.5          | 534-0218  |
| 1.75      | 9.5          | 534-0220  |
| 2.00      | 9.5          | 534-0222  |
| 2.25      | 9.5          | 534-0224  |
| 2.50      | 9.5          | 534-0226  |
| 2.75      | 9.5          | 534-0228  |
| 3.00      | 9.5          | 534-0230  |

### Center Drills

#### 60° Angle, Plain Style



| Size | Body Dia. | Drill Dia. | Overall Length | Milled Order No. | Ground Order No. |
|------|-----------|------------|----------------|------------------|------------------|
| 1    | 1/8"      | 3/64"      | 1-1/4"         | 217-4001         | 217-9001         |
| 2    | 3/16      | 5/64       | 1-7/8          | 217-4002         | 217-9002         |
| 3    | 1/4       | 7/64       | 2              | 217-4003         | 217-9003         |
| 4    | 5/16      | 1/8        | 2-1/8          | 217-4004         | 217-9004         |
| 5    | 7/16      | 3/16       | 2-3/4          | 217-4005         | 217-9005         |
| 6    | 1/2       | 7/32       | 3              | 217-4006         | 217-9006         |
| 7    | 5/8       | 1/4        | 3-1/4          | 217-4007         | 217-9007         |
| 8    | 3/4       | 5/16       | 3-1/2          | 217-4008         | 217-9008         |

### Bell Type Center Drills

#### 60°/120° Angle, HSS



| Size | Body Dia. | Drill Dia. | Bell dia. | Overall Length | Milled Order No. |
|------|-----------|------------|-----------|----------------|------------------|
| #11  | 1/8"      | 3/64"      | 0.100"    | 1-1/4"         | 217-7001         |
| #12  | 3/16      | 1/16       | 0.150"    | 1-7/8          | 217-7002         |
| #13  | 1/4       | 3/32       | 0.200"    | 2              | 217-7003         |
| #14  | 5/16      | 7/64       | 0.250"    | 2-1/8          | 217-7004         |
| #15  | 7/16      | 5/32       | 0.350"    | 2-3/4          | 217-7005         |
| #16  | 1/2       | 3/16       | 0.400"    | 3              | 217-7006         |
| #17  | 5/8       | 7/32       | 0.500"    | 3-1/4          | 217-7007         |
| #18  | 3/4       | 1/4        | 0.600"    | 3-1/2          | 217-7008         |

### Bell Type Center Drills

#### 60°/120° Angle, HSS, Ground



| Size | Body Dia. | Drill Dia. | Bell Dia. | Overall Length | Order No. |
|------|-----------|------------|-----------|----------------|-----------|
| #11  | 1/8"      | 3/64"      | .1"       | 1-1/4"         | 217-2011  |
| #12  | 3/16      | 1/16       | .15       | 1-7/8          | 217-2012  |
| #13  | 1/4       | 3/32       | .2        | 2              | 217-2013  |
| #14  | 5/16      | 7/64       | .25       | 2-1/8          | 217-2014  |
| #15  | 7/16      | 5/32       | .35       | 2-3/4          | 217-2015  |
| #16  | 1/2       | 3/16       | .4        | 3              | 217-2016  |
| #17  | 5/8       | 7/32       | .5        | 3-1/4          | 217-2017  |
| #18  | 3/4       | 1/4        | .6        | 3-1/2          | 217-2018  |
| #19  | 7/8       | 5/16       | .7        | 3-5/8          | 217-2019  |
| #20  | 1         | 3/8        | .8        | 3-3/4          | 217-2020  |

### Missile & Aircraft Mini Center Drills

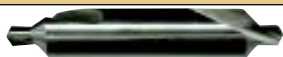
#### 60° Angle, HSS Ground



| Size | Body Dia. | Drill Dia. | Overall Length | Order No. |
|------|-----------|------------|----------------|-----------|
| 000  | 1/8"      | .020"      | 1-1/4"         | 217-5000  |
| 00   | 1/8       | .025       | 1-1/4          | 217-5001  |
| 0    | 1/8       | 1/32       | 1-1/4          | 217-5002  |

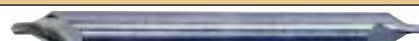
### Plain Center Drills

#### 82° & 90° Angle, HSS Ground



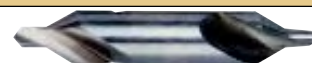
| Size       | Body Dia. | Drill Dia. | Overall Length | 82° Order No. | 90° Order No. |
|------------|-----------|------------|----------------|---------------|---------------|
| 1          | 1/8       | 3/64       | 1-1/4          | 217-2001      | 217-0001      |
| 2          | 3/16      | 5/64       | 1-7/8          | 217-2002      | 217-0002      |
| 3          | 1/4       | 7/64       | 2              | 217-2003      | 217-0003      |
| 4          | 5/16      | 1/8        | 2-1/8          | 217-2004      | 217-0004      |
| 5          | 7/16      | 3/16       | 2-3/4          | 217-2005      | 217-0005      |
| 6          | 1/2       | 7/32       | 3              | 217-2006      | 217-0006      |
| 7          | 5/8       | 1/4        | 3-1/4          | 217-2007      | 217-0007      |
| 8          | 3/4       | 5/16       | 3-1/2          | 217-2008      | 217-0008      |
| 5pcs: 1-5# |           |            |                | 217-9082      | 217-0015      |

### Long Series Center Drills



| Size | Body Dia. | Drill Dia. | Overall Length | Milled Order No. | Ground Order No. |
|------|-----------|------------|----------------|------------------|------------------|
| 1#   | 1/8"      | 3/64"      | 3"             | 217-8103         | 217-7103         |
| 1#   | 1/8       | 3/64       | 4              | 217-8104         | 217-7104         |
| 1#   | 1/8       | 3/64       | 5              | 217-8105         | 217-7105         |
| 1#   | 1/8       | 3/64       | 6              | 217-8106         | 217-7106         |
| 2#   | 3/16      | 5/64       | 3              | 217-8203         | 217-7203         |
| 2#   | 3/16      | 5/64       | 4              | 217-8204         | 217-7204         |
| 2#   | 3/16      | 5/64       | 5              | 217-8205         | 217-7205         |
| 2#   | 3/16      | 5/64       | 6              | 217-8206         | 217-7206         |
| 3#   | 1/4       | 7/64       | 4              | 217-8304         | 217-7304         |
| 3#   | 1/4       | 7/64       | 5              | 217-8305         | 217-7305         |
| 3#   | 1/4       | 7/64       | 6              | 217-8306         | 217-7306         |
| 4#   | 5/16      | 1/8        | 4              | 217-8404         | 217-7404         |
| 4#   | 5/16      | 1/8        | 5              | 217-8405         | 217-7405         |
| 4#   | 5/16      | 1/8        | 6              | 217-8406         | 217-7406         |
| 5#   | 7/16      | 3/16       | 4              | 217-8504         | 217-7504         |
| 5#   | 7/16      | 3/16       | 5              | 217-8505         | 217-7505         |
| 5#   | 7/16      | 3/16       | 6              | 217-8506         | 217-7506         |
| 6#   | 1/2       | 7/32       | 4              | 217-8604         | 217-7604         |
| 6#   | 1/2       | 7/32       | 5              | 217-8605         | 217-7605         |
| 6#   | 1/2       | 7/32       | 6              | 217-8606         | 217-7606         |
| 7#   | 5/8       | 1/4        | 6              | 217-8706         | 217-7706         |
| 8#   | 3/4       | 5/16       | 6              | 217-8806         | 217-7806         |

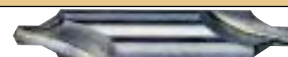
### Metric Center Drills



| Dia.  | Shank Dia | Overall Length | Milled Order No. | Ground Order No. |
|-------|-----------|----------------|------------------|------------------|
| 1.0mm | 4mm       | 35.5mm         | 217-0010         | 217-1010         |
| 1.6   | 6.3       | 45             | 217-0016         | 217-1016         |
| 2.0   | 8         | 50             | 217-0020         | 217-1020         |
| 2.5   | 10        | 45             | 217-0025         | 217-1025         |
| 3.15  | 11.2      | 60             | 217-0032         | 217-1032         |
| 4.0   | 14        | 67             | 217-0040         | 217-1040         |
| 5.0   | 18        | 175            | 217-0050         | 217-1050         |
| 6.3   | 20        | 80             | 217-0060         | 217-1060         |

### Metric Center Drills

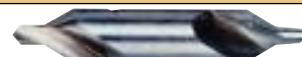
#### 120° Bell Type



| Dia   | Shank Dia | Overall Length | Milled Order No. | Ground Order No. |
|-------|-----------|----------------|------------------|------------------|
| 1.0mm | 4mm       | 35.5mm         | 217-3010         | 217-4010         |
| 1.6   | 6.3       | 45             | 217-3016         | 217-4016         |
| 2.0   | 8         | 50             | 217-3020         | 217-4020         |
| 2.5   | 10        | 45             | 217-3025         | 217-4025         |
| 3.15  | 11.2      | 60             | 217-3032         | 217-4032         |
| 4.0   | 14        | 67             | 217-3040         | 217-4040         |
| 5.0   | 18        | 175            | 217-3050         | 217-4050         |
| 6.3   | 20        | 80             | 217-3060         | 217-4060         |

### Metric Center Drills

#### DIN333A, Right Hand, HSS



| Size | Shank Dia. | OAL  | Order No. |
|------|------------|------|-----------|
| .5mm | 3.15mm     | 20mm | 212-0050  |
| .8   | 3.15       | 21   | 212-0080  |
| 1    | 3.15       | 33.5 | 212-0100  |
| 1.25 | 3.15       | 33.5 | 212-0125  |
| 1.6  | 4          | 37.5 | 212-0160  |
| 2    | 5          | 42   | 212-0200  |
| 2.5  | 6.3        | 47   | 212-0250  |
| 3.15 | 8          | 52   | 212-0315  |
| 4    | 10         | 59   | 212-0400  |
| 5    | 12.5       | 66   | 212-0500  |
| 6.3  | 16         | 74   | 212-0630  |
| 8    | 20         | 83   | 212-0800  |
| 10   | 25         | 103  | 212-1000  |
| 12.5 | 31.5       | 125  | 212-1500  |

## Spotting & Centering Drills

**BEST TOOL®**

### NC Spotting Drills

#### 90° & 120° ,High Speed Steel

Designed with a narrow chisel edge for quick starting and a constant web to allow for resharpener without the need for web thinning.



|      |        |        | HSS             |                 | Tin Coated      |                 |
|------|--------|--------|-----------------|-----------------|-----------------|-----------------|
|      |        |        | 90°             | 120°            | 90°             | 120°            |
| Size | Length | OAL    | Order No.       | Order No.       | Order No.       | Order No.       |
| 1/4" | 3/4"   | 2-1/2" | <b>216-2163</b> | <b>216-3163</b> | <b>216-6163</b> | <b>216-5163</b> |
|      |        | 4      | <b>216-2164</b> | <b>216-3164</b> | <b>216-6164</b> | <b>216-5164</b> |
|      |        | 6      | <b>216-2166</b> | <b>216-3166</b> | <b>216-6166</b> | <b>216-5166</b> |
| 3/8  | 1-1/8  | 3-1/8  | <b>216-2244</b> | <b>216-3244</b> | <b>216-6244</b> | <b>216-5244</b> |
|      |        | 5      | <b>216-2245</b> | <b>216-3245</b> | <b>216-6245</b> | <b>216-5245</b> |
|      |        | 7      | <b>216-2247</b> | <b>216-3247</b> | <b>216-6247</b> | <b>216-5247</b> |
| 1/2  | 1-3/8  | 3-3/4  | <b>216-2324</b> | <b>216-3324</b> | <b>216-6324</b> | <b>216-5324</b> |
|      |        | 6      | <b>216-2326</b> | <b>216-3326</b> | <b>216-6326</b> | <b>216-5326</b> |
|      |        | 8      | <b>216-2328</b> | <b>216-3328</b> | <b>216-6328</b> | <b>216-5328</b> |
| 5/8" | 1-5/8" | 4-3/8" | <b>216-2405</b> | <b>216-3405</b> | <b>216-6405</b> | <b>216-5405</b> |
|      |        | 7      | <b>216-2407</b> | <b>216-3407</b> | <b>216-6407</b> | <b>216-5407</b> |
|      |        | 9      | <b>216-2409</b> | <b>216-3409</b> | <b>216-6409</b> | <b>216-5409</b> |
| 3/4  | 1-7/8  | 5      | <b>216-2485</b> | <b>216-3485</b> | <b>216-6485</b> | <b>216-5485</b> |
|      |        | 8      | <b>216-2488</b> | <b>216-3488</b> | <b>216-6488</b> | <b>216-5488</b> |
|      |        | 10     | <b>216-2489</b> | <b>216-3489</b> | <b>216-6489</b> | <b>216-5489</b> |
| 1    | 2-1/4  | 6      | <b>216-2646</b> | <b>216-3646</b> | <b>216-6646</b> | <b>216-5646</b> |
|      |        | 8      | <b>216-2648</b> | <b>216-3648</b> | <b>216-6648</b> | <b>216-5648</b> |
|      |        | 10     | <b>216-2649</b> | <b>216-3649</b> | <b>216-6649</b> | <b>216-5649</b> |

### Extra Short Spot Drills

#### High Speed Steel



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Order No.       |
|-----------|-------------------|---------------------|-----------------|
| 3.1       | 16                | 40                  | <b>213-0031</b> |
| 3.2       | 16                | 40                  | <b>213-0032</b> |
| 3.3       | 16                | 41                  | <b>213-0033</b> |
| 4.1       | 16                | 44                  | <b>213-0041</b> |
| 4.2       | 16                | 44                  | <b>213-0042</b> |
| 4.7       | 20                | 48                  | <b>213-0047</b> |
| 4.8       | 20                | 48                  | <b>213-0048</b> |
| 4.9       | 22                | 50                  | <b>213-0049</b> |
| 5.0       | 24                | 52                  | <b>213-0050</b> |
| 5.2       | 24                | 52                  | <b>213-0052</b> |

### Micro drill Adapter Precision Drill Fixture

- Finer sensitive control
  - Reduced drill breakage
  - Easier small hole drilling using large high speed machinery
  - Reduction of rejected production parts due to broken drills
  - Consistent precision operation, runs without down time
  - Multiple operations on a single set-up
  - Applicable in mills, lathes, drill presses and jig borers
- Easy operation

Grasp free turning ring, feed with gentle Finger pressure, Auto Return upon release. Has JTO male taper.



| Specification                    | Order No.       |
|----------------------------------|-----------------|
| 1/2" Straight shank, 3/4" Travel | <b>830-2022</b> |

### Spotting & Centering Drills

#### 90° & 118° ,High Speed Steel , Right Hand & Left Hand

Prevent misalignment frequently caused by using regular drills for centering.

These short drills can be chucked close to the point ensuring accuracy and true starts.



|       |        |        | 90°        |           | 118°       |           |
|-------|--------|--------|------------|-----------|------------|-----------|
| Flute |        |        | Right Hand | Left Hand | Right Hand | Left Hand |
| Size  | Length | OAL    | Order No.  | Order No. | Order No.  | Order No. |
| 1/8"  | 3/8"   | 1-1/4" | 216-1108   | 216-1308  | 216-1508   | 216-1708  |
| 3/16  | 1/2    | 1-3/8  | 216-1112   | 216-1312  | 216-1512   | 216-1712  |
| 1/4   | 5/8    | 1-1/2  | 216-1116   | 216-1316  | 216-1516   | 216-1716  |
| 5/16  | 5/8    | 1-1/2  | 216-1120   | 216-1320  | 216-1520   | 216-1720  |
| 3/8   | 1      | 2      | 216-1124   | 216-1324  | 216-1524   | 216-1724  |
| 7/16  | 1      | 2      | 216-1128   | 216-1328  | 216-1528   | 216-1728  |
| 1/2   | 1      | 2      | 216-1132   | 216-1332  | 216-1532   | 216-1732  |
| 9/16  | 1      | 2      | 216-1136   | 216-1336  | 216-1536   | 216-1736  |
| 5/8   | 1-1/8  | 2-1/4  | 216-1140   | 216-1340  | 216-1540   | 216-1740  |
| 3/4   | 1-1/8  | 2-1/4  | 216-1148   | 216-1348  | 216-1548   | 216-1748  |
| 7/8   | 1-1/4  | 2-1/2  | 216-1156   | 216-1356  | 216-1556   | 216-1756  |
| 1     | 1-1/4  | 2-1/2  | 216-1164   | 216-1364  | 216-1564   | 216-1764  |
| 1-1/4 | 2      | 4      | 216-1178   | 216-1378  | 216-1578   | 216-1778  |
| 1-1/2 | 1-1/2  | 5      | 216-1194   | 216-1394  | 216-1594   | 216-1794  |
| 1-3/4 | 2-3/4  | 5-1/2  | 216-1210   | 216-1410  | 216-1610   | 216-1810  |

### Double End Sheet Metal Drills

#### High Speed Steel



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Order No.       |
|-----------|-------------------|---------------------|-----------------|
| 3.0       | 11                | 46                  | <b>216-0030</b> |
| 3.1       | 11                | 49                  | <b>216-0031</b> |
| 3.2       | 11                | 49                  | <b>216-0032</b> |
| 3.25      | 11                | 49                  | <b>216-0033</b> |
| 3.3       | 11                | 49                  | <b>216-0034</b> |
| 3.5       | 14                | 52                  | <b>216-0035</b> |
| 4.0       | 14                | 55                  | <b>216-0040</b> |
| 4.1       | 14                | 55                  | <b>216-0041</b> |
| 4.2       | 14                | 55                  | <b>216-0042</b> |
| 4.5       | 17                | 58                  | <b>216-0045</b> |
| 4.8       | 17                | 62                  | <b>216-0048</b> |
| 5.0       | 17                | 62                  | <b>216-0050</b> |
| 5.2       | 17                | 62                  | <b>216-0052</b> |

### Hole Cutter

These Hole Cutters are recommended for use in hand held air or electric drill motors as well as light drill press applications in sheet metal, thin wall tubing, steel plate or any other larger diameter shallow hole cutting.

This tool centers quickly and is held securely in position after the pilot drill has entered the work piece. The cutter body then cuts a clean, burr-free hole faster than conventional twist drills or hole saws.

Tool life is significantly longer than other hole cutting tools.



| Size | No. of Flutes | Order No.       |
|------|---------------|-----------------|
| 1/2" | 4             | <b>350-0001</b> |

### Carbide Tipped Masonry Drills



#### Inch

| Size  | Shank | Overall Length | Order No. | Size   | Shank | Overall Length | Order No. |
|-------|-------|----------------|-----------|--------|-------|----------------|-----------|
| 1/8"  | 1/8   | 3"             | 340-3080  | 9/16   | 3/8   | 6              | 340-3358  |
| 5/32  | 5/32  | 3              | 340-3100  | 9/16   | 1/2   | 6              | 340-3360  |
| 11/64 | 1/8   | 3-1/4          | 340-3105  | 9/16   | 1/2   | 8              | 340-3361  |
| 3/16  | 3/16  | 3              | 340-3118  | 9/16   | 1/2   | 12             | 340-3362  |
| 3/16  | 3/16  | 3.5            | 340-3120  | 9/16   | 1/2   | 16             | 340-3363  |
| 3/16  | 3/16  | 6              | 340-3121  | 9/16   | 1/2   | 18             | 340-3364  |
| 3/16  | 3/16  | 4              | 340-3124  | 9/16   | 3/8   | 12             | 380-3465  |
| 3/16  | 5/32  | 6              | 340-3126  | 9/16   | 1/2   | 13             | 380-3467  |
| 7/32  | 7/32  | 3.5            | 340-3140  | 19/32  | 1/2   | 6              | 340-3380  |
| 7/32  | 7/32  | 4              | 340-3142  | 5/8    | 3/8   | 6              | 340-3495  |
| 15/64 | 3/16  | 4              | 340-3150  | 5/8    | 3/8   | 13             | 340-3497  |
| 1/4   | 1/4   | 4              | 340-3160  | 5/8    | 1/2   | 6              | 340-3400  |
| 1/4   | 1/4   | 6              | 340-3161  | 5/8    | 1/2   | 8              | 340-3401  |
| 1/4   | 1/4   | 8              | 340-3162  | 5/8    | 1/2   | 12             | 340-3402  |
| 1/4   | 1/4   | 12             | 340-3163  | 5/8    | 1/2   | 16             | 340-3403  |
| 1/4   | 1/4   | 16             | 340-3164  | 5/8    | 1/2   | 18             | 340-3404  |
| 1/4   | 1/4   | 18             | 340-3465  | 21/32  | 1/2   | 6              | 340-3420  |
| 17/64 | 1/4   | 4              | 340-3170  | 11/16  | 1/2   | 6              | 340-3430  |
| 9/32  | 1/4   | 4              | 340-3180  | 23/32  | 1/2   | 6              | 340-3460  |
| 9/32  | 9/32  | 4              | 340-3182  | 23/32  | 1/2   | 8              | 340-3461  |
| 5/16  | 1/4   | 4              | 340-3195  | 23/32  | 1/2   | 12             | 340-3462  |
| 5/16  | 1/4   | 6              | 340-3197  | 23/32  | 1/2   | 16             | 340-3463  |
| 5/16  | 5/16  | 4              | 340-3198  | 23/32  | 1/2   | 18             | 340-3464  |
| 5/16  | 5/16  | 5              | 340-3200  | 3/4    | 1/2   | 6              | 340-3480  |
| 5/16  | 5/16  | 6              | 340-3201  | 3/4    | 1/2   | 8              | 340-3481  |
| 5/16  | 5/16  | 8              | 340-3202  | 3/4    | 1/2   | 12             | 340-3482  |
| 5/16  | 5/16  | 12             | 340-3203  | 3/4    | 1/2   | 16             | 340-3483  |
| 5/16  | 5/16  | 16             | 340-3204  | 3/4    | 1/2   | 18             | 340-3484  |
| 5/16  | 5/16  | 18             | 340-3205  | 3/4    | 1/2   | 13             | 340-3488  |
| 11/32 | 5/16  | 5              | 340-3220  | 25/32  | 1/2   | 6              | 340-3500  |
| 3/8   | 3/8   | 3              | 340-3234  | 25/32  | 1/2   | 8              | 340-3501  |
| 3/8   | 1/4   | 4              | 340-3236  | 25/32  | 1/2   | 12             | 340-3502  |
| 3/8   | 1/4   | 6              | 340-3238  | 25/32  | 1/2   | 16             | 340-3503  |
| 3/8   | 3/8   | 4              | 340-3239  | 25/32  | 1/2   | 18             | 340-3504  |
| 3/8   | 3/8   | 5              | 340-3240  | 27/32  | 1/2   | 6              | 340-3540  |
| 3/8   | 3/8   | 6              | 340-3241  | 7/8    | 1/2   | 6              | 340-3560  |
| 3/8   | 3/8   | 8              | 340-3242  | 1      | 1/2   | 12             | 340-3561  |
| 3/8"  | 3/8   | 12             | 340-3243  | 1      | 1/2   | 18             | 340-3562  |
| 3/8   | 3/8   | 16             | 340-3244  | 7/8    | 1/2   | 16             | 340-3563  |
| 3/8   | 3/8   | 18             | 340-3245  | 7/8    | 1/2   | 18             | 340-3564  |
| 7/16  | 1/4   | 4              | 340-3276  | 29/32  | 1/2   | 6              | 340-3580  |
| 7/16  | 3/8   | 6              | 340-3280  | 15/16  | 1/2   | 6              | 340-3600  |
| 7/16  | 3/8   | 12             | 340-3282  | 15/16  | 1/2   | 8              | 340-3601  |
| 7/16  | 3/8   | 18             | 340-3284  | 15/16  | 1/2   | 12             | 340-3602  |
| 15/32 | 3/8   | 6              | 340-3300  | 15/16  | 1/2   | 16             | 340-3603  |
| 15/32 | 3/8   | 8              | 340-3301  | 15/16  | 1/2   | 18             | 340-3604  |
| 15/32 | 3/8   | 12             | 340-3302  | 1      | 1/2   | 6              | 340-3640  |
| 15/32 | 3/8   | 16             | 340-3303  | 1      | 1/2   | 8              | 340-3641  |
| 15/32 | 3/8   | 18             | 340-3304  | 1      | 1/2   | 12             | 340-3642  |
| 1/2   | 1/4   | 4              | 340-3318  | 1      | 1/2   | 16             | 340-3643  |
| 1/2   | 1/4   | 6              | 340-3319  | 1      | 1/2   | 18             | 340-3644  |
| 1/2   | 1/2   | 6              | 340-3320  | 1-1/32 | 1/2   | 6              | 340-3660  |
| 1/2   | 1/2   | 8              | 340-3321  | 1-1/32 | 1/2   | 8              | 340-3661  |
| 1/2   | 1/2   | 12             | 340-3322  | 1-1/32 | 1/2   | 12             | 340-3662  |
| 1/2   | 1/2   | 16             | 340-3323  | 1-1/32 | 1/2   | 16             | 340-3663  |
| 1/2   | 1/2   | 18             | 340-3324  | 1-1/32 | 1/2   | 18             | 340-3664  |

#### Metric

| Size (mm) | OAL (mm) | Order No. | Size (mm) | OAL (mm) | Order No. |
|-----------|----------|-----------|-----------|----------|-----------|
| 3.0       | 60       | 340-0030  | 16.0      | 200      | 340-0161  |
| 4.0       | 75       | 340-0040  | 16.0      | 300      | 340-0162  |
| 5.0       | 85       | 340-0050  | 16.0      | 400      | 340-0163  |
| 5.5       | 85       | 340-0055  | 16.0      | 600      | 340-0164  |
| 6.0       | 100      | 340-0060  | 17.0      | 160      | 340-0170  |
| 6.0       | 150      | 340-0061  | 18.0      | 160      | 340-0180  |
| 6.0       | 200      | 340-0062  | 18.0      | 200      | 340-0181  |
| 6.0       | 300      | 340-0063  | 18.0      | 300      | 340-0182  |
| 6.0       | 400      | 340-0064  | 18.0      | 400      | 340-0183  |
| 6.5       | 100      | 340-0065  | 18.0      | 600      | 340-0184  |
| 7.0       | 100      | 340-0070  | 19.0      | 160      | 340-0190  |
| 8.0       | 120      | 340-0080  | 19.0      | 200      | 340-0191  |
| 8.0       | 150      | 340-0081  | 19.0      | 300      | 340-0192  |
| 8.0       | 200      | 340-0082  | 19.0      | 400      | 340-0193  |
| 8.0       | 300      | 340-0083  | 19.0      | 600      | 340-0194  |
| 8.0       | 400      | 340-0084  | 20.0      | 160      | 340-0200  |
| 8.0       | 600      | 340-0085  | 20.0      | 200      | 340-0201  |
| 9.0       | 120      | 340-0090  | 20.0      | 300      | 340-0202  |
| 10.0      | 120      | 340-0100  | 20.0      | 400      | 340-0203  |
| 10.0      | 150      | 340-0101  | 20.0      | 600      | 340-0204  |
| 10.0      | 200      | 340-0102  | 21.0      | 600      | 340-0210  |
| 10.0      | 300      | 340-0103  | 22.0      | 160      | 340-0220  |
| 10.0      | 400      | 340-0104  | 22.0      | 200      | 340-0221  |
| 10.0      | 600      | 340-0105  | 22.0      | 300      | 340-0222  |
| 11.0      | 150      | 340-0110  | 22.0      | 400      | 340-0223  |
| 12.0      | 150      | 340-0120  | 22.0      | 600      | 340-0224  |
| 12.0      | 200      | 340-0121  | 23.0      | 160      | 340-0230  |
| 12.0      | 300      | 340-0122  | 24.0      | 160      | 340-0240  |
| 12.0      | 400      | 340-0123  | 24.0      | 200      | 340-0241  |
| 12.0      | 600      | 340-0124  | 24.0      | 300      | 340-0242  |
| 13.0      | 150      | 340-0130  | 24.0      | 400      | 340-0243  |
| 13.0      | 200      | 340-0131  | 24.0      | 600      | 340-0244  |
| 13.0      | 300      | 340-0132  | 25.0      | 160      | 340-0250  |
| 13.0      | 400      | 340-0133  | 25.0      | 200      | 340-0251  |
| 13.0      | 600      | 340-0134  | 25.0      | 300      | 340-0252  |
| 14.0      | 150      | 340-0140  | 25.0      | 400      | 340-0253  |
| 14.0      | 200      | 340-0141  | 25.0      | 600      | 340-0254  |
| 14.0      | 300      | 340-0142  | 26.0      | 160      | 340-0260  |
| 14.0      | 400      | 340-0143  | 26.0      | 200      | 340-0261  |
| 14.0      | 600      | 340-0144  | 26.0      | 300      | 340-0262  |
| 15.0      | 150      | 340-0150  | 26.0      | 400      | 340-0263  |
| 16.0      | 150      | 340-0160  | 26.0      | 600      | 340-0264  |

### Machine Wood Bits

with Center Point



| Size (mm) | Order No. |
|-----------|-----------|
| 3.0       | 208-0030  |
| 4.0       | 208-0040  |
| 5.0       | 208-0050  |
| 6.0       | 208-0060  |
| 7.0       | 208-0070  |
| 8.0       | 208-0080  |
| 9.0       | 208-0090  |
| 10.0      | 208-0100  |
| 11.0      | 208-0110  |
| 12.0      | 208-0120  |
| 13.0      | 208-0130  |

| Size (mm) | Order No. |
|-----------|-----------|
| 14.0      | 208-0140  |
| 15.0      | 208-0150  |
| 16.0      | 208-0160  |
| 18.0      | 208-0180  |
| 20.0      | 208-0200  |
| 22.0      | 208-0220  |
| 24.0      | 208-0240  |
| 26.0      | 208-0260  |
| 28.0      | 208-0280  |
| 30.0      | 208-0300  |

## Hammer Drills

with Cylindrical Shank and 4 Shank Grooves



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Order No. | Size (mm) | Flute Length (mm) | Overall Length (mm) | Order No. | Size (mm) | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------|-------------------|---------------------|-----------|-----------|-------------------|---------------------|-----------|-----------|-------------------|---------------------|-----------|
| 5.0       | 50                | 110                 | 211-0050  | 12.0      | 100               | 160                 | 211-0120  | 16.0      | 150               | 210                 | 211-0160  |
| 5.0       | 100               | 160                 | 211-0051  | 12.0      | 150               | 260                 | 211-0121  | 16.0      | 100               | 160                 | 211-0161  |
| 5.5       | 50                | 110                 | 211-0055  | 12.0      | 150               | 210                 | 211-0122  | 16.0      | 250               | 305                 | 211-0162  |
| 6.0       | 50                | 110                 | 211-0060  | 12.0      | 250               | 305                 | 211-0124  | 16.0      | 300               | 350                 | 211-0163  |
| 6.0       | 100               | 160                 | 211-0061  | 12.0      | 300               | 350                 | 211-0125  | 16.0      | 400               | 460                 | 211-0165  |
| 6.5       | 100               | 110                 | 211-0065  | 12.0      | 400               | 460                 | 211-0126  | 18.0      | 200               | 250                 | 211-0181  |
| 6.5       | 100               | 160                 | 211-0066  | 13.0      | 100               | 160                 | 211-0130  | 18.0      | 250               | 305                 | 211-0182  |
| 7.0       | 50                | 110                 | 211-0070  | 13.0      | 200               | 267                 | 211-0131  | 18.0      | 300               | 350                 | 211-0183  |
| 8.0       | 50                | 110                 | 211-0080  | 13.0      | 250               | 305                 | 211-0132  | 18.0      | 400               | 460                 | 211-0185  |
| 8.0       | 100               | 160                 | 211-0081  | 13.0      | 300               | 350                 | 211-0133  | 19.0      | 250               | 305                 | 211-0192  |
| 8.0       | 150               | 210                 | 211-0082  | 13.0      | 400               | 460                 | 211-0134  | 19.0      | 400               | 460                 | 211-0194  |
| 8.0       | 200               | 267                 | 211-0083  | 14.0      | 100               | 160                 | 211-0140  | 20.0      | 200               | 250                 | 211-0200  |
| 9.0       | 100               | 160                 | 211-0090  | 14.0      | 150               | 210                 | 211-0141  | 20.0      | 250               | 305                 | 211-0201  |
| 10.0      | 100               | 160                 | 211-0100  | 14.0      | 150               | 260                 | 211-0142  | 20.0      | 300               | 350                 | 211-0202  |
| 10.0      | 150               | 210                 | 211-0101  | 14.0      | 250               | 305                 | 211-0143  | 20.0      | 400               | 460                 | 211-0204  |
| 10.0      | 200               | 260                 | 211-0102  | 14.0      | 300               | 350                 | 211-0144  | 22.0      | 300               | 350                 | 211-0223  |
| 10.0      | 300               | 360                 | 211-0103  | 14.0      | 400               | 460                 | 211-0146  | 22.0      | 400               | 460                 | 211-0225  |
| 10.0      | 350               | 110                 | 211-0105  | 15.0      | 100               | 160                 | 211-0150  | 25.0      | 300               | 350                 | 211-0252  |
| 11.0      | 100               | 160                 | 211-0110  | 15.0      | 200               | 260                 | 211-0151  | 25.0      | 400               | 460                 | 211-0254  |

## Inch HSS Step Drills

Specialty step drill designed to machine a large number of different holes diameters with a single tool

Individuals

| Size Range | Step | Step Thickness | No. of Holes | Straight Shank |           |                      | Hexagon Shank |                      |  |
|------------|------|----------------|--------------|----------------|-----------|----------------------|---------------|----------------------|--|
|            |      |                |              | Shank Dia.     | Order No. | TiN Coated Order No. | HSS Order No. | TiN Coated Order No. |  |
| 1/8-1/2"   | 1/32 | 1/8            | 13           | 1/4            | 331-3601  | 331-3621             | 331-3701      | 331-3721             |  |
| 3/16-1/2"  | 1/16 | 3/8            | 6            | 1/4            | 331-3604  | 331-3624             | 331-3704      | 331-3724             |  |
| 1/4-3/4"   | 1/16 | 1/8            | 9            | 3/8            | 331-3607  | 331-3627             | 331-3707      | 331-3727             |  |
| 3/16-7/8"  | 1/16 | 1/8            | 12           | 3/8            | 331-3610  | 331-3630             | 331-3710      | 331-3730             |  |
| 1/4-1-3/8" | 1/8  | 1/8            | 10           | 1/2            | 331-3613  | 331-3633             | 331-3713      | 331-3733             |  |

Sets

| No. of Pieces | Specification                                            | HSS Order No. | TiN Coated Order No. |
|---------------|----------------------------------------------------------|---------------|----------------------|
| 3             | 1/8-1/2", 3/16-1/2", 1/4-3/4", Blister Card              | 331-3681      | 331-3682             |
| 3             | 1/4" Hex Shank 1/8-1/2", 3/16-1/2", 1/4-3/4" Wooden Case | 331-3680      | 331-3683             |



## Metric Step Drills

High Speed Steel



Individuals

| Size Range (mm) | Step (mm) | No. of Holes | Straight Shank |               |                      | Hexagon Shank |                      |
|-----------------|-----------|--------------|----------------|---------------|----------------------|---------------|----------------------|
|                 |           |              | Shank Dia.     | HSS Order No. | TiN Coated Order No. | HSS Order No. | TiN Coated Order No. |
| 4-12            | 1         | 9            | 6              | 331-3401      | 331-3441             | 331-3501      | 331-3541             |
| 4-12            | 1         | 9            | 6.5            | 331-3402      | 331-3442             |               |                      |
| 4-12            | 2         | 5            | 6              | 331-3404      | 331-3444             | 331-3504      | 331-3544             |
| 4-12            | 2         | 5            | 6.5            | 331-3405      | 331-3445             |               |                      |
| 6-18            | 2         | 7            | 10             | 331-3407      | 331-3447             | 331-3507      | 331-3547             |
| 6-20            | 2         | 8            | 8              | 331-3410      | 331-3450             | 331-3510      | 331-3550             |
| 6-30            | 2-3       | 12           | 10             | 331-3413      | 331-3453             | 331-3513      | 331-3553             |
| 4-20            | 2         | 9            | 10             | 331-3416      | 331-3456             | 331-3516      | 331-3556             |
| 4-22            | 2         | 10           | 10             | 331-3419      | 331-3459             | 331-3519      | 331-3559             |
| 5-35            | 2-3       | 13           | 13             | 331-3422      | 331-3462             | 331-3522      | 331-3562             |

Sets

| No. of Pieces | Specification          | Case   | HSS Order No. | TiN Coated Order No. |
|---------------|------------------------|--------|---------------|----------------------|
| 3             | 4-12mm, 6-20mm, 6-30mm | Wooden | 331-3480      | 331-3482             |
| 3             | 4-12mm, 6-20mm, 6-30mm | Metal  | 331-3481      | 331-3483             |

## Forstner Wood Bits



| Size (mm) | Order No. |
|-----------|-----------|
| 6.0       | 331-4060  |
| 10.0      | 331-4100  |
| 13.0      | 331-4130  |
| 15.0      | 331-4150  |
| 20.0      | 331-4200  |
| 22.0      | 331-4220  |
| 25.0      | 331-4250  |

| Size | Order No. |
|------|-----------|
| 1/4" | 331-4316  |
| 3/8  | 331-4324  |
| 1/2  | 331-4332  |
| 5/8  | 331-4340  |
| 3/4  | 331-4348  |
| 7/8  | 331-4356  |
| 1    | 331-4364  |

## Spade Wood Bits



| Size (mm) | Order No. |
|-----------|-----------|
| 6.0       | 331-3060  |
| 8.0       | 331-3080  |
| 10.0      | 331-3100  |
| 12.0      | 331-3120  |
| 14.0      | 331-3140  |
| 16.0      | 331-3160  |
| 18.0      | 331-3180  |
| 20.0      | 331-3200  |
| 22.0      | 331-3220  |
| 24.0      | 331-3240  |

| Size   | Order No. |
|--------|-----------|
| 3/8"   | 331-3002  |
| 1/2    | 331-3004  |
| 5/8    | 331-3006  |
| 3/4    | 331-3008  |
| 7/8    | 331-3012  |
| 1      | 331-3014  |
| 1-3/32 | 331-3016  |
| 1-3/16 | 331-3018  |
| 1-1/4  | 331-3020  |
| 1-3/8  | 331-3022  |

### Spade Wood Bit Set

Spade Wood Bits in Plastic Pouch.



| Pieces | Specification                    | Order No. |
|--------|----------------------------------|-----------|
| 6      | 3/8", 1/2", 5/8", 3/4", 7/8", 1" | 331-2060  |

### 5 Piece Wood Bits



| Pieces | Specification | Order No. |
|--------|---------------|-----------|
| 5      | 4,5,6,8,10mm  | 208-2000  |

### 5 Piece Masonry Drills



| Pieces | Specification | Order No. |
|--------|---------------|-----------|
| 5      | 4,5,6,7,8mm   | 340-2000  |

### 7 Piece Masonry Drills



| Pieces | Specification     | Order No. |
|--------|-------------------|-----------|
| 7      | 4,5,6,7,8,10,12mm | 340-2010  |

### Forstner Wood Bit Set



| Pieces | Specification                          | Order No. |
|--------|----------------------------------------|-----------|
| 7      | 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1" | 331-2070  |

### 8 Piece Wood Bits



| Pieces | Specification      | Order No. |
|--------|--------------------|-----------|
| 8      | 3,4,5,6,7,8,9,10mm | 208-2010  |

### 8 Piece Masonry Drills



| Pieces | Specification      | Order No. |
|--------|--------------------|-----------|
| 8      | 3,4,5,6,7,8,9,10mm | 340-2020  |

### 9 Piece Drill Combination Set



| Pieces | Specification                    | Order No. |
|--------|----------------------------------|-----------|
| 9      | Steel/Masonry/Wood drill 5,6,8mm | 201-3428  |

### Core Drills

#### Straight Shank, 4 Flute, High Speed Steel

- Designed for both portable and stationary machines.
- Shank sizes correspond to the drill size.
- For use in both ferrous and non-ferrous metal, enlarging punched or drilled holes.



| Size    | Flute Length | Overall Length | Order No. |
|---------|--------------|----------------|-----------|
| 1/4"    | 3-1/2"       | 6-1/8"         | 218-5016  |
| 17/64   | 3-3/4        | 6-1/8          | 218-5017  |
| 9/32    | 3-7/8        | 6-1/4          | 218-5018  |
| 5/16    | 4            | 6-3/8          | 218-5020  |
| 21/64   | 4-1/8        | 6-1/2          | 218-5021  |
| 11/32   | 4-1/8        | 6-1/2          | 218-5022  |
| 3/8     | 4-1/4        | 6-3/4          | 218-5024  |
| 13/32   | 4-3/8        | 7              | 218-5026  |
| 27/64   | 4-5/8        | 7-1/4          | 218-5027  |
| 7/16    | 4-5/8        | 7-1/4          | 218-5028  |
| 15/32   | 4-3/4        | 7-1/2          | 218-5030  |
| 1/2     | 4-3/4        | 7-3/4          | 218-5032  |
| 33/64   | 4-3/4        | 8              | 218-5033  |
| 17/32   | 4-3/4        | 8              | 218-5034  |
| 9/16    | 4-7/8        | 8-1/4          | 218-5036  |
| 9/32    | 4-7/8        | 8-3/4          | 218-5038  |
| 5/8     | 4-7/8        | 8-3/4          | 218-5040  |
| 41/64   | 5            | 9              | 218-5041  |
| 21/32   | 5-1/8        | 9              | 218-5042  |
| 11/16   | 5-3/8        | 9-1/4          | 218-5044  |
| 23/32   | 5-5/8        | 9-1/2          | 218-5046  |
| 3/4     | 5-7/8        | 9-3/4          | 218-5048  |
| 49/64   | 6            | 9-7/8          | 218-5049  |
| 25/32   | 6            | 9-7/8          | 218-5050  |
| 13/16   | 6-1/8        | 10             | 218-5052  |
| 27/32   | 6-1/8        | 10             | 218-5054  |
| 7/8     | 6-1/8        | 10             | 218-5056  |
| 29/32   | 6-1/8        | 10             | 218-5058  |
| 15/16   | 6-1/8        | 10-3/4         | 218-5060  |
| 31/32   | 6-3/8        | 11             | 218-5062  |
| 1       | 6-3/8        | 11             | 218-5064  |
| 1-1/32  | 6-1/2        | 11-1/8         | 218-5066  |
| 1-1/16  | 6-5/8        | 11-1/4         | 218-5068  |
| 1-3/32  | 6-7/8        | 11-1/2         | 218-5070  |
| 1-1/8   | 7-1/8        | 11-3/4         | 218-5072  |
| 1-5/32  | 7-1/4        | 11-7/8         | 218-5074  |
| 1-3/16  | 7-3/8        | 12             | 218-5076  |
| 1-7/32  | 7-1/2        | 12-1/8         | 218-5078  |
| 1-1/4   | 7-7/8        | 12-1/2         | 218-5080  |
| 1-9/32  | 8-1/2        | 14-1/8         | 218-5082  |
| 1-5/16  | 8-5/8        | 14-1/4         | 218-5084  |
| 1-11/32 | 8-3/4        | 14-3/8         | 218-5086  |
| 1-3/8   | 8-7/8        | 14-1/2         | 218-5088  |
| 1-13/32 | 9            | 14-5/8         | 218-5090  |
| 1-7/16  | 9-1/8        | 14-3/4         | 218-5092  |
| 1-15/32 | 9-1/4        | 14-7/8         | 218-5094  |
| 1-1/2   | 9-3/8        | 15             | 218-5096  |
| 1-9/16  | 9-5/8        | 15-1/4         | 218-5100  |
| 1-5/8   | 9-7/8        | 15-5/8         | 218-5104  |
| 1-11/16 | 10           | 15-3/4         | 218-5108  |
| 1-3/4   | 10-1/2       | 16-1/4         | 218-5112  |
| 1-13/16 | 10-1/2       | 16-1/4         | 218-5116  |
| 1-7/8   | 10-3/4       | 16-1/2         | 218-5120  |
| 1-15/16 | 10-3/4       | 16-5/8         | 218-5124  |
| 2       | 10-3/4       | 16-5/8         | 218-5128  |

## Core Drills

### Taper Shank, 4 Flute, High Speed Steel



- Designed for both portable and stationary machines.
- For use in both ferrous and non-ferrous metal, enlarging punched or drilled holes.

| Size    | Flute Length | Overall Length | Taper Shank | Order No. | Size     | Flute Length | Overall Length | Taper Shank | Order No. |
|---------|--------------|----------------|-------------|-----------|----------|--------------|----------------|-------------|-----------|
| 13/32"  | 3-5/8"       | 7"             | MT1         | 218-1026  | 1-17/64" | 8-1/2"       | 14-1/8"        | MT4         | 218-1081  |
| 7/16    | 3-7/8        | 7-1/4          | MT1         | 218-1028  | 1-9/32   | 8-1/2        | 14-1/8         | MT4         | 218-1082  |
| 15/32   | 4-1/8        | 7-1/2          | MT1         | 218-1030  | 1-5/16   | 8-5/8        | 14-1/4         | MT4         | 218-1084  |
| 31/64   | 4-3/8        | 8-1/4          | MT2         | 218-1031  | 1-11/32  | 8-3/4        | 14-3/8         | MT4         | 218-1086  |
| 1/2     | 4-3/8        | 8-1/4          | MT2         | 218-1032  | 1-3/8    | 8-7/8        | 14-1/2         | MT4         | 218-1088  |
| 33/64   | 4-5/8        | 8-1/2          | MT2         | 218-1033  | 1-13/32  | 9            | 14-5/8         | MT4         | 218-1090  |
| 17/32   | 4-5/8        | 8-1/2          | MT2         | 218-1034  | 1-7/16   | 9-1/8        | 14-3/4         | MT4         | 218-1092  |
| 9/16    | 4-7/8        | 8-3/4          | MT2         | 218-1036  | 1-15/32  | 9-1/4        | 14-7/8         | MT4         | 218-1094  |
| 19/32   | 4-7/8        | 8-3/4          | MT2         | 218-1038  | 1-1/2    | 9-3/8        | 15             | MT4         | 218-1096  |
| 39/64   | 4-7/8        | 8-3/4          | MT2         | 218-1039  | 1-17/32  | 9-3/8        | 16-3/8         | MT5         | 218-1098  |
| 5/8     | 4-7/8        | 8-3/4          | MT2         | 218-1040  | 1-35/64  | 9-5/8        | 16-5/8         | MT5         | 218-1099  |
| 41/64   | 5-1/8        | 9              | MT2         | 218-1041  | 1-9/16   | 9-5/8        | 16-5/8         | MT5         | 218-1100  |
| 21/32   | 5-1/8        | 9              | MT2         | 218-1042  | 1-37/64  | 9-7/8        | 16-7/8         | MT5         | 218-1101  |
| 11/16   | 5-3/8        | 9-1/4          | MT2         | 218-1044  | 1-19/32  | 9-7/8        | 16-7/8         | MT5         | 218-1102  |
| 45/64   | 5-5/8        | 9-1/2          | MT2         | 218-1045  | 1-39/64  | 10           | 17             | MT5         | 218-1103  |
| 23/32   | 5-5/8        | 9-1/2          | MT2         | 218-1046  | 1-5/8    | 10           | 17             | MT5         | 218-1104  |
| 47/64   | 5-5/8        | 9-1/2          | MT2         | 218-1047  | 1-21/32  | 10-1/8       | 17-1/8         | MT5         | 218-1106  |
| 3/4     | 5-7/8        | 9-3/4          | MT2         | 218-1048  | 1-11/16  | 10-1/8       | 17-1/8         | MT5         | 218-1108  |
| 49/64   | 6            | 9-7/8          | MT2         | 218-1049  | 1-23/32  | 10-1/8       | 17-1/8         | MT5         | 218-1110  |
| 25/32   | 6            | 9-7/8          | MT2         | 218-1050  | 1-3/4    | 10-1/8       | 17-1/8         | MT5         | 218-1112  |
| 51/64   | 6-1/8        | 10-3/4         | MT3         | 218-1051  | 1-25/32  | 10-1/8       | 17-1/8         | MT5         | 218-1114  |
| 13/16   | 6-1/8        | 10-3/4         | MT3         | 218-1052  | 1-13/16  | 10-1/8       | 17-1/8         | MT5         | 218-1116  |
| 27/32   | 6-1/8        | 10-3/4         | MT3         | 218-1054  | 1-27/32  | 10-1/8       | 17-1/8         | MT5         | 218-1118  |
| 55/64   | 6-1/8        | 10-3/4         | MT3         | 218-1055  | 1-7/8    | 10-3/8       | 17-3/8         | MT5         | 218-1120  |
| 7/8     | 6-1/8        | 10-3/4         | MT3         | 218-1056  | 1-29/32  | 10-3/8       | 17-3/8         | MT5         | 218-1122  |
| 29/32   | 6-1/8        | 10-3/4         | MT3         | 218-1058  | 1-15/16  | 10-3/8       | 17-3/8         | MT5         | 218-1124  |
| 59/64   | 6-1/8        | 10-3/4         | MT3         | 218-1059  | 1-31/32  | 10-3/8       | 17-3/8         | MT5         | 218-1126  |
| 15/16   | 6-1/8        | 10-3/4         | MT3         | 218-1060  | 2        | 10-3/8       | 17-3/8         | MT5         | 218-1128  |
| 61/64   | 6-3/8        | 11             | MT3         | 218-1061  | 2-1/32   | 10-3/8       | 17-3/8         | MT5         | 218-1130  |
| 31/32   | 6-3/8        | 11             | MT3         | 218-1062  | 2-1/16   | 10-1/4       | 17-3/8         | MT5         | 218-1132  |
| 63/64   | 6-3/8        | 11             | MT3         | 218-1063  | 2-1/8    | 10-1/4       | 17-3/8         | MT5         | 218-1136  |
| 1       | 6-3/8        | 11             | MT3         | 218-1064  | 2-3/16   | 10-1/4       | 17-3/8         | MT5         | 218-1140  |
| 1-1/32  | 6-1/2        | 11-1/8         | MT3         | 218-1066  | 2-1/4    | 10-1/8       | 17-3/8         | MT5         | 218-1144  |
| 1-3/64  | 6-5/8        | 11-1/4         | MT3         | 218-1067  | 2-5/16   | 10-1/8       | 17-3/8         | MT5         | 218-1148  |
| 1-1/16  | 6-5/8        | 11-1/4         | MT3         | 218-1068  | 2-3/8    | 10-1/8       | 17-3/8         | MT5         | 218-1152  |
| 1-5/64  | 6-7/8        | 12-1/2         | MT4         | 218-1069  | 2-7/16   | 10-1/8       | 17-3/8         | MT5         | 218-1156  |
| 1-3/32  | 6-7/8        | 12-1/2         | MT4         | 218-1070  | 2-1/2    | 1-1/4        | 18-3/4         | MT5         | 218-1160  |
| 1-1/8   | 7-1/8        | 12-3/4         | MT4         | 218-1072  | 2-9/16   | 1-7/8        | 19-1/2         | MT5         | 218-1164  |
| 1-5/32  | 7-1/4        | 12-7/8         | MT4         | 218-1074  | 2-5/8    | 11-7/8       | 19-1/2         | MT5         | 218-1168  |
| 1-11/64 | 7-3/8        | 13             | MT4         | 218-1075  | 2-11/16  | 12-3/4       | 20-3/8         | MT5         | 218-1172  |
| 1-3/16  | 7-3/8        | 13             | MT4         | 218-1076  | 2-3/4    | 2-3/4        | 20-3/8         | MT5         | 218-1176  |
| 1-13/64 | 7-1/2        | 13-1/8         | MT4         | 218-1077  | 2-13/16  | 13-3/8       | 21-1/8         | MT5         | 218-1180  |
| 1-7/32  | 7-1/2        | 13-1/8         | MT4         | 218-1078  | 2-7/8    | 13-3/8       | 21-1/8         | MT5         | 218-1184  |
| 1-15/64 | 7-7/8        | 13-1/2         | MT4         | 218-1079  | 2-15/16  | 14           | 21-3/4         | MT5         | 218-1188  |
| 1-1/4   | 7-7/8        | 13-1/2         | MT4         | 218-1080  | 3        | 14           | 21-3/4         | MT5         | 218-1192  |

## Tube & Sheet Metal Drills

### High Speed Steel

#### 3 Piece Set

3-14mm, 6-20mm, 16-30mm

Order No. 331-7093



| Range (mm) | Order No. | Range (mm) | Order No. |
|------------|-----------|------------|-----------|
| 3-14       | 331-7003  | 26-40      | 331-7026  |
| 4-60       | 331-7004  | 36-50      | 331-7036  |
| 6-20       | 331-7006  | 46-60      | 331-7046  |
| 16-30      | 331-7016  |            |           |

## Saw Drills

### HSS, 135° Split Point, Spiral Point

- Used with your power drill to saw, ream, drill and cut through wood, metal and plastic.



| Size | Flute Length | OAL     | Order No. | Tin coated Order No. |
|------|--------------|---------|-----------|----------------------|
| 1/8" | 1-1/4"       | 2-1/2"  | 334-0008  | 334-0108             |
| 3/16 | 5            | 3-1/4   | 334-0012  | 334-0112             |
| 1/4  | 2-1/2        | 3-11/16 | 334-0016  | 334-0116             |

### Taper Shank Drills

#### High Speed Steel, Right Hand, 118°, Black Oxide

Designed to perform in a wide range of steel, ferrous and non-ferrous materials.



| Size  | Flute Length | Overall Length | Shank Taper | Order No. | Size    | Flute Length | Overall Length | Shank Taper | Order No. |
|-------|--------------|----------------|-------------|-----------|---------|--------------|----------------|-------------|-----------|
| 1/16" | 1-1/4"       | 4-5/8"         | MT1         | 302-1004  | 13/16"  | 6-1/8"       | 10"            | MT2*        | 302-2052  |
| 5/64  | 1-3/8        | 4-3/4          | MT1         | 302-1005  | 13/16   | 6-1/8        | 10-3/4         | MT3         | 302-3052  |
| 3/32  | 1-1/2        | 4-7/8          | MT1         | 302-1006  | 53/64   | 6-1/8        | 10             | MT2         | 302-2053  |
| 7/64  | 1-5/8        | 5              | MT1         | 302-1007  | 53/64   | 6-1/8        | 10-3/4         | MT3         | 302-3053  |
| 1/8   | 1-7/8        | 5-1/8          | MT1         | 302-1008  | 27/32   | 6-1/8        | 10             | MT2*        | 302-2054  |
| 9/64  | 2-1/8        | 5-3/8          | MT1         | 302-1009  | 27/32   | 6-1/8        | 10-3/4         | MT3         | 302-3054  |
| 5/32  | 2-1/8        | 5-3/8          | MT1         | 302-1010  | 55/64   | 6-1/8        | 10             | MT2*        | 302-2055  |
| 11/64 | 2-1/2        | 5-3/4          | MT1         | 302-1011  | 55/64   | 6-1/8        | 10-3/4         | MT3         | 302-3055  |
| 3/16  | 2-1/2        | 5-3/4          | MT1         | 302-1012  | 7/8     | 6-1/8        | 10             | MT2*        | 302-2056  |
| 13/64 | 2-3/4        | 6              | MT1         | 302-1013  | 7/8     | 6-1/8        | 10-3/4         | MT3         | 302-3056  |
| 7/32  | 2-3/4        | 6              | MT1         | 302-1014  | 57/64   | 6-1/8        | 10             | MT2*        | 302-2057  |
| 15/64 | 2-7/8        | 6-1/8          | MT1         | 302-1015  | 57/64   | 6-1/8        | 10-3/4         | MT3         | 302-3057  |
| 1/4   | 2-7/8        | 6-1/8          | MT1         | 302-1016  | 29/32   | 6-1/8        | 10             | MT2*        | 302-2058  |
| 17/64 | 3            | 6-1/4          | MT1         | 302-1017  | 29/32   | 6-1/8        | 10-3/4         | MT3         | 302-3058  |
| 9/32  | 3            | 6-1/4          | MT1         | 302-1018  | 59/64   | 6-1/8        | 10-1/4         | MT2         | 302-2059  |
| 19/64 | 3-1/8        | 6-3/8          | MT1         | 302-1019  | 59/64   | 6-1/8        | 10-3/4         | MT3         | 302-3059  |
| 5/16  | 3-1/8        | 6-3/8          | MT1         | 302-1020  | 15/16   | 6-1/8        | 10-1/4         | MT2         | 302-2060  |
| 21/64 | 3-1/4        | 6-1/2          | MT1         | 302-1021  | 15/16   | 6-1/8        | 10-3/4         | MT3         | 302-3060  |
| 11/32 | 3-1/4        | 6-1/2          | MT1         | 302-1022  | 61/64   | 6-3/8        | 11             | MT3         | 302-3061  |
| 23/64 | 3-1/2        | 6-3/4          | MT1         | 302-1023  | 31/32   | 6-3/8        | 11             | MT3         | 302-3062  |
| 3/8   | 3-1/2        | 6-3/4          | MT1         | 302-1024  | 63/64   | 6-3/8        | 11             | MT3         | 302-3063  |
| 3/8   | 3-1/2        | 7-3/8          | MT2*        | 302-2024  | 1       | 6            | 10-3/4         | MT2         | 302-2100  |
| 25/64 | 3-5/8        | 7              | MT1         | 302-1025  | 1       | 6-3/8        | 11             | MT3         | 302-3100  |
| 25/64 | 3-5/8        | 7-1/2          | MT2*        | 302-2025  | 1       | 6-3/8        | 12             | MT4*        | 302-4100  |
| 13/32 | 3-5/8        | 7              | MT1         | 302-1026  | 1-1/64  | 6-1/2        | 11-1/8         | MT3         | 302-3101  |
| 13/32 | 3-5/8        | 7-1/2          | MT2*        | 302-2026  | 1-1/32  | 6-1/2        | 11-1/8         | MT3         | 302-3102  |
| 27/64 | 3-7/8        | 7-1/4          | MT1         | 302-1027  | 1-1/32  | 6-1/2        | 12-1/8         | MT4         | 302-4102  |
| 27/64 | 3-7/8        | 7-3/4          | MT2*        | 302-2027  | 1-3/64  | 6-5/8        | 11-1/4         | MT3         | 302-3103  |
| 7/16  | 3-7/8        | 7-1/4          | MT1         | 302-1028  | 1-3/64  | 6            | 11"            | MT4         | 302-4103  |
| 7/16  | 3-7/8        | 7-3/4          | MT2*        | 302-2028  | 1-1/16  | 6-5/8        | 11-1/4         | MT3         | 302-3104  |
| 29/64 | 4-1/8        | 7-1/2          | MT1         | 302-1029  | 1-1/16  | 6-5/8        | 12-1/4         | MT4*        | 302-4104  |
| 29/64 | 4-1/8        | 8              | MT2         | 302-2029  | 1-5/64  | 6-7/8        | 11-1/2         | MT3*        | 302-3105  |
| 15/32 | 4-1/8        | 7-1/2          | MT1         | 302-1030  | 1-5/64  | 6-7/8        | 12-1/2         | MT4         | 302-4105  |
| 15/32 | 4-1/8        | 8              | MT2*        | 302-2030  | 1-3/32  | 6-7/8        | 11-1/2         | MT3 *       | 302-3106  |
| 31/64 | 4-3/8        | 7-3/4          | MT1         | 302-1031  | 1-3/32  | 6-7/8        | 12-1/2         | MT4         | 302-4106  |
| 31/64 | 4-3/8        | 8-1/4          | MT2         | 302-2031  | 1-7/64  | 7-1/8        | 11-3/4         | MT3*        | 302-3107  |
| 1/2   | 4-3/8        | 7-3/4          | MT1*        | 302-1032  | 1-7/64  | 7-1/8        | 12-3/4         | MT4         | 302-4107  |
| 1/2   | 4-3/8        | 8-1/4          | MT2         | 302-2032  | 1-1/8   | 7-1/8        | 11-3/4         | MT3*        | 302-3108  |
| 33/64 | 4-5/8        | 8              | MT1*        | 302-1033  | 1-1/8   | 7-1/8        | 12-3/4         | MT4         | 302-4108  |
| 33/64 | 4-5/8        | 8-1/2          | MT2         | 302-2033  | 1-9/64  | 7-1/4        | 11-7/8         | MT3*        | 302-3109  |
| 17/32 | 4-5/8        | 8              | MT1*        | 302-1034  | 1-9/64  | 7-1/4        | 12-7/8         | MT4         | 302-4109  |
| 17/32 | 4-5/8        | 8-1/2          | MT2         | 302-2034  | 1-5/32  | 7-1/4        | 11-7/8         | MT3         | 302-3110  |
| 35/64 | 4-7/8        | 8-1/4          | MT1*        | 302-1035  | 1-5/32  | 7-1/4        | 12-7/8         | MT4         | 302-4110  |
| 35/64 | 4-7/8        | 8-3/4          | MT2         | 302-2035  | 1-11/64 | 7-3/8        | 12             | MT3*        | 302-3111  |
| 9/16  | 4-7/8        | 8-1/2          | MT1*        | 302-1036  | 1-11/64 | 7-3/8        | 13             | MT4         | 302-4111  |
| 9/16  | 4-7/8        | 8-3/4          | MT2         | 302-2036  | 1-3/16  | 7-3/8        | 12             | MT3*        | 302-3112  |
| 37/64 | 4-7/8        | 8-3/4          | MT2         | 302-2037  | 1-3/16  | 7-3/8        | 13             | MT4         | 302-4112  |
| 19/32 | 4-7/8        | 8-3/4          | MT2         | 302-2038  | 1-13/64 | 7-1/2        | 12-1/8         | MT3         | 302-3113  |
| 39/64 | 4-7/8        | 8-3/4          | MT2         | 302-2039  | 1-13/64 | 7-1/2        | 13-1/8         | MT4         | 302-4113  |
| 5/8   | 4-7/8        | 8-3/4          | MT2         | 302-2040  | 1-7/32  | 7-1/2        | 12-1/8         | MT3*        | 302-3114  |
| 41/64 | 5-1/8        | 9              | MT2         | 302-2041  | 1-7/32  | 7-1/2        | 13-1/8         | MT4         | 302-4114  |
| 41/64 | 5-1/8        | 9-3/4          | MT3*        | 302-3041  | 1-15/64 | 7-7/8        | 12-1/2         | MT3*        | 302-3115  |
| 21/32 | 5-1/8        | 9              | MT2         | 302-2042  | 1-15/64 | 7-7/8        | 13-1/2         | MT4         | 302-4115  |
| 21/32 | 5-1/8        | 9-3/4          | MT3*        | 302-3042  | 1-1/4   | 7-7/8        | 12-1/2         | MT3*        | 302-3116  |
| 43/64 | 5-3/8        | 9-1/4          | MT2         | 302-2043  | 1-1/4   | 7-7/8        | 13-1/2         | MT4         | 302-4116  |
| 43/64 | 5-3/8        | 10             | MT3*        | 302-3043  | 1-17/64 | 8-1/2        | 14-1/8         | MT4         | 302-4117  |
| 11/16 | 5-3/8        | 9-1/4          | MT2         | 302-2044  | 1-9/32  | 8-1/2        | 14-1/8         | MT4         | 302-4118  |
| 11/16 | 5-3/8        | 10             | MT3*        | 302-3044  | 1-19/64 | 8-5/8        | 14-1/4         | MT4         | 302-4119  |
| 45/64 | 5-5/8        | 9-1/2          | MT2         | 302-2045  | 1-5/16  | 8-5/8        | 14             | MT3         | 302-3120  |
| 45/64 | 5-5/8        | 10-1/4         | MT3*        | 302-3045  | 1-5/16  | 8-5/8        | 14-1/2         | MT4         | 302-4120  |
| 23/32 | 5-5/8        | 9-1/2          | MT2         | 302-2046  | 1-21/64 | 8-3/4        | 14-3/8         | MT4         | 302-4121  |
| 23/32 | 5-5/8        | 10-1/4         | MT3*        | 302-3046  | 1-11/32 | 8-3/4        | 14-1/2         | MT4         | 302-4122  |
| 47/64 | 5-7/8        | 9-3/4          | MT2         | 302-2047  | 1-23/64 | 8-7/8        | 14-1/2         | MT4         | 302-4123  |
| 47/64 | 5-7/8        | 10-1/2         | MT3*        | 302-3047  | 1-3/8   | 8-7/8        | 14             | MT3         | 302-3124  |
| 3/4   | 5-7/8        | 9-3/4          | MT2         | 302-2048  | 1-3/8   | 8-7/8        | 14-1/2         | MT4         | 302-4124  |
| 3/4   | 5-7/8        | 10-1/2         | MT3*        | 302-3048  | 1-25/64 | 9            | 14-5/8         | MT4         | 302-4125  |
| 49/64 | 6            | 9-7/8          | MT2         | 302-2049  | 1-13/32 | 9            | 14-5/8         | MT4         | 302-4126  |
| 49/64 | 6            | 10-5/8         | MT3*        | 302-3049  | 1-27/64 | 9-1/8        | 14-3/4         | MT4         | 302-4127  |
| 25/32 | 6            | 9-7/8          | MT2         | 302-2050  | 1-7/16  | 9-1/8        | 14-1/4         | MT3         | 302-3128  |
| 25/32 | 6            | 10-7/8         | MT3*        | 302-3050  | 1-7/16  | 9-1/8        | 14-1/2         | MT4         | 302-4128  |
| 51/64 | 6-1/8        | 10             | MT2*        | 302-2051  | 1-29/64 | 9-1/4        | 14-7/8         | MT4         | 302-4129  |
| 51/64 | 6-1/8        | 10-3/4         | MT3         | 302-3051  | 1-15/32 | 9-1/4        | 14-7/8         | T4          | 302-4130  |

\*Indicates smaller or larger shank than standard.

# Taper Shank Drills



## Taper Shank Drills Continued

### High Speed Steel, Right Hand, 118°, Black Oxide

Designed to perform in a wide range of steel, ferrous and non-ferrous materials.



| Size     | Flute Length | Overall Length | Shank Taper | Order No. | Size    | Flute Length | Overall Length | Shank Taper | Order No. |
|----------|--------------|----------------|-------------|-----------|---------|--------------|----------------|-------------|-----------|
| 1-31/64" | 9-3/8"       | 15"            | MT4         | 302-4131  | 2-5/64" | 10-1/4"      | 17-3/8"        | MT5         | 302-5205  |
| 1-1/2    | 9-3/8        | 15-3/8         | MT2         | 302-2132  | 2-3/32  | 10-1/4       | 17-3/8         | MT5         | 302-5206  |
| 1-1/2    | 9-3/8        | 14-3/8         | MT3         | 302-3132  | 2-7/64  | 10-1/4       | 17-3/8         | MT5         | 302-5207  |
| 1-1/2    | 9-3/8        | 15             | MT4         | 302-4132  | 2-1/8   | 9            | 16-5/8         | MT4         | 302-4208  |
| 1-33/64  | 9-3/8        | 15             | MT4*        | 302-4133  | 2-1/8   | 10-1/4       | 17-3/8         | MT5         | 302-5208  |
| 1-33/64  | 9-3/8        | 16-3/8         | MT5         | 302-5133  | 2-9/64  | 10-1/4       | 17-3/8         | MT5         | 302-5209  |
| 1-17/32  | 9-3/8        | 15             | MT4         | 302-4134  | 2-5/32  | 10-1/4       | 17-3/8         | MT5         | 302-5210  |
| 1-17/32  | 9-3/8        | 16-3/8         | MT5         | 302-5134  | 2-11/64 | 10-1/4       | 17-3/8         | MT5         | 302-5211  |
| 1-35/64  | 9-5/8        | 15-1/4         | MT4*        | 302-4135  | 2-3/16  | 10-1/4       | 16-5/8         | MT4         | 302-4212  |
| 1-35/64  | 9-5/8        | 16-5/8         | MT5         | 302-5135  | 2-3/16  | 10-1/4       | 17-3/8         | MT5         | 302-5212  |
| 1-9/16   | 9-5/8        | 15-1/4         | MT4*        | 302-4136  | 2-13/64 | 10-1/8       | 17-3/8         | MT5         | 302-5213  |
| 1-9/16   | 9-5/8        | 16-5/8         | MT5         | 302-5136  | 2-7/32  | 10-1/8       | 17-3/8         | MT5         | 302-5214  |
| 1-37/64  | 9-7/8        | 15-1/2         | MT4*        | 302-4137  | 2-1/4   | 10-1/8       | 16-5/8         | MT4         | 302-4216  |
| 1-37/64  | 9-7/8        | 16-7/8         | MT5         | 302-5137  | 2-1/4   | 10-1/8       | 17-3/8         | MT5         | 302-5216  |
| 1-19/32  | 9-7/8        | 15-1/2         | MT4*        | 302-4138  | 2-9/32  | 10-1/8       | 17-3/8         | MT5         | 302-5218  |
| 1-19/32  | 9-7/8        | 16-7/8         | MT5         | 302-5138  | 2-19/64 | 16-5/8       | 9-1/4          | MT4         | 302-4219  |
| 1-39/64  | 10           | 15-5/8         | MT4*        | 302-4139  | 2-5/16  | 10-1/8       | 16-5/8         | MT4         | 302-4220  |
| 1-39/64  | 10           | 17             | MT5         | 302-5139  | 2-5/16  | 10-1/8       | 17-3/8         | MT5         | 302-5220  |
| 1-5/8    | 10           | 15-5/8         | MT4         | 302-4140  | 2-11/32 | 10-1/8       | 17-3/8         | MT5         | 302-5222  |
| 1-5/8    | 10           | 17             | MT5         | 302-5140  | 2-3/8   | 10-1/8       | 16-5/8         | MT4         | 302-4224  |
| 1-41/64  | 10-1/8       | 15-3/4         | MT4*        | 302-4141  | 2-3/8   | 10-1/8       | 17-3/8         | MT5         | 302-5224  |
| 1-41/64  | 10-1/8       | 17-1/8         | MT5         | 302-5141  | 2-25/64 | 10-1/8       | 17-3/8         | MT5         | 302-5215  |
| 1-21/32  | 10-1/8       | 15-3/4         | MT4         | 302-4142  | 2-13/32 | 11-1/4       | 18-3/4         | MT5         | 302-5226  |
| 1-21/32  | 10-1/8       | 17-1/8         | MT5         | 302-5142  | 2-7/16  | 11-1/4       | 17-3/8         | MT4         | 302-4228  |
| 1-43/64  | 10-1/8       | 15-3/4         | MT4*        | 302-4143  | 2-7/16  | 11-1/4       | 18-3/4         | MT5         | 302-5228  |
| 1-43/64  | 10-1/8       | 17-1/8         | MT5         | 302-5143  | 2-15/32 | 11-1/4       | 18-3/4         | MT5         | 302-5230  |
| 1-11/16  | 10-1/8       | 15-3/4         | MT4*        | 302-4144  | 2-1/2   | 11-1/4       | 17-3/8         | MT4         | 302-4232  |
| 1-11/16  | 10-1/8       | 17-1/8         | MT5         | 302-5144  | 2-1/2   | 11-1/4       | 18-3/4         | MT5         | 302-5232  |
| 1-45/64  | 10-1/8       | 15-3/4         | MT4*        | 302-4145  | 2-17/32 | 11-7/8       | 19-1/4         | MT5         | 302-5234  |
| 1-45/64  | 10-1/8       | 17-1/8         | MT5         | 302-5145  | 2-9/16  | 11-7/8       | 19-1/2         | MT5         | 302-5236  |
| 1-23/32  | 10-1/8       | 15-3/4         | MT4*        | 302-4146  | 2-19/32 | 11-7/8       | 19-1/2         | MT5         | 302-5238  |
| 1-23/32  | 10-1/8       | 17-1/8         | MT5         | 302-5146  | 2-5/8   | 11-7/8       | 19-1/2         | MT5         | 302-5240  |
| 1-47/64  | 10-3/8       | 16-1/4         | MT4*        | 302-4147  | 2-21/32 | 12-1/2       | 20             | MT5         | 302-5242  |
| 1-47/64  | 10-1/8       | 17-1/8         | MT5         | 302-5147  | 2-11/16 | 12-3/4       | 20-3/8         | MT5         | 302-5244  |
| 1-3/4    | 10-3/8       | 16-1/4         | MT4*        | 302-4148  | 2-23/32 | 13           | 20-1/2         | MT5         | 302-5246  |
| 1-3/4    | 10-1/8       | 17-1/8         | MT5         | 302-5148  | 2-3/4   | 12-3/4       | 20-3/8         | MT5         | 302-5248  |
| 1-49/64  | 10-3/8       | 16-1/4         | MT4         | 302-4149  | 2-25/32 | 13           | 20-1/2         | MT5         | 302-5250  |
| 1-49/64  | 10-1/8       | 17-1/8         | MT5         | 302-5149  | 2-13/16 | 13-3/8       | 21-1/8         | MT5         | 302-5252  |
| 1-25/32  | 10-3/8       | 16-1/4         | MT4*        | 302-4150  | 2-27/32 | 13-1/2       | 21             | MT5         | 302-5254  |
| 1-25/32  | 10-1/8       | 17-1/8         | MT5         | 302-5150  | 2-7/8   | 13-3/8       | 21-1/8         | MT5         | 302-5256  |
| 1-51/64  | 10-3/8       | 16-1/4         | MT4         | 302-4151  | 2-57/64 | 9            | 16-1/2         | MT5         | 302-5257  |
| 1-51/64  | 10-1/8       | 17-1/8         | MT5         | 302-5151  | 2-29/32 | 13-1/2       | 21             | MT5         | 302-5258  |
| 1-13/16  | 10-3/8       | 16-1/4         | MT4         | 302-4152  | 2-15/16 | 14           | 21-3/4         | MT5         | 302-5260  |
| 1-13/16  | 10-1/8       | 17-1/8         | MT5         | 302-5152  | 2-31/32 | 14-1/2       | 22             | MT5         | 302-5262  |
| 1-53/64  | 10-3/8       | 16-1/4         | MT4         | 302-4153  | 3       | 14           | 21-3/4         | MT5         | 302-5300  |
| 1-53/64  | 10-1/8       | 17-1/8         | MT5         | 302-5153  | 3-1/16  | 14-1/8       | 22             | MT5         | 302-5304  |
| 1-27/32  | 10-3/8       | 16-1/4         | MT4*        | 302-4154  | 3-1/16  | 14-1/2       | 24-1/2         | MT6         | 302-6304  |
| 1-27/32  | 10-1/8       | 17-1/8         | MT5         | 302-5154  | 3-1/8   | 14-1/4       | 22             | MT5         | 302-5308  |
| 1-55/64  | 10-3/8       | 16-1/2         | MT4         | 302-4155  | 3-1/8   | 14-5/8       | 24-1/2         | MT6         | 302-6308  |
| 1-55/64  | 10-1/8       | 17-3/8         | MT5         | 302-5155  | 3-3/16  | 14-1/4       | 23             | MT5         | 302-5312  |
| 1-7/8    | 10-1/2       | 16-1/2         | MT4*        | 302-4156  | 3-3/16  | 14-5/8       | 25-1/2         | MT6         | 302-6312  |
| 1-7/8    | 10-3/4       | 17-3/8         | MT5         | 302-5156  | 3-1/4   | 14-1/4       | 23             | MT5         | 302-5316  |
| 1-57/64  | 10-1/2       | 16-1/2         | MT4         | 302-4157  | 3-1/4   | 15-1/2       | 25-1/2         | MT6         | 302-6316  |
| 1-57/64  | 10-3/8       | 17-3/8         | MT5         | 302-5157  | 3-5/16  | 15-1/4       | 23             | MT5         | 302-5320  |
| 1-29/32  | 10-1/2       | 16-1/2         | MT4*        | 302-4158  | 3-5/16  | 15-1/2       | 25-1/2         | MT6         | 302-6320  |
| 1-29/32  | 10-3/8       | 17-3/8         | MT5         | 302-5158  | 3-3/8   | 15-1/4       | 23             | MT5         | 302-5324  |
| 1-59/64  | 10-1/2       | 16-1/2         | MT4         | 302-4159  | 3-3/8   | 15-1/2       | 25-1/2         | MT6         | 302-6324  |
| 1-59/64  | 10-3/8       | 17-3/8         | MT5         | 302-5159  | 3-13/32 | 15-1/4       | 23             | MT6         | 302-6326  |
| 1-15/16  | 10-5/8       | 16-5/8         | MT4         | 302-4160  | 3-7/16  | 15-1/4       | 23             | MT5         | 302-5328  |
| 1-15/16  | 10-3/8       | 17-3/8         | MT5         | 302-5160  | 3-1/2   | 16-1/4       | 24             | MT5         | 302-5332  |
| 1-61/64  | 10-5/8       | 16-5/8         | MT4         | 302-4161  | 3-1/2   | 16-1/4       | 26-1/2         | MT6         | 302-6332  |
| 1-61/64  | 10-3/8       | 17-3/8         | MT5         | 302-5161  | 3-5/8   | 16-1/4       | 25-7/8         | MT6         | 302-6340  |
| 1-31/32  | 10-5/8       | 16-5/8         | MT4         | 302-4162  | 3-11/16 | 16-1/4       | 26             | MT6         | 302-6344  |
| 1-31/32  | 10-3/8       | 17-3/8         | MT5         | 302-5162  | 3-3/4   | 16-1/4       | 25-7/8         | MT5         | 302-5348  |
| 1-63/64  | 10-5/8       | 16-5/8         | MT4         | 302-4163  | 3-3/4   | 16-1/2       | 29             | MT6         | 302-6348  |
| 1-63/64  | 10-3/8       | 17-3/8         | MT5         | 302-5163  | 3-13/16 | 16-1/4       | 26             | MT6         | 302-6352  |
| 2        | 10-5/8       | 16-5/8         | MT4*        | 302-4200  | 3-7/8   | 16-1/2       | 29             | MT5         | 302-5356  |
| 2        | 10-3/8       | 17-3/8         | MT5         | 302-5200  | 3-7/8   | 16-1/2       | 29             | MT6         | 302-6356  |
| 2-1/32   | 10-3/8       | 17-3/8         | MT5         | 302-5202  | 4       | 16-1/2       | 29             | MT5         | 302-5400  |
| 2-1/16   | 9            | 16-5/8         | MT4         | 302-4204  | 4       | 16-1/2       | 29             | MT6         | 302-6400  |
| 2-1/16   | 10-1/4       | 17-3/8         | MT5         | 302-5204  |         |              |                |             |           |

\*Indicates smaller or larger shank than standard.

### Extra Long Taper Shank Drills

High Speed Steel, Right Hand, 118°, Black Oxide

Designed to perform in a wide range of steel, ferrous and non-ferrous materials, where extra length is required.



| Size  | Flute Length | Overall Length | Shank Taper | Order No. | Size    | Flute Length | Overall Length | Shank Taper | Order No. |
|-------|--------------|----------------|-------------|-----------|---------|--------------|----------------|-------------|-----------|
| 3/16" | 7"           | 10"            | MT1         | 502-1012  | 39/64"  | 10"          | 15"            | MT2         | 502-1525  |
| 5/16  | 7            | 10             | MT1         | 502-1020  | 5/8     | 10           | 15             | MT2         | 502-1526  |
| 35/64 | 7            | 10             | MT2         | 502-1035  | 41/64   | 10           | 15             | MT2         | 502-1527  |
| 1/8   | 8            | 12             | MT1         | 502-1200  | 21/32   | 10           | 15             | MT2         | 502-1528  |
| 3/16  | 8            | 12             | MT1         | 502-1202  | 43/64   | 10           | 15             | MT2         | 502-1529  |
| 1/4   | 8            | 12             | MT1         | 502-1204  | 11/16   | 10           | 15             | MT2         | 502-1530  |
| 17/64 | 8            | 12             | MT1         | 502-1206  | 45/64   | 10           | 15             | MT2         | 502-1531  |
| 9/32  | 8            | 12             | MT1         | 502-1208  | 23/32   | 10           | 15             | MT2         | 502-1532  |
| 19/64 | 8            | 12             | MT1         | 502-1210  | 47/64   | 10           | 15             | MT2         | 502-1533  |
| 5/16  | 8            | 12             | MT1         | 502-1212  | 3/4     | 10           | 15             | MT2         | 502-1534  |
| 21/64 | 8            | 12             | MT1         | 502-1214  | 49/64   | 10           | 15             | MT2         | 502-1535  |
| 11/32 | 8            | 12             | MT1         | 502-1216  | 25/32   | 10           | 15             | MT2         | 502-1536  |
| 23/64 | 8            | 12             | MT1         | 502-1218  | 51/64   | 10           | 15             | MT2         | 502-1537  |
| 3/8   | 8            | 12             | MT1         | 502-1220  | 13/16   | 10           | 15             | MT3         | 502-1538  |
| 25/64 | 8            | 12             | MT1         | 502-1222  | 53/64   | 10           | 15             | MT3         | 502-1539  |
| 13/32 | 8            | 12             | MT1         | 502-1224  | 27/32   | 10           | 15             | MT3         | 502-1540  |
| 27/64 | 8            | 12             | MT1         | 502-1226  | 55/64   | 10           | 15             | MT3         | 502-1541  |
| 7/16  | 8            | 12             | MT1         | 502-1228  | 7/8     | 10           | 15             | MT3         | 502-1542  |
| 29/64 | 8            | 12             | MT1         | 502-1230  | 57/64   | 10           | 15             | MT3         | 502-1543  |
| 15/32 | 8            | 12             | MT1         | 502-1232  | 29/32   | 10           | 15             | MT3         | 502-1544  |
| 31/64 | 8            | 12             | MT2         | 502-1234  | 59/64   | 10           | 15             | MT3         | 502-1545  |
| 1/2   | 8            | 12             | MT2         | 502-1236  | 15/16   | 10           | 15             | MT3         | 502-1546  |
| 33/64 | 8            | 12             | MT2         | 502-1238  | 61/64   | 10           | 15             | MT3         | 502-1547  |
| 17/32 | 8            | 12             | MT2         | 502-1240  | 31/32   | 10           | 15             | MT3         | 502-1548  |
| 35/64 | 8            | 12             | MT2         | 502-1242  | 63/64   | 10           | 15             | MT3         | 502-1549  |
| 9/16  | 8            | 12             | MT2         | 502-1244  | 1       | 10           | 15             | MT3         | 502-1550  |
| 37/64 | 8            | 12             | MT2         | 502-1246  | 1-1/64  | 10           | 15             | MT3         | 502-1551  |
| 19/32 | 8            | 12             | MT2         | 502-1248  | 1-1/32  | 10           | 15             | MT3         | 502-1552  |
| 39/64 | 8            | 12             | MT2         | 502-1250  | 1-3/64  | 10           | 15             | MT3         | 502-1553  |
| 5/8   | 8            | 12             | MT2         | 502-1252  | 1-1/16  | 10           | 15             | MT3         | 502-1554  |
| 41/64 | 8            | 12             | MT2         | 502-1254  | 1-5/64  | 10           | 15             | MT3         | 502-1555  |
| 21/32 | 8            | 12             | MT2         | 502-1256  | 1-3/32  | 10           | 15             | MT4         | 502-1556  |
| 43/64 | 8            | 12             | MT2         | 502-1258  | 1-7/64  | 10           | 15             | MT4         | 502-1557  |
| 11/16 | 8            | 12             | MT2         | 502-1260  | 1-1/8   | 10           | 15             | MT4         | 502-1558  |
| 45/64 | 8            | 12             | MT2         | 502-1262  | 1-9/64  | 10           | 15             | MT4         | 502-1560  |
| 23/32 | 8            | 12             | MT2         | 502-1264  | 1-5/32  | 10           | 15             | MT4         | 502-1561  |
| 47/64 | 8            | 12             | MT2         | 502-1266  | 1-11/64 | 10           | 15             | MT4         | 502-1562  |
| 3/4   | 8            | 12             | MT2         | 502-1268  | 1-3/16  | 10           | 15             | MT4         | 502-1563  |
| 49/64 | 8            | 12             | MT2         | 502-1270  | 1-13/64 | 10           | 15             | MT4         | 502-1564  |
| 25/32 | 8            | 12             | MT2         | 502-1272  | 1-7/32  | 10           | 15             | MT4         | 502-1565  |
| 13/16 | 8            | 12             | MT3         | 502-1274  | 1-15/64 | 10           | 15             | MT4         | 502-1566  |
| 53/64 | 8            | 12             | MT3         | 502-1276  | 1-1/4   | 10           | 15             | MT4         | 502-1567  |
| 27/32 | 8            | 12             | MT3         | 502-1278  | 1/4     | 12           | 18             | MT1         | 502-1800  |
| 7/8   | 8            | 12             | MT3         | 502-1280  | 17/64   | 12           | 18             | MT1         | 502-1801  |
| 15/16 | 8            | 12             | MT3         | 502-1282  | 9/32    | 12           | 18             | MT1         | 502-1802  |
| 7/32  | 10           | 15             | MT1         | 502-1499  | 19/64   | 12           | 18             | MT1         | 502-1803  |
| 3/16  | 10           | 15             | MT1         | 502-1500  | 5/16    | 12           | 18             | MT1         | 502-1804  |
| 15/64 | 10           | 15             | MT1         | 502-1501  | 11/32   | 12           | 18             | MT1         | 502-1805  |
| 1/4   | 10           | 15             | MT1         | 502-1502  | 23/64   | 12           | 18             | MT1         | 502-1806  |
| 17/64 | 10           | 15             | MT1         | 502-1503  | 3/8     | 12           | 18             | MT1         | 502-1807  |
| 9/32  | 10           | 15             | MT1         | 502-1504  | 25/64   | 12           | 18             | MT1         | 502-1808  |
| 19/64 | 10           | 15             | MT1         | 502-1505  | 13/32   | 12           | 18             | MT1         | 502-1809  |
| 5/16  | 10           | 15             | MT1         | 502-1506  | 27/64   | 12           | 18             | MT1         | 502-1810  |
| 21/64 | 10           | 15             | MT1         | 502-1507  | 7/16    | 12           | 18             | MT1         | 502-1811  |
| 11/32 | 10           | 15             | MT1         | 502-1508  | 29/64   | 12           | 18             | MT1         | 502-1812  |
| 23/64 | 10           | 15             | MT1         | 502-1509  | 15/32   | 12           | 18             | MT1         | 502-1813  |
| 3/8   | 10           | 15             | MT1         | 502-1510  | 31/64   | 12           | 18             | MT1         | 502-1814  |
| 25/64 | 10           | 15             | MT1         | 502-1511  | 1/2     | 12           | 18             | MT2         | 502-1815  |
| 13/32 | 10           | 15             | MT1         | 502-1512  | 33/64   | 12           | 18             | MT2         | 502-1816  |
| 27/64 | 10           | 15             | MT1         | 502-1513  | 17/32   | 12           | 18             | MT2         | 502-1817  |
| 7/16  | 10           | 15             | MT1         | 502-1514  | 35/64   | 12           | 18             | MT2         | 502-1818  |
| 29/64 | 10           | 15             | MT1         | 502-1515  | 9/16    | 12           | 18             | MT2         | 502-1819  |
| 15/32 | 10           | 15             | MT1         | 502-1516  | 37/64   | 12           | 18             | MT2         | 502-1820  |
| 31/64 | 10           | 15             | MT1         | 502-1517  | 19/32   | 12           | 18             | MT2         | 502-1821  |
| 1/2   | 10           | 15             | MT2         | 502-1518  | 39/64   | 12           | 18             | MT2         | 502-1822  |
| 33/64 | 10           | 15             | MT2         | 502-1519  | 5/8     | 12           | 18             | MT2         | 502-1823  |
| 17/32 | 10           | 15             | MT2         | 502-1520  | 41/64   | 12           | 18             | MT2         | 502-1824  |
| 35/64 | 10           | 15             | MT2         | 502-1521  | 21/32   | 12           | 18             | MT2         | 502-1825  |
| 9/16  | 10           | 15             | MT2         | 502-1522  | 43/64   | 12           | 18             | MT2         | 502-1826  |
| 37/64 | 10           | 15             | MT2         | 502-1523  | 11/16   | 12           | 18             | MT2         | 502-1827  |
| 19/32 | 10           | 15             | MT2         | 502-1524  | 45/64   | 12           | 18             | MT2         | 502-1828  |

# Taper Shank Drills



## Extra Long Taper Shank Drills Continued

High Speed Steel, Right Hand, 118°, Black Oxide

Designed to perform in a wide range of steel, ferrous and non-ferrous materials, where extra length is required.



| Size    | Flute Length | Overall Length | Shank Taper | Order No. | Size    | Flute Length | Overall Length | Shank Taper | Order No. |
|---------|--------------|----------------|-------------|-----------|---------|--------------|----------------|-------------|-----------|
| 23/32"  | 12"          | 18"            | MT2         | 502-1829  | 35/64"  | 18"          | 24"            | MT2         | 502-2310  |
| 47/64   | 12           | 18             | MT2         | 502-1830  | 9/16    | 18           | 24             | MT2         | 502-2311  |
| 3/4     | 12           | 18             | MT2         | 502-1831  | 37/64   | 18           | 24             | MT2         | 502-2312  |
| 49/64   | 12           | 18             | MT2         | 502-1832  | 19/32   | 18           | 24             | MT2         | 502-2313  |
| 25/32   | 12           | 18             | MT2         | 502-1833  | 39/64   | 18           | 24             | MT2         | 502-2314  |
| 51/64   | 12           | 18             | MT2         | 502-1834  | 5/8     | 18           | 24             | MT2         | 502-2315  |
| 13/16   | 12           | 18             | MT3         | 502-1835  | 41/64   | 18           | 24             | MT2         | 502-2416  |
| 53/64   | 12           | 18             | MT3         | 502-1836  | 21/32   | 18           | 24             | MT2         | 502-2317  |
| 27/32   | 12           | 18             | MT3         | 502-1837  | 43/64   | 18           | 24             | MT2         | 502-2318  |
| 55/64   | 12           | 18             | MT3         | 502-1838  | 11/16   | 18           | 24             | MT2         | 502-2319  |
| 7/8     | 12           | 18             | MT3         | 502-1839  | 45/64   | 18           | 24             | MT2         | 502-2320  |
| 57/64   | 12           | 18             | MT3         | 502-1840  | 23/32   | 18           | 24             | MT2         | 502-2321  |
| 29/32   | 12           | 18             | MT3         | 502-1841  | 47/64   | 18           | 24             | MT2         | 502-2322  |
| 59/64   | 12           | 18             | MT3         | 502-1842  | 3/4     | 18           | 24             | MT2         | 502-2323  |
| 15/16   | 12           | 18             | MT3         | 502-1843  | 49/64   | 18           | 24             | MT3         | 502-2324  |
| 61/64   | 12           | 18             | MT3         | 502-1844  | 25/32   | 18           | 24             | MT3         | 502-2325  |
| 31/32   | 12           | 18             | MT3         | 502-1845  | 51/64   | 18           | 24             | MT3         | 502-2326  |
| 63/64   | 12           | 18             | MT3         | 502-1846  | 13/16   | 18           | 24             | MT3         | 502-2327  |
| 1       | 12           | 18             | MT3         | 502-1847  | 53/64   | 18           | 24             | MT3         | 502-2328  |
| 1-1/64  | 12           | 18             | MT3         | 502-1848  | 27/32   | 18           | 24             | MT3         | 502-2329  |
| 1-1/32  | 12           | 18             | MT3         | 502-1849  | 55/64   | 18           | 24             | MT3         | 502-2330  |
| 1-3/64  | 12           | 18             | MT3         | 502-1850  | 7/8     | 18           | 24             | MT3         | 502-2331  |
| 1-1/16  | 12           | 18             | MT3         | 502-1851  | 57/64   | 18           | 24             | MT3         | 502-2332  |
| 1-5/64  | 12           | 18             | MT3         | 502-1852  | 29/32   | 18           | 24             | MT3         | 502-2333  |
| 1-3/32  | 12           | 18             | MT4         | 502-1853  | 59/64   | 18           | 24             | MT3         | 502-2334  |
| 1-7/64  | 12           | 18             | MT4         | 502-1854  | 15/16   | 18           | 24             | MT3         | 502-2335  |
| 1-1/8   | 12           | 18             | MT4         | 502-1855  | 61/64   | 18           | 24             | MT3         | 502-2336  |
| 1-9/64  | 12           | 18             | MT4         | 502-1856  | 31/32   | 18           | 24             | MT3         | 502-2337  |
| 1-5/32  | 12           | 18             | MT4         | 502-1857  | 63/64   | 18           | 24             | MT3         | 502-2338  |
| 1-11/64 | 12           | 18             | MT4         | 502-1858  | 1       | 18           | 24             | MT3         | 502-2339  |
| 1-3/16  | 12           | 18             | MT4         | 502-1859  | 1-1/64  | 18           | 24             | MT3         | 502-2340  |
| 1-13/64 | 12           | 18             | MT4         | 502-1860  | 1-1/32  | 18           | 24             | MT3         | 502-2341  |
| 1-7/32  | 12           | 18             | MT4         | 502-1861  | 1-3/64  | 18           | 24             | MT3         | 502-2342  |
| 1-15/64 | 12           | 18             | MT4         | 502-1862  | 1-1/16  | 18           | 24             | MT3         | 502-2343  |
| 1-1/4   | 12           | 18             | MT4         | 502-1863  | 1-5/64  | 18           | 24             | MT3         | 502-2344  |
| 1-17/64 | 12           | 18             | MT4         | 502-1864  | 1-3/32  | 18           | 24             | MT3         | 502-2345  |
| 1-9/32  | 12           | 18             | MT4         | 502-1865  | 1-7/64  | 18           | 24             | MT3         | 502-2346  |
| 1-19/64 | 12           | 18             | MT4         | 502-1866  | 1-1/8   | 18           | 24             | MT4         | 502-2347  |
| 1-5/16  | 12           | 18             | MT4         | 502-1867  | 1-9/64  | 18           | 24             | MT4         | 502-2348  |
| 1-21/64 | 12           | 18             | MT4         | 502-1868  | 1-5/32  | 18           | 24             | MT4         | 502-2349  |
| 1-11/32 | 12           | 18             | MT4         | 502-1869  | 1-11/64 | 18           | 24             | MT4         | 502-2350  |
| 1-23/64 | 12           | 18             | MT4         | 502-1870  | 1-3/16  | 18           | 24             | MT4         | 502-2351  |
| 1-3/8   | 12           | 18             | MT4         | 502-1871  | 1-13/64 | 18           | 24             | MT4         | 502-2352  |
| 1-25/64 | 12           | 18             | MT4         | 502-1872  | 1-7/32  | 18           | 24             | MT4         | 502-2353  |
| 1-13/32 | 12           | 18             | MT4         | 502-1873  | 1-15/64 | 18           | 24             | MT4         | 502-2354  |
| 1-27/64 | 12           | 18             | MT4         | 502-1874  | 1-1/4   | 18           | 24             | MT4         | 502-2355  |
| 1-7/16  | 12           | 18             | MT4         | 502-1875  | 1-17/64 | 18           | 24             | MT4         | 502-2356  |
| 1-29/64 | 12           | 18             | MT4         | 502-1876  | 1-9/32  | 18           | 24             | MT4         | 502-2357  |
| 1-15/32 | 12           | 18             | MT4         | 502-1877  | 1-19/64 | 18           | 24             | MT4         | 502-2358  |
| 1-31/64 | 12           | 18             | MT4         | 502-1878  | 1-5/16  | 18           | 24             | MT4         | 502-2359  |
| 1-1/2   | 12           | 18             | MT4         | 502-1879  | 1-21/64 | 18           | 24             | MT4         | 502-2360  |
| 1-9/16  | 12           | 18             | MT5         | 502-1880  | 1-11/32 | 18           | 24             | MT4         | 502-2361  |
| 1-5/8   | 12           | 18             | MT5         | 502-1881  | 1-23/64 | 18           | 24             | MT4         | 502-2362  |
| 1-11/16 | 12           | 18             | MT5         | 502-1882  | 1-3/8   | 18           | 24             | MT4         | 502-2363  |
| 1-3/4   | 12           | 18             | MT5         | 502-1883  | 1-25/64 | 18           | 24             | MT4         | 502-2364  |
| 1-19/32 | 12           | 18             | MT5         | 502-1885  | 1-13/32 | 18           | 24             | MT4         | 502-2365  |
| 1-25/32 | 12           | 18             | MT5         | 502-1887  | 1-27/64 | 18           | 24             | MT4         | 502-2366  |
| 1-13/16 | 12           | 18             | MT5         | 502-1889  | 1-7/16  | 18           | 24             | MT4         | 502-2367  |
| 1-7/8   | 12           | 18             | MT5         | 502-1891  | 1-29/64 | 18           | 24             | MT4         | 502-2368  |
| 1-15/16 | 12           | 18             | MT5         | 502-1893  | 1-15/32 | 18           | 24             | MT4         | 502-2369  |
| 2       | 12           | 18             | MT5         | 502-1895  | 1-31/64 | 18           | 24             | MT4         | 502-2370  |
| 3/8     | 18           | 24             | MT1         | 502-2300  | 1-1/2   | 18           | 24             | MT4         | 502-2371  |
| 25/64   | 18           | 24             | MT1         | 502-2301  | 1-9/16  | 18           | 24             | MT5         | 502-2372  |
| 13/32   | 18           | 24             | MT1         | 502-2302  | 1-11/16 | 18           | 24             | MT5         | 502-2373  |
| 27/64   | 18           | 24             | MT1         | 502-2303  | 1-3/4   | 18           | 24             | MT5         | 502-2374  |
| 7/16    | 18           | 24             | MT1         | 502-2304  | 1-7/8   | 18           | 24             | MT5         | 502-2376  |
| 15/32   | 18           | 24             | MT1         | 502-2305  | 2       | 18           | 24             | MT5         | 502-2377  |
| 31/64   | 18           | 24             | MT1         | 502-2306  | 3/4     | 24           | 30             | MT2         | 502-3010  |
| 1/2     | 18           | 24             | MT2         | 502-2307  | 7/8     | 24           | 30             | MT3         | 502-3015  |
| 33/64   | 18           | 24             | MT2         | 502-2308  | 1       | 24           | 30             | MT3         | 502-3020  |
| 17/32   | 18           | 24             | MT2         | 502-2309  | 1-1/4   | 24           | 30             | MT4         | 502-3025  |

## Metric Taper Shank Drills

DIN 341, High Speed Steel, Right Hand, Black Oxide



| Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------|-------------|-------------------|---------------------|-----------|
| 5.00      | MT1         | 74                | 155                 | 341-0500  |
| 5.25      | MT1         | 74                | 155                 | 341-0525  |
| 5.50      | MT1         | 80                | 161                 | 341-0550  |
| 5.75      | MT1         | 80                | 161                 | 341-0575  |
| 6.00      | MT1         | 80                | 161                 | 341-0600  |
| 6.25      | MT1         | 86                | 167                 | 341-0625  |
| 6.50      | MT1         | 86                | 167                 | 341-0650  |
| 6.75      | MT1         | 93                | 174                 | 341-0675  |
| 7.00      | MT1         | 93                | 174                 | 341-0700  |
| 7.25      | MT1         | 93                | 174                 | 341-0725  |
| 7.50      | MT1         | 93                | 174                 | 341-0750  |
| 7.75      | MT1         | 100               | 181                 | 341-0775  |
| 8.00      | MT1         | 100               | 181                 | 341-0800  |
| 8.25      | MT1         | 100               | 181                 | 341-0825  |
| 8.50      | MT1         | 100               | 181                 | 341-0850  |
| 8.75      | MT1         | 107               | 188                 | 341-0875  |
| 9.00      | MT1         | 107               | 188                 | 341-0900  |
| 9.25      | MT1         | 107               | 188                 | 341-0925  |
| 9.50      | MT1         | 107               | 188                 | 341-0950  |
| 9.75      | MT1         | 116               | 197                 | 341-0975  |
| 10.00     | MT1         | 116               | 197                 | 341-1000  |
| 10.25     | MT1         | 116               | 197                 | 341-1025  |
| 10.50     | MT1         | 116               | 197                 | 341-1050  |
| 10.75     | MT1         | 125               | 206                 | 341-1075  |
| 11.00     | MT1         | 125               | 206                 | 341-1100  |
| 11.25     | MT1         | 125               | 206                 | 341-1125  |
| 11.50     | MT1         | 125               | 206                 | 341-1150  |
| 11.75     | MT1         | 125               | 206                 | 341-1175  |
| 12.00     | MT1         | 134               | 215                 | 341-1200  |
| 12.25     | MT1         | 134               | 215                 | 341-1225  |
| 12.50     | MT1         | 134               | 215                 | 341-1250  |
| 12.75     | MT1         | 134               | 215                 | 341-1275  |
| 13.00     | MT1         | 134               | 215                 | 341-1300  |
| 13.25     | MT1         | 134               | 215                 | 341-1325  |
| 13.50     | MT1         | 142               | 223                 | 341-1350  |
| 13.75     | MT1         | 142               | 223                 | 341-1375  |
| 14.00     | MT1         | 142               | 223                 | 341-1400  |
| 14.25     | MT2         | 147               | 245                 | 341-1425  |
| 14.50     | MT2         | 147               | 245                 | 341-1450  |
| 14.75     | MT2         | 147               | 245                 | 341-1475  |
| 15.00     | MT2         | 147               | 245                 | 341-1500  |
| 15.25     | MT2         | 153               | 251                 | 341-1525  |
| 15.50     | MT2         | 153               | 251                 | 341-1550  |
| 15.75     | MT2         | 153               | 251                 | 341-1575  |
| 16.00     | MT2         | 153               | 251                 | 341-1600  |
| 16.25     | MT2         | 159               | 255                 | 341-1625  |
| 16.50     | MT2         | 159               | 255                 | 341-1650  |
| 16.75     | MT2         | 159               | 255                 | 341-1675  |
| 17.00     | MT2         | 159               | 255                 | 341-1700  |

| Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------|-------------|-------------------|---------------------|-----------|
| 17.25     | MT2         | 165               | 263                 | 341-1725  |
| 17.50     | MT2         | 165               | 263                 | 341-1750  |
| 17.75     | MT2         | 165               | 263                 | 341-1775  |
| 18.00     | MT2         | 165               | 263                 | 341-1800  |
| 18.25     | MT2         | 171               | 269                 | 341-1825  |
| 18.50     | MT2         | 171               | 269                 | 341-1850  |
| 18.75     | MT2         | 171               | 269                 | 341-1875  |
| 19.00     | MT2         | 171               | 269                 | 341-1900  |
| 19.25     | MT2         | 177               | 275                 | 341-1925  |
| 19.50     | MT2         | 177               | 275                 | 341-1950  |
| 19.75     | MT2         | 177               | 275                 | 341-1975  |
| 20.00     | MT2         | 177               | 275                 | 341-2000  |
| 20.25     | MT2         | 184               | 282                 | 341-2025  |
| 20.50     | MT2         | 184               | 282                 | 341-2050  |
| 20.75     | MT2         | 184               | 282                 | 341-2075  |
| 21.00     | MT2         | 184               | 282                 | 341-2100  |
| 21.25     | MT2         | 191               | 289                 | 341-2125  |
| 21.50     | MT2         | 191               | 289                 | 341-2150  |
| 21.75     | MT2         | 191               | 289                 | 341-2175  |
| 22.00     | MT2         | 191               | 289                 | 341-2200  |
| 22.25     | MT2         | 191               | 289                 | 341-2225  |
| 22.50     | MT2         | 198               | 296                 | 341-2250  |
| 22.75     | MT2         | 198               | 296                 | 341-2275  |
| 23.00     | MT2         | 198               | 296                 | 341-2300  |
| 23.25     | MT3         | 198               | 319                 | 341-2325  |
| 23.50     | MT3         | 198               | 319                 | 341-2350  |
| 23.75     | MT3         | 206               | 327                 | 341-2375  |
| 24.00     | MT3         | 206               | 327                 | 341-2400  |
| 24.25     | MT3         | 206               | 327                 | 341-2425  |
| 24.50     | MT3         | 206               | 327                 | 341-2450  |
| 24.75     | MT3         | 206               | 327                 | 341-2475  |
| 25.00     | MT3         | 206               | 327                 | 341-2500  |
| 25.25     | MT3         | 214               | 335                 | 341-2525  |
| 25.50     | MT3         | 214               | 335                 | 341-2550  |
| 25.75     | MT3         | 214               | 335                 | 341-2575  |
| 26.00     | MT3         | 214               | 335                 | 341-2600  |
| 26.25     | MT3         | 214               | 335                 | 341-2625  |
| 26.50     | MT3         | 214               | 335                 | 341-2650  |
| 26.75     | MT3         | 222               | 343                 | 341-2675  |
| 27.00     | MT3         | 222               | 343                 | 341-2700  |
| 27.25     | MT3         | 222               | 343                 | 341-2725  |
| 27.50     | MT3         | 222               | 343                 | 341-2750  |
| 27.75     | MT3         | 222               | 343                 | 341-2775  |
| 28.00     | MT3         | 222               | 343                 | 341-2800  |
| 28.25     | MT3         | 230               | 351                 | 341-2825  |
| 28.50     | MT3         | 230               | 351                 | 341-2850  |
| 28.75     | MT3         | 230               | 351                 | 341-2875  |
| 29.00     | MT3         | 230               | 351                 | 341-2900  |
| 29.25     | MT3         | 230               | 351                 | 341-2925  |

| Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------|-------------|-------------------|---------------------|-----------|
| 29.50     | MT3         | 230               | 351                 | 341-2950  |
| 29.75     | MT3         | 230               | 351                 | 341-2975  |
| 30.00     | MT3         | 230               | 351                 | 341-3000  |
| 30.25     | MT3         | 239               | 360                 | 341-3025  |
| 30.50     | MT3         | 239               | 360                 | 341-3050  |
| 30.75     | MT3         | 239               | 360                 | 341-3075  |
| 31.00     | MT3         | 239               | 360                 | 341-3100  |
| 31.25     | MT3         | 239               | 360                 | 341-3125  |
| 31.50     | MT3         | 239               | 360                 | 341-3150  |
| 31.75     | MT3         | 248               | 369                 | 341-3175  |
| 32.00     | MT4         | 248               | 397                 | 341-3200  |
| 32.50     | MT4         | 248               | 397                 | 341-3250  |
| 33.00     | MT4         | 248               | 397                 | 341-3300  |
| 33.50     | MT4         | 248               | 397                 | 341-3350  |
| 34.00     | MT4         | 257               | 406                 | 341-3400  |
| 34.50     | MT4         | 257               | 406                 | 341-3450  |
| 35.00     | MT4         | 257               | 406                 | 341-3500  |
| 35.50     | MT4         | 257               | 406                 | 341-3550  |
| 36.00     | MT4         | 267               | 416                 | 341-3600  |
| 36.50     | MT4         | 267               | 416                 | 341-3650  |
| 37.00     | MT4         | 267               | 416                 | 341-3700  |
| 37.50     | MT4         | 267               | 416                 | 341-3750  |
| 38.00     | MT4         | 277               | 426                 | 341-3800  |
| 38.50     | MT4         | 277               | 426                 | 341-3850  |
| 39.00     | MT4         | 277               | 426                 | 341-3900  |
| 39.50     | MT4         | 277               | 426                 | 341-3950  |
| 40.00     | MT4         | 277               | 426                 | 341-4000  |
| 40.50     | MT4         | 287               | 436                 | 341-4050  |
| 41.00     | MT4         | 287               | 436                 | 341-4100  |
| 41.50     | MT4         | 287               | 436                 | 341-4150  |
| 42.00     | MT4         | 287               | 436                 | 341-4200  |
| 42.50     | MT4         | 287               | 436                 | 341-4250  |
| 43.00     | MT4         | 298               | 447                 | 341-4300  |
| 43.50     | MT4         | 298               | 447                 | 341-4350  |
| 44.00     | MT4         | 298               | 447                 | 341-4400  |
| 44.50     | MT4         | 298               | 447                 | 341-4450  |
| 45.00     | MT4         | 298               | 447                 | 341-4500  |
| 45.50     | MT4         | 310               | 459                 | 341-4550  |
| 46.00     | MT4         | 310               | 459                 | 341-4600  |
| 46.50     | MT4         | 310               | 459                 | 341-4650  |
| 47.00     | MT4         | 310               | 459                 | 341-4700  |
| 47.50     | MT4         | 310               | 459                 | 341-4750  |
| 48.00     | MT4         | 321               | 470                 | 341-4800  |
| 48.50     | MT4         | 321               | 470                 | 341-4850  |
| 49.00     | MT4         | 321               | 470                 | 341-4900  |
| 49.50     | MT4         | 321               | 470                 | 341-4950  |
| 50.00     | MT4         | 321               | 470                 | 341-5000  |

# Metric Taper Shank Drills



## Metric Taper Shank Drills

DIN 345, High Speed Steel, Right Hand, Black Oxide



| Flute Overall |       |        |        |           |           | Flute Overall |       |        |        |           |           | Flute Overall |       |        |        |           |           |
|---------------|-------|--------|--------|-----------|-----------|---------------|-------|--------|--------|-----------|-----------|---------------|-------|--------|--------|-----------|-----------|
| Size          | Shank | Length | Length | Roll      | Milled    | Size          | Shank | Length | Length | Roll      | Milled    | Size          | Shank | Length | Length | Roll      | Milled    |
| (mm)          | Taper | (mm)   | (mm)   | Order No. | Order No. | (mm)          | Taper | (mm)   | (mm)   | Order No. | Order No. | (mm)          | Taper | (mm)   | (mm)   | Order No. | Order No. |
| 5.00          | MT1   | 52     | 133    | 303-0500  | 308-0500  | 19.50         | MT2   | 140    | 238    | 303-1950  | 308-1950  | 36.00         | MT4   | 195    | 344    | 303-3600  | 308-3600  |
| 5.25          | MT1   | 52     | 133    | 303-0525  | 308-0525  | 19.75         | MT2   | 140    | 238    | 303-1975  | 308-1975  | 36.50         | MT4   | 195    | 344    | 303-3650  | 308-3650  |
| 5.50          | MT1   | 57     | 138    | 303-0550  | 308-0550  | 20.00         | MT2   | 140    | 238    | 303-2000  | 308-2000  | 37.00         | MT4   | 195    | 344    | 303-3700  | 308-3700  |
| 5.75          | MT1   | 57     | 138    | 303-0575  | 308-0575  | 20.25         | MT2   | 145    | 243    | 303-2025  | 308-2025  | 37.50         | MT4   | 195    | 344    | 303-3750  | 308-3750  |
| 6.00          | MT1   | 57     | 138    | 303-0600  | 308-0600  | 20.50         | MT2   | 145    | 243    | 303-2050  | 308-2050  | 38.00         | MT4   | 200    | 349    | 303-3800  | 308-3800  |
| 6.25          | MT1   | 63     | 144    | 303-0625  | 308-0625  | 20.75         | MT2   | 145    | 243    | 303-2075  | 308-2075  | 38.50         | MT4   | 200    | 349    | 303-3850  | 308-3850  |
| 6.50          | MT1   | 63     | 144    | 303-0650  | 308-0650  | 21.00         | MT2   | 145    | 243    | 303-2100  | 308-2100  | 39.00         | MT4   | 200    | 349    | 303-3900  | 308-3900  |
| 6.75          | MT1   | 69     | 150    | 303-0675  | 308-0675  | 21.25         | MT2   | 150    | 248    | 303-2125  | 308-2125  | 39.50         | MT4   | 200    | 349    | 303-3950  | 308-3950  |
| 7.00          | MT1   | 69     | 150    | 303-0700  | 308-0700  | 21.50         | MT2   | 150    | 248    | 303-2150  | 308-2150  | 40.00         | MT4   | 200    | 349    | 303-4000  | 308-4000  |
| 7.25          | MT1   | 69     | 150    | 303-0725  | 308-0725  | 21.75         | MT2   | 150    | 248    | 303-2175  | 308-2175  | 40.50         | MT4   | 205    | 354    | 303-4050  | 308-4050  |
| 7.50          | MT1   | 69     | 150    | 303-0750  | 308-0750  | 22.00         | MT2   | 150    | 248    | 303-2200  | 308-2200  | 41.00         | MT4   | 205    | 354    | 303-4100  | 308-4100  |
| 7.75          | MT1   | 75     | 156    | 303-0775  | 308-0775  | 22.25         | MT2   | 150    | 248    | 303-2225  | 308-2225  | 41.50         | MT4   | 205    | 354    | 303-4150  | 308-4150  |
| 8.00          | MT1   | 75     | 156    | 303-0800  | 308-0800  | 22.50         | MT2   | 155    | 253    | 303-2250  | 308-2250  | 42.00         | MT4   | 205    | 354    | 303-4200  | 308-4200  |
| 8.25          | MT1   | 75     | 156    | 303-0825  | 308-0825  | 22.75         | MT2   | 155    | 253    | 303-2275  | 308-2275  | 42.50         | MT4   | 205    | 354    | 303-4250  | 308-4250  |
| 8.50          | MT1   | 75     | 156    | 303-0850  | 308-0850  | 23.00         | MT2   | 155    | 253    | 303-2300  | 308-2300  | 43.00         | MT4   | 210    | 359    | 303-4300  | 308-4300  |
| 8.75          | MT1   | 81     | 162    | 303-0875  | 308-0875  | 23.25         | MT3   | 155    | 276    | 303-2325  | 308-2325  | 43.50         | MT4   | 210    | 359    | 303-4350  | 308-4350  |
| 9.00          | MT1   | 81     | 162    | 303-0900  | 308-0900  | 23.50         | MT3   | 155    | 276    | 303-2350  | 308-2350  | 44.00         | MT4   | 210    | 359    | 303-4400  | 308-4400  |
| 9.25          | MT1   | 81     | 162    | 303-0925  | 308-0925  | 23.75         | MT3   | 160    | 281    | 303-2375  | 308-2375  | 44.50         | MT4   | 210    | 359    | 303-4450  | 308-4450  |
| 9.50          | MT1   | 81     | 162    | 303-0950  | 308-0950  | 24.00         | MT3   | 160    | 281    | 303-2400  | 308-2400  | 45.00         | MT4   | 210    | 359    | 303-4500  | 308-4500  |
| 9.75          | MT1   | 87     | 168    | 303-0975  | 308-0975  | 24.25         | MT3   | 160    | 281    | 303-2425  | 308-2425  | 45.50         | MT4   | 215    | 364    | 303-4550  | 308-4550  |
| 10.00         | MT1   | 87     | 168    | 303-1000  | 308-1000  | 24.50         | MT3   | 160    | 281    | 303-2450  | 308-2450  | 46.00         | MT4   | 215    | 364    | 303-4600  | 308-4600  |
| 10.25         | MT1   | 87     | 168    | 303-1025  | 308-1025  | 24.75         | MT3   | 160    | 281    | 303-2475  | 308-2475  | 46.50         | MT4   | 215    | 364    | 303-4650  | 308-4650  |
| 10.50         | MT1   | 87     | 168    | 303-1050  | 308-1050  | 25.00         | MT3   | 160    | 281    | 303-2500  | 308-2500  | 47.00         | MT4   | 215    | 364    | 303-4700  | 308-4700  |
| 10.75         | MT1   | 94     | 175    | 303-1075  | 308-1075  | 25.25         | MT3   | 165    | 286    | 303-2525  | 308-2525  | 47.50         | MT4   | 215    | 364    | 303-4750  | 308-4750  |
| 11.00         | MT1   | 94     | 175    | 303-1100  | 308-1100  | 25.50         | MT3   | 165    | 286    | 303-2550  | 308-2550  | 48.00         | MT4   | 220    | 369    | 303-4800  | 308-4800  |
| 11.25         | MT1   | 94     | 175    | 303-1125  | 308-1125  | 25.75         | MT3   | 165    | 286    | 303-2575  | 308-2575  | 48.50         | MT4   | 220    | 369    | 303-4850  | 308-4850  |
| 11.50         | MT1   | 94     | 175    | 303-1150  | 308-1150  | 26.00         | MT3   | 165    | 286    | 303-2600  | 308-2600  | 49.00         | MT4   | 220    | 369    | 303-4900  | 308-4900  |
| 11.75         | MT1   | 94     | 175    | 303-1175  | 308-1175  | 26.25         | MT3   | 165    | 286    | 303-2625  | 308-2625  | 49.50         | MT4   | 220    | 369    | 303-4950  | 308-4950  |
| 12.00         | MT1   | 101    | 182    | 303-1200  | 308-1200  | 26.50         | MT3   | 165    | 286    | 303-2650  | 308-2650  | 50.00         | MT4   | 220    | 369    | 303-5000  | 308-5000  |
| 12.25         | MT1   | 101    | 182    | 303-1225  | 308-1225  | 26.75         | MT3   | 170    | 291    | 303-2675  | 308-2675  | 50.50         | MT4   | 225    | 374    | 303-5050  | 308-5050  |
| 12.50         | MT1   | 101    | 182    | 303-1250  | 308-1250  | 27.00         | MT3   | 170    | 291    | 303-2700  | 308-2700  | 51.00         | MT5   | 412    | 225    |           | 308-5100  |
| 12.75         | MT1   | 101    | 182    | 303-1275  | 308-1275  | 27.25         | MT3   | 170    | 291    | 303-2725  | 308-2725  | 52.00         | MT5   | 412    | 225    |           | 308-5200  |
| 13.00         | MT1   | 101    | 182    | 303-1300  | 308-1300  | 27.50         | MT3   | 170    | 291    | 303-2750  | 308-2750  | 53.00         | MT5   | 412    | 225    |           | 308-5300  |
| 13.25         | MT1   | 101    | 182    | 303-1325  | 308-1325  | 27.75         | MT3   | 170    | 291    | 303-2775  | 308-2775  | 54.00         | MT5   | 230    | 417    |           | 308-5400  |
| 13.50         | MT1   | 108    | 189    | 303-1350  | 308-1350  | 28.00         | MT3   | 170    | 291    | 303-2800  | 308-2800  | 55.00         | MT5   | 230    | 417    |           | 308-5500  |
| 13.75         | MT1   | 108    | 189    | 303-1375  | 308-1375  | 28.25         | MT3   | 175    | 296    | 303-2825  | 308-2825  | 56.00         | MT5   | 230    | 417    |           | 308-5600  |
| 14.00         | MT2   | 108    | 189    | 303-1400  | 308-1400  | 28.50         | MT3   | 175    | 296    | 303-2850  | 308-2850  | 57.00         | MT5   | 235    | 422    |           | 308-5700  |
| 14.25         | MT2   | 114    | 212    | 303-1425  | 308-1425  | 28.75         | MT3   | 175    | 296    | 303-2875  | 308-2875  | 58.00         | MT5   | 235    | 422    |           | 308-5800  |
| 14.50         | MT2   | 114    | 212    | 303-1450  | 308-1450  | 29.00         | MT3   | 175    | 296    | 303-2900  | 308-2900  | 59.00         | MT5   | 235    | 422    |           | 308-5900  |
| 14.75         | MT2   | 114    | 212    | 303-1475  | 308-1475  | 29.25         | MT3   | 175    | 296    | 303-2925  | 308-2925  | 60.00         | MT5   | 235    | 422    |           | 308-6000  |
| 15.00         | MT2   | 114    | 212    | 303-1500  | 308-1500  | 29.50         | MT3   | 175    | 296    | 303-2950  | 308-2950  | 61.00         | MT5   | 240    | 427    |           | 308-6100  |
| 15.25         | MT2   | 120    | 218    | 303-1525  | 308-1525  | 29.75         | MT3   | 175    | 296    | 303-2975  | 308-2975  | 62.00         | MT5   | 240    | 427    |           | 308-6200  |
| 15.50         | MT2   | 120    | 218    | 303-1550  | 308-1550  | 30.00         | MT3   | 175    | 296    | 303-3000  | 308-3000  | 63.00         | MT5   | 240    | 427    |           | 308-6300  |
| 15.75         | MT2   | 120    | 218    | 303-1575  | 308-1575  | 30.25         | MT3   | 180    | 301    | 303-3025  | 308-3025  | 64.00         | MT5   | 245    | 432    |           | 308-6400  |
| 16.00         | MT2   | 120    | 218    | 303-1600  | 308-1600  | 30.50         | MT3   | 180    | 301    | 303-3050  | 308-3050  | 65.00         | MT5   | 245    | 432    |           | 308-6500  |
| 16.25         | MT2   | 125    | 223    | 303-1625  | 308-1625  | 30.75         | MT3   | 180    | 301    | 303-3075  | 308-3075  | 66.00         | MT5   | 245    | 432    |           | 308-6600  |
| 16.50         | MT2   | 125    | 223    | 303-1650  | 308-1650  | 31.00         | MT3   | 180    | 301    | 303-3100  | 308-3100  | 67.00         | MT5   | 245    | 432    |           | 308-6700  |
| 16.75         | MT2   | 125    | 223    | 303-1675  | 308-1675  | 31.25         | MT3   | 180    | 301    | 303-3125  | 308-3125  | 68.00         | MT5   | 250    | 437    |           | 308-6800  |
| 17.00         | MT2   | 125    | 223    | 303-1700  | 308-1700  | 31.50         | MT3   | 180    | 301    | 303-3150  | 308-3150  | 69.00         | MT5   | 250    | 437    |           | 308-6900  |
| 17.25         | MT2   | 130    | 228    | 303-1725  | 308-1725  | 31.75         | MT3   | 185    | 306    | 303-3175  | 308-3175  | 70.00         | MT5   | 250    | 437    |           | 308-7000  |
| 17.50         | MT2   | 130    | 228    | 303-1750  | 308-1750  | 32.00         | MT4   | 185    | 334    | 303-3200  | 308-3200  | 71.00         | MT5   | 250    | 437    |           | 308-7100  |
| 17.75         | MT2   | 130    | 228    | 303-1775  | 308-1775  | 32.50         | MT4   | 185    | 334    | 303-3250  | 308-3250  | 72.00         | MT5   | 255    | 442    |           | 308-7200  |
| 18.00         | MT2   | 130    | 228    | 303-1800  | 308-1800  | 33.00         | MT4   | 185    | 334    | 303-3300  | 308-3300  | 73.00         | MT5   | 255    | 442    |           | 308-7300  |
| 18.25         | MT2   | 135    | 233    | 303-1825  | 308-1825  | 33.50         | MT4   | 185    | 334    | 303-3350  | 308-3350  | 74.00         | MT5   | 255    | 442    |           | 308-7400  |
| 18.50         | MT2   | 135    | 233    | 303-1850  | 308-1850  | 34.00         | MT4   | 190    | 339    | 303-3400  | 308-3400  | 75.00         | MT5   | 255    | 442    |           | 308-7500  |
| 18.75         | MT2   | 135    | 233    | 303-1875  | 308-1875  | 34.50         | MT4   | 190    | 339    | 303-3450  | 308-3450  | 76.00         | MT5   | 260    | 447    |           | 308-7600  |
| 19.00         | MT2   | 135    | 233    | 303-1900  | 308-1900  | 35.00         | MT4   | 190    | 339    | 303-3500  | 308-3500  |               |       |        |        |           |           |
| 19.25         | MT2   | 140    | 238    | 303-1925  | 308-1925  | 35.50         | MT4   | 190    | 339    | 303-3550  | 308-3550  |               |       |        |        |           |           |

### 5% Cobalt Metric Taper Shank Drills

DIN 345



| Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. | Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. | Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------|-------------|-------------------|---------------------|-----------|-----------|-------------|-------------------|---------------------|-----------|-----------|-------------|-------------------|---------------------|-----------|
| 10.00     | MT1         | 87                | 168                 | 345-1000  | 19.00     | MT2         | 135               | 223                 | 345-1900  | 28.00     | MT3         | 170               | 291                 | 345-2800  |
| 10.50     | MT1         | 87                | 168                 | 345-1050  | 19.50     | MT2         | 140               | 238                 | 345-1950  | 28.50     | MT3         | 175               | 296                 | 345-2850  |
| 11.00     | MT1         | 94                | 175                 | 345-1100  | 20.00     | MT2         | 140               | 238                 | 345-2000  | 29.00     | MT3         | 175               | 296                 | 345-2900  |
| 12.00     | MT1         | 101               | 182                 | 345-1200  | 20.50     | MT2         | 145               | 243                 | 345-2050  | 30.00     | MT3         | 175               | 296                 | 345-3000  |
| 12.50     | MT1         | 101               | 182                 | 345-1250  | 21.00     | MT2         | 145               | 243                 | 345-2100  | 30.50     | MT3         | 180               | 301                 | 345-3050  |
| 12.75     | MT1         | 101               | 182                 | 345-1275  | 21.50     | MT2         | 150               | 248                 | 345-2150  | 31.00     | MT3         | 180               | 301                 | 345-3100  |
| 13.00     | MT1         | 101               | 182                 | 345-1300  | 22.00     | MT2         | 150               | 248                 | 345-2200  | 31.50     | MT3         | 180               | 301                 | 345-3150  |
| 13.50     | MT1         | 108               | 189                 | 345-1350  | 22.50     | MT2         | 155               | 253                 | 345-2250  | 32.00     | MT4         | 185               | 334                 | 345-3200  |
| 14.00     | MT2         | 108               | 189                 | 345-1400  | 23.00     | MT2         | 155               | 253                 | 345-2300  | 33.00     | MT4         | 185               | 334                 | 345-3300  |
| 14.50     | MT2         | 114               | 212                 | 345-1450  | 23.50     | MT3         | 155               | 276                 | 345-2350  | 33.50     | MT4         | 185               | 334                 | 345-3350  |
| 15.00     | MT2         | 114               | 212                 | 345-1500  | 24.00     | MT3         | 160               | 281                 | 345-2400  | 34.00     | MT4         | 190               | 339                 | 345-3400  |
| 15.50     | MT2         | 120               | 218                 | 345-1550  | 24.50     | MT3         | 160               | 281                 | 345-2450  | 34.50     | MT4         | 190               | 339                 | 345-3450  |
| 16.00     | MT2         | 120               | 218                 | 345-1600  | 25.00     | MT3         | 160               | 281                 | 345-2500  | 35.00     | MT4         | 190               | 339                 | 345-3500  |
| 16.50     | MT2         | 125               | 223                 | 345-1650  | 25.50     | MT3         | 165               | 286                 | 345-2550  | 38.00     | MT4         | 200               | 349                 | 345-3800  |
| 17.00     | MT2         | 125               | 223                 | 345-1700  | 26.00     | MT3         | 165               | 286                 | 345-2600  | 43.00     | MT4         | 210               | 359                 | 345-4300  |
| 17.50     | MT2         | 130               | 228                 | 345-1750  | 26.50     | MT3         | 165               | 286                 | 345-2650  | 44.50     | MT4         | 210               | 359                 | 345-4450  |
| 18.00     | MT2         | 130               | 228                 | 345-1800  | 27.00     | MT3         | 170               | 291                 | 345-2700  | 45.00     | MT4         | 210               | 359                 | 345-4500  |
| 18.50     | MT2         | 135               | 223                 | 345-1850  | 27.50     | MT3         | 170               | 291                 | 345-2750  | 50.00     | MT4         | 220               | 369                 | 345-5000  |

### Metric Taper Shank Drills

DIN 346, High Speed Steel, Right Hand, Black Oxide



| Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. | Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. | Size (mm) | Shank Taper | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------|-------------|-------------------|---------------------|-----------|-----------|-------------|-------------------|---------------------|-----------|-----------|-------------|-------------------|---------------------|-----------|
| 12.00     | MT2         | 101               | 199                 | 346-1200  | 22.25     | MT3         | 150               | 271                 | 346-2225  | 31.75     | MT4         | 185               | 334                 | 346-3175  |
| 12.25     | MT2         | 101               | 199                 | 346-1225  | 22.50     | MT3         | 155               | 276                 | 346-2250  | 40.50     | MT5         | 205               | 392                 | 346-4050  |
| 12.50     | MT2         | 101               | 199                 | 346-1250  | 22.75     | MT3         | 155               | 276                 | 346-2275  | 41.00     | MT5         | 205               | 392                 | 346-4100  |
| 12.75     | MT2         | 101               | 199                 | 346-1275  | 23.00     | MT3         | 155               | 276                 | 346-2300  | 41.50     | MT5         | 205               | 392                 | 346-4150  |
| 13.00     | MT2         | 101               | 199                 | 346-1300  | 26.75     | MT4         | 170               | 319                 | 346-2675  | 42.00     | MT5         | 205               | 392                 | 346-4200  |
| 13.25     | MT2         | 101               | 199                 | 346-1325  | 27.00     | MT4         | 170               | 319                 | 346-2700  | 42.50     | MT5         | 205               | 392                 | 346-4250  |
| 13.50     | MT2         | 108               | 206                 | 346-1350  | 27.25     | MT4         | 170               | 319                 | 346-2725  | 43.00     | MT5         | 210               | 397                 | 346-4300  |
| 13.75     | MT2         | 108               | 206                 | 346-1375  | 27.50     | MT4         | 170               | 319                 | 346-2750  | 43.50     | MT5         | 210               | 397                 | 346-4350  |
| 14.00     | MT2         | 108               | 206                 | 346-1400  | 27.75     | MT4         | 170               | 319                 | 346-2775  | 44.00     | MT5         | 210               | 397                 | 346-4400  |
| 18.25     | MT3         | 135               | 256                 | 346-1825  | 28.00     | MT4         | 170               | 319                 | 346-2800  | 44.50     | MT5         | 210               | 397                 | 346-4450  |
| 18.50     | MT3         | 135               | 256                 | 346-1850  | 28.25     | MT4         | 175               | 324                 | 346-2825  | 45.00     | MT5         | 210               | 397                 | 346-4500  |
| 18.75     | MT3         | 135               | 256                 | 346-1875  | 28.50     | MT4         | 175               | 324                 | 346-2850  | 45.50     | MT5         | 215               | 402                 | 346-4550  |
| 19.00     | MT3         | 135               | 256                 | 346-1900  | 28.75     | MT4         | 175               | 324                 | 346-2875  | 46.00     | MT5         | 215               | 402                 | 346-4600  |
| 19.25     | MT3         | 140               | 261                 | 346-1925  | 29.00     | MT4         | 175               | 324                 | 346-2900  | 46.50     | MT5         | 215               | 402                 | 346-4650  |
| 19.50     | MT3         | 140               | 261                 | 346-1950  | 29.25     | MT4         | 175               | 324                 | 346-2925  | 47.00     | MT5         | 215               | 402                 | 346-4700  |
| 20.00     | MT3         | 140               | 261                 | 346-2000  | 29.50     | MT4         | 175               | 324                 | 346-2950  | 47.50     | MT5         | 215               | 402                 | 346-4750  |
| 20.25     | MT3         | 145               | 266                 | 346-2025  | 29.75     | MT4         | 175               | 324                 | 346-2975  | 48.00     | MT5         | 220               | 407                 | 346-4800  |
| 20.50     | MT3         | 145               | 266                 | 346-2050  | 30.00     | MT4         | 175               | 324                 | 346-3000  | 48.50     | MT5         | 220               | 407                 | 346-4850  |
| 20.75     | MT3         | 145               | 266                 | 346-2075  | 30.25     | MT4         | 180               | 329                 | 346-3025  | 49.00     | MT5         | 220               | 407                 | 346-4900  |
| 21.00     | MT3         | 145               | 266                 | 346-2100  | 30.50     | MT4         | 180               | 329                 | 346-3050  | 49.50     | MT5         | 220               | 407                 | 346-4950  |
| 21.25     | MT3         | 150               | 271                 | 346-2125  | 30.75     | MT4         | 180               | 329                 | 346-3075  | 50.00     | MT5         | 220               | 407                 | 346-5000  |
| 21.50     | MT3         | 150               | 271                 | 346-2150  | 31.00     | MT4         | 180               | 329                 | 346-3100  | 50.50     | MT5         | 225               | 412                 | 346-5050  |
| 21.75     | MT3         | 150               | 271                 | 346-2175  | 31.25     | MT4         | 180               | 329                 | 346-3125  |           |             |                   |                     |           |
| 22.00     | MT3         | 150               | 271                 | 346-2200  | 31.50     | MT4         | 180               | 329                 | 346-3150  |           |             |                   |                     |           |

### 5% Cobalt Inch Taper Shank Drills



| Size  | Flute Length | Overall Length | Shank Taper | Order No. | Size   | Flute Length | Overall Length | Shank Taper | Order No. | Size   | Flute Length | Overall Length | Shank Taper | Order No. |
|-------|--------------|----------------|-------------|-----------|--------|--------------|----------------|-------------|-----------|--------|--------------|----------------|-------------|-----------|
| 1/4"  | 2-7/8"       | 5-3/8"         | MT1         | 300-1616  | 19/32" | 4-7/8"       | 8-3/4"         | MT2         | 300-2638  | 15/16" | 6-1/8"       | 10-3/4"        | MT3         | 300-3660  |
| 9/32  | 3            | 5-7/8"         | MT1         | 300-1618  | 5/8    | 4-7/8        | 8-3/4          | MT2         | 300-2640  | 31/32  | 6-3/8        | 11             | MT3         | 300-3662  |
| 5/16  | 3-1/8        | 6-1/8          | MT1         | 300-1620  | 21/32  | 5-1/8        | 9-3/4          | MT2         | 300-2642  | 1      | 6-3/8        | 11             | MT3         | 300-3664  |
| 11/32 | 3-1/4        | 6-1/8          | MT1         | 300-1622  | 11/16  | 5-3/8        | 9-1/4          | MT2         | 300-2644  | 1-1/8  | 7-1/8        | 12-7/8         | MT4         | 300-4708  |
| 3/8   | 3-1/2        | 6-3/8          | MT1         | 300-1624  | 23/32  | 5-5/8        | 9-1/2          | MT2         | 300-2646  | 1-3/16 | 7-3/8        | 13             | MT4         | 300-4712  |
| 13/32 | 3-5/8        | 6-5/8          | MT1         | 300-1626  | 3/4    | 5-7/8        | 9-3/4          | MT2         | 300-2648  | 1-1/4  | 7-7/8        | 13-1/2         | MT4         | 300-4716  |
| 7/16  | 3-7/8        | 6-7/8          | MT1         | 300-1628  | 25/32  | 6            | 9-7/8          | MT2         | 300-3650  | 1-5/6  | 8-5/8        | 14-1/4         | MT4         | 300-4720  |
| 15/32 | 4-1/8        | 6-7/8          | MT1         | 300-1630  | 13/16  | 6-1/8        | 10-3/4         | MT3         | 300-3652  | 1-3/8  | 8-7/8        | 14-1/2         | MT4         | 300-4724  |
| 1/2   | 4-3/8        | 8-1/4          | MT2         | 300-2632  | 27/32  | 6-1/8        | 10-3/4         | MT3         | 300-3654  | 1-7/16 | 9-1/8        | 14-3/4         | MT4         | 300-4728  |
| 17/32 | 4-5/8        | 8-1/2          | MT2         | 300-2634  | 7/8    | 6-1/8        | 10-3/4         | MT3         | 300-3656  |        |              |                |             |           |
| 9/16  | 4-7/8        | 8-3/4          | MT2         | 300-2636  | 29/32  | 6-1/8        | 10-3/4         | MT3         | 300-3658  |        |              |                |             |           |

## Reduced Shank Drills

**BESTOOL®**

### Silver & Deming Drills

Also called reduced shank drills, with 1/2", 3/4", 1/4", 3/8" shank, drilling large hole sizes than each drill chuck capacity

#### High Speed Steel, Black Oxide, 118°

6" Overall Length, 3" Flute Length

#### 1/4" Shank



| Size   | Order No. | Size   | Order No. | Size  | Order No. |
|--------|-----------|--------|-----------|-------|-----------|
| 17/64" | 301-0017  | 23/64" | 301-0023  | 7/16" | 301-0028  |
| 9/32   | 301-0018  | 3/8    | 301-0024  | 29/64 | 301-0029  |
| 19/64  | 301-0019  | 25/64  | 301-0025  | 15/32 | 301-0030  |
| 5/16   | 301-0020  | 13/32  | 301-0026  | 31/64 | 301-0031  |
| 21/64  | 301-0021  | 27/64  | 301-0027  | 1/2   | 301-0032  |
| 11/32  | 301-0022  |        |           |       |           |

#### 3/8" shank



| Size   | Order No. | Size   | Order No. | Size  | Order No. |
|--------|-----------|--------|-----------|-------|-----------|
| 25/64" | 301-0325  | 31/64" | 301-0331  | 5/8"  | 301-0340  |
| 13/32  | 301-0326  | 1/2    | 301-0332  | 21/32 | 301-0342  |
| 27/64  | 301-0327  | 17/32  | 301-0334  | 11/16 | 301-0344  |
| 7/16   | 301-0328  | 9/16   | 301-0336  | 23/32 | 301-0346  |
| 29/64  | 301-0329  | 19/32  | 301-0338  | 3/4   | 301-0348  |
| 15/32  | 301-0330  |        |           |       |           |

#### 1/2" Shank, Inch



| Size  | Order No. | Size   | Order No. | Size    | Order No. | Size     | Order No. |
|-------|-----------|--------|-----------|---------|-----------|----------|-----------|
| 1/2"  | 301-1032  | 49/64" | 301-1049  | 1-1/32" | 301-1102  | 1-19/64" | 301-1119  |
| 33/64 | 301-1033  | 25/32  | 301-1050  | 1-3/64  | 301-1103  | 1-5/16   | 301-1120  |
| 17/32 | 301-1034  | 51/64  | 301-1051  | 1-1/16  | 301-1104  | 1-21/64  | 301-1121  |
| 35/64 | 301-1035  | 13/16  | 301-1052  | 1-5/64  | 301-1105  | 1-11/32  | 301-1122  |
| 9/16  | 301-1036  | 53/64  | 301-1053  | 1-3/32  | 301-1106  | 1-23/64  | 301-1123  |
| 37/64 | 301-1037  | 27/32  | 301-1054  | 1-7/64  | 301-1107  | 1-3/8    | 301-1124  |
| 19/32 | 301-1038  | 55/64  | 301-1055  | 1-1/8   | 301-1108  | 1-25/64  | 301-1125  |
| 39/64 | 301-1039  | 7/8    | 301-1056  | 1-9/64  | 301-1109  | 1-13/32  | 301-1126  |
| 5/8   | 301-1040  | 57/64  | 301-1057  | 1-5/32  | 301-1110  | 1-27/64  | 301-1127  |
| 41/64 | 301-1041  | 29/32  | 301-1058  | 1-11/64 | 301-1111  | 1-7/16   | 301-1128  |
| 21/32 | 301-1042  | 59/64  | 301-1059  | 1-3/16  | 301-1112  | 1-29/64  | 301-1129  |
| 43/64 | 301-1043  | 15/16  | 301-1060  | 1-13/64 | 301-1113  | 1-15/32  | 301-1130  |
| 11/16 | 301-1044  | 61/64  | 301-1061  | 1-7/32  | 301-1114  | 1-31/64  | 301-1131  |
| 45/64 | 301-1045  | 31/32  | 301-1062  | 1-15/64 | 301-1115  | 1-1/2    | 301-1132  |
| 23/32 | 301-1046  | 63/64  | 301-1063  | 1-1/4   | 301-1116  |          |           |
| 47/64 | 301-1047  | 1      | 301-1064  | 1-17/64 | 301-1117  |          |           |
| 3/4   | 301-1048  | 1-1/64 | 301-1101  | 1-9/32  | 301-1118  |          |           |

#### 1/2" Shank, Metric

| Size (mm) | Order No. | Size (mm) | Order No. | Size (mm) | Order No. | Size (mm) | Order No. |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 12.50     | 301-1025  | 17.10     | 301-1171  | 23.75     | 301-1237  | 31.25     | 301-1312  |
| 13.00     | 301-1030  | 17.50     | 301-1175  | 24.00     | 301-1240  | 32.00     | 301-1320  |
| 13.80     | 301-1138  | 17.75     | 301-1177  | 25.00     | 301-1250  | 32.50     | 301-1325  |
| 14.00     | 301-1140  | 17.80     | 301-1178  | 25.50     | 301-1255  | 33.00     | 301-1330  |
| 14.25     | 301-1142  | 18.00     | 301-1180  | 26.00     | 301-1260  | 34.00     | 301-1340  |
| 14.50     | 301-1145  | 19.75     | 301-1197  | 26.75     | 301-1267  | 34.50     | 301-1345  |
| 15.00     | 301-1150  | 20.00     | 301-1200  | 27.00     | 301-1270  | 36.00     | 301-1360  |
| 16.00     | 301-1160  | 20.50     | 301-1205  | 27.50     | 301-1275  | 37.00     | 301-1370  |
| 16.50     | 301-1165  | 21.50     | 301-1215  | 28.50     | 301-1285  | 38.00     | 301-1380  |
| 16.75     | 301-1167  | 22.00     | 301-1220  | 30.00     | 301-1300  | 41.00     | 301-1410  |
| 17.00     | 301-1170  | 22.50     | 301-1225  | 30.50     | 301-1305  |           |           |

### Silver & Deming Drills



#### 3/4" Shank

6" Overall Length

| Size   | Order No. | Size    | Order No. | Size     | Order No. | Size     | Order No. |
|--------|-----------|---------|-----------|----------|-----------|----------|-----------|
| 25/32" | 301-1950  | 1-3/32" | 301-2006  | 1-13/32" | 301-2026  | 1-23/32" | 301-2046  |
| 13/16  | 301-1952  | 1-1/8   | 301-2008  | 1-7/16   | 301-2028  | 1-3/4    | 301-2048  |
| 27/32  | 301-1954  | 1-5/32  | 301-2010  | 1-15/32  | 301-2030  | 1-25/32  | 301-2050  |
| 7/8    | 301-1956  | 1-3/16  | 301-2012  | 1-1/2    | 301-2032  | 1-13/16  | 301-2052  |
| 29/32  | 301-1958  | 1-7/32  | 301-2014  | 1-17/32  | 301-2034  | 1-27/32  | 301-2054  |
| 15/16  | 301-1960  | 1-1/4   | 301-2016  | 1-9/16   | 301-2036  | 1-7/8    | 301-2056  |
| 31/32  | 301-1962  | 1-9/32  | 301-2018  | 1-19/32  | 301-2038  | 1-29/32  | 301-2058  |
| 1      | 301-2000  | 1-5/16  | 301-2020  | 1-5/8    | 301-2040  | 1-15/16  | 301-2060  |
| 1-1/32 | 301-2002  | 1-11/32 | 301-2022  | 1-21/32  | 301-2042  | 1-31/32  | 301-2062  |
| 1-1/16 | 301-2004  | 1-3/8   | 301-2024  | 1-11/16  | 301-2044  | 2        | 301-2064  |

### Silver & Deming Drill Sets



| Pieces of Shank | Drills | Specification                                      | Wooden Stand Order No. |
|-----------------|--------|----------------------------------------------------|------------------------|
| 1/4"            | 16     | 17/64 to 1/2" by 64ths                             | 301-0096               |
| 3/8             | 8      | 25/64 to 1/2" by 64ths                             | 301-0398               |
| 1/2             | 5      | 17/32", 9/16", 5/8", 3/4", 1"                      | 301-0204               |
| 1/2             | 5      | 9/16", 5/8", 3/4", 7/8", 1"                        | 301-0215               |
| 1/2             | 6      | 1-1/8" to 1-3/8" by 16ths and 1-1/2"               | 301-0206               |
| 1/2             | 8      | 9/16-1" by 16ths                                   | 301-0218               |
| 1/2             | 8      | 1-1/16 to 1-1/2" by 16ths                          | 301-0288               |
| 1/2             | 10     | 9/16 to 1" by 16ths, 1-1/8", 1-1/4"                | 301-0210               |
| 1/2             | 12     | 9/16 to 1-1/4" by 16ths                            | 301-0212               |
| 1/2             | 13     | 17/32 to 1" by 16ths & 32nds                       | 301-0213               |
| 1/2             | 16     | 17/32 to 1" by 32nds                               | 301-0216               |
| 1/2             | 17     | 17/32 to 1-1/32" by 32nds                          | 301-0217               |
| 1/2             | 32     | 33/64 to 1" by 64ths                               | 301-0232               |
| 1/2             | 40     | 33/64" to 1" by 64ths & 1-1/16" to 1-1/2" by 16ths | 301-0240               |
| 3/4             | 5      | 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2"                     | 301-0225               |



| Pieces of Shank | Drills | Specification                  | Plastic Case Order No. |
|-----------------|--------|--------------------------------|------------------------|
| 1/2             | 5      | 9/16", 5/8", 3/4", 7/8", 1"    | 301-0205               |
| 1/2             | 8      | 9/16-1" by 16ths               | 301-0208               |
| 1/2             | 8      | 1-1/16 to 1-1/2" by 16ths      | 301-0298               |
| 3/4             | 5      | 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2" | 301-0235               |

**M35 Cobalt Silver & Deming Drills**
**1/2" Shank, 118° & 135° Split Point**
**Individual**


| Size   | 118°<br>Order No. | 135°<br>Order No. | Size     | 118°<br>Order No. | 135°<br>Order No. | Size     | 118°<br>Order No. | 135°<br>Order No. |
|--------|-------------------|-------------------|----------|-------------------|-------------------|----------|-------------------|-------------------|
| 33/64" | 301-0433          | 301-0833          | 55/64"   | 301-0455          | 301-0855          | 1-3/16"  | 301-0512          | 301-0912          |
| 17/32" | 301-0434          | 301-0834          | 7/8"     | 301-0456          | 301-0856          | 1-13/64" | 301-0513          | 301-0913          |
| 35/64" | 301-0435          | 301-0835          | 57/64"   | 301-0457          | 301-0857          | 1-7/32"  | 301-0514          | 301-0914          |
| 9/16"  | 301-0436          | 301-0836          | 29/32"   | 301-0458          | 301-0858          | 1-15/64" | 301-0515          | 301-0915          |
| 37/64" | 301-0437          | 301-0837          | 59/64"   | 301-0459          | 301-0859          | 1-1/4"   | 301-0516          | 301-0916          |
| 19/32" | 301-0438          | 301-0838          | 15/16"   | 301-0460          | 301-0860          | 1-17/64" | 301-0517          | 301-0917          |
| 39/64" | 301-0439          | 301-0839          | 61/64"   | 301-0461          | 301-0861          | 1-9/32"  | 301-0518          | 301-0918          |
| 5/8"   | 301-0440          | 301-0840          | 31/32"   | 301-0462          | 301-0862          | 1-19/64" | 301-0519          | 301-0919          |
| 41/64" | 301-0441          | 301-0841          | 63/64"   | 301-0463          | 301-0863          | 1-5/16"  | 301-0520          | 301-0920          |
| 21/32" | 301-0442          | 301-0842          | 1"       | 301-0464          | 301-0864          | 1-21/64" | 301-0521          | 301-0921          |
| 43/64" | 301-0443          | 301-0843          | 1-1/64"  | 301-0501          | 301-0901          | 1-11/32" | 301-0522          | 301-0922          |
| 11/16" | 301-0444          | 301-0844          | 1-1/32"  | 301-0502          | 301-0902          | 1-23/64" | 301-0523          | 301-0923          |
| 45/64" | 301-0445          | 301-0845          | 1-3/64"  | 301-0503          | 301-0903          | 1-3/8"   | 301-0524          | 301-0924          |
| 23/32" | 301-0446          | 301-0846          | 1-1/16"  | 301-0504          | 301-0904          | 1-25/64" | 301-0525          | 301-0925          |
| 47/64" | 301-0447          | 301-0847          | 1-5/64"  | 301-0505          | 301-0905          | 1-13/32" | 301-0526          | 301-0926          |
| 3/4"   | 301-0448          | 301-0848          | 1-3/32"  | 301-0506          | 301-0906          | 1-27/64" | 301-0527          | 301-0927          |
| 49/64" | 301-0449          | 301-0849          | 1-7/64"  | 301-0507          | 301-0907          | 1-7/16"  | 301-0528          | 301-0928          |
| 25/32" | 301-0450          | 301-0850          | 1-1/8"   | 301-0508          | 301-0908          | 1-29/64" | 301-0529          | 301-0929          |
| 51/64" | 301-0451          | 301-0851          | 1-9/64"  | 301-0509          | 301-0909          | 1-15/32" | 301-0530          | 301-0930          |
| 13/16" | 301-0452          | 301-0852          | 1-5/32"  | 301-0510          | 301-0910          | 1-31/64" | 301-0531          | 301-0931          |
| 53/64" | 301-0453          | 301-0853          | 1-11/64" | 301-0511          | 301-0911          | 1-1/2"   | 301-0532          | 301-0932          |
| 27/32" | 301-0454          | 301-0854          |          |                   |                   |          |                   |                   |

**Sets**

| Pieces | Specification                                         | 118°<br>Order No. | 135°<br>Order No. |
|--------|-------------------------------------------------------|-------------------|-------------------|
| 8      | 9/16 - 1" by 16ths, wooden Case                       | 301-0591          | 301-0991          |
| 5      | 9/16, 5/8, 3/4, 7/8 & 1", wooden Case                 | 301-0592          | 301-0992          |
| 13     | 17/32 - 3/4" by 32nds, 3/16-1" by 16ths, wooden Stand | 301-0593          | 301-0993          |
| 6      | 1-1/8 to 1-3/8" by 16ths, 1-1/2", Carton Box          | 301-0594          | 301-0994          |
| 5      | 9/16 - 1" by 8ths, Wooden Stand                       | 301-0595          | 301-0995          |
| 16     | 7/32 - 1" by 32nds, Carton Box                        | 301-0596          | 301-0996          |
| 8      | 9/16 - 1" by 16ths, Carton Box                        | 301-0597          | 301-0997          |
| 8      | 9/16 - 1" by 16ths, Wooden Stand                      | 301-0598          | 301-0998          |
| 8      | 9/16 - 1" by 16ths, Metal Case                        | 301-0599          | 301-0999          |

**M42 Cobalt Silver & Deming Drills**
**1/2" Shank, 118°**
**6" Overall Length, 3" Flute Length**


| Size   | Order No. | Size   | Order No. | Size    | Order No. |
|--------|-----------|--------|-----------|---------|-----------|
| 33/64" | 134-3334  | 3/4"   | 134-3482  | 63/64"  | 134-3631  |
| 17/32" | 134-3342  | 49/64" | 134-3490  | 1"      | 134-3649  |
| 35/64" | 134-3359  | 25/32" | 134-3508  | 1-1/64" | 134-3651  |
| 9/16"  | 134-3367  | 51/64" | 134-3516  | 1-1/32" | 134-3653  |
| 37/64" | 134-3375  | 13/16" | 134-3524  | 1-1/16" | 134-3655  |
| 19/32" | 134-3383  | 53/64" | 134-3532  | 1-3/32" | 134-3657  |
| 39/64" | 134-3391  | 27/32" | 134-3540  | 1-1/8"  | 134-3659  |
| 5/8"   | 134-3409  | 55/64" | 134-3557  | 1-5/32" | 134-3661  |
| 41/64" | 134-3417  | 7/8"   | 134-3565  | 1-3/16" | 134-3663  |
| 21/32" | 134-3425  | 57/64" | 134-3573  | 1-7/32" | 134-3665  |
| 43/64" | 134-3433  | 29/32" | 134-3581  | 1-1/4"  | 134-3667  |
| 11/16" | 134-3441  | 59/64" | 134-3599  | 1-5/16" | 134-3669  |
| 45/64" | 134-3458  | 15/16" | 134-3607  | 1-3/8"  | 134-3671  |
| 23/32" | 134-3466  | 61/64" | 134-3615  | 1-7/16" | 134-3673  |
| 47/64" | 134-3474  | 31/32" | 134-3623  | 1-1/2"  | 134-3675  |

## Jobber Length Drill Sets



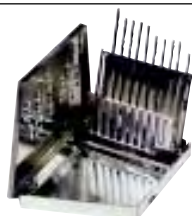
### Inch 13 PCS

|                                        | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|----------------------------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification                          | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 13pcs 1/16-1/4" by 64ths / metal box   | 201-0004              | 215-0004           | 208-0004        | 206-0004         | 207-0004             |
| 13pcs 1/16-1/4" by 64ths / plastic box | 201-0003              | 215-0003           | 208-0003        | 206-0003         | 207-0003             |



### Inch 15 PCS

|                                      | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|--------------------------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification                        | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 15pcs 1/16-1/2" by 32nds / metal box | 201-0015              | 215-0015           | 208-0015        | 206-0015         | 207-0015             |



### Inch 20 PCS

|                              | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|------------------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification                | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 20pcs #61-80 HSS / metal box | 201-0019              | 215-0019           | 208-0019        | 206-0015         | 207-0019             |



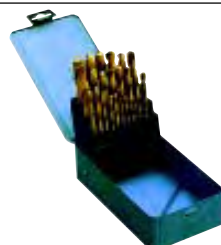
### Inch 21 PCS

|                                          | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|------------------------------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification                            | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 21pcs 1/16" to 3/8" by 64ths / metal box | 201-0006              | 215-0006           | 208-0021        | 206-0006         | 207-0006             |



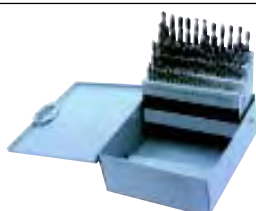
### Inch 26 PCS

|                       | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|-----------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification         | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 26pcs A-Z / metal box | 201-0026              | 215-0026           | 208-0026        | 206-0026         | 207-0026             |



### Inch 29 PCS

|                                      | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|--------------------------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification                        | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 29pcs 1/16-1/2" by 64ths / metal box | 201-0008              | 215-0008           | 208-0008        | 206-0008         | 207-0008             |



### Inch 60 PCS

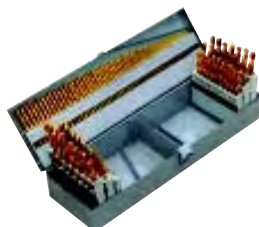
|                             | Rolled<br>Black Oxide | Rolled<br>Polished | Ground<br>Black | Ground<br>Bright | Ground<br>TiN-Coated |
|-----------------------------|-----------------------|--------------------|-----------------|------------------|----------------------|
| Specification               | Order No.             | Order No.          | Order No.       | Order No.        | Order No.            |
| 60pcs #1-60 HSS / metal box | 201-0018              | 215-0018           | 208-0018        | 206-0018         | 207-0018             |

## Jobber Length Drill Sets



### Inch & Metric 114 PCS

|                                                                 | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|-----------------------------------------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 114pcs 1/16-1/2" by 64ths,<br>#1-60, 1-13mm by .5mm / metal box | 201-0009                           | 215-0009                        | 208-0009                     | 206-0009                      | 207-0009                          |



### Inch 115 PCS

| Specification                                       | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|-----------------------------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 115pcs 1/16-1/2" by 64ths A-Z,<br>#1-60 / metal box | 201-0010                           | 215-0010                        | 208-0010                     | 206-0010                      | 207-0010                          |



### Metric 13 PCS

| Specification                         | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|---------------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 13pcs 1.5-6.5mm by .5mm / metal box   | 201-0002                           | 215-0002                        | 208-0002                     | 206-0002                      | 207-0002                          |
| 13pcs 1.5-6.5mm by .5mm / plastic box | 201-0001                           | 215-0001                        | 208-0001                     | 206-0001                      | 207-0001                          |



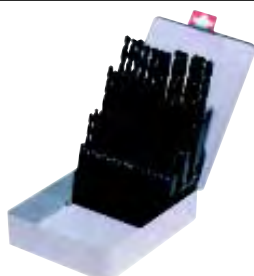
### Metric 19PCS

| Specification                       | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|-------------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 19pcs 1 to 10mm by .5mm / metal box | 201-0005                           | 215-0005                        | 208-0005                     | 206-0005                      | 207-0005                          |



### Metric 25PCS

| Specification                    | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|----------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 25pcs 1-13mm by .5mm / metal box | 201-0007                           | 215-0007                        | 208-0007                     | 206-0007                      | 207-0007                          |



### Metric 41PCS

| Specification                      | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|------------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 41pcs 6mm-10mm by .1mm / metal box | 201-0016                           | 215-0016                        | 208-0041                     | 206-0016                      | 207-0016                          |



### Metric 51 PCS

| Specification                     | Rolled<br>Black Oxide<br>Order No. | Rolled<br>Polished<br>Order No. | Ground<br>Black<br>Order No. | Ground<br>Bright<br>Order No. | Ground<br>TiN-Coated<br>Order No. |
|-----------------------------------|------------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------------|
| 51pcs 1-6.0mm by .1mm / metal box | 201-0017                           | 215-0017                        | 208-0017                     | 206-0017                      | 207-0017                          |

## M35 Cobalt Jobber Length Drill Sets

135° Split Point, Fully Ground



## 135° Cobalt Drill Sets with Metal Box

| Pieces of Drills | Specification                           | Order No. |
|------------------|-----------------------------------------|-----------|
| 13               | 1/16-1/4" by 1/64" 135° split point     | 209-5004  |
| 21               | 1/16-3/8"x1/64" 135° split point        | 209-5006  |
| 26               | A-Z 135° split point                    | 209-5026  |
| 29               | 1/16-1/2" by 1/64" 135° split point     | 209-5008  |
| 60               | 1#-60# 135° split point                 | 209-5018  |
| 115              | 1/16-1/2", A-Z, 1#-60# 135° split point | 209-5010  |



## 118° Cobalt Drill Sets with Metal Box

| Pieces of Drills | Specification               | Order No. |
|------------------|-----------------------------|-----------|
| 13               | 1/16-1/4" by 1/64" 118°     | 209-0004  |
| 15               | 1/16-1/2" by 1/64" 118°     | 209-0015  |
| 21               | 1/16-3/8"x1/64" 118°        | 209-0006  |
| 26               | A-Z 118°                    | 209-0026  |
| 29               | 1/16-1/2" by 1/64" 118°     | 209-0008  |
| 60               | 1#-60# 118°                 | 209-0018  |
| 115              | 1/16-1/2", A-Z, 1#-60# 118° | 209-0010  |

## Screw Machine Drill Sets

135° Split Point, High Speed Steel, Fully Ground,  
Right Hand, Black Finished

## Metal Box

| Pieces of Drills | Specification                  | Order No. |
|------------------|--------------------------------|-----------|
| 20               | #61-80                         | 208-1020  |
| 26               | A-Z                            | 208-1026  |
| 29               | 1/16-1/2" by 1/64"             | 208-1029  |
| 60               | #1-60                          | 208-1060  |
| 115              | A-Z, 1/16-1/2" by 1/64", #1-60 | 208-1010  |

## Left Hand Jobber Length Drill Sets

118° Point, High Speed Steel, Fully Ground, Black Finished



## Metal Box

| Pieces of Drills | Specification                  | Order No. |
|------------------|--------------------------------|-----------|
| 26               | A-Z                            | 208-2026  |
| 29               | 1/16-1/2" by 1/64"             | 208-2008  |
| 60               | #1-60                          | 208-2060  |
| 115              | A-Z, 1/16-1/2" by 1/64", #1-60 | 208-2011  |

## Long Boy Drill Sets

118° Point, High Speed Steel

## Metal Stand



| Pieces of Drills | Specification                 | Order No. |
|------------------|-------------------------------|-----------|
| 25               | 1/8-1/2" by 1/64", 8" Length  | 201-8005  |
| 25               | 1/8-1/2" by 1/64", 10" Length | 201-8010  |
| 25               | 1/8-1/2" by 1/64", 12" Length | 201-8015  |

### Aircraft Extension Drill Sets

High Speed Steel, 118° Point, Right Hand

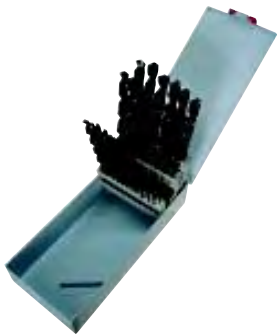


Metal Stand

| Pieces of Drills | Specification                     | Order No. |
|------------------|-----------------------------------|-----------|
| 13               | 1/16" to 1/4" by 64ths, 6" length | 434-0301  |
| 29               | 1/16 to 1/2" by 64ths, 12" length | 434-0302  |
| 60               | No.1 to 60, 6" length             | 434-0303  |
| 60               | No.1 to 60, 12" length            | 434-0304  |
| 13               | 1/8" - 1/2" by 32nds, 8" Length   | 434-0305  |
| 13               | 1/8" - 1/2" by 32nds, 10" Length  | 434-0306  |
| 13               | 1/8" - 1/2" by 32nds, 12" Length  | 434-0307  |
| 11               | 3/16" - 1/2" by 32nds, 18" Length | 434-0308  |

### Taper Length Drill Sets

High Speed Steel, For Deep Hole Drilling,  
Complete with Metal Box



| Pieces of Drills | Specification           | Order No. |
|------------------|-------------------------|-----------|
| 16               | 33/64" to 3/4" by 64ths | 310-6916  |
| 16               | 49/64" to 1" by 64ths   | 310-6917  |
| 26               | A through Z             | 310-6926  |
| 29               | 1/16" to 1/2" by 64ths  | 310-6929  |
| 60               | No.1 to No. 60          | 310-6960  |

### Drill Blank Sets

High Speed Steel, Ground



| Pieces of Drills | Specification                                                  | Order No. |
|------------------|----------------------------------------------------------------|-----------|
| 20               | 20pcs/set wire size blanks #61-80                              | 305-8320  |
| 26               | 26pcs/set letter size blanks A to Z                            | 305-8326  |
| 29               | 29pcs/set blanks 1/16" to 1/2" by 64ths                        | 305-8329  |
| 60               | 60pcs/set wire size blanks 1 to 60                             | 305-8360  |
| 115              | 115pcs/set (1/16-1/2" by 1/64ths,A-Z,# 1-#60) with metal index | 305-8315  |

### Silver & Deming Drill Sets



| Pieces of Drills | Shank | Specification                                      | Wooden Stand Order No. | Plastic Case Order No. |
|------------------|-------|----------------------------------------------------|------------------------|------------------------|
| 5                | 1/2"  | 17/32", 9/16", 5/8", 3/4", 1"                      | 301-0204               |                        |
| 5                | 1/2   | 9/16", 5/8", 3/4", 7/8", 1"                        | 301-0215               | 301-0205               |
| 6                | 1/2   | 1-1/8" to 1-1/2" by 16ths ,exclude 7/16"           | 301-0206               |                        |
| 8                | 1/2   | 9/16-1" by 16ths                                   | 301-0218               | 301-0208               |
| 8                | 1/2   | 1-1/16 to 1-1/2" by 16ths                          | 301-0288               | 301-0298               |
| 10               | 1/2   | 9/16 to 1" by 16ths ,1-1/8", 1-1/4"                | 301-0210               |                        |
| 12               | 1/2   | 9/16 to 1-1/4" by 16ths                            | 301-0212               |                        |
| 13               | 1/2   | 17/32 to 1" by 16ths & 32nds                       | 301-0213               |                        |
| 16               | 1/2   | 17/32 to 1" by 32nds                               | 301-0216               |                        |
| 17               | 1/2   | 17/32 to 1-1/32" by 32nds                          | 301-0217               |                        |
| 32               | 1/2   | 33/64 to 1" by 64ths                               | 301-0232               |                        |
| 40               | 1/2   | 33/64" to 1" by 64ths & 1-1/16" to 1-1/2" by 16ths | 301-0240               |                        |
| 5                | 3/4   | 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2"                     | 301-0225               | 301-0235               |
| 16               | 1/4   | 17/64 to 1/2" by 64ths                             | 301-0096               |                        |
| 8                | 3/8   | 25/64 to 1/2" by 64ths                             | 301-0398               |                        |

# Countersinks

## Single Flute Countersinks

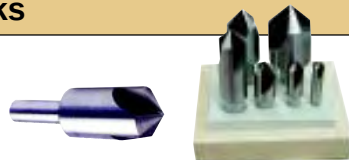
High Speed Steel



| Size                                                     | Shank Dia. | Shank Length | OAL   | 60° Order No. | 82° Order No. | 90° Order No. | 100° Order No. |
|----------------------------------------------------------|------------|--------------|-------|---------------|---------------|---------------|----------------|
| 3/16"                                                    | 3/16"      |              |       | 380-5601      | 380-5801      | 380-5901      | 380-5101       |
| 1/4                                                      | 3/16       | 1-1/2        | 3/4   | 380-5600      | 380-5800      | 380-5900      | 380-5100       |
| 1/4                                                      | 1/4        | 1-1/2        | 3/4   | 380-5602      | 380-5802      | 380-5902      | 380-5102       |
| 5/16                                                     | 1/4        | 1-3/4        | 7/8   | 380-5603      | 380-5803      | 380-5903      | 380-5103       |
| 3/8                                                      | 1/4        | 1-3/4        | 7/8   | 380-5604      | 380-5804      | 380-5904      | 380-5104       |
| 1/2                                                      | 1/4        | 2            | 1     | 380-5606      | 380-5806      | 380-5906      | 380-5106       |
| 1/2                                                      | 3/8        | 2            | 1     | 380-5607      | 380-5807      | 380-5907      | 380-5107       |
| 5/8                                                      | 3/8        | 2-1/4        | 1     | 380-5608      | 380-5808      | 380-5908      | 380-5108       |
| 5/8                                                      | 1/2        | 2-1/4        | 1     | 380-5610      | 380-5810      | 380-5910      | 380-5110       |
| 3/4                                                      | 3/8        | 2-1/4        | 1     | 380-5612      | 380-5812      | 380-5912      | 380-5112       |
| 3/4                                                      | 1/2        | 2-1/2        | 1-1/4 | 380-5614      | 380-5814      | 380-5914      | 380-5114       |
| 7/8                                                      | 1/2        | 2-1/2        | 1-1/4 | 380-5615      | 380-5815      | 380-5915      | 380-5115       |
| 1                                                        | 1/2        | 2-3/4        | 1-1/2 | 380-5616      | 380-5816      | 380-5916      | 380-5116       |
| 1-1/4                                                    | 1/2        | 3-3/8        | 1-5/8 | 380-5618      | 380-5818      | 380-5918      | 380-5118       |
| 1-1/4                                                    | 3/4        |              |       | 380-5620      | 380-5820      | 380-5920      | 380-5120       |
| 1-1/2                                                    | 1/2        | 3-1/2        | 1-3/4 | 380-5622      | 380-5822      | 380-5922      | 380-5122       |
| 1-1/2                                                    | 3/4        | 3-1/2        | 1-3/4 | 380-5624      | 380-5824      | 380-5924      | 380-5124       |
| 1-3/4                                                    | 3/4        |              |       | 380-5626      | 380-5826      | 380-5926      | 380-5126       |
| 2                                                        | 3/4        | 4            | 2     | 380-5628      | 380-5828      | 380-5928      | 380-5128       |
| 2                                                        | 1/2        | 4            | 2     | 380-5627      | 380-5827      | 380-5927      | 380-5127       |
| 6Pcs:1/4,3/8,1/2" with 1/4" Shk,5/8,3/4, 1" with 1/2"Shk |            |              |       | 380-5696      | 380-5896      | 380-5996      |                |
| 5Pcs:1/4,3/8,1/2" with 1/4" Shk, 3/4,1" with1/2" Shk     |            |              |       | 380-5695      | 380-5895      | 380-5995      |                |

## 3 Flute Countersinks

High Speed Steel



| Size                                 | Shank Dia. | Shank Length | Overall Length | 60° Order No. | 82° Order No. | 90° Order No. | 100° Order No. |
|--------------------------------------|------------|--------------|----------------|---------------|---------------|---------------|----------------|
| 1/4"                                 | 3/16"      | 3/4"         | 1-1/2"         | 380-8116      | 380-8316      | 380-8516      | 380-8716       |
| 3/8                                  | 1/4        | 7/8          | 1-3/4          | 380-8124      | 380-8324      | 380-8524      | 380-8724       |
| 1/2                                  | 3/8        | 1            | 2              | 380-8132      | 380-8332      | 380-8532      | 380-8732       |
| 5/8                                  | 3/8        | 1            | 2-1/4          | 380-8140      | 380-8340      | 380-8540      | 380-8740       |
| 3/4                                  | 1/2        | 1-1/4        | 2-5/8          | 380-8148      | 380-8348      | 380-8548      | 380-8748       |
| 1                                    | 1/2        | 1-1/4        | 2-3/4          | 380-8164      | 380-8364      | 380-8564      | 380-8764       |
| 1-1/4                                | 3/4        | 1-1/4        | 3              | 380-8180      | 380-8380      | 380-8580      | 380-8780       |
| 1-1/2                                | 3/4        | 1-1/4        | 3              | 380-8196      | 380-8396      | 380-8596      | 380-8796       |
| 2                                    | 3/4        | 1-1/4        | 3-1/4          | 380-8228      | 380-8428      | 380-8628      | 380-8828       |
| 5pcs/set: 1/4, 3/8, 1/2, 3/4, 1"     |            |              |                | 380-8285      | 380-8485      | 380-8685      | 380-8885       |
| 6pcs/set: 1/4, 3/8, 1/2, 5/8, 3/4,1" |            |              |                | 380-8286      | 380-8486      | 380-8686      | 380-8886       |

## 4 Flute Machine Countersinks

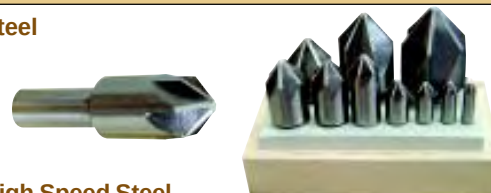
High Speed Steel



| Size  | Shank Dia. | Shank Length | Overall Length | 60° Order No. | 82° Order No. | 90° Order No. |
|-------|------------|--------------|----------------|---------------|---------------|---------------|
| 1/2"  | 1/2"       | 2-1/4"       | 3-7/8"         | 380-1232      | 380-1432      | 380-1632      |
| 5/8   | 1/2        | 2-1/4        | 4              | 380-1240      | 380-1440      | 380-1640      |
| 3/4   | 1/2        | 2-1/4        | 4-1/8          | 380-1248      | 380-1448      | 380-1648      |
| 7/8   | 1/2        | 2-1/4        | 4-1/4          | 380-1256      | 380-1456      | 380-1656      |
| 1     | 1/2        | 2-1/4        | 4-3/8          | 380-1264      | 380-1464      | 380-1664      |
| 1-1/4 | 1/2        | 2-1/4        | 5              | 380-1280      | 380-1480      | 380-1680      |
| 1-1/2 | 1/2        | 2-1/4        | 5-3/8          | 380-1296      | 380-1496      | 380-1696      |

## 6 Flute Chatterless Countersinks

High Speed Steel



Individuals, High Speed Steel

| Size                                         | Shank Diameter | Overall Length | 60° Order No. | 82° Order No. | 90° Order No. |
|----------------------------------------------|----------------|----------------|---------------|---------------|---------------|
| 3/16"                                        | 3/16"          | 1-1/2"         | 380-6005      | 380-6105      | 380-6205      |
| 1/4                                          | 1/4            | 2              | 380-6010      | 380-6110      | 380-6210      |
| 5/16                                         | 1/4            | 2              | 380-6015      | 380-6115      | 380-6215      |
| 3/8                                          | 1/4            | 2              | 380-6020      | 380-6120      | 380-6220      |
| 1/2                                          | 1/4            | 2              | 380-6025      | 380-6125      | 380-6225      |
| 5/8                                          | 1/2            | 2-3/4          | 380-6030      | 380-6130      | 380-6230      |
| 3/4                                          | 1/2            | 2-3/4          | 380-6035      | 380-6135      | 380-6235      |
| 7/8                                          | 1/2            | 2-3/4          | 380-6040      | 380-6140      | 380-6240      |
| 1                                            | 1/2            | 2-3/4          | 380-6045      | 380-6145      | 380-6245      |
| 1-1/4                                        | 3/4            | 3-3/8          | 380-6050      | 380-6150      | 380-6250      |
| 1-1/2                                        | 3/4            | 3-1/2          | 380-6055      | 380-6155      | 380-6255      |
| 1-3/4                                        | 1              | 4-1/4          | 380-6060      | 380-6160      | 380-6260      |
| 2                                            | 1              | 4-3/8          | 380-6065      | 380-6165      | 380-6265      |
| 8pcs /set in wooden stand (1/4-1")           |                |                | 380-6080      | 380-6180      | 380-6280      |
| 5pcs/set in wooden Stand(1/4,3/8,1/2,3/4,1") |                |                | 380-6085      | 380-6185      | 380-6285      |
| 10pcs/set in wooden stand(3/16--1-1/4")      |                |                | 380-6090      | 380-6190      | 380-6290      |
| 11pcs/set in wooden Stand(3/16-1-1/2")       |                |                | 380-6091      | 380-6191      | 380-6291      |
| 10pcs/set in wooden Stand(1/4-1-1/2")        |                |                | 380-6092      | 380-6192      | 380-6292      |

Individuals, Cobalt M35

| Size                                    | Shank Diameter | Overall Length | 60° Order No. | 82° Order No. | 90° Order No. |
|-----------------------------------------|----------------|----------------|---------------|---------------|---------------|
| 3/16"                                   | 3/16"          | 1-1/2"         | 380-7005      | 380-7105      | 380-7205      |
| 1/4                                     | 1/4            | 2              | 380-7010      | 380-7110      | 380-7210      |
| 5/16                                    | 1/4            | 2              | 380-7015      | 380-7115      | 380-7215      |
| 3/8                                     | 1/4            | 2              | 380-7020      | 380-7120      | 380-7220      |
| 1/2                                     | 1/4            | 2              | 380-7025      | 380-7125      | 380-7225      |
| 5/8                                     | 1/2            | 2-3/4          | 380-7030      | 380-7130      | 380-7230      |
| 3/4                                     | 1/2            | 2-3/4          | 380-7035      | 380-7135      | 380-7235      |
| 7/8                                     | 1/2            | 2-3/4          | 380-7040      | 380-7140      | 380-7240      |
| 1                                       | 1/2            | 2-3/4          | 380-7045      | 380-7145      | 380-7245      |
| 1-1/4                                   | 3/4            | 3-3/8          | 380-7050      | 380-7150      | 380-7250      |
| 1-1/2                                   | 3/4            | 3-1/2          | 380-7055      | 380-7155      | 380-7255      |
| 1-3/4                                   | 1              | 4-1/4          | 380-7060      | 380-7160      | 380-7260      |
| 2                                       | 1              | 4-3/8          | 380-7065      | 380-7165      | 380-7265      |
| 8pcs /set in wooden stand (1/4-1")      |                |                | 380-7080      | 380-7180      | 380-7280      |
| 10pcs/set in wooden stand(3/16--1-1/4") |                |                | 380-7090      | 380-7190      | 380-7290      |

Individuals, Cobalt M42

| Size                                    | Shank Diameter | Overall Length | 60° Order No. | 82° Order No. | 90° Order No. |
|-----------------------------------------|----------------|----------------|---------------|---------------|---------------|
| 3/16"                                   | 3/16"          | 1-1/2"         | 380-7305      | 380-7405      | 380-7905      |
| 1/4                                     | 1/4            | 2              | 380-7310      | 380-7410      | 380-7910      |
| 5/16                                    | 1/4            | 2              | 380-7315      | 380-7415      | 380-7915      |
| 3/8                                     | 1/4            | 2              | 380-7320      | 380-7420      | 380-7920      |
| 1/2                                     | 1/4            | 2              | 380-7325      | 380-7425      | 380-7925      |
| 5/8                                     | 1/2            | 2-3/4          | 380-7330      | 380-7430      | 380-7930      |
| 3/4                                     | 1/2            | 2-3/4          | 380-7335      | 380-7435      | 380-7935      |
| 7/8                                     | 1/2            | 2-3/4          | 380-7340      | 380-7440      | 380-7940      |
| 1                                       | 1/2            | 2-3/4          | 380-7345      | 380-7445      | 380-7945      |
| 1-1/4                                   | 3/4            | 3-3/8          | 380-7350      | 380-7450      | 380-7950      |
| 1-1/2                                   | 3/4            | 3-1/2          | 380-7355      | 380-7455      | 380-7955      |
| 1-3/4                                   | 1              | 4-1/4          | 380-7360      | 380-7460      | 380-7960      |
| 2                                       | 1              | 4-3/8          | 380-7365      | 380-7465      | 380-7965      |
| 8pcs /set in wooden stand (1/4-1")      |                |                | 380-7380      | 380-7480      | 380-7980      |
| 10pcs/set in wooden stand(3/16--1-1/4") |                |                | 380-7390      | 380-7490      | 380-7990      |

## DIN335C 90° 3 Flute Countersinks



### Individuals

| Size   | Shank Dia. | Overall Length | HSS Order No. | HSS TiN Order No. | Cobalt Order No. |
|--------|------------|----------------|---------------|-------------------|------------------|
| 4.3mm  | 4          | 40             | 381-6043      | 381-7043          | 381-8043         |
| 5mm    | 4          | 40             | 381-6050      | 381-7050          | 381-8050         |
| 5.3mm  | 4          | 40             | 381-6053      | 381-7053          | 381-8053         |
| 5.8mm  | 5          | 45             | 381-6058      | 381-7058          | 381-8058         |
| 6mm    | 5          | 45             | 381-6060      | 381-7060          | 381-8060         |
| 6.3mm  | 5          | 45             | 381-6063      | 381-7063          | 381-8063         |
| 7mm    | 6          | 50             | 381-6070      | 381-7070          | 381-8070         |
| 7.3mm  | 6          | 50             | 381-6073      | 381-7073          | 381-8073         |
| 8mm    | 6          | 50             | 381-6080      | 381-7080          | 381-8080         |
| 8.3mm  | 6          | 50             | 381-6083      | 381-7083          | 381-8083         |
| 9.4mm  | 6          | 50             | 381-6094      | 381-7094          | 381-8094         |
| 10mm   | 6          | 50             | 381-6100      | 381-7100          | 381-8100         |
| 10.4mm | 6          | 50             | 381-6104      | 381-7104          | 381-8104         |
| 11.5mm | 8          | 56             | 381-6115      | 381-7115          | 381-8115         |
| 12.4mm | 8          | 56             | 381-6124      | 381-7124          | 381-8124         |
| 13.4mm | 8          | 56             | 381-6134      | 381-7134          | 381-8134         |
| 15mm   | 10         | 60             | 381-6150      | 381-7150          | 381-8150         |
| 16.5mm | 10         | 60             | 381-6165      | 381-7165          | 381-8165         |
| 19mm   | 10         | 63             | 381-6190      | 381-7190          | 381-8190         |
| 20.5mm | 10         | 63             | 381-6205      | 381-7205          | 381-8205         |
| 23mm   | 10         | 67             | 381-6230      | 381-7230          | 381-8230         |
| 25mm   | 10         | 67             | 381-6250      | 381-7250          | 381-8250         |
| 26mm   | 10         | 67             | 381-6260      | 381-7260          | 381-8260         |
| 28mm   | 12         | 71             | 381-6280      | 381-7280          | 381-8280         |
| 30mm   | 12         | 71             | 381-6300      | 381-7300          | 381-8300         |
| 31mm   | 12         | 71             | 381-6310      | 381-7310          | 381-8310         |



### Sets

| Pieces     | Description                                                      | HSS Order No. | TiN Coated Order No. | Cobalt Order No. |
|------------|------------------------------------------------------------------|---------------|----------------------|------------------|
| 6 Pcs/set  | 6.3, 8.3, 10.4, 12.4, 16.5, 20.5mm                               | 381-6906      | 381-7906             | 381-8906         |
| 12 Pcs/set | 5.3, 5.8, 6.3, 7.3, 8.3, 9.4, 10.4, 12.4, 13.4, 16.5, 20.5, 25mm | 381-6912      | 381-7912             | 381-8912         |

## Countersinks/Counterbores

### Countersinks & Deburring Tools

#### Inch, High Speed Steel



### Individuals

| Range          | Shank Dia. | Description  | 60° Order No. | 82° Order No. | 90° Order No. |
|----------------|------------|--------------|---------------|---------------|---------------|
| 1/16" - 15/64" | 1/4"       | 0 double end | 380-0815      | 380-1815      | 380-2815      |
| 5/32 - 13/32   | 1/4        | 1 single end | 380-0816      | 380-1816      | 380-2816      |
| 3/16 - 17/32   | 1/4        | 2 single end | 380-0817      | 380-1817      | 380-2817      |
| 3/16 - 25/32   | 1/2        | 3 single end | 380-0818      | 380-1818      | 380-2818      |
| 9/16 - 1-1/16  | 1/2        | 4 single end | 380-0819      | 380-1819      | 380-2819      |
| 5/8 - 1-15/32  | 1/2        | 5 single end | 380-0822      | 380-1822      | 380-2822      |
| 3/4 - 1-3/4    | 5/8        | 6 single end | 380-0823      | 380-1823      | 380-2823      |
| 1 - 2          | 5/8        | 7 single end | 380-0824      | 380-1824      | 380-2824      |
| 1-1/4 - 2-1/2  | 3/4        | 8 single end | 380-0825      | 380-1825      | 380-2825      |

### Sets

| Pieces | Description                   | Plastic Stand Order No. | Wooden stand Order No. |
|--------|-------------------------------|-------------------------|------------------------|
| 5Pcs   | 60° 1 each of: 1/16" to 9/16" | 380-0811                | 380-0810               |
| 5Pcs   | 82° 1 each of: 1/16 to 9/16   | 380-1811                | 380-1810               |
| 5Pcs   | 90° 1 each of: 1/16 to 9/16   | 380-2811                | 380-2810               |

#### Metric, High Speed Steel

### Individuals

| Range   | Head Dia. | Shank Dia. | Length | 60° Order No. | 82° Order No. | 90° Order No. |
|---------|-----------|------------|--------|---------------|---------------|---------------|
| 2-5mm   | 10        | 6          | 45     | 380-3002      | 380-3102      | 380-3202      |
| 5-10mm  | 14        | 8          | 48     | 380-3005      | 380-3105      | 380-3205      |
| 10-15mm | 21        | 10         | 65     | 380-3010      | 380-3110      | 380-3210      |
| 15-20mm | 28        | 12         | 85     | 380-3015      | 380-3115      | 380-3215      |
| 20-25mm | 35        | 15         | 102    | 380-3020      | 380-3120      | 380-3220      |
| 25-30mm | 44        | 15         | 115    | 380-3025      | 380-3125      | 380-3225      |
| 30-35mm | 48        | 15         | 127    | 380-3030      | 380-3130      | 380-3230      |
| 35-40mm | 53        | 15         | 136    | 380-3035      | 380-3135      | 380-3235      |
| 40-50mm | 64        | 18         | 166    | 380-3040      | 380-3140      | 380-3240      |

### Sets

| Pieces   | Description                   | Order No. |
|----------|-------------------------------|-----------|
| 4Pcs/set | 60° 1 each of 2/5mm - 15/20mm | 380-3402  |
| 4Pcs/set | 82° 1 each of 2/5mm - 15/20mm | 380-3404  |
| 4Pcs/set | 90° 1 each of 2/5mm - 15/20mm | 380-3406  |
| 5Pcs/set | 60° 1 each of 2/5mm - 20/25mm | 380-3602  |
| 5Pcs/set | 82° 1 each of 2/5mm - 20/25mm | 380-3604  |
| 5Pcs/set | 90° 1 each of 2/5mm - 20/25mm | 380-3606  |

## 2 Flute Solid Pilot Counterbores

#### High Speed Steel, Straight Shank

#### Machine Screw Sizes



| Screw Size | Pilot Dia. | Cutting Size & Shank Dia. | Overall Length | Order No. |
|------------|------------|---------------------------|----------------|-----------|
| 2#         | .085"      | .155"                     | 2-1/2"         | 381-5102  |
| 3#         | .098       | .176                      | 3-1/2          | 381-5103  |
| 4#         | .111       | .198                      | 2-5/8          | 381-5104  |
| 5#         | .124       | .220                      | 2-5/8          | 381-5105  |
| 6#         | .137       | .241                      | 2-5/8          | 381-5106  |
| 8#         | .163       | .285                      | 2-3/4          | 381-5108  |
| 10#        | .189       | .328                      | 2-7/8          | 381-5110  |
| 12#        | .215       | .372                      | 3              | 381-5112  |

## Counter Bit With Replaceable Blade

### A unique piloted countersink

- Conical pilot supports cutting edge to assure chatter-free cut.
- Will not commence cutting until the pilot or workpiece has found the center of the previously drilled hole.
- Rubber spring provides "pre-load" for constant pressure, thus helping to eliminate chatter.
- Concentric countersinks and chamfers assured.
- Replaceable high speed steel blades ground with radial relief, assure smooth cut.
- Available Straight shank.



| Capacity   | Degree | Shank Size | Order No. |
|------------|--------|------------|-----------|
| 1/4"-1-1/8 | 60°    | 1/2"       | 381-2900  |

# Counterbores

**BESTOOL®**

## 2 Flute Solid Counterbores

High Speed Steel, Straight Shank



Fractional Sizes

| Pilot Dia. | Cutting Size Dia. | Shank Dia. | Overall Length | Order No. |
|------------|-------------------|------------|----------------|-----------|
| 1/4"       | 13/32"            | 5/16"      | 3-5/8"         | 381-5316  |
| 5/16       | 15/32             | 3/8        | 4              | 381-5320  |
| 3/8        | 19/32             | 7/16       | 4-3/8          | 381-5324  |
| 7/16       | 21/32             | 1/2        | 4-3/4          | 381-5328  |
| 1/2        | 25/32             | 9/16       | 5-1/4          | 381-5332  |

## Interchangeable Pilots Counterbores

High Speed Steel, Straight Shank, Right Hand

Use for counter boring holes for socket heads of cap screws



| Pilot |                |               |           | Straight   |              |                 |                 | Taper      |              |                 |                 | Pilot |                |               |           | Straight   |              |                 |                 | Taper      |              |                 |                 |
|-------|----------------|---------------|-----------|------------|--------------|-----------------|-----------------|------------|--------------|-----------------|-----------------|-------|----------------|---------------|-----------|------------|--------------|-----------------|-----------------|------------|--------------|-----------------|-----------------|
| Size  | Overall Length | No. of Flutes | Hole Dia. | Shank Dia. | Shank Length | Shank Order No. | Shank Order No. | Shank Dia. | Shank Length | Shank Order No. | Shank Order No. | Size  | Overall Length | No. of Flutes | Hole Dia. | Shank Dia. | Shank Length | Shank Order No. | Shank Order No. | Shank Dia. | Shank Length | Shank Order No. | Shank Order No. |
| 3/16" | 3"             | 3             | 3/32"     | 15/64      | 2-3/8"       | 381-2012        | MT1             | 381-4012   | 53/64"       | 5-3/8"          | 3               | 1/4"  | 3/4"           | 3-7/8"        | 381-2053  | MT2        | 381-4053     |                 |                 |            |              |                 |                 |
| 13/64 | 3              | 3             | 3/32      | 15/64      | 2-3/8        | 381-2013        | MT1             | 381-4013   | 27/32        | 5-3/8           | 3               | 1/4   | 3/4            | 3-7/8         | 381-2054  | MT2        | 381-4054     |                 |                 |            |              |                 |                 |
| 7/32  | 3              | 3             | 3/32      | 15/64      | 2-3/8        | 381-2014        | MT1             | 381-4014   | 55/64        | 5-3/8           | 3               | 1/4   | 3/4            | 3-7/8         | 381-2055  | MT2        | 381-4055     |                 |                 |            |              |                 |                 |
| 15/64 | 3-13/16        | 3             | 3/32      | 15/64      | 3-1/16       | 381-2015        | MT1             | 381-4015   | 7/8          | 5-3/8           | 3               | 1/4   | 3/4            | 3-7/8         | 381-2056  | MT2        | 381-4056     |                 |                 |            |              |                 |                 |
| 1/4   | 3-13/16        | 3             | 3/32      | 15/64      | 3-1/16       | 381-2016        | MT1             | 381-4016   | 57/64        | 6-1/8           | 3               | 1/4   | 3/4            | 4-5/8         | 381-2057  | MT2        | 381-4057     |                 |                 |            |              |                 |                 |
| 17/64 | 3-13/16        | 3             | 3/32      | 17/64      | 3-1/16       | 381-2017        | MT1             | 381-4017   | 29/32        | 6-1/8           | 3               | 1/4   | 3/4            | 4-5/8         | 381-2058  | MT2        | 381-4058     |                 |                 |            |              |                 |                 |
| 9/32  | 3-13/16        | 3             | 3/32      | 17/64      | 3-1/16       | 381-2018        | MT1             | 381-4018   | 59/64        | 6-1/8           | 3               | 1/4   | 3/4            | 4-5/8         | 381-2059  | MT2        | 381-4059     |                 |                 |            |              |                 |                 |
| 19/64 | 3-13/16        | 3             | 3/32      | 17/64      | 3-1/16       | 381-2019        | MT1             | 381-4019   | 15/16        | 6-1/8           | 3               | 1/4   | 3/4            | 4-5/8         | 381-2060  | MT3        | 381-4060     |                 |                 |            |              |                 |                 |
| 5/16  | 3-13/16        | 3             | 3/32      | 19/64      | 3-1/16       | 381-2020        | MT1             | 381-4020   | 61/64        | 6-3/8           | 3               | 1/4   | 3/4            | 4-5/8         | 381-2061  | MT3        | 381-4061     |                 |                 |            |              |                 |                 |
| 21/64 | 3-13/16        | 3             | 3/32      | 5/16       | 3-1/16       | 381-2021        | MT1             | 381-4021   | 31/32        | 6-3/8           | 3               | 5/16  | 3/4            | 4-5/8         | 381-2062  | MT3        | 381-4062     |                 |                 |            |              |                 |                 |
| 11/32 | 3-13/16        | 3             | 3/32      | 5/16       | 3-1/16       | 381-2022        | MT1             | 381-4022   | 63/64        | 6-3/8           | 3               | 5/16  | 3/4            | 4-5/8         | 381-2063  | MT3        | 381-4063     |                 |                 |            |              |                 |                 |
| 23/64 | 4-1/16         | 3             | 5/32      | 5/16       | 3-1/16       | 381-2023        | MT1             | 381-4023   | 1            | 6-3/8           | 3               | 5/16  | 3/4            | 4-5/8         | 381-2064  | MT3        | 381-4064     |                 |                 |            |              |                 |                 |
| 3/8   | 4-1/16         | 3             | 5/32      | 5/16       | 3-1/16       | 381-2024        | MT1             | 381-4024   | 1-1/16       | 6-3/8           | 3               | 5/16  | 3/4            | 4-5/8         | 381-2068  | MT3        | 381-4068     |                 |                 |            |              |                 |                 |
| 25/64 | 4-1/16         | 3             | 5/32      | 3/8        | 3-1/16       | 381-2025        | MT1             | 381-4025   | 1-1/8        | 6-3/8           | 3               | 5/16  | 1              | 4-5/8         | 381-2072  | MT3        | 381-4072     |                 |                 |            |              |                 |                 |
| 13/32 | 4-1/16         | 3             | 5/32      | 3/8        | 3-1/16       | 381-2026        | MT1             | 381-4026   | 1-3/16       | 6-3/8           | 3               | 5/16  | 1              | 4-5/8         | 381-2076  | MT3        | 381-4076     |                 |                 |            |              |                 |                 |
| 27/64 | 4-1/16         | 3             | 5/32      | 3/8        | 3-1/16       | 381-2027        | MT1             | 381-4027   | 1-1/4        | 6-5/8           | 5               | 3/8   | 1              | 4-5/8         | 381-2080  | MT3        | 381-4080     |                 |                 |            |              |                 |                 |
| 7/16  | 4-1/16         | 3             | 5/32      | 3/8        | 3-1/16       | 381-2028        | MT1             | 381-4028   | 1-5/16       | 6-5/8           | 5               | 3/8   | 1              | 4-5/8         | 381-2084  | MT3        | 381-4084     |                 |                 |            |              |                 |                 |
| 29/64 | 4-5/16         | 3             | 3/16      | 7/16       | 3-1/16       | 381-2029        | MT1             | 381-4029   | 1-3/8        | 6-5/8           | 5               | 3/8   | 1              | 4-5/8         | 381-2088  | MT3        | 381-4088     |                 |                 |            |              |                 |                 |
| 15/32 | 4-5/16         | 3             | 3/16      | 7/16       | 3-1/16       | 381-2030        | MT1             | 381-4030   | 1-7/16       | 7-7/8           | 5               | 3/8   | 1-1/4          | 5-7/8         | 381-2090  | MT4        | 381-4090     |                 |                 |            |              |                 |                 |
| 31/64 | 4-5/16         | 3             | 3/16      | 7/16       | 3-1/16       | 381-2031        | MT1             | 381-4031   | 1-1/2        | 7-7/8           | 5               | 3/8   | 1-1/4          | 5-7/8         | 381-2096  | MT4        | 381-4096     |                 |                 |            |              |                 |                 |
| 1/2   | 4-5/16         | 3             | 3/16      | 7/16       | 3-1/16       | 381-2032        | MT1             | 381-4032   | 1-9/16       | 8-1/8           | 5               | 7/16  | 1-1/4          | 5-7/8         | 381-2100  | MT4        | 381-4100     |                 |                 |            |              |                 |                 |
| 33/64 | 4-5/16         | 3             | 3/16      | 1/2        | 3-1/16       | 381-2033        | MT1             | 381-4033   | 1-5/8        | 8-1/8           | 5               | 7/16  | 1-1/4          | 5-7/8         | 381-2104  | MT4        | 381-4104     |                 |                 |            |              |                 |                 |
| 17/32 | 4-5/16         | 3             | 3/16      | 1/2        | 3-1/16       | 381-2034        | MT1             | 381-4034   | 1-11/16      | 8-1/8           | 5               | 7/16  | 1-1/4          | 5-7/8         | 381-2108  | MT4        | 381-4108     |                 |                 |            |              |                 |                 |
| 35/64 | 4-5/16         | 3             | 3/16      | 1/2        | 3-1/16       | 381-2035        | MT1             | 381-4035   | 1-3/4        | 8-1/8           | 5               | 7/16  | 1-1/4          | 5-7/8         | 381-2112  | MT4        | 381-4112     |                 |                 |            |              |                 |                 |
| 16    | 4-5/16         | 3             | 3/16      | 1/2        | 3-1/16       | 381-2036        | MT1             | 381-4036   | 1-13/16      | 8-1/8           | 5               | 7/16  | 1-1/2          | 5-7/8         | 381-2116  | MT4        | 381-4116     |                 |                 |            |              |                 |                 |
| 37/64 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2037        | MT2             | 381-4037   | 1-7/8        | 8-1/8           | 5               | 7/16  | 1-1/2          | 5-7/8         | 381-2120  | MT4        | 381-4120     |                 |                 |            |              |                 |                 |
| 19/32 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2038        | MT2             | 381-4038   | 1-15/16      | 8-1/8           | 5               | 7/16  | 1-1/2          | 5-7/8         | 381-2124  | MT4        | 381-4124     |                 |                 |            |              |                 |                 |
| 39/64 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2039        | MT2             | 381-4039   | 2            | 8-3/8           | 5               | 1/2   | 1-1/2          | 5-7/8         | 381-2128  | MT4        | 381-4128     |                 |                 |            |              |                 |                 |
| 8     | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2040        | MT2             | 381-4040   | 2-1/16       | 9-7/8           | 5               | 1/2   | 1-1/2          | 7-3/8         | 381-2136  | MT5        | 381-4136     |                 |                 |            |              |                 |                 |
| 41/64 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2041        | MT2             | 381-4041   | 2-1/8        | 9-7/8           | 5               | 1/2   | 1-1/2          | 7-3/8         | 381-2144  | MT5        | 381-4144     |                 |                 |            |              |                 |                 |
| 21/32 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2042        | MT2             | 381-4042   | 2-3/16       | 9-7/8           | 5               | 1/2   | 1-1/2          | 7-3/8         | 381-2152  | MT5        | 381-4152     |                 |                 |            |              |                 |                 |
| 43/64 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2043        | MT2             | 381-4043   | 2-1/4        | 9-7/8           | 5               | 1/2   | 1-1/2          | 7-3/8         | 381-2160  | MT5        | 381-4160     |                 |                 |            |              |                 |                 |
| 11/16 | 5-1/8          | 3             | 3/16      | 1/2        | 3-7/8        | 381-2044        | MT2             | 381-4044   | 2-5/16       | 9-7/8           | 5               | 1/2   | 1-1/2          | 7-3/8         | 381-2168  | MT5        | 381-4168     |                 |                 |            |              |                 |                 |
| 45/64 | 5-3/8          | 3             | 1/4       | 1/2        | 3-7/8        | 381-2045        | MT2             | 381-4045   | 2-3/8        | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2176  | MT5        | 381-4176     |                 |                 |            |              |                 |                 |
| 23/32 | 5-3/8          | 3             | 1/4       | 1/2        | 3-7/8        | 381-2046        | MT2             | 381-4046   | 2-7/16       | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2184  | MT5        | 381-4184     |                 |                 |            |              |                 |                 |
| 47/64 | 5-3/8          | 3             | 1/4       | 1/2        | 3-7/8        | 381-2047        | MT2             | 381-4047   | 2-1/2        | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2192  | MT5        | 381-4192     |                 |                 |            |              |                 |                 |
| 3/4   | 5-3/8          | 3             | 1/4       | 1/2        | 3-7/8        | 381-2048        | MT2             | 381-4048   | 2-9/16       | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2200  | MT5        | 381-4200     |                 |                 |            |              |                 |                 |
| 49/64 | 5-3/8          | 3             | 1/4       | 5/8        | 3-7/8        | 381-2049        | MT2             | 381-4049   | 2-5/8        | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2208  | MT5        | 381-4208     |                 |                 |            |              |                 |                 |
| 25/32 | 5-3/8          | 3             | 1/4       | 5/8        | 3-7/8        | 381-2050        | MT2             | 381-4050   | 2-3/4        | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2216  | MT5        | 381-4216     |                 |                 |            |              |                 |                 |
| 51/64 | 5-3/8          | 3             | 1/4       | 5/8        | 3-7/8        | 381-2051        | MT2             | 381-4051   | 2-7/8        | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2224  | MT5        | 381-4224     |                 |                 |            |              |                 |                 |
| 13/16 | 5-3/8          | 3             | 1/4       | 5/8        | 3-7/8        | 381-2052        | MT2             | 381-4052   | 3            | 9-7/8           | 5               | 1/2   | 1-3/4          | 7-3/8         | 381-2232  | MT5        | 381-4232     |                 |                 |            |              |                 |                 |

### Interchangeable Pilots For Counterbores

- Shank Diameters of interchangeable pilots must be same with the pilot holes of counterbore when choosing pilots.

| Pilot Dia. | Pilot Shank Diameter |                |                 |                 |                |                 |                |                 |                |
|------------|----------------------|----------------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|
|            | 3/32" Order No.      | 1/8" Order No. | 5/32" Order No. | 3/16" Order No. | 1/4" Order No. | 5/16" Order No. | 3/8" Order No. | 7/16" Order No. | 1/2" Order No. |
| 1/8"       | 381-3005             | 381-3105       |                 |                 |                |                 |                |                 |                |
| 5/32"      | 381-3009             | 381-3109       | 381-3203        |                 |                |                 |                |                 |                |
| 3/16"      | 381-3013             | 381-3113       | 381-3205        |                 |                |                 |                |                 |                |
| 7/32"      | 381-3017             | 381-3117       | 381-3209        | 381-3305        |                |                 |                |                 |                |
| 1/4"       | 381-3021             | 381-3121       | 381-3213        | 381-3309        | 381-3405       |                 |                |                 |                |
| 9/32"      | 381-3025             | 381-3125       | 381-3217        | 381-3313        | 381-3409       |                 |                |                 |                |
| 5/16"      | 381-3029             | 381-3129       | 381-3221        | 381-3317        | 381-3413       |                 |                |                 |                |
| 11/32"     | 381-3033             | 381-3133       | 381-3225        | 381-3321        | 381-3417       |                 |                |                 |                |
| 3/8"       | 381-3037             | 381-3137       | 381-3229        | 381-3325        | 381-3421       | 381-3505        |                |                 |                |
| 13/32"     |                      | 381-3141       | 381-3233        | 381-3329        | 381-3425       | 381-3509        |                |                 |                |
| 7/16"      |                      | 381-3145       | 381-3237        | 381-3333        | 381-3429       | 381-3513        | 381-3605       | 381-3705        | 381-3805       |
| 15/32"     |                      | 381-3149       | 381-3241        | 381-3337        | 381-3433       | 381-3517        | 381-3609       | 381-3707        | 381-3807       |
| 1/2"       |                      | 381-3153       | 381-3245        | 381-3341        | 381-3437       | 381-3521        | 381-3613       | 381-3709        | 381-3809       |
| 17/32"     |                      |                |                 | 381-3345        | 381-3441       | 381-3525        | 381-3617       | 381-3713        | 381-3813       |
| 9/16"      |                      | 381-3157       |                 | 381-3349        | 381-3445       | 381-3529        | 381-3621       | 381-3715        | 381-3817       |
| 19/32"     |                      |                |                 | 381-3353        | 381-3449       | 381-3533        | 381-3625       | 381-3716        | 381-3819       |
| 5/8"       |                      |                |                 | 381-3357        | 381-3453       | 381-3537        | 381-3629       | 381-3717        | 381-3821       |
| 21/32"     |                      |                |                 | 381-3359        | 381-3457       | 381-3541        | 381-3633       | 381-3719        | 381-3823       |
| 11/16"     |                      |                |                 | 381-3361        | 381-3461       | 381-3545        | 381-3637       | 381-3721        | 381-3825       |
| 23/32"     |                      |                |                 | 381-3365        | 381-3465       | 381-3549        | 381-3641       | 381-3723        | 381-3827       |
| 3/4"       |                      |                |                 | 381-3369        | 381-3469       | 381-3553        | 381-3645       | 381-3725        | 381-3829       |
| 25/32"     |                      |                |                 | 381-3373        | 381-3473       | 381-3557        | 381-3649       | 381-3729        | 381-3833       |
| 13/16"     |                      |                |                 | 381-3377        | 381-3477       | 381-3561        | 381-3653       | 381-3733        | 381-3837       |
| 27/32"     |                      |                |                 | 381-3381        | 381-3481       | 381-3565        | 381-3657       | 381-3735        | 381-3839       |
| 7/8"       |                      |                |                 | 381-3385        | 381-3485       | 381-3569        | 381-3661       | 381-3737        | 381-3841       |
| 29/32"     |                      |                |                 |                 |                | 381-3573        | 381-3665       | 381-3739        | 381-3843       |
| 15/16"     |                      |                |                 |                 |                | 381-3577        | 381-3669       | 381-3741        | 381-3845       |
| 31/32"     |                      |                |                 |                 |                | 381-3578        | 381-3670       | 381-3743        | 381-3847       |
| 1"         |                      |                |                 |                 |                | 381-3581        | 381-3673       | 381-3745        | 381-3849       |
| 1-1/16"    |                      |                |                 |                 |                | 381-3585        | 381-3677       | 381-3749        | 381-3853       |
| 1-1/8"     |                      |                |                 |                 |                | 381-3589        | 381-3681       | 381-3753        | 381-3857       |
| 1-3/16"    |                      |                |                 |                 |                |                 | 381-3685       | 381-3757        | 381-3861       |
| 1-1/4"     |                      |                |                 |                 |                |                 | 381-3689       | 381-3761        | 381-3865       |
| 1-5/16"    |                      |                |                 |                 |                |                 | 381-3693       | 381-3765        | 381-3869       |
| 1-3/8"     |                      |                |                 |                 |                |                 | 381-3697       | 381-3769        | 381-3873       |
| 1-7/16"    |                      |                |                 |                 |                |                 |                | 381-3773        | 381-3877       |
| 1-1/2"     |                      |                |                 |                 |                |                 |                | 381-3777        | 381-3881       |
| 1-9/16"    |                      |                |                 |                 |                |                 |                |                 | 381-3885       |
| 1-5/8"     |                      |                |                 |                 |                |                 |                |                 | 381-3889       |
| 1-11/16"   |                      |                |                 |                 |                |                 |                |                 | 381-3893       |
| 1-3/4"     |                      |                |                 |                 |                |                 |                |                 | 381-3897       |
| 1-13/16"   |                      |                |                 |                 |                |                 |                |                 | 381-3901       |
| 1-7/8"     |                      |                |                 |                 |                |                 |                |                 | 381-3905       |
| 1-15/16"   |                      |                |                 |                 |                |                 |                |                 | 381-3909       |
| 2"         |                      |                |                 |                 |                |                 |                |                 | 381-3913       |

### Interchangeable Pilots Counterbore Sets

#### High Speed Steel

##### 21 Piece Set

Set Included one each of following:

Pilots:

4.4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8,  
8.5, 9, 9.5, 10, 10.5mm

Counterbores:

8.5, 9.5, 10.5, 11.5, 13.5, 16.5mm  
1 Piece Holder



Straight Shank

**Order No.381-2921**

Taper Shank

**Order No.381-2923**

##### 22 Piece Set

Set Included one each of following:

Pilots:

12, 13, 14, 15, 16, 17, 18, 19,  
20, 21, 22, 23, 24, 25mm

Counterbores :

26, 28, 30, 32, 33, 34, 36mm  
1 Piece Holder



Straight Shank

**Order No.381-2922**

Taper Shank

**Order No.381-2924**

##### 39 Piece 3 Flute Counterbore Set

Each Set Included:

13 Counterbores: 1/4-1" by 16ths

26 Pilots:

1/8", 5/32", 3/16", 1/4" with 3/32" shank  
3/16", 7/32", 1/4", 9/32", 5/16" with 5/32" shank  
1/4", 5/16", 3/8", 7/16", 1/2" with 3/16" shank  
5/16", 3/8", 7/16", 1/2", 9/16", 5/8" with 1/4" shank  
3/8", 7/16", 1/2", 9/16", 5/8", 3/4" with 5/16" shank



Straight Shank

**Order No.381-2938**

Taper Shank

**Order No. 381-2939**

# Counterbores



## HSS 4 Flute Interchangeable Pilot Aircraft Counterbores

### Long Series - 1/2" or smaller Straight Shank

Can be used in any 1/2" capacity tool or machine.



| Size  | Shank Dia. | Hole Dia. | Overall Length | Order No. | Size   | Shank Dia. | Hole Dia. | Overall Length | Order No. |
|-------|------------|-----------|----------------|-----------|--------|------------|-----------|----------------|-----------|
| 1/4"  | 15/16"     | 3/32"     | 4"             | 381-0301  | 23/32" | 1/2"       | 3/16"     | 5-3/8"         | 381-0316  |
| 9/32  | 17/64      | 3/32      | 4              | 381-0302  | 3/4    | 1/2        | 3/16      | 5-3/8          | 381-0317  |
| 5/16  | 119/64     | 3/32      | 4              | 381-0303  | 25/32  | 1/2        | 3/16      | 5-3/8          | 381-0318  |
| 11/32 | 5/16x      | 3/32      | 4              | 381-0304  | 13/16  | 1/2        | 3/16      | 5-3/8          | 381-0319  |
| 3/8   | 15/16      | 3/32      | 4              | 381-0305  | 7/8    | 1/2        | 3/16      | 5-3/8          | 381-0320  |
| 13/32 | 3/8        | 1/8       | 4              | 381-0306  | 15/16  | 1/2        | 3/16      | 5-3/8          | 381-0321  |
| 7/16  | 3/8        | 1/8       | 4              | 381-0307  | 1      | 1/2        | 3/16      | 5-3/8          | 381-0322  |
| 15/32 | 7/16       | 1/8       | 4-1/4          | 381-0308  | 1-1/16 | 1/2        | 3/16      | 5-1/2          | 381-0323  |
| 1/2   | 7/16       | 1/8       | 4-1/4          | 381-0309  | 1-1/8  | 1/2        | 3/16      | 5-1/2          | 381-0324  |
| 17/32 | 1/2        | 1/8       | 4-1/4          | 381-0310  | 1-3/16 | 1/2        | 3/16      | 5-1/2          | 381-0325  |
| 9/16  | 1/2        | 1/8       | 4-1/4          | 381-0311  | 1-1/4  | 1/2        | 3/16      | 5-1/2          | 381-0326  |
| 19/32 | 1/2        | 1/8       | 4-1/4          | 381-0312  | 1-5/16 | 1/2        | 1/4       | 5-1/2          | 381-0327  |
| 5/8   | 1/2        | 1/8       | 4-1/4          | 381-0313  | 1-3/8  | 1/2        | 1/4       | 5-1/2          | 381-0328  |
| 21/32 | 1/2        | 3/16      | 5-3/8          | 381-0314  | 1-7/16 | 1/2        | 1/4       | 5-1/2          | 381-0329  |
| 11/16 | 1/2        | 3/16      | 5-3/8          | 381-0315  | 1-1/2  | 1/2        | 1/4       | 5-1/2          | 381-0330  |

### Short Series - 1/4" Straight Shank

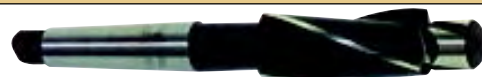
Can be used in 1/4" electric or pneumatic drills especially in aircraft work



| Size  | Hole Dia. | Overall Length | Order No. | Size   | Hole Dia. | Overall Length | Order No. |
|-------|-----------|----------------|-----------|--------|-----------|----------------|-----------|
| 1/4"  | 3/32"     | 2-3/8"         | 381-0401  | 21/32" | 3/16"     | 3-1/8"         | 381-0414  |
| 9/32  | 3/32      | 2-3/8          | 381-0402  | 11/16  | 3/16      | 3-1/8          | 381-0415  |
| 5/16  | 3/32      | 2-3/8          | 381-0403  | 23/32  | 3/16      | 3-1/8          | 381-0416  |
| 11/32 | 3/32      | 2-3/8          | 381-0404  | 3/4    | 3/16      | 3-1/8          | 381-0417  |
| 3/8   | 3/32      | 2-3/8          | 381-0405  | 25/32  | 3/16      | 3-1/8          | 381-0418  |
| 13/32 | 1/8       | 2-13/16        | 381-0406  | 13/16  | 3/16      | 3-1/8          | 381-0419  |
| 7/16  | 1/8       | 2-13/16        | 381-0407  | 27/32  | 3/16      | 3-1/8          | 381-0420  |
| 15/32 | 1/8       | 2-13/16        | 381-0408  | 7/8    | 3/16      | 3-1/8          | 381-0421  |
| 1/2   | 1/8       | 2-13/16        | 381-0409  | 29/32  | 3/16      | 3-1/8          | 381-0422  |
| 17/32 | 1/8       | 2-13/16        | 381-0410  | 15/16  | 3/16      | 3-1/8          | 381-0423  |
| 9/16  | 1/8       | 2-13/16        | 381-0411  | 31/32  | 3/16      | 3-1/8          | 381-0424  |
| 19/32 | 1/8       | 2-13/16        | 381-0412  | 1      | 3/16      | 3-1/8          | 381-0425  |
| 5/8   | 1/8       | 2-13/16        | 381-0413  |        |           |                |           |

## Taper Shank Counterbores

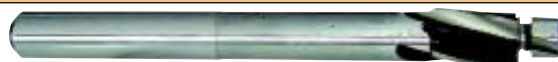
### 3 Flute, High Speed Steel



| Cap Screw Size | Cutter Dia. | Pilot Dia. | Overall Length | Shank Taper | Order No. | Cap Screw Size | Cutter Dia. | Pilot Dia. | Overall Length | Shank Taper | Order No. |
|----------------|-------------|------------|----------------|-------------|-----------|----------------|-------------|------------|----------------|-------------|-----------|
| 1/4"           | 13/32"      | 9/32"      | 5-3/4"         | MT2         | 381-1025  | 5/8"           | 31/32"      | 21/32"     | 7-1/2"         | MT2         | 381-1050  |
| 5/16           | 1/2         | 11/32      | 6              | MT2         | 381-1030  | 5/8            | 11/16       | 1          | 7-1/2          | MT2         | 381-1053  |
| 3/8            | 19/32       | 13/32      | 6-1/2          | MT2         | 381-1035  | 3/4            | 1-3/16      | 13/16      | 9              | MT3         | 381-1055  |
| 7/16           | 11/16       | 15/32      | 7              | MT2         | 381-1040  | 7/8            | 1-3/8       | 15/16      | 9              | MT3         | 381-1060  |
| 1/2            | 25/32       | 17/32      | 7-1/4          | MT2         | 381-1045  | 1              | 1-9/16      | 1-1/16     | 10             | MT3         | 381-1065  |

## Cap Screw Counterbores

### 3 Flute, High Speed Steel, Straight Shank



| Screw Size | Pilot Dia. | Cutting Dia. | Shank Dia. | Overall Length | Order No. | Screw Size | Pilot Dia. | Cutting Dia. | Shank Dia. | Overall Length | Order No. |
|------------|------------|--------------|------------|----------------|-----------|------------|------------|--------------|------------|----------------|-----------|
| 5#         | 0.1410"    | 0.2210"      | 3/16"      | 3"             | 381-0005  | 7/16"      | 15/32"     | 11/16"       | 1/2"       | 7"             | 381-0040  |
| 6#         | 0.1500     | 0.2420       | 7/32       | 3              | 381-0010  | 1/2        | 17/32      | 25/32        | 3/4        | 7-1/2          | 381-0045  |
| 8#         | 11/64      | 19/64        | 1/4        | 3              | 381-0015  | 5/8        | 21/32      | 31/32        | 3/4        | 7-1/2          | 381-0050  |
| 10#        | 13/64      | 21/64        | 5/16       | 3-1/2          | 381-0020  | 3/4        | 13/16      | 1-3/16       | 1          | 8              | 381-0055  |
| 1/4        | 9/32       | 13/32        | 3/8        | 5              | 381-0025  | 7/8        | 15/16      | 1-3/8        | 1          | 8              | 381-0060  |
| 5/16       | 11/32      | 1/2          | 7/16       | 5              | 381-0030  | 1          | 1-1/16     | 1-9/16       | 1          | 10             | 381-0065  |
| 3/8        | 13/32      | 19/32        | 1/2        | 6              | 381-0035  |            |            |              |            |                |           |

### Cap Screw Counterbores Continued

#### 4Flute, High Speed Steel, Straight Shank



| Screw Size | Pilot Dia. | Cutting Dia. | Flute Length | Shank Dia. | Overall Length | Order No.       | Screw Size | Pilot Dia. | Cutting Dia. | Flute Length | Shank Dia. | Overall Length | Order No.       |
|------------|------------|--------------|--------------|------------|----------------|-----------------|------------|------------|--------------|--------------|------------|----------------|-----------------|
| 4-40       | 0.1120     | 0.1860       | 11/16        | 5/32       | 3-7/8          | <b>381-0070</b> | 3/8        | 0.3750     | 0.5720       | 1-5/8        | 1/2        | 6-1/2          | <b>381-0110</b> |
| 4-40       | 0.1270     | 0.2020       | 11/16        | 5/32       | 3-7/8          | <b>381-0071</b> | 3/8        | 0.3900     | 0.5880       | 1-5/8        | 1/2        | 6-1/2          | <b>381-0115</b> |
| 4-40       | 0.1430     | 0.180        | 11/16        | 5/32       | 3-7/8          | <b>381-0072</b> | 3/8        | 0.4060     | 0.6040       | 1-5/8        | 1/2        | 6-1/2          | <b>381-0120</b> |
| 5-40       | 0.1250     | 0.2050       | 11/16        | 3/16       | 4-1/8          | <b>381-0074</b> | 7/16       | .4370      | 0.6630       | 1-11/16      | 1/2        | 7              | <b>381-0125</b> |
| 5-40       | 0.1400     | 0.2210       | 11/16        | 3/16       | 4-1/8          | <b>381-0075</b> | 7/16       | .4520      | 0.6790       | 1-11/16      | 1/2        | 7              | <b>381-0130</b> |
| 5-40       | 0.1560     | 0.2370       | 11/16        | 3/16       | 4-1/8          | <b>381-0076</b> | 7/16       | .4680      | 0.6950       | 1-11/16      | 1/2        | 7              | <b>381-0135</b> |
| 6-32       | 0.1380     | 0.2280       | 7/8          | 7/32       | 4-5/8          | <b>381-0078</b> | 1/2        | 0.5000     | 0.7570       | 2            | 1/2        | 7-1/2          | <b>381-0140</b> |
| 6-32       | 0.1530     | 0.2440       | 7/8          | 7/32       | 4-5/8          | <b>381-0079</b> | 1/2        | 0.5150     | 0.7730       | 2            | 1/2        | 7-1/2          | <b>381-0145</b> |
| 6-32       | 0.1690     | 0.2600       | 7/8          | 7/32       | 4-5/8          | <b>381-0080</b> | 1/2        | 0.5310     | 0.7890       | 2            | 1/2        | 7-1/2          | <b>381-0150</b> |
| 8-32       | 0.1640     | 0.2720       | 15/16        | 1/4        | 5              | <b>381-0083</b> | 5/8        | 0.6250     | 0.9450       | 2            | 5/8        | 7-5/8          | <b>381-0155</b> |
| 8-32       | 0.1790     | 0.2880       | 15/16        | 1/4        | 5              | <b>381-0084</b> | 5/8        | 0.6400     | 0.9610       | 2            | 5/8        | 7-5/8          | <b>381-0160</b> |
| 8-32       | 0.1950     | 0.3040       | 15/16        | 1/4        | 5              | <b>381-0085</b> | 5/8        | 0.6560     | 0.9770       | 2            | 5/8        | 7-5/8          | <b>381-0165</b> |
| 10-32      | 0.1900     | 0.3140       | 1-1/8        | 9/32       | 5-1/4          | <b>381-0087</b> | 3/4        | 0.7500     | 1.1330       | 2-1/8        | 3/4        | 7-3/4          | <b>381-0170</b> |
| 10-32      | 0.2050     | 0.3300       | 1-1/8        | 9/32       | 5-1/4          | <b>381-0088</b> | 3/4        | 0.7650     | 1.1490       | 2-1/8        | 3/4        | 7-3/4          | <b>381-0175</b> |
| 10-32      | 0.2210     | 0.3460       | 1-1/8        | 9/32       | 5-1/4          | <b>381-0089</b> | 3/4        | 0.7810     | 1.1650       | 2-1/8        | 3/4        | 7-3/4          | <b>381-0180</b> |
| 1/4        | 0.2810     | 0.4140       | 1-5/16       | 5/16       | 5-5/8          | <b>381-0094</b> | 7/8        | 0.8750     | 1.3220       | 2-1/8        | 7/8        | 8-1/8          | <b>381-0185</b> |
| 1/4        | 0.2650     | 0.3980       | 1-5/16       | 5/16       | 5-5/8          | <b>381-0095</b> | 7/8        | 0.8910     | 1.3380       | 2-1/8        | 7/8        | 8-1/8          | <b>381-0190</b> |
| 1/4        | 0.2500     | 0.3820       | 1-5/16       | 5/16       | 5-5/8          | <b>381-0096</b> | 7/8        | 0.9060     | 1.3540       | 2-1/8        | 7/8        | 8-1/8          | <b>381-0195</b> |
| 5/16       | 0.3120     | 0.4750       | 1-5/16       | 3/8        | 6-1/8          | <b>381-0098</b> | 1          | 1.0000     | 1.5100       | 2-1/4        | 1          | 8-1/2          | <b>381-0200</b> |
| 5/16       | 0.3280     | 0.4910       | 1-5/16       | 3/8        | 6-1/8          | <b>381-0100</b> | 1          | 1.0150     | 1.5260       | 2-1/4        | 1          | 8-1/2          | <b>381-0205</b> |
| 5/16       | 0.3430     | 0.5070       | 1-5/16       | 3/8        | 6-1/8          | <b>381-0105</b> | 1          | 1.0310     | 1.5420       | 2-1/4        | 1          | 8-1/2          | <b>381-0210</b> |

#### Capscrew Counterbore Sets

| Pieces | Descriptions                              | Set Order No.   |
|--------|-------------------------------------------|-----------------|
| 6pcs   | 1/4, 5/16, 3/8, 1/2, 5/8 and 3/4"         | <b>381-9060</b> |
| 7pcs   | 6#, 8#, 10#, 1/4, 5/16, 3/8 and 1/2"      | <b>381-9070</b> |
| 10pcs  | 4-40 through 1/2", 1/32" Oversized Pilots | <b>381-9101</b> |
| 10pcs  | 4-40 through 1/2", 1/64" Oversized Pilots | <b>381-9102</b> |
| 10pcs  | 4-40 through 1/2", Standard Size Pilots   | <b>381-9103</b> |



### Metric Capscrew Counterbores

#### High Speed Steel



#### 3Flute, Straight Shank

| Screw Size | Pilot Dia. | Cutter Dia. | Cutter Length | Shank Dia. | OAL | Order No.       | Screw Size | Pilot Dia. | Cutter Dia. | Cutter Length | Shank Dia. | OAL | Order No.       |
|------------|------------|-------------|---------------|------------|-----|-----------------|------------|------------|-------------|---------------|------------|-----|-----------------|
| M3         | 3.2        | 6           | 19.00         | 5.00       | 71  | <b>381-1503</b> | M8         | 8.4        | 15          | 32.00         | 12.50      | 100 | <b>381-1508</b> |
| M4         | 4.3        | 8           | 20.00         | 5.00       | 71  | <b>381-1504</b> | M10        | 10.5       | 18          | 36.00         | 12.50      | 100 | <b>381-1510</b> |
| M5         | 5.3        | 10          | 25.00         | 8.00       | 80  | <b>381-1505</b> | M12        | 13.5       | 20          | 36.00         | 12.50      | 100 | <b>381-1512</b> |
| M6         | 6.4        | 11          | 25.00         | 8.00       | 80  | <b>381-1506</b> |            |            |             |               |            |     | <b>381-1514</b> |

#### 3Flute, Taper Shank

| Screw Size | Pilot Dia. | Cutter Dia. | Cutter Length | Shank Taper | OAL   | Order No.       | Screw Size | Pilot Dia. | Cutter Dia. | Cutter Length | Shank Taper | OAL | Order No.       |
|------------|------------|-------------|---------------|-------------|-------|-----------------|------------|------------|-------------|---------------|-------------|-----|-----------------|
| M14        | 15         | 24          | 60.325        | MT2         | 228.6 | <b>381-1614</b> | M20        | 21         | 33          | 79.375        | MT2         | 254 | <b>381-1620</b> |
| M16        | 17         | 26          | 79.375        | MT2         | 228.6 | <b>381-1616</b> | M24        | 25.4       | 40          | 79.375        | MT3         | 254 | <b>381-1624</b> |

#### Capscrew Counterbore Sets

| Pieces | Descriptions                       | Set Order No.   |
|--------|------------------------------------|-----------------|
| 6pcs   | Metric 3, 4, 5, 6, 8, 10mm         | <b>381-9061</b> |
| 7pcs   | Metric 3, 4, 5, 6, 8, 10, 12mm     | <b>381-9079</b> |
| 8pcs   | Metric 3, 4, 5, 6, 8, 10, 12, 14mm | <b>381-9080</b> |



## Straight Shank Chucking Reamers

## Straight Flute

- Right hand cutting direction,
- Designed for general purpose machine reaming in most materials, using screw machines, turret lathes, drill presses and machining centers.
- Precision engineered design for exceptional quality and accuracy.
- Ground with a 45 deg. Chamfer, suitable for reaming most materials.

## Fractional Sizes

| Size  | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. | Size    | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|--------|--------------|----------------|-----------|---------|--------------|----------------|-----------|
| 3/64" | 1/2"         | 2-1/2"         | 331-1003  | 15/32" | 1-3/4"       | 7"             | 331-1030  | 57/64"  | 2-5/8"       | 10"            | 331-1057  |
| 1/16  | 1/2          | 2-1/2          | 331-1004  | 31/64  | 2            | 8              | 331-1031  | 29/32   | 2-5/8        | 10             | 331-1058  |
| 5/64  | 3/4          | 3              | 331-1005  | 1/2    | 2            | 8              | 331-1032  | 59/64   | 2-5/8        | 10             | 331-1059  |
| 3/32  | 3/4          | 3              | 331-1006  | 33/64  | 2            | 8              | 331-1033  | 15/16   | 2-5/8        | 10             | 331-1060  |
| 7/64  | 7/8          | 3-1/2          | 331-1007  | 17/32  | 2            | 8              | 331-1034  | 61/64   | 2-5/8        | 10             | 331-1061  |
| 1/8   | 7/8          | 3-1/2          | 331-1008  | 35/64  | 2            | 8              | 331-1035  | 31/32   | 2-5/8        | 10             | 331-1062  |
| 9/64  | 1            | 4              | 331-1009  | 9/16   | 2            | 8              | 331-1036  | 63/64   | 2-3/4        | 10             | 331-1063  |
| 5/32  | 1            | 4              | 331-1010  | 37/64  | 2            | 8              | 331-1037  | 1       | 2-3/4        | 10-1/2         | 331-1100  |
| 11/64 | 1-1/8        | 4-1/2          | 331-1011  | 19/32  | 2            | 8              | 331-1038  | 1-1/32  | 2-3/4        | 10-1/2         | 331-1102  |
| 3/16  | 1-1/8        | 4-1/2          | 331-1012  | 39/64  | 2-1/4        | 9              | 331-1039  | 1-1/16  | 2-3/4        | 10-1/2         | 331-1104  |
| 13/64 | 1-1/4        | 5              | 331-1013  | 5/8    | 2-1/4        | 9              | 331-1040  | 1-3/32  | 2-7/8        | 10-1/2         | 331-1106  |
| 7/32  | 1-1/4        | 5              | 331-1014  | 41/64  | 2-1/4        | 9              | 331-1041  | 1-1/8   | 2-7/8        | 11             | 331-1108  |
| 15/64 | 1-1/2        | 6              | 331-1015  | 21/32  | 2-1/4        | 9              | 331-1042  | 1-5/32  | 2-7/8        | 11             | 331-1110  |
| 1/4   | 1-1/2        | 6              | 331-1016  | 43/64  | 2-1/4        | 9              | 331-1043  | 1-3/16  | 2-7/8        | 11             | 331-1112  |
| 17/64 | 1-1/2        | 6              | 331-1017  | 11/16  | 2-1/4        | 9              | 331-1044  | 1-7/32  | 2-7/8        | 11             | 331-1114  |
| 9/32  | 1-1/2        | 6              | 331-1018  | 45/64  | 2-1/4        | 9              | 331-1045  | 1-1/4   | 3            | 11-1/2         | 331-1116  |
| 19/64 | 1-1/2        | 6              | 331-1019  | 23/32  | 2-1/4        | 9              | 331-1046  | 1-9/32  | 3            | 11-1/2         | 331-1118  |
| 5/16  | 1-1/2        | 6              | 331-1020  | 47/64  | 2-1/2        | 9-1/2          | 331-1047  | 1-5/16  | 3            | 11-1/2         | 331-1120  |
| 21/64 | 1-1/2        | 6              | 331-1021  | 3/4    | 2-1/2        | 9-1/2          | 331-1048  | 1-3/8   | 3-1/4        | 12             | 331-1124  |
| 11/32 | 1-1/2        | 6              | 331-1022  | 49/64  | 2-1/2        | 9-1/2          | 331-1049  | 1-7/16  | 3-1/2        | 12-1/2         | 331-1128  |
| 23/64 | 1-3/4        | 7              | 331-1023  | 25/32  | 2-1/2        | 9-1/2          | 331-1050  | 1-1/2   | 3-1/2        | 12-1/2         | 331-1132  |
| 3/8   | 1-3/4        | 7              | 331-1024  | 51/64  | 2-1/2        | 9-1/2          | 331-1051  | 1-9/16  | 3-1/2        | 12-1/2         | 331-1136  |
| 25/64 | 1-3/4        | 7              | 331-1025  | 13/16  | 2-1/2        | 9-1/2          | 331-1052  | 1-5/8   | 3-1/2        | 13             | 331-1140  |
| 13/32 | 1-3/4        | 7              | 331-1026  | 53/64  | 2-1/2        | 9-1/2          | 331-1053  | 1-11/16 | 3-1/2        | 13             | 331-1144  |
| 27/64 | 1-3/4        | 7              | 331-1027  | 27/32  | 2-1/2        | 9-1/2          | 331-1054  | 1-3/4   | 4            | 13-1/2         | 331-1148  |
| 7/16  | 1-3/4        | 7              | 331-1028  | 55/64  | 2-5/8        | 9-1/2          | 331-1055  | 1-7/8   | 4            | 14             | 331-1156  |
| 29/64 | 1-3/4        | 7              | 331-1029  | 7/8    | 2-5/8        | 10             | 331-1056  | 2       | 4            | 14             | 331-1200  |

## Number Sizes

| Size  | Flute Length | Overall Length | Order No. | Size  | Flute Length | Overall Length | Order No. | Size  | Flute Length | Overall Length | Order No. | Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|-------|--------------|----------------|-----------|-------|--------------|----------------|-----------|-------|--------------|----------------|-----------|
| No.1  | 1-1/2"       | 6"             | 331-0201  | No.16 | 1-1/8"       | 4-1/2"         | 331-0216  | No.31 | 7/8"         | 3-1/2"         | 331-0231  | No.46 | 3/4"         | 3"             | 331-0246  |
| No.2  | 1-1/2        | 6              | 331-0202  | No.17 | 1-1/8        | 4-1/2          | 331-0217  | No.32 | 7/8          | 3-1/2          | 331-0232  | No.47 | 3/4          | 3              | 331-0247  |
| No.3  | 1-1/4        | 5              | 331-0203  | No.18 | 1-1/8        | 4-1/2          | 331-0218  | No.33 | 7/8          | 3-1/2          | 331-0233  | No.48 | 3/4          | 3              | 331-0248  |
| No.4  | 1-1/4        | 5              | 331-0204  | No.19 | 1-1/8        | 4-1/2          | 331-0219  | No.34 | 7/8          | 3-1/2          | 331-0234  | No.49 | 3/4          | 3              | 331-0249  |
| No.5  | 1-1/4        | 5              | 331-0205  | No.20 | 1-1/8        | 4-1/2          | 331-0220  | No.35 | 7/8          | 3-1/2          | 331-0235  | No.50 | 3/4          | 3              | 331-0250  |
| No.6  | 1-1/4        | 5              | 331-0206  | No.21 | 1-1/8        | 4-1/2          | 331-0221  | No.36 | 7/8          | 3-1/2          | 331-0236  | No.51 | 3/4          | 3              | 331-0251  |
| No.7  | 1-1/4        | 5              | 331-0207  | No.22 | 1            | 4              | 331-0222  | No.37 | 7/8          | 3-1/2          | 331-0237  | No.52 | 1/2          | 2-1/2          | 331-0252  |
| No.8  | 1-1/4        | 5              | 331-0208  | No.23 | 1            | 4              | 331-0223  | No.38 | 7/8          | 3-1/2          | 331-0238  | No.53 | 1/2          | 2-1/2          | 331-0253  |
| No.9  | 1-1/4        | 5              | 331-0209  | No.24 | 1            | 4              | 331-0224  | No.39 | 7/8          | 3-1/2          | 331-0239  | No.54 | 1/2          | 2-1/2          | 331-0254  |
| No.10 | 1-1/4        | 5              | 331-0210  | No.25 | 1            | 4              | 331-0225  | No.40 | 7/8          | 3-1/2          | 331-0240  | No.55 | 1/2          | 2-1/2          | 331-0255  |
| No.11 | 1-1/4        | 5              | 331-0211  | No.26 | 1            | 4              | 331-0226  | No.41 | 7/8          | 3-1/2          | 331-0241  | No.56 | 1/2          | 2-1/2          | 331-0256  |
| No.12 | 1-1/8        | 4-1/2          | 331-0212  | No.27 | 1            | 4              | 331-0227  | No.42 | 3/4          | 3              | 331-0242  | No.57 | 1/2          | 2-1/2          | 331-0257  |
| No.13 | 1-1/8        | 4-1/2          | 331-0213  | No.28 | 1            | 4              | 331-0228  | No.43 | 3/4          | 3              | 331-0243  | No.58 | 1/2          | 2-1/2          | 331-0258  |
| No.14 | 1-1/8        | 4-1/2          | 331-0214  | No.29 | 1            | 4              | 331-0229  | No.44 | 3/4          | 3              | 331-0244  | No.59 | 1/2          | 2-1/2          | 331-0259  |
| No.15 | 1-1/8        | 4-1/2          | 331-0215  | No.30 | 7/8          | 3-1/2          | 331-0230  | No.45 | 3/4          | 3              | 331-0245  | No.60 | 1/2          | 2-1/2          | 331-0260  |

## Letter Sizes

| Size | Flute Length | Overall Length | Order No. | Size | Flute Length | Overall Length | Order No. | Size | Flute Length | Overall Length | Order No. |
|------|--------------|----------------|-----------|------|--------------|----------------|-----------|------|--------------|----------------|-----------|
| A    | 1-1/2        | 6"             | 331-0001  | J    | 1-1/2        | 6"             | 331-0010  | S    | 1-3/4        | 7"             | 331-0019  |
| B    | 1-1/2        | 6              | 331-0002  | K    | 1-1/2        | 6              | 331-0011  | T    | 1-3/4        | 7              | 331-0020  |
| C    | 1-1/2        | 6              | 331-0003  | L    | 1-1/2        | 6              | 331-0012  | U    | 1-3/4        | 7              | 331-0021  |
| D    | 1-1/2        | 6              | 331-0004  | M    | 1-1/2        | 6              | 331-0013  | V    | 1-3/4        | 7              | 331-0022  |
| E    | 1-1/2        | 6              | 331-0005  | N    | 1-1/2        | 6              | 331-0014  | W    | 1-3/4        | 7              | 331-0023  |
| F    | 1-1/2        | 6              | 331-0006  | O    | 1-1/2        | 6              | 331-0015  | X    | 1-3/4        | 7              | 331-0024  |
| G    | 1-1/2        | 6              | 331-0007  | P    | 1-1/2        | 6              | 331-0016  | Y    | 1-3/4        | 7              | 331-0025  |
| H    | 1-1/2        | 6              | 331-0008  | Q    | 1-1/2        | 6              | 331-0017  | Z    | 1-3/4        | 7              | 331-0026  |
| I    | 1-1/2        | 6              | 331-0009  | R    | 1-1/2        | 6              | 331-0018  |      |              |                |           |

## M35 Cobalt Straight Shank Chucking Reamers

### Straight Flute

- Right hand cutting direction,
- Designed for general purpose machine reaming in most materials, using screw machines, turret lathes, drill presses and machining centers.
- Precision engineered design for exceptional quality and accuracy.
- Ground with a 45 deg. Chamfer, suitable for reaming most materials.

### Fractional Sizes

| Size  | Flute Length | Overall Length | Order No.       | Size   | Flute Length | Overall Length | Order No.       | Size    | Flute Length | Overall Length | Order No.       |
|-------|--------------|----------------|-----------------|--------|--------------|----------------|-----------------|---------|--------------|----------------|-----------------|
| 3/64" | 1/2"         | 2-1/2"         | <b>331-1303</b> | 15/32" | 1-3/4"       | 7"             | <b>331-1330</b> | 57/64"  | 2-5/8"       | 10"            | <b>331-1357</b> |
| 1/16  | 1/2          | 2-1/2          | <b>331-1304</b> | 31/64  | 2            | 8              | <b>331-1331</b> | 29/32   | 2-5/8        | 10             | <b>331-1358</b> |
| 5/64  | 3/4          | 3              | <b>331-1305</b> | 1/2    | 2            | 8              | <b>331-1332</b> | 59/64   | 2-5/8        | 10             | <b>331-1359</b> |
| 3/32  | 3/4          | 3              | <b>331-1306</b> | 33/64  | 2            | 8              | <b>331-1333</b> | 15/16   | 2-5/8        | 10             | <b>331-1360</b> |
| 7/64  | 7/8          | 3-1/2          | <b>331-1307</b> | 17/32  | 2            | 8              | <b>331-1334</b> | 61/64   | 2-5/8        | 10             | <b>331-1361</b> |
| 1/8   | 7/8          | 3-1/2          | <b>331-1308</b> | 35/64  | 2            | 8              | <b>331-1335</b> | 31/32   | 2-5/8        | 10             | <b>331-1362</b> |
| 9/64  | 1            | 4              | <b>331-1309</b> | 9/16   | 2            | 8              | <b>331-1336</b> | 63/64   | 2-3/4        | 10             | <b>331-1363</b> |
| 5/32  | 1            | 4              | <b>331-1310</b> | 37/64  | 2            | 8              | <b>331-1337</b> | 1       | 2-3/4        | 10-1/2         | <b>331-1364</b> |
| 11/64 | 1-1/8        | 4-1/2          | <b>331-1311</b> | 19/32  | 2            | 8              | <b>331-1338</b> | 1-1/32  | 2-3/4        | 10-1/2         | <b>331-1366</b> |
| 3/16  | 1-1/8        | 4-1/2          | <b>331-1312</b> | 39/64  | 2-1/4        | 9              | <b>331-1339</b> | 1-1/16  | 2-3/4        | 10-1/2         | <b>331-1368</b> |
| 13/64 | 1-1/4        | 5              | <b>331-1313</b> | 5/8    | 2-1/4        | 9              | <b>331-1340</b> | 1-3/32  | 2-7/8        | 10-1/2         | <b>331-1370</b> |
| 7/32  | 1-1/4        | 5              | <b>331-1314</b> | 41/64  | 2-1/4        | 9              | <b>331-1341</b> | 1-1/8   | 2-7/8        | 11             | <b>331-1372</b> |
| 15/64 | 1-1/2        | 6              | <b>331-1315</b> | 21/32  | 2-1/4        | 9              | <b>331-1342</b> | 1-5/32  | 2-7/8        | 11             | <b>331-1374</b> |
| 1/4   | 1-1/2        | 6              | <b>331-1316</b> | 43/64  | 2-1/4        | 9              | <b>331-1343</b> | 1-3/16  | 2-7/8        | 11             | <b>331-1376</b> |
| 17/64 | 1-1/2        | 6              | <b>331-1317</b> | 11/16  | 2-1/4        | 9              | <b>331-1344</b> | 1-7/32  | 2-7/8        | 11             | <b>331-1378</b> |
| 9/32  | 1-1/2        | 6              | <b>331-1318</b> | 45/64  | 2-1/4        | 9              | <b>331-1345</b> | 1-1/4   | 3            | 11-1/2         | <b>331-1380</b> |
| 19/64 | 1-1/2        | 6              | <b>331-1319</b> | 23/32  | 2-1/4        | 9              | <b>331-1346</b> | 1-9/32  | 3            | 11-1/2         | <b>331-1382</b> |
| 5/16  | 1-1/2        | 6              | <b>331-1320</b> | 47/64  | 2-1/2        | 9-1/2          | <b>331-1347</b> | 1-5/16  | 3            | 11-1/2         | <b>331-1384</b> |
| 21/64 | 1-1/2        | 6              | <b>331-1321</b> | 3/4    | 2-1/2        | 9-1/2          | <b>331-1348</b> | 1-3/8   | 3-1/4        | 12             | <b>331-1386</b> |
| 11/32 | 1-1/2        | 6              | <b>331-1322</b> | 49/64  | 2-1/2        | 9-1/2          | <b>331-1349</b> | 1-7/16  | 3-1/2        | 12-1/2         | <b>331-1388</b> |
| 23/64 | 1-3/4        | 7              | <b>331-1323</b> | 25/32  | 2-1/2        | 9-1/2          | <b>331-1350</b> | 1-1/2   | 3-1/2        | 12-1/2         | <b>331-1390</b> |
| 3/8   | 1-3/4        | 7              | <b>331-1324</b> | 51/64  | 2-1/2        | 9-1/2          | <b>331-1351</b> | 1-9/16  | 3-1/2        | 12-1/2         | <b>331-1392</b> |
| 25/64 | 1-3/4        | 7              | <b>331-1325</b> | 13/16  | 2-1/2        | 9-1/2          | <b>331-1352</b> | 1-5/8   | 3-1/2        | 13             | <b>331-1394</b> |
| 13/32 | 1-3/4        | 7              | <b>331-1326</b> | 53/64  | 2-1/2        | 9-1/2          | <b>331-1353</b> | 1-11/16 | 3-1/2        | 13             | <b>331-1396</b> |
| 27/64 | 1-3/4        | 7              | <b>331-1327</b> | 27/32  | 2-1/2        | 9-1/2          | <b>331-1354</b> | 1-3/4   | 4            | 13-1/2         | <b>331-1398</b> |
| 7/16  | 1-3/4        | 7              | <b>331-1328</b> | 55/64  | 2-5/8        | 9-1/2          | <b>331-1355</b> | 1-7/8   | 4            | 14             | <b>331-1199</b> |
| 29/64 | 1-3/4        | 7              | <b>331-1329</b> | 7/8    | 2-5/8        | 10             | <b>331-1356</b> | 2       | 4            | 14             | <b>331-1400</b> |

### Number Sizes

| Size  | Flute Length | Overall Length | Order No.       | Size  | Flute Length | Overall Length | Order No.       | Size  | Flute Length | Overall Length | Order No.       | Size  | Flute Length | Overall Length | Order No.       |
|-------|--------------|----------------|-----------------|-------|--------------|----------------|-----------------|-------|--------------|----------------|-----------------|-------|--------------|----------------|-----------------|
| No.1  | 1-1/2"       | 6"             | <b>331-1401</b> | No.16 | 1-1/8"       | 4-1/2"         | <b>331-1416</b> | No.31 | 7/8"         | 3-1/2"         | <b>331-1431</b> | No.46 | 3/4"         | 3"             | <b>331-1446</b> |
| No.2  | 1-1/2        | 6              | <b>331-1402</b> | No.17 | 1-1/8        | 4-1/2          | <b>331-1417</b> | No.32 | 7/8          | 3-1/2          | <b>331-1432</b> | No.47 | 3/4          | 3              | <b>331-1447</b> |
| No.3  | 1-1/4        | 5              | <b>331-1403</b> | No.18 | 1-1/8        | 4-1/2          | <b>331-1418</b> | No.33 | 7/8          | 3-1/2          | <b>331-1433</b> | No.48 | 3/4          | 3              | <b>331-1448</b> |
| No.4  | 1-1/4        | 5              | <b>331-1404</b> | No.19 | 1-1/8        | 4-1/2          | <b>331-1419</b> | No.34 | 7/8          | 3-1/2          | <b>331-1434</b> | No.49 | 3/4          | 3              | <b>331-1449</b> |
| No.5  | 1-1/4        | 5              | <b>331-1405</b> | No.20 | 1-1/8        | 4-1/2          | <b>331-1420</b> | No.35 | 7/8          | 3-1/2          | <b>331-1435</b> | No.50 | 3/4          | 3              | <b>331-1450</b> |
| No.6  | 1-1/4        | 5              | <b>331-1406</b> | No.21 | 1-1/8        | 4-1/2          | <b>331-1421</b> | No.36 | 7/8          | 3-1/2          | <b>331-1436</b> | No.51 | 3/4          | 3              | <b>331-1451</b> |
| No.7  | 1-1/4        | 5              | <b>331-1407</b> | No.22 | 1            | 4              | <b>331-1422</b> | No.37 | 7/8          | 3-1/2          | <b>331-1437</b> | No.52 | 1/2          | 2-1/2          | <b>331-1452</b> |
| No.8  | 1-1/4        | 5              | <b>331-1408</b> | No.23 | 1            | 4              | <b>331-1423</b> | No.38 | 7/8          | 3-1/2          | <b>331-1438</b> | No.53 | 1/2          | 2-1/2          | <b>331-1453</b> |
| No.9  | 1-1/4        | 5              | <b>331-1409</b> | No.24 | 1            | 4              | <b>331-1424</b> | No.39 | 7/8          | 3-1/2          | <b>331-1439</b> | No.54 | 1/2          | 2-1/2          | <b>331-1454</b> |
| No.10 | 1-1/4        | 5              | <b>331-1410</b> | No.25 | 1            | 4              | <b>331-1425</b> | No.40 | 7/8          | 3-1/2          | <b>331-1440</b> | No.55 | 1/2          | 2-1/2          | <b>331-1455</b> |
| No.11 | 1-1/4        | 5              | <b>331-1411</b> | No.26 | 1            | 4              | <b>331-1426</b> | No.41 | 7/8          | 3-1/2          | <b>331-1441</b> | No.56 | 1/2          | 2-1/2          | <b>331-1456</b> |
| No.12 | 1-1/8        | 4-1/2          | <b>331-1412</b> | No.27 | 1            | 4              | <b>331-1427</b> | No.42 | 3/4          | 3              | <b>331-1442</b> | No.57 | 1/2          | 2-1/2          | <b>331-1457</b> |
| No.13 | 1-1/8        | 4-1/2          | <b>331-1413</b> | No.28 | 1            | 4              | <b>331-1428</b> | No.43 | 3/4          | 3              | <b>331-1443</b> | No.58 | 1/2          | 2-1/2          | <b>331-1458</b> |
| No.14 | 1-1/8        | 4-1/2          | <b>331-1414</b> | No.29 | 1            | 4              | <b>331-1429</b> | No.44 | 3/4          | 3              | <b>331-1444</b> | No.59 | 1/2          | 2-1/2          | <b>331-1459</b> |
| No.15 | 1-1/8        | 4-1/2          | <b>331-1415</b> | No.30 | 7/8          | 3-1/2          | <b>331-1430</b> | No.45 | 3/4          | 3              | <b>331-1445</b> | No.60 | 1/2          | 2-1/2          | <b>331-1460</b> |

### Letter Sizes

| Size | Flute Length | Overall Length | Order No.       | Size | Flute Length | Overall Length | Order No.       | Size | Flute Length | Overall Length | Order No.       |
|------|--------------|----------------|-----------------|------|--------------|----------------|-----------------|------|--------------|----------------|-----------------|
| A    | 1-1/2        | 6"             | <b>331-1501</b> | J    | 1-1/2        | 6"             | <b>331-1510</b> | S    | 1-3/4        | 7"             | <b>331-1519</b> |
| B    | 1-1/2        | 6              | <b>331-1502</b> | K    | 1-1/2        | 6              | <b>331-1511</b> | T    | 1-3/4        | 7              | <b>331-1520</b> |
| C    | 1-1/2        | 6              | <b>331-1503</b> | L    | 1-1/2        | 6              | <b>331-1512</b> | U    | 1-3/4        | 7              | <b>331-1521</b> |
| D    | 1-1/2        | 6              | <b>331-1504</b> | M    | 1-1/2        | 6              | <b>331-1513</b> | V    | 1-3/4        | 7              | <b>331-1522</b> |
| E    | 1-1/2        | 6              | <b>331-1505</b> | N    | 1-1/2        | 6              | <b>331-1514</b> | W    | 1-3/4        | 7              | <b>331-1523</b> |
| F    | 1-1/2        | 6              | <b>331-1506</b> | O    | 1-1/2        | 6              | <b>331-1515</b> | X    | 1-3/4        | 7              | <b>331-1524</b> |
| G    | 1-1/2        | 6              | <b>331-1507</b> | P    | 1-1/2        | 6              | <b>331-1516</b> | Y    | 1-3/4        | 7              | <b>331-1525</b> |
| H    | 1-1/2        | 6              | <b>331-1508</b> | Q    | 1-1/2        | 6              | <b>331-1517</b> | Z    | 1-3/4        | 7              | <b>331-1526</b> |
| I    | 1-1/2        | 6              | <b>331-1509</b> | R    | 1-1/2        | 6              | <b>331-1518</b> |      |              |                |                 |

## Spiral Flute Chucking Reamers

### High Speed Steel, Straight Shank, Right Hand

- Provides better surface finish than straight flute reamers.
- Spiral flutes pull chips away from part, providing excellent chip removal, especially in blind holes.

- Right hand spiral – right hand cut.
- Use for difficult-to-ream materials.
- Best choice for interrupted cuts such as keyways or cross holes.



### Fractional Sizes

| Size  | Decimal Size | Flute Length | Overall Length | No. of Flute | Order No. | Size   | Decimal Size | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|--------------|--------------|----------------|--------------|-----------|--------|--------------|--------------|----------------|--------------|-----------|
| 1/8"  | .1250"       | 7/8"         | 3-1/2"         | 4            | 241-2005  | 35/64" | .5469        | 2"           | 8"             | 6            | 241-2126  |
| 9/64  | .1406        | 1            | 4              | 4            | 241-2010  | 9/16   | .5625        | 2            | 8              | 6            | 241-2130  |
| 5/32  | .1562        | 1            | 4              | 4            | 241-2015  | 37/64  | .5781        | 2            | 8              | 6            | 241-2131  |
| 11/64 | .1719        | 1-1/8        | 4-1/2          | 6            | 241-2020  | 19/32  | .5938        | 2            | 8              | 6            | 241-2135  |
| 3/16  | .1875        | 1-1/8        | 4-1/2          | 6            | 241-2025  | 39/64  | .6094        | 2-1/4        | 9              | 8            | 241-2139  |
| 13/64 | .2031        | 1-1/4        | 5              | 6            | 241-2030  | 5/8    | .6250        | 2-1/4        | 9              | 8            | 241-2140  |
| 7/32  | .2188        | 1-1/4        | 5              | 6            | 241-2035  | 41/64  | .6406        | 2-1/4        | 9              | 8            | 241-2144  |
| 15/64 | .2344        | 1-1/2        | 6              | 6            | 241-2040  | 21/32  | .6562        | 2-1/4        | 9              | 8            | 241-2145  |
| 1/4   | .2500        | 1-1/2        | 6              | 6            | 241-2045  | 11/16  | .6875        | 2-1/4        | 9              | 8            | 241-2150  |
| 17/64 | .2656        | 1-1/2        | 6              | 6            | 241-2050  | 23/32  | .7188        | 2-1/4        | 9              | 8            | 241-2155  |
| 9/32  | .2812        | 1-1/2        | 6              | 6            | 241-2055  | 3/4    | .7500        | 2-1/2        | 9-1/2          | 8            | 241-2160  |
| 19/64 | .2969        | 1-1/2        | 6              | 6            | 241-2060  | 25/32  | .7812        | 2-1/2        | 9-1/2          | 8            | 241-2165  |
| 5/16  | .3125        | 1-1/2        | 6              | 6            | 241-2065  | 13/16  | .8125        | 2-1/2        | 9-1/2          | 8            | 241-2170  |
| 21/64 | .3281        | 1-1/2        | 6              | 6            | 241-2070  | 27/32  | .8438        | 2-1/2        | 9-1/2          | 8            | 241-2175  |
| 11/32 | .3438        | 1-1/2        | 6              | 6            | 241-2075  | 7/8    | .8750        | 2-5/8        | 10             | 8            | 241-2180  |
| 23/64 | .3594        | 1-3/4        | 7              | 6            | 241-2080  | 29/32  | .9062        | 2-5/8        | 10             | 8            | 241-2185  |
| 3/8   | .3750        | 1-3/4        | 7              | 6            | 241-2085  | 15/16  | .9375        | 2-5/8        | 10             | 8            | 241-2190  |
| 25/64 | .3906        | 1-3/4        | 7              | 6            | 241-2090  | 31/32  | .9688        | 2-5/8        | 10             | 8            | 241-2195  |
| 13/32 | .4062        | 1-3/4        | 7              | 6            | 241-2095  | 1      | 1.0000       | 2-3/4        | 10-1/2         | 8            | 241-2200  |
| 27/64 | .4219        | 1-3/4        | 7              | 6            | 241-2100  | 1-1/16 | 1.0625       | 2-3/4        | 10-1/2         | 10           | 241-2205  |
| 7/16  | .3745        | 1-3/4        | 7              | 6            | 241-2101  | 1-1/8  | 1.1250       | 2-7/8        | 11             | 10           | 241-2210  |
| 29/64 | .4531        | 1-3/4        | 7              | 6            | 241-2105  | 1-3/16 | 1.1875       | 2-7/8        | 11             | 10           | 241-2215  |
| 15/32 | .4688        | 1-3/4        | 7              | 6            | 241-2110  | 1-1/4  | 1.2500       | 3            | 11-1/2         | 10           | 241-2220  |
| 31/64 | .4844        | 2            | 8              | 6            | 241-2115  | 1-5/16 | 1.3125       | 3-1/4        | 12             | 10           | 241-2225  |
| 1/2   | .5000        | 2            | 8              | 6            | 241-2120  | 1-3/8  | 1.3750       | 3-1/4        | 12             | 12           | 241-2230  |
| 33/64 | .5156        | 2            | 8              | 6            | 241-2121  | 1-7/16 | 1.4375       | 3-1/2        | 12-1/2         | 12           | 241-2235  |
| 17/32 | .5312        | 2            | 8              | 6            | 241-2125  | 1-1/2  | 1.5000       | 3-1/2        | 12-1/2         | 12           | 241-2240  |

## Metric Chucking Reamers

### DIN212/A, High Speed Steel, Straight Flute

### Straight Shank



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Shank Dia. (mm) | No. of Flute | Order No. | Size (mm) | Flute Length (mm) | Overall Length (mm) | Shank Dia. (mm) | No. of Flute | Order No. |
|-----------|-------------------|---------------------|-----------------|--------------|-----------|-----------|-------------------|---------------------|-----------------|--------------|-----------|
| 1.0       | 8                 | 30                  | 2               | 4            | 331-5010  | 13.5      | 44                | 151                 | 10              | 6            | 331-5135  |
| 1.5       | 8                 | 30                  | 2               | 4            | 331-5015  | 14.0      | 47                | 160                 | 12.5            | 6            | 331-5140  |
| 2.0       | 11                | 49                  | 2               | 4            | 331-5020  | 14.5      | 50                | 162                 | 12.5            | 6            | 331-5145  |
| 2.5       | 14                | 57                  | 2.5             | 4            | 331-5025  | 15.0      | 50                | 162                 | 12.5            | 6            | 331-5150  |
| 3.0       | 15                | 61                  | 3               | 6            | 331-5030  | 15.5      | 52                | 170                 | 12.5            | 8            | 331-5155  |
| 3.5       | 18                | 70                  | 3.5             | 6            | 331-5035  | 16.0      | 52                | 170                 | 12.5            | 8            | 331-5160  |
| 4.0       | 19                | 75                  | 4               | 6            | 331-5040  | 16.5      | 54                | 175                 | 14              | 8            | 331-5165  |
| 4.5       | 21                | 80                  | 4.5             | 6            | 331-5045  | 17.0      | 54                | 175                 | 14              | 8            | 331-5170  |
| 5.0       | 23                | 86                  | 5               | 6            | 331-5050  | 17.5      | 56                | 182                 | 14              | 8            | 331-5175  |
| 5.5       | 26                | 93                  | 5.6             | 6            | 331-5055  | 18.0      | 56                | 182                 | 14              | 8            | 331-5180  |
| 6.0       | 26                | 93                  | 5.6             | 6            | 331-5060  | 18.5      | 58                | 189                 | 16              | 8            | 331-5185  |
| 6.5       | 28                | 101                 | 6.3             | 6            | 331-5065  | 19.0      | 58                | 189                 | 16              | 8            | 331-5190  |
| 7.0       | 31                | 109                 | 7.1             | 6            | 331-5070  | 19.5      | 60                | 195                 | 16              | 8            | 331-5195  |
| 7.5       | 31                | 109                 | 7.1             | 6            | 331-5075  | 20.0      | 60                | 195                 | 16              | 8            | 331-5200  |
| 8.0       | 33                | 117                 | 8               | 6            | 331-5080  | 20.5      | 60                | 215                 | 18              | 8            | 331-5205  |
| 8.5       | 33                | 117                 | 8               | 6            | 331-5085  | 21.0      | 60                | 215                 | 18              | 8            | 331-5210  |
| 9.0       | 36                | 125                 | 9               | 6            | 331-5090  | 21.5      | 60                | 225                 | 18              | 8            | 331-5215  |
| 9.5       | 36                | 125                 | 9               | 6            | 331-5095  | 22.0      | 60                | 225                 | 18              | 8            | 331-5220  |
| 10.0      | 38                | 133                 | 10              | 6            | 331-5100  | 22.5      | 60                | 230                 | 18              | 8            | 331-5225  |
| 10.5      | 38                | 133                 | 10              | 6            | 331-5105  | 23.0      | 60                | 230                 | 18              | 8            | 331-5230  |
| 11.0      | 41                | 142                 | 10              | 6            | 331-5110  | 23.5      | 60                | 240                 | 20              | 8            | 331-5235  |
| 11.5      | 41                | 142                 | 10              | 6            | 331-5115  | 24.0      | 60                | 240                 | 20              | 8            | 331-5240  |
| 12.0      | 44                | 151                 | 10              | 6            | 331-5120  | 24.5      | 60                | 245                 | 20              | 8            | 331-5245  |
| 12.5      | 44                | 151                 | 10              | 6            | 331-5125  | 25.0      | 60                | 245                 | 20              | 8            | 331-5250  |
| 13.0      | 44                | 151                 | 10              | 6            | 331-5130  |           |                   |                     |                 |              |           |

## Special Decimal Chucking Reamers

High Speed Steel, Straight Shank, Straight Flute



| Size   | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. |
|--------|--------------|----------------|-----------|--------|--------------|----------------|-----------|--------|--------------|----------------|-----------|
| .0160" | 1/2"         | 1-3/8"         | 339-0160  | .1010" | 7/8"         | 3-1/2"         | 339-1010  | .1535" | 1"           | 4"             | 339-1535  |
| .0200  | 1/2          | 1-3/8          | 339-0200  | .1020  | 7/8          | 3-1/2          | 339-1020  | .1545  | 1            | 4              | 339-1545  |
| .0210  | 1/2          | 1-3/8          | 339-0210  | .1025  | 7/8          | 3-1/2          | 339-1025  | .1550  | 1            | 4              | 339-1550  |
| .0310  | 1/2          | 1-3/8          | 339-0310  | .1030  | 7/8          | 3-1/2          | 339-1030  | .1555  | 1            | 4              | 339-1555  |
| .0327  | 1/2          | 1-3/8          | 339-0327  | .1050  | 7/8          | 3-1/2          | 339-1050  | .1557  | 1            | 4              | 339-1557  |
| .0390  | 1/2          | 1-3/8          | 339-0390  | .1055  | 7/8          | 3-1/2          | 339-1055  | .1558  | 1            | 4              | 339-1558  |
| .0415  | 1/2          | 1-3/8          | 339-0415  | .1060  | 7/8          | 3-1/2          | 339-1060  | .1565  | 1            | 4              | 339-1565  |
| .0435  | 1/2          | 1-3/8          | 339-0435  | .1070  | 7/8          | 3-1/2          | 339-1070  | .1580  | 1            | 4              | 339-1580  |
| .0445  | 1/2          | 1-3/8          | 339-0445  | .1080  | 7/8          | 3-1/2          | 339-1080  | .1595  | 1-1/8        | 4-1/2          | 339-1595  |
| .0450  | 1/2          | 1-3/8          | 339-0450  | .1090  | 7/8          | 3-1/2          | 339-1090  | .1600  | 1-1/8        | 4-1/2          | 339-1600  |
| .0460  | 1/2          | 1-3/8          | 339-0460  | .1095  | 7/8          | 3-1/2          | 339-1095  | .1605  | 1-1/8        | 4-1/2          | 339-1605  |
| .0470  | 1/2          | 1-3/8          | 339-0470  | .1105  | 7/8          | 3-1/2          | 339-1105  | .1620  | 1-1/8        | 4-1/2          | 339-1620  |
| .0485  | 1/2          | 1-3/8          | 339-0485  | .1125  | 7/8          | 3-1/2          | 339-1125  | .1630  | 1-1/8        | 4-1/2          | 339-1630  |
| .0510  | 1/2          | 1-3/8          | 339-0510  | .1135  | 7/8          | 3-1/2          | 339-1135  | .1635  | 1-1/8        | 4-1/2          | 339-1635  |
| .0570  | 1/2          | 1-3/8          | 339-0570  | .1140  | 7/8          | 3-1/2          | 339-1140  | .1645  | 1-1/8        | 4-1/2          | 339-1645  |
| .0580  | 1/2          | 1-3/8          | 339-0580  | .1150  | 7/8          | 3-1/2          | 339-1150  | .1650  | 1-1/8        | 4-1/2          | 339-1650  |
| .0585  | 1/2          | 1-3/8          | 339-0585  | .1155  | 7/8          | 3-1/2          | 339-1155  | .1655  | 1-1/8        | 4-1/2          | 339-1655  |
| .0590  | 1/2          | 1-3/8          | 339-0590  | .1190  | 7/8          | 3-1/2          | 339-1190  | .1665  | 1-1/8        | 4-1/2          | 339-1665  |
| .0600  | 1/2          | 1-3/8          | 339-0600  | .1195  | 7/8          | 3-1/2          | 339-1195  | .1675  | 1-1/8        | 4-1/2          | 339-1675  |
| .0605  | 1/2          | 1-3/8          | 339-0605  | .1205  | 7/8          | 3-1/2          | 339-1205  | .1680  | 1-1/8        | 4-1/2          | 339-1680  |
| .0610  | 1/2          | 1-3/8          | 339-0610  | .1210  | 7/8          | 3-1/2          | 339-1210  | .1685  | 1-1/8        | 4-1/2          | 339-1685  |
| .0615  | 1/2          | 1-3/8          | 339-0615  | .1211  | 7/8          | 3-1/2          | 339-1211  | .1690  | 1-1/8        | 4-1/2          | 339-1690  |
| .0620  | 1/2          | 1-3/8          | 339-0620  | .1215  | 7/8          | 3-1/2          | 339-1215  | .1700  | 1-1/8        | 4-1/2          | 339-1700  |
| .0630  | 1/2          | 1-3/8          | 339-0630  | .1220  | 7/8          | 3-1/2          | 339-1220  | .1710  | 1-1/8        | 4-1/2          | 339-1710  |
| .0640  | 1/2          | 1-3/8          | 339-0640  | .1223  | 7/8          | 3-1/2          | 339-1223  | .1719  | 1-1/8        | 4-1/2          | 339-1719  |
| .0645  | 1/2          | 1-3/8          | 339-0645  | .1225  | 7/8          | 3-1/2          | 339-1225  | .1720  | 1-1/8        | 4-1/2          | 339-1720  |
| .0650  | 1/2          | 1-3/8          | 339-0650  | .1230  | 7/8          | 3-1/2          | 339-1230  | .1724  | 1-1/8        | 4-1/2          | 339-1724  |
| .0655  | 1/2          | 1-3/8          | 339-0655  | .1235  | 7/8          | 3-1/2          | 339-1235  | .1725  | 1-1/8        | 4-1/2          | 339-1725  |
| .0665  | 1/2          | 1-3/8          | 339-0665  | .1240  | 7/8          | 3-1/2          | 339-1240  | .1735  | 1-1/8        | 4-1/2          | 339-1735  |
| .0675  | 3/4          | 3              | 339-0675  | .1245  | 7/8          | 3-1/2          | 339-1245  | .1740  | 1-1/8        | 4-1/2          | 339-1740  |
| .0680  | 3/4          | 3              | 339-0680  | .1255  | 7/8          | 3-1/2          | 339-1255  | .1745  | 1-1/8        | 4-1/2          | 339-1745  |
| .0705  | 3/4          | 3              | 339-0705  | .1260  | 7/8          | 3-1/2          | 339-1260  | .1750  | 1-1/8        | 4-1/2          | 339-1750  |
| .0710  | 3/4          | 3              | 339-0710  | .1265  | 7/8          | 3-1/2          | 339-1265  | .1760  | 1-1/8        | 4-1/2          | 339-1760  |
| .0720  | 3/4          | 3              | 339-0720  | .1270  | 7/8          | 3-1/2          | 339-1270  | .1770  | 1-1/8        | 4-1/2          | 339-1770  |
| .0735  | 3/4          | 3              | 339-0735  | .1275  | 7/8          | 3-1/2          | 339-1275  | .1775  | 1-1/8        | 4-1/2          | 339-1775  |
| .0745  | 3/4          | 3              | 339-0745  | .1280  | 7/8          | 3-1/2          | 339-1280  | .1785  | 1-1/8        | 4-1/2          | 339-1785  |
| .0750  | 3/4          | 3              | 339-0750  | .1285  | 7/8          | 3-1/2          | 339-1285  | .1790  | 1-1/8        | 4-1/2          | 339-1790  |
| .0755  | 3/4          | 3              | 339-0755  | .1290  | 7/8          | 3-1/2          | 339-1290  | .1795  | 1-1/8        | 4-1/2          | 339-1795  |
| .0765  | 3/4          | 3              | 339-0765  | .1300  | 7/8          | 3-1/2          | 339-1300  | .1800  | 1-1/8        | 4-1/2          | 339-1800  |
| .0770  | 3/4          | 3              | 339-0770  | .1310  | 7/8          | 3-1/2          | 339-1310  | .1810  | 1-1/8        | 4-1/2          | 339-1810  |
| .0780  | 3/4          | 3              | 339-0780  | .1320  | 7/8          | 3-1/2          | 339-1320  | .1815  | 1-1/8        | 4-1/2          | 339-1815  |
| .0790  | 3/4          | 3              | 339-0790  | .1330  | 7/8          | 3-1/2          | 339-1330  | .1820  | 1-1/8        | 4-1/2          | 339-1820  |
| .0800  | 3/4          | 3              | 339-0800  | .1335  | 7/8          | 3-1/2          | 339-1335  | .1825  | 1-1/8        | 4-1/2          | 339-1825  |
| .0805  | 3/4          | 3              | 339-0805  | .1340  | 7/8          | 3-1/2          | 339-1340  | .1830  | 1-1/8        | 4-1/2          | 339-1830  |
| .0815  | 3/4          | 3              | 339-0815  | .1345  | 7/8          | 3-1/2          | 339-1345  | .1832  | 1-1/8        | 4-1/2          | 339-1832  |
| .0825  | 3/4          | 3              | 339-0825  | .1350  | 7/8          | 3-1/2          | 339-1350  | .1835  | 1-1/8        | 4-1/2          | 339-1835  |
| .0830  | 3/4          | 3              | 339-0830  | .1355  | 7/8          | 3-1/2          | 339-1355  | .1840  | 1-1/8        | 4-1/2          | 339-1840  |
| .0840  | 3/4          | 3              | 339-0840  | .1370  | 1            | 4              | 339-1370  | .1845  | 1-1/8        | 4-1/2          | 339-1845  |
| .0845  | 3/4          | 3              | 339-0845  | .1380  | 1            | 4              | 339-1380  | .1850  | 1-1/8        | 4-1/2          | 339-1850  |
| .0850  | 3/4          | 3              | 339-0850  | .1385  | 1            | 4              | 339-1385  | .1855  | 1-1/8        | 4-1/2          | 339-1855  |
| .0865  | 3/4          | 3              | 339-0865  | .1390  | 1            | 4              | 339-1390  | .1860  | 1-1/8        | 4-1/2          | 339-1860  |
| .0870  | 3/4          | 3              | 339-0870  | .1395  | 1            | 4              | 339-1395  | .1865  | 1-1/8        | 4-1/2          | 339-1865  |
| .0885  | 3/4          | 3              | 339-0885  | .1400  | 1            | 4              | 339-1400  | .1867  | 1-1/8        | 4-1/2          | 339-1867  |
| .0895  | 3/4          | 3              | 339-0895  | .1410  | 1            | 4              | 339-1410  | .1870  | 1-1/8        | 4-1/2          | 339-1870  |
| .0900  | 3/4          | 3              | 339-0900  | .1420  | 1            | 4              | 339-1420  | .1875  | 1-1/8        | 4-1/2          | 339-1875  |
| .0905  | 3/4          | 3              | 339-0905  | .1425  | 1            | 4              | 339-1425  | .1880  | 1-1/8        | 4-1/2          | 339-1880  |
| .0910  | 3/4          | 3              | 339-0910  | .1430  | 1            | 4              | 339-1430  | .1885  | 1-1/8        | 4-1/2          | 339-1885  |
| .0915  | 3/4          | 3              | 339-0915  | .1435  | 1            | 4              | 339-1435  | .1890  | 1-1/8        | 4-1/2          | 339-1890  |
| .0920  | 3/4          | 3              | 339-0920  | .1440  | 1            | 4              | 339-1440  | .1892  | 1-1/8        | 4-1/2          | 339-1892  |
| .0925  | 3/4          | 3              | 339-0925  | .1445  | 1            | 4              | 339-1445  | .1895  | 1-1/8        | 4-1/2          | 339-1895  |
| .0930  | 3/4          | 3              | 339-0930  | .1450  | 1            | 4              | 339-1450  | .1900  | 1-1/8        | 4-1/2          | 339-1900  |
| .0938  | 3/4          | 3              | 339-0938  | .1460  | 1            | 4              | 339-1460  | .1905  | 1-1/8        | 4-1/2          | 339-1905  |
| .0940  | 3/4          | 3              | 339-0940  | .1470  | 1            | 4              | 339-1470  | .1910  | 1-1/4        | 5              | 339-1910  |
| .0945  | 3/4          | 3              | 339-0945  | .1475  | 1            | 4              | 339-1475  | .1920  | 1-1/4        | 5              | 339-1920  |
| .0950  | 3/4          | 3              | 339-0950  | .1480  | 1            | 4              | 339-1480  | .1925  | 1-1/4        | 5              | 339-1925  |
| .0955  | 3/4          | 3              | 339-0955  | .1485  | 1            | 4              | 339-1485  | .1930  | 1-1/4        | 5              | 339-1930  |
| .0965  | 7/8          | 3-1/2          | 339-0965  | .1490  | 1            | 4              | 339-1490  | .1945  | 1-1/4        | 5              | 339-1945  |
| .0970  | 7/8          | 3-1/2          | 339-0970  | .1505  | 1            | 4              | 339-1505  | .1950  | 1-1/4        | 5              | 339-1950  |
| .0975  | 7/8          | 3-1/2          | 339-0975  | .1515  | 1            | 4              | 339-1515  | .1965  | 1-1/4        | 5              | 339-1965  |
| .0990  | 7/8          | 3-1/2          | 339-0990  | .1520  | 1            | 4              | 339-1520  | .1970  | 1-1/4        | 5              | 339-1970  |
| .1000  | 7/8          | 3-1/2          | 339-1000  | .1525  | 1            | 4              | 339-1525  | .1975  | 1-1/4        | 5              | 339-1975  |
| .1005  | 7/8          | 3-1/2          | 339-1005  | .1530  | 1            | 4              | 339-1530  | .1980  | 1-1/4        | 5              | 339-1980  |

## Special Decimal Chucking Reamers Continued

High Speed Steel, Straight Shank, Straight Flute



| Size   | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. |
|--------|--------------|----------------|-----------|--------|--------------|----------------|-----------|--------|--------------|----------------|-----------|
| .1985" | 1-1/4"       | 5"             | 339-1985  | 2.455" | 1-1/2"       | 6"             | 339-2455  | .3075" | 1-1/2"       | 6"             | 339-3075  |
| .1995  | 1-1/4        | 5              | 339-1995  | .2470  | 1-1/2        | 6              | 339-2470  | .3080  | 1-1/2        | 6              | 339-3080  |
| .2000  | 1-1/4        | 5              | 339-2000  | .2475  | 1-1/2        | 6              | 339-2475  | .3090  | 1-1/2        | 6              | 339-3090  |
| .2005  | 1-1/4        | 5              | 339-2005  | .2480  | 1-1/2        | 6              | 339-2480  | .3100  | 1-1/2        | 6              | 339-3100  |
| .2015  | 1-1/4        | 5              | 339-2015  | .2485  | 1-1/2        | 6              | 339-2485  | .3105  | 1-1/2        | 6              | 339-3105  |
| .2020  | 1-1/4        | 5              | 339-2020  | .2490  | 1-1/2        | 6              | 339-2490  | .3110  | 1-1/2        | 6              | 339-3110  |
| .2025  | 1-1/4        | 5              | 339-2025  | .2495  | 1-1/2        | 6              | 339-2495  | .3115  | 1-1/2        | 6              | 339-3115  |
| .2045  | 1-1/4        | 5              | 339-2045  | .2501  | 1-1/2        | 6              | 339-2501  | .3120  | 1-1/2        | 6              | 339-3120  |
| .2050  | 1-1/4        | 5              | 339-2050  | .2505  | 1-1/2        | 6              | 339-2505  | .3130  | 1-1/2        | 6              | 339-3130  |
| .2060  | 1-1/4        | 5              | 339-2060  | .2510  | 1-1/2        | 6              | 339-2510  | .3135  | 1-1/2        | 6              | 339-3135  |
| .2070  | 1-1/4        | 5              | 339-2070  | .2515  | 1-1/2        | 6              | 339-2515  | .3140  | 1-1/2        | 6              | 339-3140  |
| .2080  | 1-1/4        | 5              | 339-2080  | .2520  | 1-1/2        | 6              | 339-2520  | .3145  | 1-1/2        | 6              | 339-3145  |
| .2085  | 1-1/4        | 5              | 339-2085  | .2525  | 1-1/2        | 6              | 339-2525  | .3150  | 1-1/2        | 6              | 339-3150  |
| .2090  | 1-1/4        | 5              | 339-2090  | .2530  | 1-1/2        | 6              | 339-2530  | .3165  | 1-1/2        | 6              | 339-3165  |
| .2100  | 1-1/4        | 5              | 339-2100  | .2535  | 1-1/2        | 6              | 339-2535  | .3170  | 1-1/2        | 6              | 339-3170  |
| .2105  | 1-1/4        | 5              | 339-2105  | .2540  | 1-1/2        | 6              | 339-2540  | .3180  | 1-1/2        | 6              | 339-3180  |
| .2110  | 1-1/4        | 5              | 339-2110  | .2550  | 1-1/2        | 6              | 339-2550  | .3190  | 1-1/2        | 6              | 339-3190  |
| .2115  | 1-1/4        | 5              | 339-2115  | .2560  | 1-1/2        | 6              | 339-2560  | .3200  | 1-1/2        | 6              | 339-3200  |
| .2120  | 1-1/4        | 5              | 339-2120  | .2570  | 1-1/2        | 6              | 339-2570  | .3205  | 1-1/2        | 6              | 339-3205  |
| .2125  | 1-1/4        | 5              | 339-2125  | .2575  | 1-1/2        | 6              | 339-2575  | .3210  | 1-1/2        | 6              | 339-3210  |
| .2126  | 1-1/4        | 5              | 339-2126  | .2580  | 1-1/2        | 6              | 339-2580  | .3220  | 1-1/2        | 6              | 339-3220  |
| .2135  | 1-1/4        | 5              | 339-2135  | .2585  | 1-1/2        | 6              | 339-2585  | .3225  | 1-1/2        | 6              | 339-3225  |
| .2140  | 1-1/4        | 5              | 339-2140  | .2590  | 1-1/2        | 6              | 339-2590  | .3235  | 1-1/2        | 6              | 339-3235  |
| .2150  | 1-1/4        | 5              | 339-2150  | .2600  | 1-1/2        | 6              | 339-2600  | .3240  | 1-1/2        | 6              | 339-3240  |
| .2155  | 1-1/4        | 5              | 339-2155  | .2620  | 1-1/2        | 6              | 339-2620  | .3250  | 1-1/2        | 6              | 339-3250  |
| .2157  | 1-1/4        | 5              | 339-2157  | .2630  | 1-1/2        | 6              | 339-2630  | .3255  | 1-1/2        | 6              | 339-3255  |
| .2160  | 1-1/4        | 5              | 339-2160  | .2640  | 1-1/2        | 6              | 339-2640  | .3260  | 1-1/2        | 6              | 339-3260  |
| .2170  | 1-1/4        | 5              | 339-2170  | .2650  | 1-1/2        | 6              | 339-2650  | .3270  | 1-1/2        | 6              | 339-3270  |
| .2180  | 1-1/4        | 5              | 339-2180  | .2655  | 1-1/2        | 6              | 339-2655  | .3280  | 1-1/2        | 6              | 339-3280  |
| .2185  | 1-1/4        | 5              | 339-2185  | .2660  | 1-1/2        | 6              | 339-2660  | .3290  | 1-1/2        | 6              | 339-3290  |
| .2190  | 1-1/4        | 5              | 339-2190  | .2680  | 1-1/2        | 6              | 339-2680  | .3300  | 1-1/2        | 6              | 339-3300  |
| .2195  | 1-1/4        | 5              | 339-2195  | .2690  | 1-1/2        | 6              | 339-2690  | .3310  | 1-1/2        | 6              | 339-3310  |
| .2200  | 1-1/4        | 5              | 339-2200  | .2700  | 1-1/2        | 6              | 339-2700  | .3330  | 1-1/2        | 6              | 339-3330  |
| .2205  | 1-1/4        | 5              | 339-2205  | .2725  | 1-1/2        | 6              | 339-2725  | .3340  | 1-1/2        | 6              | 339-3340  |
| .2210  | 1-1/2        | 6              | 339-2210  | .2740  | 1-1/2        | 6              | 339-2740  | .3350  | 1-1/2        | 6              | 339-3350  |
| .2215  | 1-1/2        | 6              | 339-2215  | .2745  | 1-1/2        | 6              | 339-2745  | .3360  | 1-1/2        | 6              | 339-3360  |
| .2220  | 1-1/2        | 6              | 339-2220  | .2750  | 1-1/2        | 6              | 339-2750  | .3370  | 1-1/2        | 6              | 339-3370  |
| .2225  | 1-1/2        | 6              | 339-2225  | .2755  | 1-1/2        | 6              | 339-2755  | .3380  | 1-1/2        | 6              | 339-3380  |
| .2230  | 1-1/2        | 6              | 339-2230  | .2760  | 1-1/2        | 6              | 339-2760  | .3400  | 1-1/2        | 6              | 339-3400  |
| .2235  | 1-1/2        | 6              | 339-2235  | .2765  | 1-1/2        | 6              | 339-2765  | .3410  | 1-1/2        | 6              | 339-3410  |
| .2340  | 1-1/2        | 6              | 339-2340  | .2790  | 1-1/2        | 6              | 339-2790  | .3420  | 1-1/2        | 6              | 339-3420  |
| .2245  | 1-1/2        | 6              | 339-2245  | .2800  | 1-1/2        | 6              | 339-2800  | .3425  | 1-1/2        | 6              | 339-3425  |
| .2250  | 1-1/2        | 6              | 339-2250  | .2814  | 1-1/2        | 6              | 339-2814  | .3430  | 1-1/2        | 6              | 339-3430  |
| .2255  | 1-1/2        | 6              | 339-2255  | .2815  | 1-1/2        | 6              | 339-2815  | .3434  | 1-1/2        | 6              | 339-3434  |
| .2265  | 1-1/2        | 6              | 339-2265  | .2818  | 1-1/2        | 6              | 339-2818  | .3435  | 1-1/2        | 6              | 339-3435  |
| .2270  | 1-1/2        | 6              | 339-2270  | .2820  | 1-1/2        | 6              | 339-2820  | .3440  | 1-1/2        | 6              | 339-3440  |
| .2275  | 1-1/2        | 6              | 339-2275  | .2830  | 1-1/2        | 6              | 339-2830  | .3443  | 1-1/2        | 6              | 339-3443  |
| .2280  | 1-1/2        | 6              | 339-2280  | .2840  | 1-1/2        | 6              | 339-2840  | .3445  | 1-1/2        | 6              | 339-3445  |
| .2285  | 1-1/2        | 6              | 339-2285  | .2850  | 1-1/2        | 6              | 339-2850  | .3450  | 1-1/2        | 6              | 339-3450  |
| .2290  | 1-1/2        | 6              | 339-2290  | .2860  | 1-1/2        | 6              | 339-2860  | .3455  | 1-1/2        | 6              | 339-3455  |
| .2295  | 1-1/2        | 6              | 339-2295  | .2870  | 1-1/2        | 6              | 339-2870  | .3460  | 1-1/2        | 6              | 339-3460  |
| .2320  | 1-1/2        | 6              | 339-2320  | .2875  | 1-1/2        | 6              | 339-2875  | .3470  | 1-1/2        | 6              | 339-3470  |
| .2325  | 1-1/2        | 6              | 339-2325  | .2890  | 1-1/2        | 6              | 339-2890  | .3474  | 1-1/2        | 6              | 339-3474  |
| .2330  | 1-1/2        | 6              | 339-2330  | .2898  | 1-1/2        | 6              | 339-2898  | .3475  | 1-1/2        | 6              | 339-3475  |
| .2335  | 1-1/2        | 6              | 339-2335  | .2900  | 1-1/2        | 6              | 339-2900  | .3490  | 1-3/4        | 7              | 339-3490  |
| .2350  | 1-1/2        | 6              | 339-2350  | .2910  | 1-1/2        | 6              | 339-2910  | .3500  | 1-3/4        | 7              | 339-3500  |
| .2355  | 1-1/2        | 6              | 339-2355  | .2920  | 1-1/2        | 6              | 339-2920  | .3520  | 1-3/4        | 7              | 339-3520  |
| .2360  | 1-1/2        | 6              | 339-2360  | .2940  | 1-1/2        | 6              | 339-2940  | .3530  | 1-3/4        | 7              | 339-3530  |
| .2365  | 1-1/2        | 6              | 339-2365  | .2960  | 1-1/2        | 6              | 339-2960  | .3535  | 1-3/4        | 7              | 339-3535  |
| .2370  | 1-1/2        | 6              | 339-2370  | .2961  | 1-1/2        | 6              | 339-2961  | .3540  | 1-3/4        | 7              | 339-3540  |
| .2375  | 1-1/2        | 6              | 339-2375  | .2965  | 1-1/2        | 6              | 339-2965  | .3555  | 1-3/4        | 7              | 339-3555  |
| .2380  | 1-1/2        | 6              | 339-2380  | .2969  | 1-1/2        | 6              | 339-2969  | .3560  | 1-3/4        | 7              | 339-3560  |
| .2385  | 1-1/2        | 6              | 339-2385  | .2970  | 1-1/2        | 6              | 339-2970  | .3600  | 1-3/4        | 7              | 339-3600  |
| .2390  | 1-1/2        | 6              | 339-2390  | .2975  | 1-1/2        | 6              | 339-2975  | .3615  | 1-3/4        | 7              | 339-3615  |
| .2395  | 1-1/2        | 6              | 339-2395  | .2980  | 1-1/2        | 6              | 339-2980  | .3620  | 1-3/4        | 7              | 339-3620  |
| .2400  | 1-1/2        | 6              | 339-2400  | .3000  | 1-1/2        | 6              | 339-3000  | .3650  | 1-3/4        | 7              | 339-3650  |
| .2410  | 1-1/2        | 6              | 339-2410  | .3010  | 1-1/2        | 6              | 339-3010  | .3660  | 1-3/4        | 7              | 339-3660  |
| .2415  | 1-1/2        | 6              | 339-2415  | .3030  | 1-1/2        | 6              | 339-3030  | .3690  | 1-3/4        | 7              | 339-3690  |
| .2425  | 1-1/2        | 6              | 339-2425  | .3040  | 1-1/2        | 6              | 339-3040  | .3700  | 1-3/4        | 7              | 339-3700  |
| .2430  | 1-1/2        | 6              | 339-2430  | .3050  | 1-1/2        | 6              | 339-3050  | .3710  | 1-3/4        | 7              | 339-3710  |
| .2440  | 1-1/2        | 6              | 339-2440  | .3060  | 1-1/2        | 6              | 339-3060  | .3715  | 1-3/4        | 7              | 339-3715  |
| .2445  | 1-1/2        | 6              | 339-2445  | .3070  | 1-1/2        | 6              | 339-3070  | .3720  | 1-3/4        | 7              | 339-3720  |

### Special Decimal Chucking Reamers continued

High Speed Steel, Straight Shank, Straight Flute



| Size   | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. |
|--------|--------------|----------------|-----------|--------|--------------|----------------|-----------|--------|--------------|----------------|-----------|
| .3725" | 1-3/4"       | 7"             | 339-3725  | .4530" | 1-3/4"       | 7"             | 339-4530  | .6245" | 2-1/4"       | 9"             | 339-2645  |
| .3730  | 1-3/4        | 7              | 339-3730  | .4550  | 1-3/4        | 7              | 339-4550  | .6255  | 2-1/4        | 9              | 339-6255  |
| .3735  | 1-3/4        | 7              | 339-3735  | .4560  | 1-3/4        | 7              | 339-4560  | .6260  | 2-1/4        | 9              | 339-6260  |
| .3740  | 1-3/4        | 7              | 339-3740  | .4580  | 1-3/4        | 7              | 339-4580  | .6270  | 2-1/4        | 9              | 339-6270  |
| .3745  | 1-3/4        | 7              | 339-3745  | .4590  | 1-3/4        | 7              | 339-4590  | .6280  | 2-1/4        | 9              | 339-6280  |
| .3752  | 1-3/4        | 7              | 339-3752  | .4600  | 1-3/4        | 7              | 339-4600  | .6300  | 2-1/4        | 9              | 339-6300  |
| .3755  | 1-3/4        | 7              | 339-3755  | .4610  | 1-3/4        | 7              | 339-4610  | .6330  | 2-1/4        | 9              | 339-6330  |
| .3760  | 1-3/4        | 7              | 339-3760  | .4650  | 1-3/4        | 7              | 339-4650  | .6350  | 2-1/4        | 9              | 339-6350  |
| .3765  | 1-3/4        | 7              | 339-3765  | .4660  | 1-3/4        | 7              | 339-4660  | .6870  | 2-1/4        | 9              | 339-6870  |
| .3770  | 1-3/4        | 7              | 339-3770  | .4670  | 1-3/4        | 7              | 339-4670  | .6905  | 2-1/4        | 9              | 339-6905  |
| .3780  | 1-3/4        | 7              | 339-3780  | .4680  | 1-3/4        | 7              | 339-4680  | .7070  | 2-1/4        | 9              | 339-7070  |
| .3790  | 1-3/4        | 7              | 339-3790  | .4690  | 1-3/4        | 7              | 339-4690  | .7120  | 2-1/4        | 9              | 339-7120  |
| .3800  | 1-3/4        | 7              | 339-3800  | .4700  | 1-3/4        | 7              | 339-4700  | .7235  | 2-1/2        | 9-1/2          | 339-7235  |
| .3810  | 1-3/4        | 7              | 339-3810  | .4710  | 1-3/4        | 7              | 339-4710  | .7470  | 2-1/2        | 9-1/2          | 339-7470  |
| .3820  | 1-3/4        | 7              | 339-3820  | .4720  | 1-3/4        | 7              | 339-4720  | .7495  | 2-1/2        | 9-1/2          | 339-7495  |
| .3830  | 1-3/4        | 7              | 339-3830  | .4725  | 2            | 8              | 339-4725  | .7500  | 2-1/2        | 9-1/2          | 339-7500  |
| .3840  | 1-3/4        | 7              | 339-3840  | .4730  | 2            | 8              | 339-4730  | .7505  | 2-1/2        | 9-1/2          | 339-7505  |
| .3850  | 1-3/4        | 7              | 339-3850  | .4735  | 2            | 8              | 339-4735  | .7510  | 2-1/2        | 9-1/2          | 339-7510  |
| .3860  | 1-3/4        | 7              | 339-3860  | .4740  | 2            | 8              | 339-4740  | .7520  | 2-1/2        | 9-1/2          | 339-7520  |
| .3870  | 1-3/4        | 7              | 339-3870  | .4750  | 2            | 8              | 339-4750  | .7530  | 2-1/2        | 9-1/2          | 339-7530  |
| .3880  | 1-3/4        | 7              | 339-3880  | .4760  | 2            | 8              | 339-4760  | .7550  | 2-1/2        | 9-1/2          | 339-7550  |
| .3885  | 1-3/4        | 7              | 339-3885  | .4770  | 2            | 8              | 339-4770  | .8080  | 2-1/2        | 9-1/2          | 339-8080  |
| .3900  | 1-3/4        | 7              | 339-3900  | .4780  | 2            | 8              | 339-4780  | .8115  | 2-5/8        | 10             | 339-8115  |
| .3910  | 1-3/4        | 7              | 339-3910  | .4800  | 2            | 8              | 339-4800  | .8130  | 2-5/8        | 10             | 339-8130  |
| .3920  | 1-3/4        | 7              | 339-3920  | .4820  | 2            | 8              | 339-4820  | .8275  | 2-5/8        | 10             | 339-8275  |
| .3925  | 1-3/4        | 7              | 339-3925  | .4830  | 2            | 8              | 339-4830  | .8530  | 2-5/8        | 10             | 339-8530  |
| .3930  | 1-3/4        | 7              | 339-3930  | .4870  | 2            | 8              | 339-4870  | .8745  | 2-5/8        | 10             | 339-8745  |
| .3940  | 1-3/4        | 7              | 339-3940  | .4890  | 2            | 8              | 339-4890  | .8760  | 2-5/8        | 10             | 339-8760  |
| .3950  | 1-3/4        | 7              | 339-3950  | .4900  | 2            | 8              | 339-4900  | .8780  | 2-5/8        | 10             | 339-8780  |
| .3955  | 1-3/4        | 7              | 339-3955  | .4910  | 2            | 8              | 339-4910  | .8950  | 2-5/8        | 10             | 339-8950  |
| .3960  | 1-3/4        | 7              | 339-3960  | .4920  | 2            | 8              | 339-4920  | .9595  | 2-3/4        | 10-1/2         | 339-9595  |
| .3980  | 1-3/4        | 7              | 339-3980  | .4930  | 2            | 8              | 339-4930  | .9915  | 2-3/4        | 10-1/2         | 339-9915  |
| .4000  | 1-3/4        | 7              | 339-4000  | .4940  | 2            | 8              | 339-4940  | .9950  | 2-3/4        | 10-1/2         | 339-9950  |
| .4030  | 1-3/4        | 7              | 339-4030  | .4950  | 2            | 8              | 339-4950  | .9960  | 2-3/4        | 10-1/2         | 339-9960  |
| .4050  | 1-3/4        | 7              | 339-4050  | .4960  | 2            | 8              | 339-4960  | .9970  | 2-3/4        | 10-1/2         | 339-9970  |
| .4060  | 1-3/4        | 7              | 339-4060  | .4970  | 2            | 8              | 339-4970  | .9980  | 2-3/4        | 10-1/2         | 339-9980  |
| .4070  | 1-3/4        | 7              | 339-4070  | .4980  | 2            | 8              | 339-4980  | .9990  | 2-3/4        | 10-1/2         | 339-9990  |
| .4090  | 1-3/4        | 7              | 339-4090  | .4990  | 2            | 8              | 339-4990  | .9995  | 2-3/4        | 10-1/2         | 339-9995  |
| .4100  | 1-3/4        | 7              | 339-4100  | .4995  | 2            | 8              | 339-4995  | 1.0010 | 2-3/4        | 10-1/2         | 339-0010  |
| .4110  | 1-3/4        | 7              | 339-4110  | .5005  | 2            | 8              | 339-5005  | 1.0020 | 2-3/4        | 10-1/2         | 339-0020  |
| .4120  | 1-3/4        | 7              | 339-4120  | .5015  | 2            | 8              | 339-5015  | 1.0030 | 2-3/4        | 10-1/2         | 339-0030  |
| .4210  | 1-3/4        | 7              | 339-4210  | .5020  | 2            | 8              | 339-5020  | 1.0100 | 2-3/4        | 10-1/2         | 339-0100  |
| .4250  | 1-3/4        | 7              | 339-4250  | .5030  | 2            | 8              | 339-5030  |        |              |                |           |
| .4270  | 1-3/4        | 7              | 339-4270  | .5040  | 2            | 8              | 339-5040  |        |              |                |           |
| .4280  | 1-3/4        | 7              | 339-4280  | .5050  | 2            | 8              | 339-5050  |        |              |                |           |
| .4285  | 1-3/4        | 7              | 339-4285  | .5060  | 2            | 8              | 339-5060  |        |              |                |           |
| .4295  | 1-3/4        | 7              | 339-4295  | .5070  | 2            | 8              | 339-5070  |        |              |                |           |
| .4300  | 1-3/4        | 7              | 339-4300  | .5080  | 2            | 8              | 339-5080  |        |              |                |           |
| .4310  | 1-3/4        | 7              | 339-4310  | .5090  | 2            | 8              | 339-5090  |        |              |                |           |
| .4320  | 1-3/4        | 7              | 339-4320  | .5100  | 2            | 8              | 339-5100  |        |              |                |           |
| .4340  | 1-3/4        | 7              | 339-4340  | .5110  | 2            | 8              | 339-5110  |        |              |                |           |
| .4350  | 1-3/4        | 7              | 339-4350  | .5120  | 2            | 8              | 339-5120  |        |              |                |           |
| .4355  | 1-3/4        | 7              | 339-4355  | .5130  | 2            | 8              | 339-5130  |        |              |                |           |
| .4360  | 1-3/4        | 7              | 339-4360  | .5140  | 2            | 8              | 339-5140  |        |              |                |           |
| .4370  | 1-3/4        | 7              | 339-4370  | .5150  | 2            | 8              | 339-5150  |        |              |                |           |
| .4371  | 1-3/4        | 7              | 339-4371  | .5160  | 2            | 8              | 339-5160  |        |              |                |           |
| .4373  | 1-3/4        | 7              | 339-4373  | .5170  | 2            | 8              | 339-5170  |        |              |                |           |
| .4374  | 1-3/4        | 7              | 339-4374  | .5180  | 2            | 8              | 339-5180  |        |              |                |           |
| .4380  | 1-3/4        | 7              | 339-4380  | .5200  | 2            | 8              | 339-5200  |        |              |                |           |
| .4385  | 1-3/4        | 7              | 339-4385  | .5210  | 2            | 8              | 339-5210  |        |              |                |           |
| .4390  | 1-3/4        | 7              | 339-4390  | .5250  | 2            | 8              | 339-5250  |        |              |                |           |
| .4400  | 1-3/4        | 7              | 339-4400  | .5300  | 2            | 8              | 339-5300  |        |              |                |           |
| .4410  | 1-3/4        | 7              | 339-4410  | .5615  | 2            | 8              | 339-5615  |        |              |                |           |
| .4420  | 1-3/4        | 7              | 339-4420  | .5635  | 2            | 8              | 339-5635  |        |              |                |           |
| .4425  | 1-3/4        | 7              | 339-4425  | .5950  | 2            | 8              | 339-5950  |        |              |                |           |
| .4430  | 1-3/4        | 7              | 339-4430  | .6005  | 2            | 8              | 339-6005  |        |              |                |           |
| .4450  | 1-3/4        | 7              | 339-4450  | .6125  | 2-1/4        | 9              | 339-6125  |        |              |                |           |
| .4460  | 1-3/4        | 7              | 339-4460  | .6160  | 2-1/4        | 9              | 339-6160  |        |              |                |           |
| .4480  | 1-3/4        | 7              | 339-4480  | .6200  | 2-1/4        | 9              | 339-6200  |        |              |                |           |
| .4500  | 1-3/4        | 7              | 339-4500  | .6220  | 2-1/4        | 9              | 339-6220  |        |              |                |           |
| .4510  | 1-3/4        | 7              | 339-4510  | .6230  | 2-1/4        | 9              | 339-6230  |        |              |                |           |
| .4520  | 1-3/4        | 7              | 339-4520  | .6240  | 2-1/4        | 9              | 339-6240  |        |              |                |           |

# Reamers

**BESTOOL®**

## Straight Shank Chucking Reamer Sets

| Pieces | Description            | Order No. |
|--------|------------------------|-----------|
| 26     | A to Z                 | 331-0000  |
| 29     | 1/16" to 1/2" by 64ths | 331-1000  |
| 60     | No. 1-60               | 331-0200  |



## Carbide Tipped Chucking Reamers

### C2 Grade, Straight Flute, Right Hand Cutting

- Special steel cutting tool geometry: positive radial rake (behind center).



### Straight Shank

| Size  | Flute Length | Overall Length | Order No. | Size   | Flute Length | Overall Length | Order No. | Size  | Flute Length | Overall Length | Order No. | Size    | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|--------|--------------|----------------|-----------|-------|--------------|----------------|-----------|---------|--------------|----------------|-----------|
| 3/16" | 1-1/18"      | 4-1/2"         | 241-1012  | 15/32" | 1-3/4"       | 7"             | 241-1030  | 3/4"  | 2-1/2"       | 9-1/2"         | 241-1048  | 1-1/16" | 2-3/4"       | 10-1/2"        | 241-1068  |
| 7/32  | 1-1/4        | 5              | 241-1014  | 1/2    | 2            | 8              | 241-1032  | 25/32 | 2-1/2        | 9-1/2          | 241-1050  | 1-1/8   | 2-7/8        | 11             | 241-1072  |
| 1/4   | 1-1/2        | 6              | 241-1016  | 17/32  | 2            | 8              | 241-1034  | 13/16 | 2-1/2        | 9-1/2          | 241-1052  | 1-3/16  | 2-7/8        | 11             | 241-1076  |
| 9/32  | 1-1/2        | 6              | 241-1018  | 9/16   | 2            | 8              | 241-1036  | 27/32 | 2-1/2        | 9-1/2          | 241-1054  | 1-1/4   | 3            | 11-1/2         | 241-1080  |
| 5/16  | 1-1/2        | 6              | 241-1020  | 19/32  | 2            | 8              | 241-1038  | 7/8   | 2-5/8        | 10             | 241-1056  | 1-5/16  | 3            | 11-1/2         | 241-1084  |
| 11/32 | 1-1/2        | 6              | 241-1022  | 5/8    | 2-1/4        | 9              | 241-1040  | 29/32 | 2-5/8        | 10             | 241-1058  | 1-3/8   | 3-1/4        | 12             | 241-1088  |
| 3/8   | 1-3/4        | 7              | 241-1024  | 21/32  | 2-1/4        | 9              | 241-1042  | 15/16 | 2-5/8        | 10             | 241-1060  | 1-7/16  | 3-1/4        | 12             | 241-1092  |
| 13/32 | 1-3/4        | 7              | 241-1026  | 11/16  | 2-1/4        | 9              | 241-1044  | 31/32 | 2-5/8        | 10             | 241-1062  | 1-1/2   | 3-1/2        | 12-1/2         | 241-1096  |
| 7/16  | 1-3/4        | 7              | 241-1028  | 23/32  | 2-1/4        | 9              | 241-1046  | 1     | 2-3/4        | 10-1/2         | 241-1064  |         |              |                |           |



### Taper Shank

| Size | Flute Length | Overall Length | Shank Taper | Order No. | Size  | Flute Length | Overall Length | Shank Taper | Order No. | Size  | Flute Length | Overall Length | Shank Taper | Order No. |
|------|--------------|----------------|-------------|-----------|-------|--------------|----------------|-------------|-----------|-------|--------------|----------------|-------------|-----------|
| 1/2" | 2"           | 8"             | MT1         | 241-1132  | 11/16 | 2-1/4        | 9              | MT2         | 241-1144  | 7/8   | 2-5/8        | 10             | MT2         | 241-1156  |
| 9/16 | 2            | 8              | MT1         | 241-1136  | 3/4   | 2-1/2        | 9-1/2          | MT2         | 241-1148  | 15/16 | 2-5/8        | 10             | MT3         | 241-1160  |
| 5/8  | 2-1/4        | 9              | MT2         | 241-1140  | 13/16 | 2-1/2        | 9-1/2          | MT2         | 241-1152  | 1     | 2-3/4        | 10-1/2         | MT3         | 241-1164  |

## Taper Pin & Die Maker Reamers

### High Speed Steel



| Small Size | Small End Dia. | Large End Dia. | Flute Length | Overall Length | Straight Flute Order No. | Spiral Flute Order No. | Small Size | Small End Dia. | Large End Dia. | Flute Length | Overall Length | Straight Flute Order No. | Spiral Flute Order No. |
|------------|----------------|----------------|--------------|----------------|--------------------------|------------------------|------------|----------------|----------------|--------------|----------------|--------------------------|------------------------|
| 7/0        | .0497"         | .0666"         | 13/16"       | 1-13/16"       | 331-8200                 | 331-8300               | 5          | .2409"         | .2994"         | 2-13/16"     | 4-5/16"        | 331-8222                 | 331-8322               |
| 6/0        | .0611          | .0806          | 15/16        | 1-15/16        | 331-8202                 | 331-8302               | 6          | .2773          | .354           | 3-11/16      | 5-7/16         | 331-8224                 | 331-8324               |
| 5/0        | .0719          | .0966          | 1-3/16       | 2-3/16         | 331-8204                 | 331-8304               | 7          | .3297          | .422           | 4-7/16       | 6-5/16         | 331-8226                 | 331-8326               |
| 4/0        | .0869          | .1142          | 1-5/16       | 2-5/16         | 331-8206                 | 331-8306               | 8          | .3971          | .505           | 5-3/16       | 7-3/16         | 331-8228                 | 331-8328               |
| 3/0        | .1029          | .1302          | 1-5/16       | 2-5/16         | 331-8208                 | 331-8308               | 9          | .4805          | .6066          | 6-1/16       | 8-5/16         | 331-8230                 | 331-8330               |
| 2/0        | .1137          | .1462          | 1-9/16       | 2-9/16         | 331-8210                 | 331-8310               | 10         | .5799          | .7216          | 6-13/16      | 9-5/16         | 331-8232                 | 331-8332               |
| 0          | .1287          | .1638          | 1-11/16      | 2-15/16        | 331-8212                 | 331-8312               | 11         | .7060          | .8780          | 8-1/4        | 11-1/4         | 331-8234                 | 331-8334               |
| 1          | .1447          | .1798          | 1-11/16      | 2-15/16        | 331-8214                 | 331-8314               | 12         | .8420          | 1.0500         | 10           | 13-5/8         | 331-8236                 | 331-8336               |
| 2          | .1605          | .2008          | 1-15/16      | 3-3/16         | 331-8216                 | 331-8316               | 13         | 1.0090         | 1.2590         | 12           | 16             | 331-8238                 | 331-8338               |
| 3          | .1813          | .2294          | 2-5/16       | 3-11/16        | 331-8218                 | 331-8318               | 14         | 1.2500         | 1.5420         | 14           | 18-1/4         | 331-8240                 | 331-8340               |
| 4          | .2071          | .2604          | 2-9/16       | 4-1/16         | 331-8220                 | 331-8320               |            |                |                |              |                |                          |                        |

### HSS Taper Pin Reamer Sets

| Pieces | Description | Straight Flute Order No. | Spiral Flute Order No. |
|--------|-------------|--------------------------|------------------------|
| 6      | 0-5#        | 331-8250                 | 331-8350               |
| 11     | 0-10#       | 331-8255                 | 331-8355               |

## Brown & Sharpe Taper Finishing Reamers

### High Speed Steel

- Right hand(clockwise rotation) Cutting Direction.
- Available as hand style reamers.
- Hand reamers have straight shanks and square siving area.



| B & S Taper | Small End Diameter | Large End Diameter | Shank Diameter | Flute Length | Overall Length | HSS Order No.   | B & S Taper | Small End Diameter | Large End Diameter | Shank Diameter | Flute Length | Overall Length | HSS Order No.   |
|-------------|--------------------|--------------------|----------------|--------------|----------------|-----------------|-------------|--------------------|--------------------|----------------|--------------|----------------|-----------------|
| 1#          | 0.200"             | 0.320"             | 9/32"          | 2-7/8"       | 4-3/4"         | <b>337-6801</b> | 7#          | 0.600"             | 0.803"             | 3/4"           | 4-7/8"       | 7-1/2"         | <b>337-6807</b> |
| 2           | 0.250              | 0.380              | 11-32          | 3-1/8        | 5-1/8          | <b>337-6802</b> | 8           | 0.750              | 0.979              | 13/16          | 5-1/2        | 8-1/8          | <b>337-6808</b> |
| 3           | 0.312              | 0.453              | 13-32          | 3-3/8        | 5-1/2          | <b>337-6803</b> | 9           | 0.900              | 1.155              | 1              | 6-1/8        | 8-7/8          | <b>337-6809</b> |
| 4           | 0.350              | 0.504              | 6/7            | 3-11/16      | 5-7/8          | <b>337-6804</b> | 10          | 1.045              | 1.340              | 1-1/8          | 6-7/8        | 9-3/4          | <b>337-6810</b> |
| 5           | 0.450              | 0.617              | 6/16           | 4            | 6-3/8          | <b>337-6805</b> | 11          | 1.250              | 1.568              | 1-1/3          | 7-5/8        | 10-5/8         | <b>337-6811</b> |
| 6           | 0.500              | 0.682              | 5/8            | 4-3/8        | 6-7/8          | <b>337-6806</b> | 12          | 1.500              | 1.844              | 1-9/16         | 8-1/4        | 11-3/8         | <b>337-6812</b> |

## Taper Shank Chucking Reamers

### High Speed Steel, Right Hand,Spiral & Straight Flute

#### Fractional Sizes



| Size  | Flute Length | Overall Length | Shank Taper | Straight Flute Order No. | Spiral Flute Order No. | Size    | Flute Length | Overall Length | Shank Taper | Straight Flute Order No. | Spiral Flute Order No. |
|-------|--------------|----------------|-------------|--------------------------|------------------------|---------|--------------|----------------|-------------|--------------------------|------------------------|
| 1/4"  | 1-1/2"       | 6"             | MT1         | <b>241-3005</b>          | <b>241-4005</b>        | 15/16"  | 2-5/8"       | 10"            | MT3         | <b>241-3115</b>          | <b>241-4115</b>        |
| 9/32  | 1-1/2        | 6              | MT1         | <b>241-3010</b>          | <b>241-4010</b>        | 31/32   | 2-5/8        | 10             | MT3         | <b>241-3120</b>          | <b>241-4120</b>        |
| 5/16  | 1-1/2        | 6              | MT1         | <b>241-3015</b>          | <b>241-4015</b>        | 1       | 2-3/4        | 10-1/2         | MT3         | <b>241-3125</b>          | <b>241-4125</b>        |
| 11/32 | 1-1/2        | 6              | MT1         | <b>241-3020</b>          | <b>241-4020</b>        | 1-1/32  | 2-3/4        | 10-1/2         | MT3         | <b>241-3127</b>          | <b>241-4127</b>        |
| 3/8   | 1-3/4        | 7              | MT1         | <b>241-3025</b>          | <b>241-4025</b>        | 1-1/16  | 2-3/4        | 10-1/2         | MT3         | <b>241-3130</b>          | <b>241-4130</b>        |
| 13/32 | 1-3/4        | 7              | MT1         | <b>241-3030</b>          | <b>241-4030</b>        | 1-3/32  | 2-3/4        | 10-1/2         | MT3         | <b>241-3132</b>          | <b>241-4132</b>        |
| 7/16  | 1-3/4        | 7              | MT1         | <b>241-3035</b>          | <b>241-4035</b>        | 1-1/8   | 2-7/8        | 11             | MT3         | <b>241-3135</b>          | <b>241-4135</b>        |
| 15/32 | 1-3/4        | 7              | MT1         | <b>241-3040</b>          | <b>241-4040</b>        | 1-5/32  | 2-7/8        | 11             | MT3         | <b>241-3137</b>          | <b>241-4137</b>        |
| 1/2   | 2            | 8              | MT1         | <b>241-3045</b>          | <b>241-4045</b>        | 1-3/16  | 2-7/8        | 11             | MT3         | <b>241-3140</b>          | <b>241-4140</b>        |
| 17/32 | 2            | 8              | MT1         | <b>241-3050</b>          | <b>241-4050</b>        | 1-1/4   | 3            | 11-1/2         | MT4         | <b>241-3145</b>          | <b>241-4145</b>        |
| 9/16  | 2            | 8              | MT1         | <b>241-3055</b>          | <b>241-4055</b>        | 1-9/32  | 3            | 11-1/2         | MT4         | <b>241-3147</b>          | <b>241-4147</b>        |
| 19/32 | 2            | 8              | MT1         | <b>241-3060</b>          | <b>241-4060</b>        | 1-5/16  | 3            | 11-1/2         | MT4         | <b>241-3150</b>          | <b>241-4150</b>        |
| 5/8   | 2-1/4        | 9              | MT2         | <b>241-3065</b>          | <b>241-4065</b>        | 1-3/8   | 3-1/4        | 12             | MT4         | <b>241-3155</b>          | <b>241-4155</b>        |
| 21/32 | 2-1/4        | 9              | MT2         | <b>241-3070</b>          | <b>241-4070</b>        | 1-7/16  | 3-1/4        | 12             | MT4         | <b>241-3160</b>          | <b>241-4160</b>        |
| 11/16 | 2-1/4        | 9              | MT2         | <b>241-3075</b>          | <b>241-4075</b>        | 1-1/2   | 3-1/2        | 12-1/2         | MT4         | <b>241-3165</b>          | <b>241-4165</b>        |
| 23/32 | 2-1/4        | 9              | MT2         | <b>241-3080</b>          | <b>241-4080</b>        | 1-9/16  | 3-1/2        | 12-1/2         | MT4         | <b>241-3170</b>          | <b>241-4170</b>        |
| 3/4   | 2-1/2        | 9-1/2          | MT2         | <b>241-3085</b>          | <b>241-4085</b>        | 1-5/8   | 3-1/2        | 13             | MT4         | <b>241-3175</b>          | <b>241-4175</b>        |
| 25/32 | 2-1/2        | 9-1/2          | MT2         | <b>241-3090</b>          | <b>241-4090</b>        | 1-11/16 | 4            | 13-1/2         | MT4         | <b>241-3180</b>          | <b>241-4180</b>        |
| 13/16 | 2-1/2        | 9-1/2          | MT2         | <b>241-3095</b>          | <b>241-4095</b>        | 1-3/4   | 4            | 13-1/2         | MT4         | <b>241-3185</b>          | <b>241-4185</b>        |
| 27/32 | 2-1/2        | 9-1/2          | MT2         | <b>241-3100</b>          | <b>241-4100</b>        | 1-7/8   | 4            | 14             | MT4         | <b>241-3190</b>          | <b>241-4190</b>        |
| 7/8   | 2-5/8        | 10             | MT2         | <b>241-3105</b>          | <b>241-4105</b>        | 2       | 4            | 14-1/2         | MT4         | <b>241-3195</b>          | <b>241-4195</b>        |
| 29/32 | 2-5/8        | 10             | MT2         | <b>241-3110</b>          | <b>241-4110</b>        |         |              |                |             |                          |                        |

## Metric Taper Shank Chucking Reamers

### DIN208/A, High Speed Steel, Straight Flute



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Shank Taper | Order No.       | Size (mm) | Flute Length (mm) | Overall Length (mm) | Shank Taper | Order No.       |
|-----------|-------------------|---------------------|-------------|-----------------|-----------|-------------------|---------------------|-------------|-----------------|
| 5         | 23                | 133                 | MT1         | <b>337-1050</b> | 23        | 66                | 241                 | MT2         | <b>337-1230</b> |
| 6         | 26                | 138                 | MT1         | <b>337-1060</b> | 24        | 68                | 268                 | MT3         | <b>337-1240</b> |
| 7         | 31                | 150                 | MT1         | <b>337-1070</b> | 25        | 68                | 268                 | MT3         | <b>337-1250</b> |
| 8         | 33                | 156                 | MT1         | <b>337-1080</b> | 26        | 70                | 273                 | MT3         | <b>337-1260</b> |
| 9         | 36                | 162                 | MT1         | <b>337-1090</b> | 27        | 71                | 277                 | MT3         | <b>337-1270</b> |
| 10        | 38                | 168                 | MT1         | <b>337-1100</b> | 28        | 71                | 277                 | MT3         | <b>337-1280</b> |
| 11        | 41                | 175                 | MT1         | <b>337-1110</b> | 29        | 73                | 281                 | MT3         | <b>337-1290</b> |
| 12        | 44                | 185                 | MT1         | <b>337-1120</b> | 30        | 73                | 281                 | MT3         | <b>337-1300</b> |
| 13        | 44                | 182                 | MT1         | <b>337-1130</b> | 31        | 75                | 285                 | MT3         | <b>337-1310</b> |
| 14        | 47                | 189                 | MT1         | <b>337-1140</b> | 32        | 77                | 317                 | MT4         | <b>337-1320</b> |
| 15        | 50                | 204                 | MT2         | <b>337-1150</b> | 33        | 77                | 317                 | MT4         | <b>337-1330</b> |
| 16        | 52                | 210                 | MT2         | <b>337-1160</b> | 34        | 78                | 321                 | MT4         | <b>337-1340</b> |
| 17        | 54                | 214                 | MT2         | <b>337-1170</b> | 35        | 78                | 321                 | MT4         | <b>337-1350</b> |
| 18        | 56                | 219                 | MT2         | <b>337-1180</b> | 36        | 79                | 325                 | MT4         | <b>337-1360</b> |
| 19        | 58                | 223                 | MT2         | <b>337-1190</b> | 37        | 79                | 325                 | MT4         | <b>337-1370</b> |
| 20        | 60                | 228                 | MT2         | <b>337-1200</b> | 38        | 81                | 329                 | MT4         | <b>337-1380</b> |
| 21        | 62                | 232                 | MT2         | <b>337-1210</b> | 40        | 81                | 329                 | MT4         | <b>337-1400</b> |
| 22        | 64                | 237                 | MT2         | <b>337-1220</b> |           |                   |                     |             |                 |

## Expansion Chucking Reamers

### High Speed Steel, Straight Flute

- An economical, general purpose high production reamer designed to maintain initial size by compensating for wear on the cutting edge.
- Expansion feature allows resharpener with retaining the original size.
- Expand by tightening the end adjusting screw and regrind to original size.



**Straight Shank**

| Size    | Shank Dia. | Flute Length | Overall Length | Straight Shank Order No. |
|---------|------------|--------------|----------------|--------------------------|
| 3/8"    | 5/16"      | 3/4"         | 7"             | 331-9202                 |
| 13/32   | 5/16       | 3/4          | 7              | 331-9204                 |
| 7/16    | 3/8        | 7/8          | 7              | 331-9206                 |
| 15/32   | 3/8        | 7/8          | 7              | 331-9208                 |
| 1/2     | 7/16       | 1            | 8              | 331-9210                 |
| 17/32   | 7/16       | 1            | 8              | 331-9212                 |
| 9/16    | 7/16       | 1-1/8        | 8              | 331-9214                 |
| 19/32   | 7/16       | 1-1/8        | 8              | 331-9216                 |
| 5/8     | 9/16       | 1-1/4        | 9              | 331-9218                 |
| 21/32   | 9/16       | 1-1/4        | 9              | 331-9220                 |
| 11/16   | 9/16       | 1-1/4        | 9              | 331-9222                 |
| 23/32   | 9/16       | 1-1/4        | 9              | 331-9224                 |
| 3/4     | 5/8        | 1-3/8        | 9-1/2          | 331-9226                 |
| 25/32   | 5/8        | 1-3/8        | 9-1/2          | 331-9228                 |
| 13/16   | 5/8        | 1-3/8        | 9-1/2          | 331-9230                 |
| 27/32   | 5/8        | 1-3/8        | 9-1/2          | 331-9232                 |
| 7/8     | 3/4        | 1-1/2        | 10             | 331-9234                 |
| 29/32   | 3/4        | 1-1/2        | 10             | 331-9236                 |
| 15/16   | 3/4        | 1-1/2        | 10             | 331-9238                 |
| 31/32   | 3/4        | 1-1/2        | 10             | 331-9240                 |
| 1       | 7/8        | 1-5/8        | 10-1/2         | 331-9242                 |
| 1-1/32  | 7/8        | 1-5/8        | 10-1/2         | 331-9244                 |
| 1-1/16  | 7/8        | 1-5/8        | 10-1/2         | 331-9246                 |
| 1-3/32  | 7/8        | 1-5/8        | 10-1/2         | 331-9248                 |
| 1-1/8   | 7/8        | 1-3/4        | 11             | 331-9250                 |
| 1-5/32  | 7/8        | 1-3/4        | 11             | 331-9252                 |
| 1-3/16  | 1          | 1-3/4        | 11             | 331-9254                 |
| 1-7/32  | 1          | 1-3/4        | 11             | 331-9256                 |
| 1-1/4   | 1          | 1-7/8        | 11-1/2         | 331-9258                 |
| 1-5/16  | 1          | 1-7/8        | 11-1/2         | 331-9260                 |
| 1-3/8   | 1          | 2            | 12             | 331-9262                 |
| 1-7/16  | 1-1/4      | 2            | 12             | 331-9264                 |
| 1-1/2   | 1-1/4      | 2-1/8        | 12-1/2         | 331-9266                 |
| 1-9/16  | 1-1/4      | 2-1/8        | 12-1/2         | 331-9268                 |
| 1-5/8   | 1-1/4      | 2-1/4        | 13             | 331-9270                 |
| 1-11/16 | 1-1/4      | 2-1/4        | 13             | 331-9272                 |
| 1-3/4   | 1-1/4      | 2-3/8        | 13-1/2         | 331-9274                 |
| 1-13/16 | 1-1/2      | 2-3/8        | 13-1/2         | 331-9276                 |
| 1-7/8   | 1-1/2      | 2-1/2        | 14             | 331-9278                 |
| 1-15/16 | 1-1/2      | 2-1/2        | 14             | 331-9280                 |
| 2       | 1-1/2      | 2-1/2        | 14             | 331-9282                 |
| 2-1/8   | 1-1/2      | 2-3/4        | 14-1/2         | 331-9284                 |
| 2-1/4   | 1-3/4      | 2-3/4        | 14-1/2         | 331-9286                 |
| 2-1/2   | 1-3/4      | 3            | 15             | 331-9288                 |



**Taper Shank**

| Size   | Flute Length | Overall Length | Shank Taper | Taper Shank Order No. |
|--------|--------------|----------------|-------------|-----------------------|
| 3/8"   | 3/4"         | 7"             | MT1         | 331-9302              |
| 13/32  | 3/4          | 7              | MT1         | 331-9304              |
| 7/16   | 7/8          | 7              | MT1         | 331-9306              |
| 15/32  | 7/8          | 7              | MT1         | 331-9308              |
| 1/2    | 1            | 8              | MT1         | 331-9310              |
| 17/32  | 1            | 8              | MT1         | 331-9312              |
| 9/16   | 1-1/8        | 8              | MT1         | 331-9314              |
| 19/32  | 1-1/8        | 8              | MT1         | 331-9316              |
| 5/8    | 1-1/4        | 9              | MT2         | 331-9318              |
| 21/32  | 1-1/4        | 9              | MT2         | 331-9320              |
| 11/16  | 1-1/4        | 9              | MT2         | 331-9322              |
| 23/32  | 1-1/4        | 9              | MT2         | 331-9324              |
| 3/4    | 1-3/8        | 9-1/2          | MT2         | 331-9326              |
| 25/32  | 1-3/8        | 9-1/2          | MT2         | 331-9328              |
| 13/16  | 1-3/8        | 9-1/2          | MT2         | 331-9330              |
| 27/32  | 1-3/8        | 9-1/2          | MT2         | 331-9332              |
| 7/8    | 1-1/2        | 10             | MT2         | 331-9334              |
| 29/32  | 1-1/2        | 10             | MT2         | 331-9336              |
| 15/16  | 1-1/2        | 10             | MT3         | 331-9338              |
| 31/32  | 1-1/2        | 10             | MT3         | 331-9340              |
| 1      | 1-5/8        | 10-1/2         | MT3         | 331-9342              |
| 1-1/32 | 1-5/8        | 10-1/2         | MT3         | 331-9344              |
| 1-1/16 | 1-5/8        | 10-1/2         | MT3         | 331-9346              |
| 1-3/32 | 1-5/8        | 10-1/2         | MT3         | 331-9348              |
| 1-1/8  | 1-3/4        | 11             | MT3         | 331-9350              |
| 1-5/32 | 1-3/4        | 11             | MT3         | 331-9352              |
| 1-3/16 | 1-3/4        | 11             | MT3         | 331-9354              |
| 1-7/32 | 1-3/4        | 11             | MT3         | 331-9356              |
| 1-1/4  | 1-7/8        | 11-1/2         | MT4         | 331-9358              |
| 1-5/16 | 1-7/8        | 11-1/2         | MT4         | 331-9360              |
| 1-3/8  | 2            | 12             | MT4         | 331-9362              |
| 1-7/16 | 2            | 12             | MT4         | 331-9364              |
| 1-1/2  | 2-1/8        | 12-1/2         | MT4         | 331-9366              |
| 1-5/8  | 2-1/4        | 13             | MT4         | 331-9370              |
| 1-3/4  | 2-3/8        | 13-1/2         | MT5         | 331-9374              |
| 1-7/8  | 2-1/2        | 14             | MT5         | 331-9378              |
| 2      | 2-1/2        | 14             | MT5         | 331-9382              |
| 2-1/8  | 2-3/4        | 14-1/2         | MT5         | 331-9384              |
| 2-1/4  | 2-3/4        | 14-1/2         | MT5         | 331-9385              |
| 2-3/8  | 3            | 15             | MT5         | 331-9386              |
| 2-1/2  | 3            | 15             | MT5         | 331-9388              |

## Morse Taper Reamers

### High Speed Steel

- Each morse taper reamer set consists of one finishing and one roughing reamer.



**Hand Use, Straight Shank**

| Size | Dia. of Small End | Dia. of Large End | Flute Length | Overall Length | Roughing         |                  |                     | Finishing        |                  |                     |
|------|-------------------|-------------------|--------------|----------------|------------------|------------------|---------------------|------------------|------------------|---------------------|
|      |                   |                   |              |                | Reamer Order No. | Reamer Order No. | 2 Pcs/set Order No. | Reamer Order No. | Reamer Order No. | 2 Pcs/set Order No. |
| MT0  | .2503"            | .3674"            | 2-1/4"       | 3-3/4"         | 337-6100         | 337-6200         | 337-6500            |                  |                  |                     |
| MT1  | .3674             | .5170             | 3            | 5              | 337-6110         | 337-6210         | 337-6510            |                  |                  |                     |
| MT2  | .5696             | .7441             | 3-1/2        | 6              | 337-6120         | 337-6220         | 337-6520            |                  |                  |                     |
| MT3  | .7448             | .9881             | 4-1/4        | 7-1/4          | 337-6130         | 337-6230         | 337-6530            |                  |                  |                     |
| MT4  | 1.0167            | 1.2893            | 5-1/4        | 8-1/2          | 337-6140         | 337-6240         | 337-6540            |                  |                  |                     |
| MT5  | 1.4717            | 1.8005            | 6-1/4        | 9-3/4          | 337-6150         | 337-6250         | 337-6550            |                  |                  |                     |
| MT6  | 2.1119            | 2.5550            | 8-1/2        | 12-1/4         | 337-6160         | 337-6260         | 337-6560            |                  |                  |                     |



**Machine Use, Taper Shank**

| Size | Dia. of Small End | Dia. of Large End | Flute Length | Overall Length | Roughing         |                  |                     | Finishing        |                  |                     |
|------|-------------------|-------------------|--------------|----------------|------------------|------------------|---------------------|------------------|------------------|---------------------|
|      |                   |                   |              |                | Reamer Order No. | Reamer Order No. | 2 Pcs/set Order No. | Reamer Order No. | Reamer Order No. | 2 Pcs/set Order No. |
| MT0  | .2503"            | .3674"            | 2-1/4"       | 3-3/4"         | 337-6300         | 337-6400         | 337-6600            |                  |                  |                     |
| MT1  | .3674             | .5170             | 3            | 5              | 337-6310         | 337-6410         | 337-6610            |                  |                  |                     |
| MT2  | .5696             | .7441             | 3-1/2        | 6              | 337-6320         | 337-6420         | 337-6620            |                  |                  |                     |
| MT3  | .7448             | .9881             | 4-1/4        | 7-1/4          | 337-6330         | 337-6430         | 337-6630            |                  |                  |                     |
| MT4  | 1.0167            | 1.2893            | 5-1/4        | 8-1/2          | 337-6340         | 337-6440         | 337-6640            |                  |                  |                     |
| MT5  | 1.4717            | 1.8005            | 6-1/4        | 9-3/4          | 337-6350         | 337-6450         | 337-6650            |                  |                  |                     |
| MT6  | 2.1119            | 2.5550            | 8-1/2        | 12-1/4         | 337-6360         | 337-6460         | 337-6660            |                  |                  |                     |

### Taper Shank Bridge Reamers

#### High Speed Steel

- Featured two flute type: straight flute and spiral flute.
- Spiral flute reamers with left hand spiral flute and right hand cut.



| Size   | Flute Length | Overall Length | Shank Taper | Straight Flute Order No. | Spiral Flute Order No. | Size    | Flute Length | Overall Length | Shank Taper | Straight Flute Order No. | Spiral Flute Order No. |
|--------|--------------|----------------|-------------|--------------------------|------------------------|---------|--------------|----------------|-------------|--------------------------|------------------------|
| 17/64" | 2-3/4"       | 5-1/2"         | MT1         | 331-9002                 | 331-9102               | 15/16"  | 7-3/8"       | 12"            | MT3         | 331-9046                 | 331-9146               |
| 19/64  | 2            | 5-1/4          | MT1         | 331-9004                 | 331-9104               | 1       | 7-3/8        | 12             | MT3         | 331-9048                 | 331-9148               |
| 5/16   | 4-3/8        | 8-1/4          | MT1         | 331-9006                 | 331-9106               | 1-1/32  | 7-1/2        | 12-1/4         | MT3         | 331-9050                 | 331-9150               |
| 11/32  | 4            | 7-1/4          | MT1         | 331-9008                 | 331-9108               | 1-1/16  | 7-3/8        | 12             | MT3         | 331-9052                 | 331-9152               |
| 3/8    | 4-3/8        | 8-1/4          | MT2         | 331-9010                 | 331-9110               | 1-3/32  | 6-13/16      | 11-1/2         | MT3         | 331-9054                 | 331-9154               |
| 13/32  | 4-3/8        | 8-1/4          | MT2         | 331-9012                 | 331-9112               | 1-1/8   | 7-3/8        | 12             | MT3         | 331-9056                 | 331-9156               |
| 27/64  | 4-3/8        | 8-1/4          | MT2         | 331-9014                 | 331-9114               | 1-5/32  | 7-1/2        | 11-1/2         | MT3         | 331-9058                 | 331-9158               |
| 7/16   | 4-3/8        | 8-1/4          | MT2         | 331-9016                 | 331-9116               | 1-3/16  | 7-3/8        | 12             | MT3         | 331-9060                 | 331-9160               |
| 15/32  | 5-1/8        | 9              | MT2         | 331-9018                 | 331-9118               | 1-1/4   | 7-3/8        | 13             | MT4         | 331-9062                 | 331-9162               |
| 1/2    | 5-1/8        | 9              | MT2         | 331-9020                 | 331-9120               | 1-5/16  | 7-3/8        | 13             | MT4         | 331-9064                 | 331-9164               |
| 17/32  | 5-1/8        | 9              | MT2         | 331-9022                 | 331-9122               | 1-3/8   | 7-3/8        | 13             | MT4         | 331-9066                 | 331-9166               |
| 9/16   | 5-1/8        | 9              | MT2         | 331-9024                 | 331-9124               | 1-7/16  | 7-3/8        | 13             | MT4         | 331-9068                 | 331-9168               |
| 19/32  | 6-1/8        | 10-7/8         | MT2         | 331-9026                 | 331-9126               | 1-15/32 | 6-7/8        | 13             | MT4         | 331-9070                 | 331-9170               |
| 5/8    | 6-1/8        | 10             | MT2         | 331-9028                 | 331-9128               | 1-1/2   | 7-3/8        | 13             | MT4         | 331-9072                 | 331-9172               |
| 21/32  | 7            | 12             | MT2         | 331-9030                 | 331-9130               | 1-9/16  | 7-3/8        | 13             | MT4         | 331-9074                 | 331-9174               |
| 11/16  | 7-1/8        | 11-3/4         | MT2         | 331-9032                 | 331-9132               | 1-5/8   | 7-3/8        | 13             | MT4         | 331-9076                 | 331-9176               |
| 11/16  | 7-1/8        | 11-3/4         | MT3         | 331-9034                 | 331-9134               | 1-11/16 | 7-3/8        | 13             | MT4         | 331-9078                 | 331-9178               |
| 23/32  | 7-1/8        | 11-3/4         | MT3         | 331-9036                 | 331-9136               | 1-3/4   | 7-3/8        | 13             | MT4         | 331-9080                 | 331-9180               |
| 3/4    | 7-3/8        | 12             | MT3         | 331-9038                 | 331-9138               | 1-13/16 | 7-3/8        | 13             | MT4         | 331-9082                 | 331-9182               |
| 25/32  | 7-3/8        | 12             | MT3         | 331-9040                 | 331-9140               | 1-7/8   | 7-3/8        | 13             | MT4         | 331-9084                 | 331-9184               |
| 13/16  | 7-3/8        | 12             | MT3         | 331-9042                 | 331-9142               | 1-15/16 | 7-3/8        | 13             | MT4         | 331-9086                 | 331-9186               |
| 7/8    | 7-3/8        | 12             | MT3         | 331-9044                 | 331-9144               | 2       | 7-3/8        | 13             | MT4         | 331-9088                 | 331-9188               |

### Metric Taper Shank Bridge Reamers

#### High Speed Steel, Spiral Flute



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Shank Taper | Order No. | Size (mm) | Flute Length (mm) | Overall Length (mm) | Shank Taper | Order No. |
|-----------|-------------------|---------------------|-------------|-----------|-----------|-------------------|---------------------|-------------|-----------|
| 6.4       | 75                | 151                 | MT1         | 331-9631  | 23        | 165               | 281                 | MT3         | 331-9688  |
| 7.4       | 80                | 156                 | MT1         | 331-9634  | 24        | 180               | 296                 | MT3         | 331-9691  |
| 8         | 85                | 161                 | MT1         | 331-9637  | 25        | 180               | 296                 | MT3         | 331-9694  |
| 8.4       | 85                | 161                 | MT1         | 331-9640  | 26        | 180               | 296                 | MT3         | 331-9697  |
| 9         | 90                | 166                 | MT1         | 331-9643  | 27        | 195               | 311                 | MT3         | 331-9700  |
| 9.5       | 90                | 166                 | MT1         | 331-9646  | 28        | 195               | 311                 | MT3         | 331-9703  |
| 10        | 95                | 171                 | MT1         | 331-9649  | 29        | 195               | 311                 | MT3         | 331-9706  |
| 11        | 100               | 176                 | MT1         | 331-9652  | 30        | 195               | 311                 | MT3         | 331-9709  |
| 12        | 105               | 199                 | MT2         | 331-9655  | 31        | 210               | 326                 | MT3         | 331-9712  |
| 13        | 105               | 199                 | MT2         | 331-9658  | 32        | 210               | 354                 | MT4         | 331-9715  |
| 14        | 115               | 209                 | MT2         | 331-9661  | 33        | 210               | 354                 | MT4         | 331-9718  |
| 15        | 125               | 219                 | MT2         | 331-9664  | 34        | 220               | 364                 | MT4         | 331-9721  |
| 16        | 135               | 229                 | MT2         | 331-9667  | 35        | 220               | 364                 | MT4         | 331-9724  |
| 17        | 135               | 251                 | MT3         | 331-9670  | 36        | 220               | 364                 | MT4         | 331-9727  |
| 18        | 145               | 261                 | MT3         | 331-9673  | 37        | 220               | 364                 | MT4         | 331-9730  |
| 19        | 145               | 261                 | MT3         | 331-9676  | 38        | 230               | 374                 | MT4         | 331-9733  |
| 20        | 155               | 271                 | MT3         | 331-9679  | 39        | 230               | 374                 | MT4         | 331-9736  |
| 21        | 155               | 271                 | MT3         | 331-9682  | 40        | 230               | 374                 | MT4         | 331-9739  |
| 22        | 165               | 281                 | MT3         | 331-9685  |           |                   |                     |             |           |

# Reamers

**BESTOOL®**

## Inch Hand Reamers

### High Speed Steel, Right Hand, Spiral & Straight Flute, Straight Shank

- Straight flute for most jobs.
- Spiral flute for holes with keyways or other interruptions.



| Size  | Flute Length | Overall Length | Straight Flute Order No. | Spiral Flute Order No. | Size   | Flute Length | Overall Length | Straight Flute Order No. | Spiral Flute Order No. |
|-------|--------------|----------------|--------------------------|------------------------|--------|--------------|----------------|--------------------------|------------------------|
| 1/8"  | 1-1/2"       | 3"             | 337-0108                 | 337-0308               | 21/32" | 3-11/16"     | 7-3/8"         | 337-0142                 | 337-0342               |
| 9/64  | 1-5/8        | 3-1/4          | 337-0109                 | 337-0309               | 11/16  | 3-7/8        | 7-3/4          | 337-0144                 | 337-0344               |
| 5/32  | 1-5/8        | 3-1/4          | 337-0110                 | 337-0310               | 23/32  | 4-1/16       | 8-1/8          | 337-0146                 | 337-0346               |
| 11/64 | 1-3/4        | 3-1/2          | 337-0111                 | 337-0311               | 3/4    | 4-3/16       | 8-3/8          | 337-0148                 | 337-0348               |
| 3/16  | 1-3/4        | 3-1/2          | 337-0112                 | 337-0312               | 25/32  | 4-3/8        | 8-3/4          | 337-0150                 | 337-0350               |
| 7/32  | 1-7/8        | 3-3/4          | 337-0114                 | 337-0314               | 13/16  | 4-9/16       | 9-1/8          | 337-0152                 | 337-0352               |
| 1/4   | 2            | 4              | 337-0116                 | 337-0316               | 27/32  | 4-11/16      | 9-3/8          | 337-0154                 | 337-0354               |
| 9/32  | 2-1/8        | 4-1/4          | 337-0118                 | 337-0318               | 7/8    | 4-7/8        | 9-3/4          | 337-0156                 | 337-0356               |
| 5/16  | 2-1/4        | 4-1/2          | 337-0120                 | 337-0320               | 29/32  | 5            | 10             | 337-0158                 | 337-0358               |
| 11/32 | 2-3/8        | 4-3/4          | 337-0122                 | 337-0322               | 15/16  | 5-1/8        | 10-1/4         | 337-0160                 | 337-0360               |
| 3/8   | 2-1/2        | 5              | 337-0124                 | 337-0324               | 31/32  | 5-5/16       | 10-5/8         | 337-0162                 | 337-0362               |
| 25/64 | 2-1/2        | 4-3/4          | 337-0125                 | 337-0325               | 1      | 5-7/16       | 10-7/8         | 337-0164                 | 337-0364               |
| 13/32 | 2-5/8        | 5-1/4          | 337-0126                 | 337-0326               | 1-1/16 | 5-5/8        | 11-1/4         | 337-0168                 | 337-0368               |
| 7/16  | 2-3/4        | 5-1/2          | 337-0128                 | 337-0328               | 1-1/8  | 5-13/16      | 11-5/8         | 337-0172                 | 337-0372               |
| 15/32 | 2-7/8        | 5-3/4          | 337-0130                 | 337-0330               | 1-3/16 | 6            | 12             | 337-0176                 | 337-0376               |
| 31/64 | 3            | 6              | 337-0131                 | 337-0331               | 1-1/4  | 6-1/8        | 12-1/4         | 337-0180                 | 337-0380               |
| 1/2   | 3            | 6              | 337-0132                 | 337-0332               | 1-5/16 | 6-1/4        | 12-1/2         | 337-0184                 | 337-0384               |
| 17/32 | 3-1/8        | 6-1/4          | 337-0134                 | 337-0334               | 1-3/8  | 6-5/16       | 12-5/8         | 337-0188                 | 337-0388               |
| 9/16  | 3-1/4        | 6-1/2          | 337-0136                 | 337-0336               | 1-7/16 | 6-7/16       | 12-7/8         | 337-0192                 | 337-0392               |
| 19/32 | 3-3/8        | 6-3/4          | 337-0138                 | 337-0338               | 1-1/2  | 6-1/2        | 13             | 337-0196                 | 337-0396               |
| 5/8   | 3-1/2        | 7              | 337-0140                 | 337-0340               |        |              |                |                          |                        |

## Metric Hand Reamers

### DIN 206/A & 206/B

### High Speed Steel, Right Hand, Spiral & Straight Flute, Straight Shank



| Size (mm) | Flute Length (mm) | Overall Length (mm) | Straight Flute DIN206/A Order No. | Spiral Flute DIN206/B Order No. | Size (mm) | Flute Length (mm) | Overall Length (mm) | Straight Flute DIN206/A Order No. | Spiral Flute DIN206/B Order No. |
|-----------|-------------------|---------------------|-----------------------------------|---------------------------------|-----------|-------------------|---------------------|-----------------------------------|---------------------------------|
| 3.0       | 31                | 62                  | 337-2030                          | 337-3030                        | 11.5      | 71                | 142                 | 337-2115                          | 337-3115                        |
| 3.2       | 33                | 66                  | 337-2032                          | 337-3032                        | 12.0      | 76                | 152                 | 337-2120                          | 337-3120                        |
| 3.5       | 35                | 71                  | 337-2035                          | 337-3035                        | 12.5      | 76                | 152                 | 337-2125                          | 337-3125                        |
| 4.0       | 38                | 76                  | 337-2040                          | 337-3040                        | 13.0      | 76                | 152                 | 337-2130                          | 337-3130                        |
| 4.5       | 41                | 81                  | 337-2045                          | 337-3045                        | 13.5      | 81                | 163                 | 337-2135                          | 337-3135                        |
| 5.0       | 44                | 87                  | 337-2050                          | 337-3050                        | 14.0      | 81                | 163                 | 337-2140                          | 337-3140                        |
| 5.5       | 47                | 93                  | 337-2055                          | 337-3055                        | 14.5      | 81                | 163                 | 337-2145                          | 337-3145                        |
| 6.0       | 47                | 93                  | 337-2060                          | 337-3060                        | 15.0      | 81                | 163                 | 337-2150                          | 337-3150                        |
| 6.5       | 50                | 100                 | 337-2065                          | 337-3065                        | 15.5      | 87                | 175                 | 337-2155                          | 337-3155                        |
| 7.0       | 54                | 107                 | 337-2070                          | 337-3070                        | 16.0      | 87                | 175                 | 337-2160                          | 337-3160                        |
| 7.5       | 54                | 107                 | 337-2075                          | 337-3075                        | 16.5      | 87                | 175                 | 337-2165                          | 337-3165                        |
| 8.0       | 58                | 115                 | 337-2080                          | 337-3080                        | 17.0      | 87                | 175                 | 337-2170                          | 337-3170                        |
| 8.5       | 58                | 115                 | 337-2085                          | 337-3085                        | 17.5      | 93                | 188                 | 337-2175                          | 337-3175                        |
| 9.0       | 62                | 124                 | 337-2090                          | 337-3090                        | 18.0      | 93                | 188                 | 337-2180                          | 337-3180                        |
| 9.5       | 62                | 124                 | 337-2095                          | 337-3095                        | 18.5      | 93                | 188                 | 337-2185                          | 337-3185                        |
| 10.0      | 66                | 133                 | 337-2100                          | 337-3100                        | 19.0      | 93                | 188                 | 337-2190                          | 337-3190                        |
| 10.5      | 66                | 133                 | 337-2105                          | 337-3105                        | 19.5      | 100               | 201                 | 337-2195                          | 337-3195                        |
| 11.0      | 71                | 142                 | 337-2110                          | 337-3110                        | 20.0      | 100               | 201                 | 337-2200                          | 337-3200                        |

## Hex Shank Taper Car Reamers

### High Speed Steel, 5 Flute, Left Hand Spiral, Right Hand Cut

| Size   | Flute Length | Overall Length | Hex Shank Size | Order No. |
|--------|--------------|----------------|----------------|-----------|
| 11/16" | 4-1/2"       | 6-1/2"         | 1-1/16"        | 337-5444  |
| 13/16  | 5            | 7              | 1-1/4          | 337-5452  |
| 15/16  | 5            | 7              | 1-7/16         | 337-5460  |
| 1-1/16 | 5            | 7              | 1-5/8          | 337-5468  |



### Taper Car Reamers



#### Taper Shank

| Size   | Flute Length | Overall Length | Shank Taper | Order No. |
|--------|--------------|----------------|-------------|-----------|
| 5/16"  | 2-3/4"       | 5-11/16"       | MT1         | 337-5020  |
| 3/8    | 2-3/4"       | 5-11/16"       | MT1         | 337-5024  |
| 7/16   | 3-1/2"       | 6-15/16"       | MT2         | 337-5028  |
| 1/2    | 4"           | 7-9/16"        | MT2         | 337-5032  |
| 9/16   | 4"           | 7-9/16"        | MT2         | 337-5036  |
| 5/8    | 4-1/2"       | 8-1/16"        | MT2         | 337-5040  |
| 11/16  | 4-1/2"       | 8-13/16"       | MT3         | 337-5044  |
| 3/4    | 5"           | 9-1/2"         | MT3         | 337-5048  |
| 13/16  | 5"           | 9-1/2"         | MT3         | 337-5052  |
| 15/16  | 5"           | 9-1/2"         | MT3         | 337-5056  |
| 1      | 5"           | 9-1/2"         | MT3         | 337-5064  |
| 1-1/16 | 5"           | 9-1/2"         | MT3         | 337-5068  |



#### 3 Equal-Flat Straight Shank

| Size   | Flute Length | Overall Length | Shank Dia. | Shank Length | Order No. |
|--------|--------------|----------------|------------|--------------|-----------|
| 5/16"  | 2-3/4"       | 4-5/8"         | 5/16"      | 1-1/2"       | 337-5220  |
| 3/8    | 2-3/4"       | 4-5/8"         | 3/8        | 1-1/2"       | 337-5224  |
| 7/16   | 3-1/2"       | 5-3/8"         | 7/16       | 1-1/2"       | 337-5228  |
| 1/2    | 4"           | 5-7/8"         | 1/2        | 1-1/2"       | 337-5232  |
| 9/16   | 4"           | 5-7/8"         | 1/2        | 1-1/2"       | 337-5236  |
| 5/8    | 4-1/2"       | 6-3/8"         | 1/2        | 1-1/2"       | 337-5240  |
| 11/16  | 4-1/2"       | 6-3/8"         | 1/2        | 1-1/2"       | 337-5244  |
| 3/4    | 5"           | 6-7/8"         | 1/2        | 1-1/2"       | 337-5248  |
| 13/16  | 5"           | 6-7/8"         | 1/2        | 1-1/2"       | 337-5252  |
| 7/8    | 5"           | 6-7/8"         | 1/2        | 1-1/2"       | 337-5256  |
| 15/16  | 5"           | 6-7/8"         | 1/2        | 1-1/2"       | 337-5260  |
| 1      | 5"           | 6-7/8"         | 1/2        | 1-1/2"       | 337-5264  |
| 1-1/16 | 5"           | 6-7/8"         | 1/2        | 1-1/2"       | 337-5268  |

### Expansion Hand Reamers

#### High Speed Steel, Right Hand

- Straight flute for most jobs.
- Spiral flute for holes with keyways or other interruptions.

#### Expansion limits:

|               |       |
|---------------|-------|
| 1/4" - 15/32" | .006" |
| 1/2" - 31/32" | .010" |
| 1" - 1-1/2"   | .012" |
| 1-1/2" - 2"   | .015" |

Straight



Spiral



| Size  | Flute Length | Overall Length | No. of Flute | Straight Flute Order No. | Spiral Flute Order No. | Size   | Flute Length | Overall Length | No. of Flute | Straight Flute Order No. | Spiral Flute Order No. |
|-------|--------------|----------------|--------------|--------------------------|------------------------|--------|--------------|----------------|--------------|--------------------------|------------------------|
| 1/4"  | 1-7/16"      | 3-7/8"         | 6"           | 349-1016                 | 349-3016               | 27/32" | 3-1/2"       | 8"             | 8"           | 349-1054                 | 349-3054               |
| 9/32  | 1-3/4"       | 4"             | 6"           | 349-1018                 | 349-3018               | 7/8    | 4"           | 9"             | 8"           | 349-1056                 | 349-3056               |
| 5/16  | 1-3/4"       | 4"             | 6"           | 349-1020                 | 349-3020               | 29/32  | 4"           | 9"             | 8"           | 349-1058                 | 349-3058               |
| 3/8   | 2"           | 5"             | 6"           | 349-1024                 | 349-3024               | 15/16  | 4"           | 9"             | 8"           | 349-1060                 | 349-3060               |
| 13/32 | 2"           | 5"             | 6"           | 349-1026                 | 349-3026               | 31/32  | 4"           | 9"             | 8"           | 349-1062                 | 349-3062               |
| 7/16  | 2"           | 5"             | 6"           | 349-1028                 | 349-3028               | 1      | 4-1/2"       | 10"            | 8"           | 349-1064                 | 349-3064               |
| 15/32 | 2"           | 5"             | 6"           | 349-1030                 | 349-3030               | 1-1/16 | 4-1/2"       | 10"            | 8"           | 349-1068                 | 349-3068               |
| 1/2   | 2"           | 5-1/2"         | 6"           | 349-1032                 | 349-3032               | 1-1/8  | 4-3/4"       | 10-1/2"        | 8"           | 349-1072                 | 349-3072               |
| 17/32 | 2"           | 5-1/2"         | 6"           | 349-1034                 | 349-3034               | 1-3/16 | 4-3/4"       | 10-1/2"        | 8"           | 349-1076                 | 349-3076               |
| 9/16  | 2-1/2"       | 6"             | 6"           | 349-1036                 | 349-3036               | 1-1/4  | 5"           | 11"            | 8"           | 349-1080                 | 349-3080               |
| 19/32 | 2-1/2"       | 6"             | 6"           | 349-1038                 | 349-3038               | 1-5/16 | 5"           | 11"            | 10"          | 349-1084                 | 349-3084               |
| 5/8   | 3"           | 7"             | 6"           | 349-1040                 | 349-3040               | 1-3/8  | 5-1/4"       | 11-1/2"        | 10"          | 349-1088                 | 349-3088               |
| 21/32 | 3"           | 7"             | 6"           | 349-1042                 | 349-3042               | 1-7/16 | 5-1/4"       | 11-1/2"        | 10"          | 349-1092                 | 349-3092               |
| 11/16 | 3"           | 7"             | 6"           | 349-1044                 | 349-3044               | 1-1/2  | 5-1/2"       | 12"            | 10"          | 349-1096                 | 349-3096               |
| 23/32 | 3"           | 7"             | 6"           | 349-1046                 | 349-3046               | 1-3/4  | 5-1/2"       | 12-3/8"        | 12"          | 349-1112                 | 349-3112               |
| 3/4   | 3-1/2"       | 8"             | 8"           | 349-1048                 | 349-3048               | 1-7/8  | 5-1/2"       | 12-3/8"        | 12"          | 349-1120                 | 349-3120               |
| 25/32 | 3-1/2"       | 8"             | 8"           | 349-1050                 | 349-3050               | 2      | 5-1/2"       | 13-1/8"        | 12"          | 349-1128                 | 349-3128               |
| 13/16 | 3-1/2"       | 8"             | 8"           | 349-1052                 | 349-3052               |        |              |                |              |                          |                        |

### Metric Expansion Hand Reamers

#### DIN859, High Speed Steel, Spiral Flute



| Size (mm) | Flute Length (mm) | Total Length (mm) | Square Size (mm) | No. of Flute | Order No. | Size (mm) | Flute Length (mm) | Total Length (mm) | Square Size (mm) | No. of Flute | Order No. |
|-----------|-------------------|-------------------|------------------|--------------|-----------|-----------|-------------------|-------------------|------------------|--------------|-----------|
| 6         | 47                | 93                | 7                | 6            | 349-5006  | 17        | 87                | 175               | 16               | 9            | 349-5017  |
| 7         | 54                | 107               | 8                | 9            | 349-5007  | 18        | 93                | 188               | 18               | 9            | 349-5018  |
| 8         | 58                | 115               | 9                | 9            | 349-5008  | 19        | 93                | 188               | 18               | 9            | 349-5019  |
| 9         | 62                | 124               | 10               | 9            | 349-5009  | 20        | 100               | 201               | 20               | 12           | 349-5020  |
| 10        | 66                | 133               | 11               | 9            | 349-5010  | 21        | 100               | 201               | 20               | 12           | 349-5021  |
| 11        | 71                | 142               | 12               | 9            | 349-5011  | 22        | 107               | 201               | 22               | 12           | 349-5022  |
| 12        | 76                | 152               | 13               | 9            | 349-5012  | 23        | 107               | 201               | 22               | 12           | 349-5023  |
| 13        | 76                | 152               | 13               | 9            | 349-5013  | 24        | 115               | 231               | 24               | 12           | 349-5024  |
| 14        | 81                | 163               | 14               | 9            | 349-5014  | 25        | 115               | 231               | 24               | 12           | 349-5025  |
| 15        | 81                | 163               | 14               | 9            | 349-5015  | 30        | 124               | 247               | 26               | 12           | 349-5030  |
| 16        | 87                | 175               | 16               | 9            | 349-5016  |           |                   |                   |                  |              |           |

# Reamers



## Jobber Reamers

### High Speed Steel, Straight Flute

Longer flute length than regular chucking reamer for using on jobs where a long er flute machine reamer needed



| Size  | Flute Length | Overall Length | Shank Taper | Order No. | Size   | Flute Length | Overall Length | Shank Taper | Order No. |
|-------|--------------|----------------|-------------|-----------|--------|--------------|----------------|-------------|-----------|
| 1/4"  | 2"           | 5-3/16"        | 1           | 337-4016  | 3/4"   | 4-3/16"      | 8-3/8"         | 2           | 337-4048  |
| 9/32  | 2            | 5-3/16         | 1           | 337-4018  | 25/32  | 4-3/16       | 8-3/8          | 2           | 337-4050  |
| 5/16  | 2-1/4        | 5-1/2          | 1           | 337-4020  | 13/16  | 4-9/16       | 8-13/16        | 2           | 337-4052  |
| 11/32 | 2-1/4        | 5-1/2          | 1           | 337-4022  | 27/32  | 4-7/8        | 9-3/16         | 2           | 337-4054  |
| 3/8   | 2-1/2        | 5-13/16        | 1           | 337-4024  | 7/8    | 4-7/8        | 9-3/16         | 2           | 337-4056  |
| 13/32 | 2-1/2        | 5-13/16        | 1           | 337-4026  | 15/16  | 5-1/8        | 10             | 3           | 337-4060  |
| 7/16  | 2-3/4        | 6-1/8          | 1           | 337-4028  | 1      | 5-7/16       | 10-3/8         | 3           | 337-4064  |
| 15/32 | 2-3/4        | 6-1/8          | 1           | 337-4030  | 1-1/16 | 5-5/8        | 10-5/8         | 3           | 337-4068  |
| 1/2   | 3            | 6-7/16         | 1           | 337-4032  | 1-1/8  | 5-13/16      | 10-7/8         | 3           | 337-4072  |
| 17/32 | 3            | 6-7/16         | 1           | 337-4034  | 1-3/16 | 6            | 11-1/8         | 3           | 337-4076  |
| 9/16  | 3-1/4        | 6-3/4          | 1           | 337-4036  | 1-1/4  | 6-1/8        | 12-9/16        | 4           | 337-4080  |
| 19/32 | 3-1/4        | 6-3/4          | 1           | 337-4038  | 1-5/16 | 6-1/4        | 12-11/16       | 4           | 337-4084  |
| 5/8   | 3-1/2        | 7-9/16         | 2           | 337-4040  | 1-3/8  | 6-5/16       | 12-13/16       | 4           | 337-4088  |
| 21/32 | 3-1/2        | 7-9/16         | 2           | 337-4042  | 1-7/16 | 6-7/16       | 13             | 4           | 337-4092  |
| 11/16 | 3-7/8        | 8              | 2           | 337-4044  | 1-1/2  | 6-1/2        | 13-1/8         | 4           | 337-4096  |
| 23/32 | 3-7/8        | 8              | 2           | 337-4046  |        |              |                |             |           |

## Adjustable Blade Reamers

### High Speed Steel

- Reamer sizes can be achieved by loosening or tightening two adjustable nuts.
- Featured replaceable and regroundable reamer blades.



| Size | Size Range     | Overall Length | Order No. | Size | Size Range        | Overall Length | Order No. |
|------|----------------|----------------|-----------|------|-------------------|----------------|-----------|
| 8/A  | 1/4 to 9/32"   | 3-1/2"         | 337-1601  | E    | 23/32 to 25/32"   | 7-1/4"         | 337-1612  |
| 7/A  | 9/32 to 5/16   | 3-3/4          | 337-1602  | F    | 25/32 to 27/32    | 7-3/4          | 337-1613  |
| 6/A  | 5/16 to 11/32  | 4              | 337-1603  | G    | 27/32 to 15/16    | 8-1/4          | 337-1614  |
| 5/A  | 11/32 to 3/8   | 4-1/4          | 337-1604  | H    | 15/16 to 1-1/16   | 8-3/4          | 337-1615  |
| 4/A  | 3/8 to 13/32   | 4-1/2          | 337-1605  | I    | 1-1/16 to 1-3/16  | 10             | 337-1616  |
| 3/A  | 13/32 to 7/16  | 4-3/4          | 337-1606  | J    | 1-3/16 to 1-11/32 | 11             | 337-1617  |
| 2/A  | 7/16 to 15/32  | 5              | 337-1607  | K    | 1-11/32 to 1-1/2  | 12             | 337-1618  |
| A    | 15/32 to 17/32 | 5-1/4          | 337-1608  | L    | 1-1/2 to 1-13/16  | 13             | 337-1619  |
| B    | 17/32 to 19/32 | 5-3/4          | 337-1609  | M    | 1-13/16 to 2-7/32 | 15             | 337-1620  |
| C    | 19/32 to 21/32 | 6-1/4          | 337-1610  | N    | 2-7/32 to 2-3/4   | 17             | 337-1621  |
| D    | 21/32 to 23/32 | 6-3/4          | 337-1611  | O    | 2-3/4 to 3-11/32  | 19             | 337-1622  |

## Metric Adjustable Blade Reamers

### High Speed Steel



| Size Range (mm) | Flute Length (mm) | Overall Length (mm) | Order No. | Size Range (mm) | Flute Length (mm) | Overall Length (mm) | Order No. |
|-----------------|-------------------|---------------------|-----------|-----------------|-------------------|---------------------|-----------|
| 6.50 to 7.00    | 35                | 85                  | 337-1510  | 19.00 to 21.00  | 60                | 180                 | 337-1543  |
| 7.00 to 7.75    | 35                | 90                  | 337-1513  | 21.00 to 23.00  | 65                | 195                 | 337-1546  |
| 7.75 to 8.50    | 38                | 100                 | 337-1516  | 23.00 to 26.00  | 72                | 215                 | 337-1549  |
| 9.25 to 10.00   | 38                | 115                 | 337-1519  | 26.00 to 29.50  | 80                | 240                 | 337-1552  |
| 10.00 to 10.75  | 38                | 125                 | 337-1522  | 29.50 to 33.50  | 85                | 270                 | 337-1555  |
| 10.75 to 11.75  | 38                | 130                 | 337-1525  | 33.50 to 38.00  | 95                | 310                 | 337-1558  |
| 11.75 to 12.75  | 44                | 135                 | 337-1528  | 38.00 to 44.00  | 105               | 350                 | 337-1561  |
| 12.75 to 13.75  | 48                | 145                 | 337-1531  | 44.00 to 54.00  | 120               | 400                 | 337-1564  |
| 13.75 to 15.25  | 52                | 150                 | 337-1534  | 54.00 to 64.00  | 120               | 460                 | 337-1567  |
| 15.25 to 17.00  | 55                | 165                 | 337-1537  | 64.00 to 74.00  | 135               | 510                 | 337-1570  |
| 17.00 to 19.00  | 60                | 170                 | 337-1540  | 74.00 to 84.00  | 135               | 510                 | 337-1573  |

### Shell Reamers

#### High Speed Steel, Right Hand

Designed as a sizing or finishing reamer ,  
can be held on an arbor which complete  
with driving lugs

O.D.Tolerance:

|           |          |          |
|-----------|----------|----------|
| 3/4" - 1" | + .0005" | - .0001" |
| Over 1"   | + .0006" | - .0002" |



| Size    | Overall Length | Hole Diameter | No. of Flutes | Fitting Arbor No. | Straight Flute Order No. | Spiral Flute Order No. | Size     | Overall Length | Hole Diameter | No. of Flutes | Fitting Arbor No. | Straight Flute Order No. | Spiral Flute Order No. |
|---------|----------------|---------------|---------------|-------------------|--------------------------|------------------------|----------|----------------|---------------|---------------|-------------------|--------------------------|------------------------|
| 3/4"    | 2-1/4"         | 3/8"          | 10            | 4                 | 337-7048                 | 337-8048               | 2-7/16"  | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7156                 | 337-8156               |
| 13/16   | 2-1/2"         | 1/2"          | 10            | 5                 | 337-7052                 | 337-8052               | 2-1/2"   | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7160                 | 337-8160               |
| 7/8     | 2-1/2"         | 1/2"          | 10            | 5                 | 337-7056                 | 337-8056               | 2-9/16"  | 4"             | 1-1/2"        | 16            | 10                | 337-7164                 | 337-8164               |
| 15/16   | 2-1/2"         | 1/2"          | 10            | 5                 | 337-7060                 | 337-8060               | 2-5/8"   | 4"             | 1-1/2"        | 16            | 10                | 337-7168                 | 337-8168               |
| 1       | 2-1/2"         | 1/2"          | 10            | 5                 | 337-7064                 | 337-8064               | 2-11/16" | 4"             | 1-1/2"        | 16            | 10                | 337-7172                 | 337-8172               |
| 1-1/16  | 2-3/4"         | 5/8"          | 10            | 6                 | 337-7068                 | 337-8068               | 2-3/4"   | 4"             | 1-1/2"        | 16            | 10                | 337-7176                 | 337-8176               |
| 1-1/8   | 2-3/4"         | 5/8"          | 10            | 6                 | 337-7072                 | 337-8072               | 2-13/16" | 4"             | 1-1/2"        | 16            | 10                | 337-7180                 | 337-8180               |
| 1-3/16  | 2-3/4"         | 5/8"          | 10            | 6                 | 337-7076                 | 337-8076               | 2-7/8"   | 4"             | 1-1/2"        | 16            | 10                | 337-7184                 | 337-8184               |
| 1-1/4   | 2-3/4"         | 5/8"          | 12            | 6                 | 337-7080                 | 337-8080               | 2-15/16" | 4"             | 1-1/2"        | 16            | 10                | 337-7188                 | 337-8188               |
| 1-5/16  | 3"             | 3/4"          | 12            | 7                 | 337-7084                 | 337-8084               | 3"       | 4"             | 1-1/2"        | 16            | 10                | 337-7192                 | 337-8192               |
| 1-3/8   | 3"             | 3/4"          | 12            | 7                 | 337-7088                 | 337-8088               | 3-1/16"  | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7196                 | 337-8196               |
| 1-7/16  | 3"             | 3/4"          | 12            | 7                 | 337-7092                 | 337-8092               | 3-1/8"   | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7200                 | 337-8200               |
| 1-1/2   | 3"             | 3/4"          | 12            | 7                 | 337-7096                 | 337-8096               | 3-3/16"  | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7204                 | 337-8204               |
| 1-9/16  | 3"             | 3/4"          | 12            | 7                 | 337-7100                 | 337-8100               | 3-1/4"   | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7208                 | 337-8208               |
| 1-5/8   | 3"             | 3/4"          | 12            | 7                 | 337-7104                 | 337-8104               | 3-5/16"  | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7212                 | 337-8212               |
| 1-11/16 | 3-1/2"         | 1"            | 12            | 8                 | 337-7108                 | 337-8108               | 3-3/8"   | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7216                 | 337-8216               |
| 1-3/4   | 3-1/2"         | 1"            | 12            | 8                 | 337-7112                 | 337-8112               | 3-7/16"  | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7220                 | 337-8220               |
| 1-13/16 | 3-1/2"         | 1"            | 12            | 8                 | 337-7116                 | 337-8116               | 3-1/2"   | 4-1/2"         | 1-3/4"        | 18            | 11                | 337-7224                 | 337-8224               |
| 1-7/8   | 3-1/2"         | 1"            | 12            | 8                 | 337-7120                 | 337-8120               | 3-9/16"  | 5"             | 2"            | 20            | 12                | 337-7228                 | 337-8228               |
| 1-15/16 | 3-1/2"         | 1"            | 12            | 8                 | 337-7124                 | 337-8124               | 3-5/8"   | 5"             | 2"            | 20            | 12                | 337-7232                 | 337-8232               |
| 2       | 3-1/2"         | 1"            | 14            | 8                 | 337-7128                 | 337-8128               | 3-11/16" | 5"             | 2"            | 20            | 12                | 337-7236                 | 337-8236               |
| 2-1/16  | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7132                 | 337-8132               | 3-3/4"   | 5"             | 2"            | 20            | 12                | 337-7240                 | 337-8240               |
| 2-1/8   | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7136                 | 337-8136               | 3-13/16" | 5"             | 2"            | 20            | 12                | 337-7244                 | 337-8244               |
| 2-3/16  | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7140                 | 337-8140               | 3-7/8"   | 5"             | 2"            | 20            | 12                | 337-7248                 | 337-8248               |
| 2-1/4   | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7144                 | 337-8144               | 3-15/16" | 5"             | 2"            | 20            | 12                | 337-7252                 | 337-8252               |
| 2-5/16  | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7148                 | 337-8148               | 4"       | 5"             | 2"            | 20            | 12                | 337-7256                 | 337-8256               |
| 2-3/8   | 3-3/4"         | 1-1/4"        | 14            | 9                 | 337-7152                 | 337-8152               |          |                |               |               |                   |                          |                        |

### M42 8% Cobalt Metric Shell Reamers

#### DIN219/DIN220, High Speed Steel

- Featured two flute types: Straight Flute(DIN219) and Spiral Flute(DIN220).



| Size (mm) | Hole Dia. (mm) | Overall Length (mm) | DIN219 Straight Flute Order No. | DIN220 Spiral Flute Order No. | Size (mm) | Hole Dia. (mm) | Overall Length (mm) | DIN219 Straight Flute Order No. | DIN220 Spiral Flute Order No. |
|-----------|----------------|---------------------|---------------------------------|-------------------------------|-----------|----------------|---------------------|---------------------------------|-------------------------------|
| 20        | 10             | 40                  | 337-9120                        | 337-9320                      | 35        | 16             | 50                  | 337-9135                        | 337-9335                      |
| 21        | 10             | 40                  | 337-9121                        | 337-9321                      | 36        | 19             | 56                  | 337-9136                        | 337-9336                      |
| 22        | 10             | 40                  | 337-9122                        | 337-9322                      | 38        | 19             | 56                  | 337-9138                        | 337-9338                      |
| 23        | 10             | 40                  | 337-9123                        | 337-9323                      | 40        | 19             | 56                  | 337-9140                        | 337-9340                      |
| 24        | 13             | 45                  | 337-9124                        | 337-9324                      | 42        | 19             | 56                  | 337-9142                        | 337-9342                      |
| 25        | 13             | 45                  | 337-9125                        | 337-9325                      | 45        | 22             | 63                  | 337-9145                        | 337-9345                      |
| 26        | 13             | 45                  | 337-9126                        | 337-9326                      | 48        | 22             | 63                  | 337-9148                        | 337-9348                      |
| 27        | 13             | 45                  | 337-9127                        | 337-9327                      | 50        | 22             | 63                  | 337-9150                        | 337-9350                      |
| 28        | 13             | 45                  | 337-9128                        | 337-9328                      | 52        | 27             | 71                  | 337-9152                        | 337-9352                      |
| 29        | 13             | 45                  | 337-9129                        | 337-9329                      | 55        | 27             | 71                  | 337-9155                        | 337-9355                      |
| 30        | 13             | 45                  | 337-9130                        | 337-9330                      | 60        | 27             | 71                  | 337-9160                        | 337-9360                      |
| 32        | 16             | 50                  | 337-9132                        | 337-9332                      |           |                |                     |                                 |                               |

## Shell Reamer Arbors

### Straight Shank



| Size | Shank Dia. | Fits Shell Reamer | Order No. |
|------|------------|-------------------|-----------|
| #4   | 1/2"       | 21/32"-25/32"     | 331-2204  |
| #5   | 5/8        | 13/16"-1-1/32"    | 331-2205  |
| #6   | 3/4        | 1-1/16"-1-9/32"   | 331-2206  |
| #7   | 7/8        | 1-5/16"-1-5/8"    | 331-2207  |
| #8   | 1-1/8      | 1-11/16"-2"       | 331-2208  |
| #9   | 1-3/8      | 2-1/16"-2-1/2"    | 331-2209  |
| #10  | 1-5/8      | 2-9/16"-3"        | 331-2210  |
| #11  | 2          | 3-1/16"-3-1/2"    | 331-2211  |
| #12  | 2-1/8      | 3-9/16"-4"        | 331-2212  |

### Taper Shank



| Size | Shank Taper | Fits Shell Reamer | Order No. |
|------|-------------|-------------------|-----------|
| #4   | MT2         | 21/32"-25/32"     | 331-2304  |
| #5   | MT2         | 13/16"-1-1/32"    | 331-2305  |
| #6   | MT3         | 1-1/16"-1-9/32"   | 331-2306  |
| #7   | MT3         | 1-5/16"-1-5/8"    | 331-2307  |
| #8   | MT4         | 1-11/16"-2"       | 331-2308  |
| #9   | MT4         | 2-1/16"-2-1/2"    | 331-2309  |
| #10  | MT5         | 2-9/16"-3"        | 331-2310  |
| #11  | MT5         | 3-1/16"-3-1/2"    | 331-2311  |
| #12  | MT5         | 3-9/16"-4"        | 331-2312  |

## E-Z Eject Shell Reamer Arbors

### Straight Shank



| Size | Shank Dia. | Fits Shell Reamer | Overall Length | Order No. |
|------|------------|-------------------|----------------|-----------|
| #4   | 1/2"       | 21/32"-25/32"     | 9"             | 331-2002  |
| #5   | 5/8        | 13/16"-1-1/32"    | 9-1/2"         | 331-2004  |
| #6   | 3/4        | 1-1/16"-1-9/32"   | 10"            | 331-2006  |
| #7   | 7/8        | 1-5/16"-1-5/8"    | 11"            | 331-2008  |
| #8   | 1-1/8      | 1-11/16"-2"       | 12"            | 331-2010  |
| #9   | 1-3/8      | 2-1/16"-2-1/2"    | 13"            | 331-2012  |
| #10  | 1-5/8      | 2-9/16"-3"        | 14"            | 331-2014  |
| #11  | 2          | 3-1/16"-3-1/2"    | 15"            | 331-2016  |
| #12  | 2-1/8      | 3-9/16"-4"        | 16"            | 331-2018  |

### Taper Shank



| Size | Shank Taper | Arbor Dia. | Fits Shell Reamer | Overall Length | Order No. |
|------|-------------|------------|-------------------|----------------|-----------|
| #4   | MT2         | 3/8"       | 21/32"-25/32"     | 9"             | 331-2102  |
| #5   | MT2         | 1/2        | 13/16"-1-1/32"    | 9-1/2"         | 331-2104  |
| #6   | MT3         | 5/8        | 1-1/16"-1-9/32"   | 10"            | 331-2106  |
| #7   | MT3         | 3/4        | 1-5/16"-1-5/8"    | 11"            | 331-2108  |
| #8   | MT4         | 1          | 1-11/16"          | 12"            | 331-2110  |
| #9   | MT4         | 1-1/4      | 2-1/16"-2-1/2"    | 13"            | 331-2112  |
| #10  | MT5         | 1-1/2      | 2-9/16"-3"        | 14"            | 331-2114  |
| #11  | MT5         | 1-3/4      | 3-1/16"-3-1/2"    | 15"            | 331-2116  |
| #12  | MT5         | 2          | 3-9/16"-4"        | 16"            | 331-2118  |

## Metric Taper Shank Shell Reamer Arbors

### DIN217



| Size | Fitting Range (mm) | Shank Taper | Arbor Size (mm) | OAL (mm) | Order No. |
|------|--------------------|-------------|-----------------|----------|-----------|
| A    | 20-23              | 2           | 10              | 255      | 331-2511  |
| B    | 24-30              | 2           | 13              | 250      | 331-2514  |
| C    | 20-23              | 3           | 10              | 250      | 331-2517  |
| D    | 24-30              | 3           | 13              | 250      | 331-2520  |
| E    | 32-35              | 3           | 16              | 261      | 331-2523  |
| F    | 36-42              | 3           | 19              | 273      | 331-2526  |
| G    | 36-42              | 4           | 19              | 298      | 331-2529  |
| H    | 45-50              | 4           | 22              | 312      | 331-2532  |
| I    | 52-60              | 4           | 27              | 327      | 331-2535  |

## Taper Pipe Reamers

### High Speed Steel, Right Hand Cut Taper 3/4 inch per foot

Designed for reaming holes to be tapped with American Standard Taper Pipe Taps (NPT)



| Size  | Large End Dia. | Small End Dia. | Flute Length | Overall Length | Straight Flute Order No. | Spiral Flute Order No. |
|-------|----------------|----------------|--------------|----------------|--------------------------|------------------------|
| 1/16" | .291"          | .245"          | 3/4"         | 2"             | 337-1704                 | 337-0704               |
| 1/8   | .362           | .316           | 3/4          | 2-1/8          | 337-1708                 | 337-0708               |
| 1/4   | .472           | .406           | 1-1/16       | 2-7/16         | 337-1716                 | 337-0716               |
| 3/8   | .606           | .540           | 1-1/16       | 2-9/16         | 337-1724                 | 337-0724               |
| 1/2   | .751           | .665           | 1-3/8        | 3-1/8          | 337-1732                 | 337-0732               |
| 3/4   | .962           | .876           | 1-3/8        | 3-1/4          | 337-1748                 | 337-0748               |
| 1     | 1.212          | 1.103          | 1-3/4        | 3-3/4          | 337-1764                 | 337-0764               |
| 1-1/4 | 1.553          | 1.444          | 1-3/4        | 4              | 337-1780                 | 337-0780               |
| 1-1/2 | 1.793          | 1.684          | 1-3/4        | 4-1/4          | 337-1796                 | 337-0796               |
| 2     | 2.268          | 2.159          | 1-3/4        | 4-1/2          | 337-1828                 | 337-0828               |
| 2-1/2 | 2.772          | 2.561          | 2-5/8        | 5-1/2          | 337-1860                 | 337-0860               |
| 3     | 3.380          | 3.202          | 2-3/4        | 6              | 337-1892                 | 337-0892               |

## Hand Taps-Taper Style

### High Speed Steel, Ground Thread

- Use for hand or machine tapping in a wide variety of materials.
- Ensures easy starting.
- Higher volume of working teeth reduces tapping torque.
- Seven to ten thread chamfer.



| Size      | Thread Limit | No. of Flute | Thread Length | Overall Length | Order No. | Size       | Thread Limit | No. of Flute | Thread Length | Overall Length | Order No. |
|-----------|--------------|--------------|---------------|----------------|-----------|------------|--------------|--------------|---------------|----------------|-----------|
| 0-80NF    | H-1          | 2            | 5/16"         | 1-5/8"         | 440-1000  | 5/16"-18NC | H-3          | 4            | 1-1/8"        | 2-23/32"       | 440-1156  |
| 0-80NF    | H-2          | 2            | 5/16          | 1-5/8          | 440-1002  | 5/16-18NC  | H-5          | 4            | 1-1/8         | 2-23/32        | 440-1158  |
| 1-64NC    | H-1          | 2            | 3/8           | 1-11/16        | 440-1004  | 5/16-24NF  | H-3          | 2            | 1-1/8         | 2-23/32        | 440-1165  |
| 1-64NC    | H-2          | 2            | 3/8           | 1-11/16        | 440-1006  | 5/16-24NF  | H-3          | 3            | 1-1/8         | 2-23/32        | 440-1168  |
| 1-72NF    | H-1          | 2            | 3/8           | 1-11/16        | 440-1008  | 5/16-24NF  | H-1          | 4            | 1-1/8         | 2-23/32        | 440-1170  |
| 1-72NF    | H-2          | 2            | 3/8           | 1-11/16        | 440-1009  | 5/16-24NF  | H-2          | 4            | 1-1/8         | 2-23/32        | 440-1172  |
| 2-56NC    | H-1          | 2            | 7/16          | 1-3/4          | 440-1010  | 5/16-24NF  | H-3          | 4            | 1-1/8         | 2-23/32        | 440-1174  |
| 2-56NC    | H-2          | 2            | 7/16          | 1-3/4          | 440-1011  | 5/16-24NF  | H-4          | 4            | 1-1/8         | 2-23/32        | 440-1176  |
| 2-56NC    | H-1          | 3            | 7/16          | 1-3/4          | 440-1012  | 3/8-16NC   | H-3          | 3            | 1-1/4         | 2-15/16        | 440-1182  |
| 2-56NC    | H-2          | 3            | 7/16          | 1-3/4          | 440-1013  | 3/8-16NC   | H-5          | 3            | 1-1/4         | 2-15/16        | 440-1183  |
| 2-64NF    | H-1          | 3            | 7/16          | 1-3/4          | 440-1014  | 3/8-16NC   | H-1          | 4            | 1-1/4         | 2-15/16        | 440-1184  |
| 2-64NF    | H-2          | 3            | 7/16          | 1-3/4          | 440-1015  | 3/8-16NC   | H-2          | 4            | 1-1/4         | 2-15/16        | 440-1186  |
| 3-48NC    | H-2          | 3            | 1/2           | 1-3/4          | 440-1018  | 3/8-16NC   | H-3          | 4            | 1-1/4         | 2-15/16        | 440-1188  |
| 3-56NF    | H-1          | 3            | 1/2           | 1-3/4          | 440-1019  | 3/8-16NC   | H-5          | 4            | 1-1/4         | 2-15/16        | 440-1190  |
| 3-56NF    | H-2          | 3            | 1/2           | 1-3/4          | 440-1020  | 3/8-24NF   | H-3          | 3            | 1-1/4         | 2-15/16        | 440-1224  |
| 4-36      | H-2          | 3            | 1/2           | 1-13/16        | 440-1022  | 3/8-24NF   | H-1          | 4            | 1-1/4         | 2-15/16        | 440-1226  |
| 4-40NC    | H-1          | 3            | 9/16          | 1-7/8          | 440-1025  | 3/8-24NF   | H-2          | 4            | 1-1/4         | 2-15/16        | 440-1228  |
| 4-40NC    | H-2          | 3            | 9/16          | 1-7/8          | 440-1026  | 3/8-24NF   | H-3          | 4            | 1-1/4         | 2-15/16        | 440-1230  |
| 4-48NF    | H-2          | 2            | 9/16          | 1-7/8          | 440-1030  | 3/8-24NF   | H-4          | 4            | 1-1/4         | 2-15/16        | 440-1232  |
| 4-48NF    | H-2          | 3            | 9/16          | 1-7/8          | 440-1032  | 7/16-14NC  | H-3          | 3            | 1-7/16        | 3-5/32         | 440-1234  |
| 5-40NC    | H-2          | 2            | 5/8           | 1-15/16        | 440-1033  | 7/16-14NC  | H-5          | 3            | 1-7/16        | 3-5/32         | 440-1236  |
| 5-40NC    | H-2          | 3            | 5/8           | 1-15/16        | 440-1035  | 7/16-14NC  | H-2          | 4            | 1-7/16        | 3-5/32         | 440-1240  |
| 5-44NF    | H-2          | 3            | 5/8           | 1-15/16        | 440-1037  | 7/16-14NC  | H-3          | 4            | 1-7/16        | 3-5/32         | 440-1242  |
| 6-32NC    | H-2          | 2            | 11/16         | 2              | 440-1039  | 7/16-14NC  | H-5          | 4            | 1-7/16        | 3-5/32         | 440-1244  |
| 6-32NC    | H-3          | 2            | 11/16         | 2              | 440-1040  | 7/16-20NF  | H-3          | 3            | 1-7/16        | 3-5/32         | 440-1246  |
| 6-32NC    | H-1          | 3            | 11/16         | 2              | 440-1041  | 7/16-20NF  | H-2          | 4            | 1-7/16        | 3-5/32         | 440-1256  |
| 6-32NC    | H-2          | 3            | 11/16         | 2              | 440-1042  | 7/16-20NF  | H-3          | 4            | 1-7/16        | 3-5/32         | 440-1258  |
| 6-32NC    | H-3          | 3            | 11/16         | 2              | 440-1043  | 7/16-20NF  | H-5          | 4            | 1-7/16        | 3-5/32         | 440-1260  |
| 6-40NF    | H-2          | 2            | 11/16         | 2              | 440-1047  | 1/2-13NC   | H-3          | 3            | 1-21-32       | 3-3/8          | 440-1262  |
| 6-40NF    | H-2          | 3            | 11/16         | 2              | 440-1049  | 1/2-13NC   | H-5          | 3            | 1-21-32       | 3-3/8          | 440-1264  |
| 8-32NC    | H-2          | 2            | 3/4           | 2-1/8          | 440-1051  | 1/2-13NC   | H-1          | 4            | 1-21-32       | 3-3/8          | 440-1266  |
| 8-32NC    | H-3          | 2            | 3/4           | 2-1/8          | 440-1052  | 1/2-13NC   | H-2          | 4            | 1-21-32       | 3-3/8          | 440-1268  |
| 8-32NC    | H-2          | 3            | 3/4           | 2-1/8          | 440-1054  | 1/2-13NC   | H-3          | 4            | 1-21-32       | 3-3/8          | 440-1270  |
| 8-32NC    | H-3          | 3            | 3/4           | 2-1/8          | 440-1055  | 1/2-13NC   | H-5          | 4            | 1-21-32       | 3-3/8          | 440-1272  |
| 8-32NC    | H-1          | 4            | 3/4           | 2-1/8          | 440-1057  | 1/2-20NF   | H-3          | 3            | 1-21-32       | 3-3/8          | 440-1276  |
| 8-32NC    | H-2          | 4            | 3/4           | 2-1/8          | 440-1058  | 1/2-20NF   | H-5          | 3            | 1-21-32       | 3-3/8          | 440-1278  |
| 8-32NC    | H-3          | 4            | 3/4           | 2-1/8          | 440-1059  | 1/2-20NF   | H-1          | 4            | 1-21-32       | 3-3/8          | 440-1280  |
| 8-36NF    | H-2          | 2            | 3/4           | 2-1/8          | 440-1063  | 1/2-20NF   | H-2          | 4            | 1-21-32       | 3-3/8          | 440-1282  |
| 8-36NF    | H-2          | 4            | 3/4           | 2-1/8          | 440-1065  | 1/2-20NF   | H-3          | 4            | 1-21-32       | 3-3/8          | 440-1284  |
| 10-24NC   | H-2          | 2            | 7/8           | 2-3/8          | 440-1066  | 1/2-20NF   | H-5          | 4            | 1-21-32       | 3-3/8          | 440-1286  |
| 10-24NC   | H-3          | 2            | 7/8           | 2-3/8          | 440-1067  | 9/16-12NC  | H-1          | 4            | 1-21-32       | 3-19/32        | 440-1312  |
| 10-24NC   | H-2          | 3            | 7/8           | 2-3/8          | 440-1068  | 9/16-12NC  | H-3          | 4            | 1-21-32       | 3-19/32        | 440-1316  |
| 10-24NC   | H-3          | 3            | 7/8           | 2-3/8          | 440-1069  | 9/16-12NC  | H-5          | 4            | 1-21-32       | 3-19/32        | 440-1318  |
| 10-24NC   | H-1          | 4            | 7/8           | 2-3/8          | 440-1071  | 9/16-18NF  | H-2          | 4            | 1-21-32       | 3-19/32        | 440-1322  |
| 10-24NC   | H-2          | 4            | 7/8           | 2-3/8          | 440-1072  | 9/16-18NF  | H-3          | 4            | 1-21-32       | 3-19/32        | 440-1324  |
| 10-24NC   | H-3          | 4            | 7/8           | 2-3/8          | 440-1073  | 9/16-18NF  | H-5          | 4            | 1-21-32       | 3-19/32        | 440-1326  |
| 10-32NF   | H-2          | 2            | 7/8           | 2-3/8          | 440-1078  | 5/8-11NC   | H-2          | 4            | 1-13/16       | 3-13/16        | 440-1330  |
| 10-32NF   | H-3          | 2            | 7/8           | 2-3/8          | 440-1079  | 5/8-11NC   | H-3          | 4            | 1-13/16       | 3-13/16        | 440-1332  |
| 10-32NF   | H-2          | 3            | 7/8           | 2-3/8          | 440-1080  | 5/8-11NC   | H-5          | 4            | 1-13/16       | 3-13/16        | 440-1334  |
| 10-32NF   | H-3          | 3            | 7/8           | 2-3/8          | 440-1081  | 5/8-18NF   | H-1          | 4            | 1-13/16       | 3-13/16        | 440-1338  |
| 10-32NF   | H-1          | 4            | 7/8           | 2-3/8          | 440-1083  | 5/8-18NF   | H-2          | 4            | 1-13/16       | 3-13/16        | 440-1340  |
| 10-32NF   | H-2          | 4            | 7/8           | 2-3/8          | 440-1084  | 5/8-18NF   | H-3          | 4            | 1-13/16       | 3-13/16        | 440-1342  |
| 10-32NF   | H-3          | 4            | 7/8           | 2-3/8          | 440-1085  | 5/8-18NF   | H-5          | 4            | 1-13/16       | 3-13/16        | 440-1343  |
| 12-24NC   | H-3          | 4            | 15/16         | 2-3/8          | 440-1090  | 11/16-11NS | H-3          | 4            | 1-13/16       | 4-1/32         | 440-1344  |
| 12-28NF   | H-1          | 4            | 15/16         | 2-3/8          | 440-1091  | 11/16-16NS | H-3          | 4            | 1-13/16       | 4-1/32         | 440-1345  |
| 12-28NF   | H-3          | 4            | 15/16         | 2-3/8          | 440-1092  | 3/4-10NC   | H-3          | 4            | 2             | 4-1/4          | 440-1350  |
| 1/4-20NC  | H-3          | 2            | 1             | 2-1/2          | 440-1102  | 3/4-10NC   | H-5          | 4            | 2             | 4-1/4          | 440-1352  |
| 1/4-20NC  | H-3          | 3            | 1             | 2-1/2          | 440-1108  | 3/4-16NF   | H-1          | 4            | 2             | 4-1/4          | 440-1354  |
| 1/4-20NC  | H-5          | 3            | 1             | 2-1/2          | 440-1110  | 3/4-16NF   | H-3          | 4            | 2             | 4-1/4          | 440-1358  |
| 1/4-20NC  | H-1          | 4            | 1             | 2-1/2          | 440-1112  | 3/4-16NC   | H-5          | 4            | 2             | 4-1/4          | 440-1360  |
| 1/4-20NC  | H-2          | 4            | 1             | 2-1/2          | 440-1114  | 7/8-9NC    | H-4          | 4            | 2-7/32        | 4-11/16        | 440-1366  |
| 1/4-20NC  | H-3          | 4            | 1             | 2-1/2          | 440-1116  | 7/8-14NF   | H-4          | 4            | 2-7/32        | 4-11/16        | 440-1374  |
| 1/4-20NC  | H-5          | 4            | 1             | 2-1/2          | 440-1118  | 1-8NC      | H-4          | 4            | 2-1/2         | 5-1/8          | 440-1380  |
| 1/4-28NF  | H-3          | 2            | 1             | 2-1/2          | 440-1132  | 1-12NF     | H-4          | 4            | 2-1/2         | 5-1/8          | 440-1388  |
| 1/4-28NF  | H-3          | 3            | 1             | 2-1/2          | 440-1134  | 1-14NS     | H-4          | 4            | 2-1/2         | 5-1/8          | 440-1394  |
| 1/4-28NF  | H-1          | 4            | 1             | 2-1/2          | 440-1136  | 1-1/8-7NC  | H-4          | 4            | 2-9/16        | 5-7/16         | 440-1398  |
| 1/4-28NF  | H-2          | 4            | 1             | 2-1/2          | 440-1138  | 1-1/8-12NF | H-4          | 4            | 2-9/16        | 5-7/16         | 440-1400  |
| 1/4-28NF  | H-3          | 4            | 1             | 2-1/2          | 440-1140  | 1-1/4-7NC  | H-4          | 4            | 2-9/16        | 5-3/4          | 440-1402  |
| 1/4-28NF  | H-4          | 4            | 1             | 2-1/2          | 440-1142  | 1-1/4-12NF | H-4          | 6            | 2-9/16        | 5-3/4          | 440-1404  |
| 5/16-18NC | H-3          | 2            | 1-1/8         | 2-23/32        | 440-1144  | 1-3/8-6NC  | H-4          | 4            | 3             | 6-1/16         | 440-1406  |
| 5/16-18NC | H-3          | 3            | 1-1/8         | 2-23/32        | 440-1148  | 1-3/8-12NF | H-4          | 6            | 3             | 6-1/16         | 440-1408  |
| 5/16-18NC | H-1          | 4            | 1-1/8         | 2-23/32        | 440-1152  | 1-1/2-6NC  | H-4          | 4            | 3             | 6-3/8          | 440-1410  |
| 5/16-18NC | H-2          | 4            | 1-1/8         | 2-23/32        | 440-1154  | 1-1/2-12NF | H-4          | 6            | 3             | 6-3/8          | 440-1412  |

## Hand Taps-Plug Style

## High Speed Steel, Ground Thread

- Used for hand tapping or general machine and CNC tapping in wide variety of materials.
- The most versatile choice for through and semi-blind holes.
- Three to five thread chamfer.



| ThreadNo. of Thread |       |       |        |         | ThreadNo. of Thread |           |       |       |        | ThreadNo. of Thread |           |            |       |       |         |         |           |
|---------------------|-------|-------|--------|---------|---------------------|-----------|-------|-------|--------|---------------------|-----------|------------|-------|-------|---------|---------|-----------|
| Size                | Limit | Flute | Length | OAL     | Order No.           | Size      | Limit | Flute | Length | OAL                 | Order No. | Size       | Limit | Flute | Length  | OAL     | Order No. |
| 0-80NF              | H-1   | 2     | 5/16"  | 1-5/8"  | 440-2000            | 10-32NF   | H-2   | 2     | 7/8"   | 2-3/8"              | 440-2078  | 7/16"-20NF | H-5   | 3     | 1-7/16" | 3-5/32" | 440-2254  |
| 0-80NF              | H-2   | 2     | 5/16   | 1-5/8   | 440-2002            | 10-32NF   | H-3   | 2     | 7/8    | 2-3/8               | 440-2079  | 7/16-20NF  | H-2   | 4     | 1-7/16  | 3-5/32  | 440-2256  |
| 1-64NC              | H-1   | 2     | 3/8    | 1-11/16 | 440-2004            | 10-32NF   | H-2   | 3     | 7/8    | 2-3/8               | 440-2080  | 7/16-20NF  | H-3   | 4     | 1-7/16  | 3-5/32  | 440-2258  |
| 1-64NC              | H-2   | 2     | 3/8    | 1-11/16 | 440-2006            | 10-32NF   | H-3   | 3     | 7/8    | 2-3/8               | 440-2081  | 7/16-20NF  | H-5   | 4     | 1-7/16  | 3-5/32  | 440-2260  |
| 1-72NF              | H-1   | 2     | 3/8    | 1-11/16 | 440-2008            | 10-32NF   | H-7   | 3     | 7/8    | 2-3/8               | 440-2082  | 7/16-20NF  | H-11  | 4     | 1-7/16  | 3-5/32  | 440-2261  |
| 1-72NF              | H-2   | 2     | 3/8    | 1-11/16 | 440-2009            | 10-32NF   | H-1   | 4     | 7/8    | 2-3/8               | 440-2083  | 1/2-13NC   | H-3   | 3     | 1-21/32 | 3-3/8   | 440-2262  |
| 2-56NC              | H-1   | 2     | 7/16   | 1-3/4   | 440-2010            | 10-32NF   | H-2   | 4     | 7/8    | 2-3/8               | 440-2084  | 1/2-13NC   | H-5   | 3     | 1-21/32 | 3-3/8   | 440-2264  |
| 2-56NC              | H-2   | 2     | 7/16   | 1-3/4   | 440-2011            | 10-32NF   | H-3   | 4     | 7/8    | 2-3/8               | 440-2085  | 1/2-13NC   | H-1   | 4     | 1-21/32 | 3-3/8   | 440-2266  |
| 2-56NC              | H-1   | 3     | 7/16   | 1-3/4   | 440-2012            | 10-32NF   | H-4   | 4     | 7/8    | 2-3/8               | 440-2086  | 1/2-13NC   | H-2   | 4     | 1-21/32 | 3-3/8   | 440-2268  |
| 2-56NC              | H-2   | 3     | 7/16   | 1-3/4   | 440-2013            | 10-32NF   | H-5   | 4     | 7/8    | 2-3/8               | 440-2087  | 1/2-13NC   | H-3   | 4     | 1-21/32 | 3-3/8   | 440-2270  |
| 2-64NF              | H-1   | 3     | 7/16   | 1-3/4   | 440-2014            | 10-32NF   | H-7   | 4     | 7/8    | 2-3/8               | 440-2088  | 1/2-13NC   | H-5   | 4     | 1-21/32 | 3-3/8   | 440-2272  |
| 2-64NF              | H-2   | 3     | 7/16   | 1-3/4   | 440-2015            | 12-24NC   | H-1   | 4     | 15/16  | 2-3/8               | 440-2089  | 1/2-13NC   | H-11  | 4     | 1-21/32 | 3-3/8   | 440-2274  |
| 3-48NC              | H-2   | 2     | 1/2    | 1-13/16 | 440-2016            | 12-24NC   | H-3   | 4     | 15/16  | 2-3/8               | 440-2090  | 1/2-20NF   | H-3   | 3     | 1-21/32 | 3-3/8   | 440-2276  |
| 3-48NC              | H-1   | 3     | 1/2    | 1-13/16 | 440-2017            | 12-28NF   | H-1   | 4     | 15/16  | 2-3/8               | 440-2091  | 1/2-20NF   | H-5   | 3     | 1-21/32 | 3-3/8   | 440-2278  |
| 3-48NC              | H-2   | 3     | 1/2    | 1-13/16 | 440-2018            | 12-28NF   | H-3   | 4     | 15/16  | 2-3/8               | 440-2092  | 1/2-20NF   | H-1   | 4     | 1-21/32 | 3-3/8   | 440-2280  |
| 3-56NF              | H-1   | 3     | 1/2    | 1-13/16 | 440-2019            | 14-20     | H-3   | 4     | 1-1/4  | 2-9/16              | 440-2093  | 1/2-20NF   | H-2   | 4     | 1-21/32 | 3-3/8   | 440-2282  |
| 3-56NF              | H-2   | 3     | 1/2    | 1-13/16 | 440-2020            | 14-24     | H-3   | 4     | 1-1/4  | 2-5/8               | 440-2094  | 1/2-20NF   | H-3   | 4     | 1-21/32 | 3-3/8   | 440-2284  |
| 4-36                | H-1   | 3     | 1/2    | 1-13/16 | 440-2021            | 1/4-20NC  | H-3   | 2     | 1      | 2-1/2               | 440-2102  | 1/2-20NF   | H-5   | 4     | 1-21/32 | 3-3/8   | 440-2286  |
| 4-36                | H-2   | 3     | 1/2    | 1-13/16 | 440-2022            | 1/4-20NC  | H-1   | 3     | 1      | 2-1/2               | 440-2104  | 9/16-12NC  | H-2   | 4     | 1-21/32 | 3-19/32 | 440-2314  |
| 4-40NC              | H-1   | 2     | 9/16   | 1-7/8   | 440-2023            | 1/4-20NC  | H-2   | 3     | 1      | 2-1/2               | 440-2106  | 9/16-12NC  | H-3   | 4     | 1-21/32 | 3-19/32 | 440-2316  |
| 4-40NC              | H-2   | 2     | 9/16   | 1-7/8   | 440-2024            | 1/4-20NC  | H-3   | 3     | 1      | 2-1/2               | 440-2108  | 9/16-12NC  | H-5   | 4     | 1-21/32 | 3-19/32 | 440-2318  |
| 4-40NC              | H-1   | 3     | 9/16   | 1-7/8   | 440-2025            | 1/4-20NC  | H-5   | 3     | 1      | 2-1/2               | 440-2110  | 9/16-18NF  | H-1   | 4     | 1-21/32 | 3-19/32 | 440-2320  |
| 4-40NC              | H-2   | 3     | 9/16   | 1-7/8   | 440-2026            | 1/4-20NC  | H-1   | 4     | 1      | 2-1/2               | 440-2112  | 9/16-18NF  | H-2   | 4     | 1-21/32 | 3-19/32 | 440-2322  |
| 4-40NC              | H-3   | 3     | 9/16   | 1-7/8   | 440-2027            | 1/4-20NC  | H-2   | 4     | 1      | 2-1/2               | 440-2114  | 9/16-18NF  | H-3   | 4     | 1-21/32 | 3-19/32 | 440-2324  |
| 4-40NC              | H-4   | 4     | 9/16   | 1-7/8   | 440-2028            | 1/4-20NC  | H-3   | 4     | 1      | 2-1/2               | 440-2116  | 9/16-18NF  | H-5   | 4     | 1-21/32 | 3-19/32 | 440-2326  |
| 4-40NC              | H-5   | 5     | 9/16   | 1-7/8   | 440-2029            | 1/4-20NC  | H-5   | 4     | 1      | 2-1/2               | 440-2118  | 5/8-11NC   | H-1   | 4     | 1-13/16 | 3-13/16 | 440-2328  |
| 4-48NF              | H-2   | 2     | 9/16   | 1-7/8   | 440-2030            | 1/4-20NC  | H-6   | 4     | 1      | 2-1/2               | 440-2120  | 5/8-11NC   | H-2   | 4     | 1-13/16 | 3-13/16 | 440-2330  |
| 4-48NF              | H-1   | 3     | 9/16   | 1-7/8   | 440-2031            | 1/4-20NC  | H-7   | 4     | 1      | 2-1/2               | 440-2122  | 5/8-11NC   | H-3   | 4     | 1-13/16 | 3-13/16 | 440-2332  |
| 4-48NF              | H-2   | 3     | 9/16   | 1-7/8   | 440-2032            | 1/4-20NC  | H-11  | 4     | 1      | 2-1/2               | 440-2124  | 5/8-11NC   | H-5   | 4     | 1-13/16 | 3-13/16 | 440-2334  |
| 5-40NC              | H-2   | 2     | 5/8    | 1-15/16 | 440-2033            | 1/4-28NF  | H-3   | 2     | 1      | 2-1/2               | 440-2132  | 5/8-11NC   | H-11  | 4     | 1-13/16 | 3-13/16 | 440-2336  |
| 5-40NC              | H-1   | 3     | 5/8    | 1-15/16 | 440-2034            | 1/4-28NF  | H-3   | 3     | 1      | 2-1/2               | 440-2134  | 5/8-18NF   | H-1   | 4     | 1-13/16 | 3-13/16 | 440-2338  |
| 5-40NC              | H-2   | 3     | 5/8    | 1-15/16 | 440-2035            | 1/4-28NF  | H-1   | 4     | 1      | 2-1/2               | 440-2136  | 5/8-18NF   | H-2   | 4     | 1-13/16 | 3-13/16 | 440-2340  |
| 5-44NF              | H-1   | 3     | 5/8    | 1-15/16 | 440-2036            | 1/4-28NF  | H-2   | 4     | 1      | 2-1/2               | 440-2138  | 5/8-18NF   | H-3   | 4     | 1-13/16 | 3-13/16 | 440-2342  |
| 5-44NF              | H-2   | 3     | 5/8    | 1-15/16 | 440-2037            | 1/4-28NF  | H-3   | 4     | 1      | 2-1/2               | 440-2140  | 5/8-18NF   | H-5   | 4     | 1-13/16 | 3-13/16 | 440-2343  |
| 6-32NC              | H-1   | 2     | 11/16  | 2       | 440-2038            | 1/4-28NF  | H-4   | 4     | 1      | 2-1/2               | 440-2142  | 11/16-11NS | H-3   | 4     | 1-13/16 | 4-1/32  | 440-2344  |
| 6-32NC              | H-2   | 2     | 11/16  | 2       | 440-2039            | 5/16-18NC | H-3   | 2     | 1-1/8  | 2-23/32             | 440-2144  | 11/16-16NS | H-3   | 4     | 1-13/16 | 4-1/32  | 440-2345  |
| 6-32NC              | H-3   | 2     | 11/16  | 2       | 440-2040            | 5/16-18NC | H-1   | 3     | 1-1/8  | 2-23/32             | 440-2146  | 3/4-10NC   | H-1   | 4     | 2       | 4-1/4   | 440-2346  |
| 6-32NC              | H-1   | 3     | 11/16  | 2       | 440-2041            | 5/16-18NC | H-3   | 3     | 1-1/8  | 2-23/32             | 440-2148  | 3/4-10NC   | H-2   | 4     | 2       | 4-1/4   | 440-2348  |
| 6-32NC              | H-2   | 3     | 11/16  | 2       | 440-2042            | 5/16-18NC | H-5   | 3     | 1-1/8  | 2-23/32             | 440-2150  | 3/4-10NC   | H-3   | 4     | 2       | 4-1/4   | 440-2350  |
| 6-32NC              | H-3   | 3     | 11/16  | 2       | 440-2043            | 5/16-18NC | H-1   | 4     | 1-1/8  | 2-23/32             | 440-2152  | 3/4-10NC   | H-5   | 4     | 2       | 4-1/4   | 440-2352  |
| 6-32NC              | H-7   | 3     | 11/16  | 2       | 440-2044            | 5/16-18NC | H-2   | 4     | 1-1/8  | 2-23/32             | 440-2154  | 3/4-16NF   | H-1   | 4     | 2       | 4-1/4   | 440-2354  |
| 6-32NC              | H-4   | 4     | 11/16  | 2       | 440-2045            | 5/16-18NC | H-3   | 4     | 1-1/8  | 2-23/32             | 440-2156  | 3/4-16NF   | H-2   | 4     | 2       | 4-1/4   | 440-2356  |
| 6-32NC              | H-5   | 5     | 11/16  | 2       | 440-2046            | 5/16-18NC | H-5   | 4     | 1-1/8  | 2-23/32             | 440-2158  | 3/4-16NF   | H-3   | 4     | 2       | 4-1/4   | 440-2358  |
| 6-40NF              | H-2   | 2     | 11/16  | 2       | 440-2047            | 5/16-18NC | H-6   | 4     | 1-1/8  | 2-23/32             | 440-2160  | 3/4-16NF   | H-5   | 4     | 2       | 4-1/4   | 440-2360  |
| 6-40NF              | H-1   | 3     | 11/16  | 2       | 440-2048            | 5/16-18NC | H-7   | 4     | 1-1/8  | 2-23/32             | 440-2162  | 7/8-9NC    | H-2   | 4     | 2-7/32  | 4-11/16 | 440-2362  |
| 6-40NF              | H-2   | 3     | 11/16  | 2       | 440-2049            | 5/16-18NC | H-11  | 4     | 1-1/8  | 2-23/32             | 440-2164  | 7/8-9NC    | H-3   | 4     | 2-7/32  | 4-11/16 | 440-2364  |
| 8-32NC              | H-1   | 2     | 3/4    | 2-1/8   | 440-2050            | 5/16-24NF | H-3   | 2     | 1-1/8  | 2-23/32             | 440-2165  | 7/8-9NC    | H-4   | 4     | 2-7/32  | 4-11/16 | 440-2366  |
| 8-32NC              | H-2   | 2     | 3/4    | 2-1/8   | 440-2051            | 5/16-24NF | H-1   | 3     | 1-1/8  | 2-23/32             | 440-2166  | 7/8-9NC    | H-6   | 4     | 2-7/32  | 4-11/16 | 440-2367  |
| 8-32NC              | H-3   | 2     | 3/4    | 2-1/8   | 440-2052            | 5/16-24NF | H-3   | 3     | 1-1/8  | 2-23/32             | 440-2168  | 7/8-14NF   | H-1   | 4     | 2-7/32  | 4-11/16 | 440-2368  |
| 8-32NC              | H-1   | 3     | 3/4    | 2-1/8   | 440-2053            | 5/16-24NF | H-1   | 4     | 1-1/8  | 2-23/32             | 440-2170  | 7/8-14NF   | H-2   | 4     | 2-7/32  | 4-11/16 | 440-2370  |
| 8-32NC              | H-2   | 3     | 3/4    | 2-1/8   | 440-2054            | 5/16-24NF | H-2   | 4     | 1-1/8  | 2-23/32             | 440-2172  | 7/8-14NF   | H-3   | 4     | 2-7/32  | 4-11/16 | 440-2372  |
| 8-32NC              | H-3   | 3     | 3/4    | 2-1/8   | 440-2055            | 5/16-24NF | H-3   | 4     | 1-1/8  | 2-23/32             | 440-2174  | 7/8-14NF   | H-4   | 4     | 2-7/32  | 4-11/16 | 440-2374  |
| 8-32NC              | H-7   | 3     | 3/4    | 2-1/8   | 440-2056            | 5/16-24NF | H-4   | 4     | 1-1/8  | 2-23/32             | 440-2176  | 7/8-14NF   | H-6   | 4     | 2-7/32  | 4-11/16 | 440-2375  |
| 8-32NC              | H-1   | 4     | 3/4    | 2-1/8   | 440-2057            | 3/8-16NC  | H-1   | 3     | 1-1/4  | 2-15/16             | 440-2180  | 1-8NC      | H-1   | 4     | 2-1/2   | 5-1/8   | 440-2376  |
| 8-32NC              | H-2   | 4     | 3/4    | 2-1/8   | 440-2058            | 3/8-16NC  | H-3   | 3     | 1-1/4  | 2-15/16             | 440-2182  | 1-8NC      | H-2   | 4     | 2-1/2   | 5-1/8   | 440-2378  |
| 8-32NC              | H-3   | 4     | 3/4    | 2-1/8   | 440-2059            | 3/8-16NC  | H-5   | 3     | 1-1/4  | 2-15/16             | 440-2183  | 1-8NC      | H-4   | 4     | 2-1/2   | 5-1/8   | 440-2380  |
| 8-32NC              | H-4   | 4     | 3/4    | 2-1/8   | 440-2060            | 3/8-16NC  | H-1   | 4     | 1-1/4  | 2-15/16             | 440-2184  | 1-8NC      | H-6   | 4     | 2-1/2   | 5-1/8   | 440-2382  |
| 8-32NC              | H-5   | 4     | 3/4    | 2-1/8   | 440-2061            | 3/        |       |       |        |                     |           |            |       |       |         |         |           |

## Hand Taps-Bottoming Style

### High Speed Steel, Ground Thread

- Used for tapping blind holes requiring full threads near the bottom of the hole.
- Featured for hand tapping general machine or CNC tapping in a wide variety of materials.
- One to two thread chamfer.



| Thread No. of Thread Overall |              |              |               |                |           | Thread No. of Thread Overall |              |              |               |                |           | Thread No. of Thread Overall |              |              |               |                |           |
|------------------------------|--------------|--------------|---------------|----------------|-----------|------------------------------|--------------|--------------|---------------|----------------|-----------|------------------------------|--------------|--------------|---------------|----------------|-----------|
| Size                         | Thread Limit | No. of Flute | Thread Length | Overall Length | Order No. | Size                         | Thread Limit | No. of Flute | Thread Length | Overall Length | Order No. | Size                         | Thread Limit | No. of Flute | Thread Length | Overall Length | Order No. |
| 0-80NF                       | H-1          | 2"           | 5/16"         | 1-5/8"         | 440-3000  | 10-32NF                      | H-2          | 2            | 7/8"          | 2-3/8"         | 440-3078  | 7/16"-14NC                   | H-5          | 4            | 1-7/16"       | 3-5/32"        | 440-3244  |
| 0-80NF                       | H-2          | 2            | 5/16          | 1-5/8          | 440-3002  | 10-32NF                      | H-3          | 2            | 7/8           | 2-3/8          | 440-3079  | 7/16-20NF                    | H-3          | 3            | 1-7/16        | 3-5/32         | 440-3246  |
| 1-64NC                       | H-1          | 2            | 3/8           | 1-11/16        | 440-3004  | 10-32NF                      | H-2          | 3            | 7/8           | 2-3/8          | 440-3080  | 7/16-20NF                    | H-5          | 3            | 1-7/16        | 3-5/32         | 440-3254  |
| 1-64NC                       | H-2          | 2            | 3/8           | 1-11/16        | 440-3006  | 10-32NF                      | H-3          | 3            | 7/8           | 2-3/8          | 440-3081  | 7/16-20NF                    | H-2          | 4            | 1-7/16        | 3-5/32         | 440-3256  |
| 1-72NF                       | H-1          | 2            | 3/8           | 1-11/16        | 440-3008  | 10-32NF                      | H-7          | 3            | 7/8           | 2-3/8          | 440-3082  | 7/16-20NF                    | H-3          | 4            | 1-7/16        | 3-5/32         | 440-3258  |
| 1-72NF                       | H-2          | 2            | 3/8           | 1-11/16        | 440-3009  | 10-32NF                      | H-1          | 4            | 7/8           | 2-3/8          | 440-3083  | 7/16-20NF                    | H-5          | 4            | 1-7/16        | 3-5/32         | 440-3260  |
| 2-56NC                       | H-2          | 2            | 7/16          | 1-3/4          | 440-3011  | 10-32NF                      | H-2          | 4            | 7/8           | 2-3/8          | 440-3084  | 1/2-13NC                     | H-3          | 3            | 1-21/32       | 3-3/8          | 440-3262  |
| 2-56NC                       | H-1          | 3            | 7/16          | 1-3/4          | 440-3012  | 10-32NF                      | H-3          | 4            | 7/8           | 2-3/8          | 440-3085  | 1/2-13NC                     | H-5          | 3            | 1-21/32       | 3-3/8          | 440-3264  |
| 2-56NC                       | H-2          | 3            | 7/16          | 1-3/4          | 440-3013  | 10-32NF                      | H-7          | 4            | 7/8           | 2-3/8          | 440-3088  | 1/2-13NC                     | H-1          | 4            | 1-21/32       | 3-3/8          | 440-3266  |
| 2-64NF                       | H-1          | 3            | 7/16          | 1-3/4          | 440-3014  | 12-24NC                      | H-3          | 4            | 15/16         | 2-3/8          | 440-3090  | 1/2-13NC                     | H-2          | 4            | 1-21/32       | 3-3/8          | 440-3268  |
| 2-64NF                       | H-2          | 3            | 7/16          | 1-3/4          | 440-3015  | 12-28NF                      | H-1          | 4            | 15/16         | 2-3/8          | 440-3091  | 1/2-13NC                     | H-3          | 4            | 1-21/32       | 3-3/8          | 440-3270  |
| 3-48NC                       | H-2          | 2            | 1/2           | 1-13/16        | 440-3016  | 12-28NF                      | H-3          | 4            | 15/16         | 2-3/8          | 440-3092  | 1/2-13NC                     | H-5          | 4            | 1-21/32       | 3-3/8          | 440-3272  |
| 3-48NC                       | H-2          | 3            | 1/2           | 1-13/16        | 440-3018  | 14-24                        | H-3          | 4            | 1-1/4         | 2-5/8          | 440-3094  | 1/2-20NF                     | H-3          | 3            | 1-21/32       | 3-3/8          | 440-3276  |
| 3-56NF                       | H-1          | 3            | 1/2           | 1-13/16        | 440-3019  | 1/4-20NC                     | H-3          | 2            | 1             | 2-1/2          | 440-3102  | 1/2-20NF                     | H-5          | 3            | 1-21/32       | 3-3/8          | 440-3278  |
| 3-56NF                       | H-2          | 3            | 1/2           | 1-13/16        | 440-3020  | 1/4-20NC                     | H-5          | 2            | 1             | 2-1/2          | 440-3103  | 1/2-20NF                     | H-1          | 4            | 1-21/32       | 3-3/8          | 440-3280  |
| 4-36                         | H-2          | 3            | 9/16          | 1-7/8          | 440-3022  | 1/4-20NC                     | H-2          | 3            | 1             | 2-1/2          | 440-3106  | 1/2-20NF                     | H-2          | 4            | 1-21/32       | 3-3/8          | 440-3282  |
| 4-40NC                       | H-1          | 2            | 9/16          | 1-7/8          | 440-3023  | 1/4-20NC                     | H-3          | 3            | 1             | 2-1/2          | 440-3108  | 1/2-20NF                     | H-3          | 4            | 1-21/32       | 3-3/8          | 440-3284  |
| 4-40NC                       | H-2          | 2            | 9/16          | 1-7/8          | 440-3024  | 1/4-20NC                     | H-5          | 3            | 1             | 2-1/2          | 440-3110  | 1/2-20NF                     | H-5          | 4            | 1-21/32       | 3-3/8          | 440-3286  |
| 4-40NC                       | H-1          | 3            | 9/16          | 1-7/8          | 440-3025  | 1/4-20NC                     | H-1          | 4            | 1             | 2-1/2          | 440-3112  | 9/16-12NC                    | H-2          | 4            | 1-21/32       | 3-19/16        | 440-3314  |
| 4-40NC                       | H-2          | 3            | 9/16          | 1-7/8          | 440-3026  | 1/4-20NC                     | H-2          | 4            | 1             | 2-1/2          | 440-3114  | 9/16-12NC                    | H-3          | 4            | 1-21/32       | 3-19/16        | 440-3316  |
| 4-48NF                       | H-2          | 2            | 9/16          | 1-7/8          | 440-3030  | 1/4-20NC                     | H-3          | 4            | 1             | 2-1/2          | 440-3116  | 9/16-12NC                    | H-5          | 4            | 1-21/32       | 3-19/16        | 440-3318  |
| 4-48NF                       | H-2          | 3            | 9/16          | 1-7/8          | 440-3032  | 1/4-20NC                     | H-5          | 4            | 1             | 2-1/2          | 440-3118  | 9/16-18NF                    | H-2          | 4            | 1-21/32       | 3-19/16        | 440-3322  |
| 5-40NC                       | H-2          | 2            | 5/8           | 1-15/16        | 440-3033  | 1/4-28NF                     | H-3          | 2            | 1             | 2-1/2          | 440-3132  | 9/16-18NF                    | H-3          | 4            | 1-21/32       | 3-19/16        | 440-3324  |
| 5-40NC                       | H-7          | 3            | 5/8           | 1-15/16        | 440-3034  | 1/4-28NF                     | H-3          | 3            | 1             | 2-1/2          | 440-3134  | 9/16-18NF                    | H-5          | 4            | 1-21/32       | 3-19/16        | 440-3326  |
| 5-40NC                       | H-2          | 3            | 5/8           | 1-15/16        | 440-3035  | 1/4-28NF                     | H-1          | 4            | 1             | 2-1/2          | 440-3136  | 5/8-11NC                     | H-1          | 4            | 1-13/16       | 3-13/16        | 440-3328  |
| 5-44NF                       | H-1          | 3            | 5/8           | 1-15/16        | 440-3036  | 1/4-28NF                     | H-2          | 4            | 1             | 2-1/2          | 440-3138  | 5/8-11NC                     | H-2          | 4            | 1-13/16       | 3-13/16        | 440-3330  |
| 5-44NF                       | H-2          | 3            | 5/8           | 1-15/16        | 440-3037  | 1/4-28NF                     | H-3          | 4            | 1             | 2-1/2          | 440-3140  | 5/8-11NC                     | H-3          | 4            | 1-13/16       | 3-13/16        | 440-3332  |
| 6-32NC                       | H-1          | 2            | 11/16         | 2              | 440-3038  | 1/4-28NF                     | H-4          | 4            | 1             | 2-1/2          | 440-3142  | 5/8-11NC                     | H-5          | 4            | 1-13/16       | 3-13/16        | 440-3334  |
| 6-32NC                       | H-2          | 2            | 11/16         | 2              | 440-3039  | 5/16-18NC                    | H-3          | 2            | 1-1/8         | 2-23/32        | 440-3144  | 5/8-18NF                     | H-1          | 4            | 1-13/16       | 3-13/16        | 440-3338  |
| 6-32NC                       | H-3          | 2            | 11/16         | 2              | 440-3040  | 5/16-18NC                    | H-5          | 2            | 1-1/8         | 2-23/32        | 440-3145  | 5/8-18NF                     | H-2          | 4            | 1-13/16       | 3-13/16        | 440-3340  |
| 6-32NC                       | H-1          | 3            | 11/16         | 2              | 440-3041  | 5/16-18NC                    | H-3          | 3            | 1-1/8         | 2-23/32        | 440-3148  | 5/8-18NF                     | H-3          | 4            | 1-13/16       | 3-13/16        | 440-3342  |
| 6-32NC                       | H-2          | 3            | 11/16         | 2              | 440-3042  | 5/16-18NC                    | H-5          | 3            | 1-1/8         | 2-23/32        | 440-3150  | 5/8-18NF                     | H-5          | 4            | 1-13/16       | 3-13/16        | 440-3343  |
| 6-32NC                       | H-3          | 3            | 11/16         | 2              | 440-3043  | 5/16-18NC                    | H-1          | 4            | 1-1/8         | 2-23/32        | 440-3152  | 11/16-11NS                   | H-3          | 4            | 1-13/16       | 4-1/32         | 440-3344  |
| 6-32NC                       | H-7          | 3            | 11/16         | 2              | 440-3044  | 5/16-18NC                    | H-2          | 4            | 1-1/8         | 2-23/32        | 440-3154  | 11/16-16NS                   | H-3          | 4            | 1-13/16       | 4-1/32         | 440-3345  |
| 6-40NF                       | H-2          | 2            | 11/16         | 2              | 440-3047  | 5/16-18NC                    | H-3          | 4            | 1-1/8         | 2-23/32        | 440-3156  | 3/4-10NC                     | H-1          | 4            | 2             | 4-1/4          | 440-3346  |
| 6-40NF                       | H-1          | 3            | 11/16         | 2              | 440-3048  | 5/16-18NC                    | H-5          | 4            | 1-1/8         | 2-23/32        | 440-3158  | 3/4-10NC                     | H-3          | 4            | 2             | 4-1/4          | 440-3350  |
| 6-40NF                       | H-2          | 3            | 11/16         | 2              | 440-3049  | 5/16-24NF                    | H-3          | 3            | 1-1/8         | 2-23/32        | 440-3168  | 3/4-10NC                     | H-5          | 4            | 2             | 4-1/4          | 440-3352  |
| 8-32NC                       | H-2          | 2            | 3/4           | 2-1/8          | 440-3051  | 5/16-24NF                    | H-1          | 4            | 1-1/8         | 2-23/32        | 440-3170  | 3/4-16NF                     | H-1          | 4            | 2             | 4-1/4          | 440-3354  |
| 8-32NC                       | H-3          | 2            | 3/4           | 2-1/8          | 440-3052  | 5/16-24NF                    | H-2          | 4            | 1-1/8         | 2-23/32        | 440-3172  | 3/4-16NF                     | H-2          | 4            | 2             | 4-1/4          | 440-3356  |
| 8-32NC                       | H-2          | 3            | 3/4           | 2-1/8          | 440-3054  | 5/16-24NF                    | H-3          | 4            | 1-1/8         | 2-23/32        | 440-3174  | 3/4-16NF                     | H-3          | 4            | 2             | 4-1/4          | 440-3358  |
| 8-32NC                       | H-3          | 3            | 3/4           | 2-1/8          | 440-3055  | 5/16-24NF                    | H-4          | 4            | 1-1/8         | 2-23/32        | 440-3176  | 3/4-16NC                     | H-5          | 4            | 2             | 4-1/4          | 440-3360  |
| 8-32NC                       | H-7          | 3            | 3/4           | 2-1/8          | 440-3056  | 3/8-16NC                     | H-1          | 3            | 1-1/4         | 2-15/16        | 440-3180  | 7/8-9NC                      | H-1          | 4            | 2-7/32        | 4-11/16        | 440-3361  |
| 8-32NC                       | H-1          | 4            | 3/4           | 2-1/8          | 440-3057  | 3/8-16NC                     | H-3          | 3            | 1-1/4         | 2-15/16        | 440-3182  | 7/8-9NC                      | H-4          | 4            | 2-7/32        | 4-11/16        | 440-3366  |
| 8-32NC                       | H-2          | 4            | 3/4           | 2-1/8          | 440-3058  | 3/8-16NC                     | H-5          | 3            | 1-1/4         | 2-15/16        | 440-3183  | 7/8-9NC                      | H-6          | 4            | 2-7/32        | 4-11/16        | 440-3367  |
| 8-32NC                       | H-3          | 4            | 3/4           | 2-1/8          | 440-3059  | 3/8-16NC                     | H-1          | 4            | 1-1/4         | 2-15/16        | 440-3184  | 7/8-14NF                     | H-4          | 4            | 2-7/32        | 4-11/16        | 440-3374  |
| 8-32NC                       | H-7          | 4            | 3/4           | 2-1/8          | 440-3062  | 3/8-16NC                     | H-2          | 4            | 1-1/4         | 2-15/16        | 440-3186  | 7/8-14NF                     | H-6          | 4            | 2-7/32        | 4-11/16        | 440-3375  |
| 8-36NF                       | H-2          | 2            | 3/4           | 2-1/8          | 440-3063  | 3/8-16NC                     | H-3          | 4            | 1-1/4         | 2-15/16        | 440-3188  | 1-8NC                        | H-1          | 4            | 2-1/2         | 5-1/8          | 440-3376  |
| 8-36NF                       | H-1          | 4            | 3/4           | 2-1/8          | 440-3064  | 3/8-16NC                     | H-5          | 4            | 1-1/4         | 2-15/16        | 440-3190  | 1-8NC                        | H-4          | 4            | 2-1/2         | 5-1/8          | 440-3380  |
| 8-36NF                       | H-2          | 4            | 3/4           | 2-1/8          | 440-3065  | 3/8-24NF                     | H-3          | 3            | 1-1/4         | 2-15/16        | 440-3224  | 1-12NF                       | H-4          | 4            | 2-1/2         | 5-1/8          | 440-3388  |
| 10-24NC                      | H-2          | 2            | 7/8           | 2-3/8          | 440-3066  | 3/8-24NF                     | H-1          | 4            | 1-1/4         | 2-15/16        | 440-3226  | 1-14NS                       | H-4          | 4            | 2-1/2         | 5-1/8          | 440-3394  |
| 10-24NC                      | H-3          | 2            | 7/8           | 2-3/8          | 440-3067  | 3/8-24NF                     | H-2          | 4            | 1-1/4         | 2-15/16        | 440-3228  | 1-1/8-7NC                    | H-4          | 4            | 2-9/16        | 5-3/4          | 440-3398  |
| 10-24NC                      | H-3          | 3            | 7/8           | 2-3/8          | 440-3069  | 3/8-24NF                     | H-3          | 4            | 1-1/4         | 2-15/16        | 440-3230  | 1-1/8-12NF                   | H-4          | 4            | 2-9/16        | 5-3/4          | 440-3400  |
| 10-24NC                      | H-7          | 3            | 7/8           | 2-3/8          | 440-3070  | 3/8-24NF                     | H-4          | 4            | 1-1/4         | 2-15/16        | 440-3232  | 1-1/4-7NC                    | H-4          | 4            | 2-9/16        | 5-3/4          | 440-3402  |
| 10-24NC                      | H-1          | 4            | 7/8           | 2-3/8          | 440-3071  | 7/16-14NC                    | H-3          | 3            | 1-7/16        | 3-5/32         | 440-3234  | 1-1/4-12NF                   | H-4          | 6            | 2-9/16        | 5-3/4          | 440-3404  |
| 10-24NC                      | H-2          | 4            | 7/8           | 2-3/8          | 440-3072  | 7/16-14NC                    | H-5          | 3            | 1-7/16        | 3-5/32         | 440-3236  | 1-3/8-6NC                    | H-4          | 4            | 3             | 6-1/16         | 440-3406  |
| 10-24NC                      | H-3          | 4            | 7/8           | 2-3/8          | 440-3073  | 7/16-14NC                    | H-1          | 4            | 1-7/16        | 3-5/32         | 440-3238  | 1-3/8-12NF                   | H-4          | 6            | 3             | 6-1/16         | 440-3408  |
| 10-24NC                      | H-7          | 4            | 7/8           | 2-3/8          | 440-3076  | 7/16-14NC                    | H-2          | 4            | 1-7/16        | 3-5/32         | 440-3240  | 1-1/2-6NC                    | H-4          | 4            | 3             | 6-3/8          | 440-3410  |
| 10-32NF                      | H-1          | 2            | 7/8           | 2-3/8          | 440-3077  | 7/16-14NC                    | H-3          | 4            | 1-7/16        | 3-5/32         | 440-3242  | 1-1/2-12NF                   | H-4          | 6            | 3             | 6-3/8          | 440-3412  |

## M35 Cobalt Spiral Point Taps

HSS, Ground Thread



| Tap Size  | No. of Flutes | Thread Limits | Order No. |
|-----------|---------------|---------------|-----------|
| 0-80NF    | 2             | H-1           | 413-9002  |
| 0-80NF    | 2             | H-2           | 413-9004  |
| 1-64NC    | 2             | H-1           | 413-9006  |
| 1-64NC    | 2             | H-2           | 413-9008  |
| 1-72NF    | 2             | H-1           | 413-9010  |
| 1-72NF    | 2             | H-2           | 413-9012  |
| 2-56NC    | 2             | H-1           | 413-9013  |
| 2-56NC    | 2             | H-2           | 413-9014  |
| 2-64NF    | 2             | H-1           | 413-9015  |
| 2-64NF    | 2             | H-2           | 413-9016  |
| 3-48NC    | 2             | H-1           | 413-9017  |
| 3-48NC    | 2             | H-2           | 413-9018  |
| 3-56NF    | 2             | H-1           | 413-9019  |
| 3-56NF    | 2             | H-2           | 413-9020  |
| 4-36      | 2             | H-1           | 413-9021  |
| 4-40NC    | 2             | H-2           | 413-9022  |
| 4-40NC    | 2             | H-1           | 413-9023  |
| 4-40NC    | 2             | H-7           | 413-9024  |
| 4-48NF    | 2             | H-1           | 413-9025  |
| 4-48NF    | 2             | H-2           | 413-9026  |
| 5-40NC    | 2             | H-1           | 413-9027  |
| 5-40NC    | 2             | H-2           | 413-9028  |
| 5-40NC    | 2             | H-3           | 413-9029  |
| 5-40NC    | 2             | H-7           | 413-9030  |
| 5-44NF    | 2             | H-1           | 413-9031  |
| 5-44NF    | 2             | H-2           | 413-9032  |
| 5-44NF    | 2             | H-3           | 413-9033  |
| 6-32NC    | 2             | H-2           | 413-9034  |
| 6-32NC    | 2             | H-1           | 413-9035  |
| 6-32NC    | 2             | H-3           | 413-9036  |
| 6-32NC    | 2             | H-7           | 413-9038  |
| 6-40NF    | 2             | H-3           | 413-9039  |
| 6-40NF    | 2             | H-2           | 413-9040  |
| 6-48      | 2             | H-3           | 413-9041  |
| 8-32NC    | 2             | H-2           | 413-9042  |
| 8-32NC    | 2             | H-1           | 413-9043  |
| 8-32NC    | 2             | H-3           | 413-9044  |
| 8-32NC    | 2             | H-7           | 413-9046  |
| 8-36NF    | 2             | H-3           | 413-9047  |
| 8-36NF    | 2             | H-2           | 413-9048  |
| 8-40      | 2             | H-3           | 413-9049  |
| 10-24NC   | 2             | H-2           | 413-9050  |
| 10-24NC   | 2             | H-1           | 413-9051  |
| 10-24NC   | 2             | H-3           | 413-9052  |
| 10-24NC   | 2             | H-7           | 413-9054  |
| 10-32NF   | 2             | H-2           | 413-9056  |
| 10-32NF   | 2             | H-1           | 413-9057  |
| 10-32NF   | 2             | H-3           | 413-9058  |
| 10-32NF   | 2             | H-7           | 413-9060  |
| 10-40     | 2             | H-3           | 413-9061  |
| 12-24NC   | 2             | H-3           | 413-9062  |
| 12-24NC   | 2             | H-2           | 413-9063  |
| 12-28NF   | 2             | H-3           | 413-9064  |
| 12-32     | 2             | H-3           | 413-9065  |
| 1/4"-20NC | 2             | H-2           | 413-9066  |
| 1/4"-20NC | 2             | H-1           | 413-9067  |
| 1/4"-20NC | 2             | H-3           | 413-9068  |

| Tap Size    | No. of Flutes | Thread Limits | Order No. |
|-------------|---------------|---------------|-----------|
| 1/4"-20NC   | 2             | H-5           | 413-9070  |
| 1/4"-20NC   | 3             | H-2           | 413-9072  |
| 1/4"-20NC   | 3             | H-3           | 413-9074  |
| 1/4"-20NC   | 3             | H-5           | 413-9076  |
| 1/4"-24     | 2             | H-3           | 413-9077  |
| 1/4"-28NF   | 2             | H-2           | 413-9078  |
| 1/4"-32     | 2             | H-3           | 413-9079  |
| 1/4"-28NF   | 2             | H-3           | 413-9080  |
| 1/4"-28NF   | 2             | H-1           | 413-9081  |
| 1/4"-28NF   | 2             | H-2           | 413-9082  |
| 1/4"-28NF   | 2             | H-3           | 413-9084  |
| 1/4"-40     | 2             | H-3           | 413-9085  |
| 5/16"-18NC  | 2             | H-2           | 413-4086  |
| 5/16"-18NC  | 2             | H-3           | 413-9088  |
| 5/16"-18NC  | 2             | H-5           | 413-9090  |
| 5/16"-18NC  | 3             | H-2           | 413-9092  |
| 5/16"-18NC  | 3             | H-3           | 413-9094  |
| 5/16"-18NC  | 3             | H-5           | 413-9096  |
| 5/16"-18NC  | 3             | H-5           | 413-9097  |
| 5/16"-24NF  | 2             | H-2           | 413-9098  |
| 5/16"-24NF  | 2             | H-3           | 413-9100  |
| 5/16"-24NF  | 2             | H-4           | 413-9101  |
| 5/16"-24NF  | 3             | H-3           | 413-9102  |
| 5/16"-32    | 2             | H-3           | 413-9103  |
| 3/8"-16NC   | 3             | H-2           | 413-9104  |
| 3/8"-16NC   | 3             | H-3           | 413-9106  |
| 3/8"-16NC   | 3             | H-5           | 413-9108  |
| 3/8"-24NF   | 3             | H-4           | 413-9109  |
| 3/8"-24NF   | 3             | H-2           | 413-9110  |
| 3/8"-24NF   | 3             | H-5           | 413-9111  |
| 3/8"-24NF   | 3             | H-3           | 413-9112  |
| 3/8"-32     | 3             | H-3           | 413-9113  |
| 7/16"-14NC  | 3             | H-3           | 413-9114  |
| 7/16"-14NC  | 3             | H-2           | 413-9115  |
| 7/16"-14NC  | 3             | H-5           | 413-9116  |
| 7/16"-14NC  | 3             | H-4           | 413-9117  |
| 7/16"-20NF  | 3             | H-3           | 413-9118  |
| 7/16"-20NF  | 3             | H-2           | 413-9119  |
| 7/16"-20NF  | 3             | H-5           | 413-9120  |
| 7/16"-20NF  | 3             | H-4           | 413-9121  |
| 1/2"-13NC   | 3             | H-3           | 413-9122  |
| 1/2"-13NC   | 3             | H-2           | 413-9123  |
| 1/2"-13NC   | 3             | H-5           | 413-9124  |
| 1/2"-13NC   | 3             | H-4           | 413-9125  |
| 1/2"-20NF   | 3             | H-3           | 413-9126  |
| 1/2"-24     | 3             | H-3           | 413-9127  |
| 1/2"-20NF   | 3             | H-5           | 413-9128  |
| 1/2"-28     | 3             | H-3           | 413-9129  |
| 9/16"-12NC  | 3             | H-3           | 413-9130  |
| 9/16"-12NC  | 3             | H-5           | 413-9132  |
| 9/16"-18NF  | 3             | H-3           | 413-9134  |
| 9/16"-18NF  | 3             | H-5           | 413-9136  |
| 5/8"-11NC   | 3             | H-3           | 413-9138  |
| 5/8"-11NC   | 3             | H-5           | 413-9140  |
| 5/8"-18NF   | 3             | H-3           | 413-9142  |
| 5/8"-18NF   | 3             | H-5           | 413-9144  |
| 11/16"-11NS | 3             | H-3           | 413-9146  |

### M35 Cobalt Spiral Point Taps Continued



| Tap Size    | No. of Flutes | Thread Limits | Order No. |
|-------------|---------------|---------------|-----------|
| 11/16"-16NS | 3             | H-3           | 413-9148  |
| 3/4"-10NC   | 3             | H-3           | 413-9150  |
| 3/4"-10NC   | 3             | H-5           | 413-9152  |
| 3/4"-16NF   | 3             | H-3           | 413-9154  |
| 3/4"-16NF   | 3             | H-5           | 413-9156  |
| 7/8"-9NC    | 3             | H-2           | 413-9157  |
| 7/8"-9NC    | 3             | H-4           | 413-9158  |
| 7/8"-9NC    | 4             | H-4           | 413-9160  |
| 7/8"-14NF   | 3             | H-2           | 413-9161  |
| 7/8"-14NF   | 3             | H-4           | 413-9162  |
| 7/8"-14NF   | 3             | H-3           | 413-9163  |
| 7/8"-14NF   | 4             | H-4           | 413-9164  |
| 1"-8NC      | 3             | H-3           | 413-9165  |
| 1"-8NC      | 3             | H-4           | 413-9166  |
| 1"-8NC      | 4             | H-4           | 413-9168  |
| 1"-12NF     | 4             | H-4           | 413-9170  |
| 1"-14NS     | 4             | H-4           | 413-9172  |
| 1"-12NF     | 3             | H-3           | 413-9173  |
| 1"-12NF     | 3             | H-4           | 413-9174  |
| 1"-12NF     | 3             | H-5           | 413-9175  |
| 1"-14NS     | 3             | H-4           | 413-9176  |
| 1"-14NS     | 3             | H-3           | 413-9177  |
| 4-36        | 2             | H-2           | 413-9180  |
| 6-40NF      | 2             | H-1           | 413-9182  |
| 8-36NF      | 2             | H-1           | 413-9184  |
| 12-24NC     | 2             | H-1           | 413-9186  |
| 12-28NF     | 2             | H-2           | 413-9187  |
| 14-20NS     | 2             | H-2           | 413-9188  |
| 14-20NS     | 2             | H-3           | 413-9189  |
| 14-24NS     | 2             | H-2           | 413-9190  |
| 14-24NS     | 2             | H-3           | 413-9191  |
| 1/4"-28NF   | 2             | H-4           | 413-9192  |
| 1/2"-20NF   | 3             | H-1           | 413-9193  |
| 1/2"-20NF   | 3             | H-2           | 413-9194  |
| 1/2"-13NC   | 3             | H-1           | 413-9195  |

### Fluteless X-PressTaps

#### High Speed Steel

These taps have no flutes or cutting edges. The X-Press Tap cold forms internal threads in ductile metals such as copper, zinc, lead, leaded steels, magnesium, die castings and aluminum. Used where chip removal is a problem.



| Size      | Thread Length | OAL      | Order No. |
|-----------|---------------|----------|-----------|
| 1-64NC    | 3/8"          | 1-11/16" | 311-7104  |
| 1-72NF    | 3/8           | 1-11/16  | 311-7106  |
| 2-64NF    | 7/16          | 1-3/4    | 311-7108  |
| 3-48NC    | 1/2           | 1-13/16  | 311-7112  |
| 3-56NF    | 1/2           | 1-13/16  | 311-7114  |
| 4-40NC    | 9/16          | 1-7/8    | 311-7116  |
| 4-48NF    | 9/16          | 1-7/8    | 311-7118  |
| 5-40NC    | 5/8           | 1-15/16  | 311-7120  |
| 5-44NF    | 5/8           | 1-15/16  | 311-7122  |
| 6-32NC    | 11/16         | 2        | 311-7124  |
| 6-40NF    | 11/16         | 2        | 311-7126  |
| 8-32NC    | 3/4           | 2-1/8    | 311-7128  |
| 8-36NF    | 3/4           | 2-1/8    | 311-7130  |
| 10-24NC   | 7/8           | 2-3/8    | 311-7132  |
| 10-32NF   | 7/8           | 2-3/8    | 311-7134  |
| 12-24NC   | 15/16         | 2-3/8    | 311-7136  |
| 12-28NF   | 15/16         | 2-3/8    | 311-7138  |
| 1/4-20NC  | 1             | 2-1/2    | 311-7148  |
| 1/4-28NF  | 1             | 2-1/2    | 311-7150  |
| 5/16-18NC | 1-1/8         | 2-23/32  | 311-7156  |
| 5/16-24NF | 1-1/8         | 2-23/32  | 311-7158  |
| 3/8-16NC  | 1-1/4         | 2-15/16  | 311-7160  |
| 3/8-24NF  | 1-1/4         | 2-15/16  | 311-7162  |
| 7/16-14NC | 1-7/16        | 3-5/32   | 311-7166  |
| 7/16-20NF | 1-7/16        | 3-5/32   | 311-7168  |
| 1/2-13NC  | 1-21/32       | 3-3/8    | 311-7170  |
| 1/2-20NF  | 1-21/32       | 3-3/8    | 311-7172  |
| 9/16-12NC | 1-21/32       | 3-19/32  | 311-7176  |
| 5/8-11NC  | 1-13/16       | 3-13/16  | 311-7180  |
| 5/8-18NF  | 1-13/16       | 3-13/16  | 311-7182  |
| 3/4-10NC  | 2             | 4-1/4    | 311-7184  |
| 3/4-16NF  | 2             | 4-1/4    | 311-7186  |

### Fluteless Spiral Point Assembly Taps

#### High Speed Steel

Recommended for High Speed Steel Taping Thin Materials Available while supplies Last.



| Size   | Thread Length | OAL      | Order No. |
|--------|---------------|----------|-----------|
| 3-48NC | 1/2"          | 1-13/16" | 311-7006  |
| 3-56NF | 1/2           | 1-13/16  | 311-7008  |
| 4-40NC | 9/16          | 1-7/8    | 311-7010  |
| 4-48NF | 9/16          | 1-7/8    | 311-7012  |
| 5-40NC | 5/8           | 1-15/16  | 311-7016  |
| 5-44NF | 5/8           | 1-15/16  | 311-7018  |
| 6-32NF | 11/16         | 2        | 311-7022  |
| 6-40NF | 11/16         | 2        | 311-7024  |
| 8-32NC | 3/4           | 2-1/8    | 311-7028  |
| 8-36NF | 3/4           | 2-1/8    | 311-7030  |

| Size      | Thread Length | OAL     | Order No. |
|-----------|---------------|---------|-----------|
| 10-24NC   | 7/8           | 2-3/8   | 311-7034  |
| 10-32NF   | 7/8           | 2-3/8   | 311-7036  |
| 12-28NF   | 15/16         | 2-3/8   | 311-7040  |
| 5/16-24NF | 1-1/8         | 2-23/32 | 311-7044  |
| 3/8-16NC  | 1-1/4         | 2-15/16 | 311-7050  |
| 3/8-24NF  | 1-1/4         | 2-15/16 | 311-7052  |
| 7/16-14NC | 1-7/16        | 3-5/32  | 311-7056  |
| 7/16-20NF | 1-7/16        | 3-5/32  | 311-7058  |
| 1/2-13NC  | 1-21/32       | 3-3/8   | 311-7062  |

## Spiral Point Taps

### HSS, Left Hand, Ground Thread

Spiral point is designed to push the chips ahead of the cutting action, helping to reduce loading in the flutes



| Tap Size  | No. of Flutes | Thread Limits | Order No. |
|-----------|---------------|---------------|-----------|
| 0-80NF    | 2             | H-1           | 440-7002  |
| 0-80NF    | 2             | H-2           | 440-7004  |
| 1-64NC    | 2             | H-1           | 440-7006  |
| 1-64NC    | 2             | H-2           | 440-7008  |
| 1-72NF    | 2             | H-1           | 440-7010  |
| 1-72NF    | 2             | H-2           | 440-7012  |
| 2-56NC    | 2             | H-2           | 440-7014  |
| 2-64NF    | 2             | H-2           | 440-7016  |
| 3-48NC    | 2             | H-2           | 440-7018  |
| 3-56NF    | 2             | H-2           | 413-7020  |
| 4-36      | 2             | H-1           | 413-7021  |
| 4-40NC    | 2             | H-2           | 440-7022  |
| 4-40NC    | 2             | H-7           | 440-7024  |
| 4-48NF    | 2             | H-2           | 440-7026  |
| 5-40NC    | 2             | H-2           | 440-7028  |
| 5-40NC    | 2             | H-7           | 440-7030  |
| 5-44NF    | 2             | H-2           | 440-7032  |
| 6-32NC    | 2             | H-2           | 440-7034  |
| 6-32NC    | 2             | H-3           | 440-7036  |
| 6-32NC    | 2             | H-7           | 440-7038  |
| 6-40NF    | 2             | H-3           | 440-7039  |
| 6-40NF    | 2             | H-2           | 440-7040  |
| 6-48      | 2             | H-3           | 440-7041  |
| 8-32NC    | 2             | H-2           | 440-7042  |
| 8-32NC    | 2             | H-3           | 440-7044  |
| 8-32NC    | 3             | H-3           | 440-7046  |
| 8-36NF    | 2             | H-2           | 440-7047  |
| 8-36NF    | 3             | H-3           | 440-7048  |
| 8-40      | 2             | H-3           | 440-7049  |
| 10-24NC   | 2             | H-2           | 440-7050  |
| 10-24NC   | 3             | H-3           | 440-7052  |
| 10-24NC   | 2             | H-7           | 440-7054  |
| 10-32NF   | 2             | H-2           | 440-7056  |
| 10-32NF   | 3             | H-2           | 440-7058  |
| 10-32NF   | 2             | H-7           | 440-7060  |
| 10-40     | 2             | H-3           | 440-7061  |
| 12-24NC   | 3             | H-3           | 440-7062  |
| 12-28NF   | 3             | H-3           | 440-7064  |
| 12-32     | 2             | H-3           | 440-7065  |
| 1/4"-20NC | 2             | H-2           | 440-7066  |
| 1/4"-20NC | 2             | H-3           | 440-7068  |
| 1/4"-20NC | 2             | H-5           | 440-7070  |
| 1/4"-20NC | 3             | H-2           | 440-7072  |
| 1/4"-20NC | 3             | H-3           | 440-7074  |
| 1/4"-20NC | 3             | H-5           | 440-7076  |
| 1/4"-24   | 2             | H-3           | 440-7077  |
| 1/4"-28NF | 2             | H-2           | 440-7078  |
| 1/4"-32   | 2             | H-3           | 440-7079  |
| 1/4"-28NF | 2             | H-3           | 440-7080  |
| 1/4"-28NF | 2             | H-2           | 440-7082  |
| 1/4"-28NF | 3             | H-3           | 440-7084  |
| 1/4"-40   | 2             | H-3           | 440-7085  |

| Tap Size    | No. of Flutes | Thread Limits | Order No. |
|-------------|---------------|---------------|-----------|
| 5/16"-18NC  | 2             | H-2           | 440-7086  |
| 5/16"-18NC  | 2             | H-3           | 440-7088  |
| 5/16"-18NC  | 2             | H-5           | 440-7090  |
| 5/16"-18NC  | 3             | H-2           | 440-7092  |
| 5/16"-18NC  | 3             | H-3           | 440-7094  |
| 5/16"-18NC  | 3             | H-5           | 440-7096  |
| 5/16"-18NC  | 3             | H-5           | 440-7097  |
| 5/16"-24NF  | 2             | H-2           | 440-7098  |
| 5/16"-24NF  | 2             | H-3           | 440-7100  |
| 5/16"-24NF  | 3             | H-3           | 440-7102  |
| 5/16"-32    | 2             | H-3           | 440-7103  |
| 3/8"-16NC   | 3             | H-2           | 440-7104  |
| 3/8"-16NC   | 3             | H-3           | 440-7106  |
| 3/8"-16NC   | 3             | H-5           | 440-7108  |
| 3/8"-24NF   | 3             | H-2           | 440-7110  |
| 3/8"-24NF   | 3             | H-3           | 440-7112  |
| 3/8"-32     | 3             | H-3           | 440-7113  |
| 7/16"-14NC  | 3             | H-3           | 440-7114  |
| 7/16"-14NC  | 3             | H-5           | 440-7116  |
| 7/16"-20NF  | 3             | H-3           | 440-7118  |
| 7/16"-20NF  | 3             | H-5           | 440-7120  |
| 1/2"-13NC   | 3             | H-3           | 440-7122  |
| 1/2"-13NC   | 3             | H-5           | 440-7124  |
| 1/2"-20NF   | 3             | H-3           | 440-7126  |
| 1/2"-24     | 3             | H-3           | 440-7127  |
| 1/2"-20NF   | 3             | H-5           | 440-7128  |
| 1/2"-28     | 3             | H-3           | 440-7129  |
| 9/16"-12NC  | 3             | H-3           | 440-7130  |
| 9/16"-12NC  | 3             | H-5           | 440-7132  |
| 9/16"-18NF  | 3             | H-3           | 440-7134  |
| 9/16"-18NF  | 3             | H-5           | 440-7136  |
| 5/8"-11NC   | 3             | H-3           | 440-7138  |
| 5/8"-11NC   | 3             | H-5           | 440-7140  |
| 5/8"-18NF   | 3             | H-3           | 440-7142  |
| 5/8"-18NF   | 3             | H-5           | 440-7144  |
| 11/16"-11NS | 3             | H-3           | 440-7146  |
| 11/16"-16NS | 3             | H-3           | 440-7148  |
| 3/4"-10NC   | 3             | H-3           | 440-7150  |
| 3/4"-10NC   | 3             | H-5           | 440-7152  |
| 3/4"-16NF   | 3             | H-3           | 440-7154  |
| 3/4"-16NF   | 3             | H-5           | 440-7156  |
| 7/8"-9NC    | 3             | H-4           | 440-7158  |
| 7/8"-9NC    | 4             | H-4           | 440-7160  |
| 7/8"-14NF   | 3             | H-4           | 440-7162  |
| 7/8"-14NF   | 4             | H-4           | 440-7164  |
| 1"-8NC      | 3             | H-3           | 440-7165  |
| 1"-8NC      | 3             | H-4           | 440-7166  |
| 1"-8NC      | 4             | H-4           | 440-7168  |
| 1"-12NF     | 4             | H-4           | 440-7170  |
| 1"-14NS     | 4             | H-4           | 440-7172  |
| 1"-12NF     | 3             | H-4           | 440-7174  |
| 1"-14NS     | 3             | H-4           | 440-7176  |

## Metric Spiral Point Taps

### HSS, Ground Thread

Spiral point is designed to push the chips ahead of the cutting action, helping to reduce loading in the flutes



| Size | Pitch | No. of Flute | Thread Limit | Order No. |
|------|-------|--------------|--------------|-----------|
| 1.60 | .35   | 2            | D-2          | 311-8009  |
| 1.60 | .35   | 2            | D-3          | 311-8010  |
| 1.80 | .35   | 2            | D-2          | 311-8020  |
| 2.0  | .40   | 2            | D-3          | 311-8030  |
| 2.0  | .45   | 2            | D-2          | 311-8034  |
| 2.2  | .45   | 2            | D-2          | 311-8040  |
| 2.50 | .45   | 2            | D-2          | 311-8049  |
| 2.50 | .45   | 2            | D-3          | 311-8050  |
| 2.60 | .45   | 2            | D-2          | 311-8052  |
| 3.0  | .35   | 2            | D-3          | 311-8055  |
| 3.0  | .50   | 2            | D-3          | 311-8060  |
| 3.0  | .60   | 2            | D-2          | 311-8064  |
| 3.5  | .50   | 2            | D-4          | 311-8069  |
| 3.5  | .60   | 2            | D-4          | 311-8070  |
| 4.0  | .50   | 2            | D-4          | 311-8080  |
| 4.0  | .70   | 2            | D-4          | 311-8090  |
| 4.0  | .75   | 2            | D-4          | 311-8094  |
| 4.0  | .80   | 2            | D-4          | 311-8096  |
| 4.5  | .75   | 2            | D-4          | 311-8100  |
| 5.0  | .50   | 2            | D-4          | 311-8110  |
| 5.0  | .75   | 2            |              | 311-8115  |
| 5.0  | .80   | 2            | D-2          | 311-8118  |
| 5.0  | .80   | 2            | D-4          | 311-8120  |
| 5.0  | .90   | 2            | D-3          | 311-8122  |
| 5.0  | 1.0   | 2            | D-4          | 311-8125  |
| 6.0  | .75   | 2            | D-3          | 311-8129  |
| 6.0  | .75   | 2            | D-4          | 311-8130  |
| 6.0  | 1.00  | 2            | D-5          | 311-8140  |
| 6.3  | 1.00  | 2            | D-5          | 311-8150  |
| 7.0  | .50   | 2            |              | 311-8151  |
| 7.0  | .75   | 2            | D-5          | 311-8152  |
| 7.0  | 1.00  | 2            | D-5          | 311-8155  |
| 7.0  | 1.00  | 3            |              | 311-8160  |
| 8.0  | .75   | 2            | D-5          | 311-8170  |
| 8.0  | .75   | 4            | D-3          | 311-8172  |
| 8.0  | 1.00  | 2            | D-3          | 311-8178  |
| 8.0  | 1.00  | 2            | D-5          | 311-8180  |
| 8.0  | 1.00  | 3            | D-5          | 311-8182  |
| 8.0  | 1.25  | 2            | D-3          | 311-8188  |
| 8.0  | 1.25  | 2            | D-5          | 311-8190  |
| 9.0  | .50   |              |              | 311-8191  |
| 9.0  | 1.00  | 3            | D-5          | 311-8192  |
| 9.0  | 1.25  | 2            | D-5          | 311-8193  |
| 9.0  | 1.25  | 3            | D-5          | 311-8194  |
| 10.0 | 1.00  | 3            | D-5          | 311-8200  |
| 10.0 | 1.00  | 3            | D-6          | 311-8202  |
| 10.0 | 1.25  | 3            | D-3          | 311-8209  |
| 10.0 | 1.25  | 3            | D-5          | 311-8210  |
| 10.0 | 1.50  | 3            | D-6          | 311-8220  |
| 11.0 | 1.50  | 3            | D-5          | 311-8222  |
| 12.0 | 1.00  | 3            |              | 311-8229  |
| 12.0 | 1.25  | 3            | D-5          | 311-8230  |
| 12.0 | 1.5   | 3            | D-6          | 311-8240  |
| 12.0 | 1.75  | 3            | D-6          | 311-8250  |
| 12.5 | 1.75  | 3            | D-6          | 311-8252  |
| 14.0 | 1.00  | 3            | D-5          | 311-8260  |
| 14.0 | 1.25  | 3            | D-5          | 311-8270  |
| 14.0 | 1.25  | 3            | D-7          | 311-8272  |
| 14.0 | 1.50  | 3            | D-3          | 311-8278  |
| 14.0 | 1.50  | 3            | D-6          | 311-8280  |
| 14.0 | 1.50  | 3            | D-7          | 311-8282  |
| 14.0 | 2.00  | 3            | D-7          | 311-8290  |
| 16.0 | 1.50  | 3            | D-6          | 311-8300  |
| 16.0 | 2.00  | 3            | D-7          | 311-8310  |
| 18.0 | 1.00  | 4            | D-4          | 311-8317  |
| 18.0 | 1.50  |              |              | 311-8318  |
| 18.0 | 2.0   |              |              | 311-8319  |
| 18.0 | 2.50  | 3            | D-7          | 311-8320  |
| 20.0 | 1.50  |              |              | 311-8328  |
| 20.0 | 2.50  | 3            | D-7          | 311-8330  |

## Spiral Point Taps-Plug Style

### High Speed Steel, Ground Thread

- Designed for greater strength which enables higher speeds and faster production.
- Shearing action of the point pushes chips ahead of the cutting action to reduce loading of the flutes.



| Size       | No. of Flute | Thread Limit | Order No. |
|------------|--------------|--------------|-----------|
| 0-80NF     | 2            | H-1          | 311-9002  |
| 0-80NF     | 2            | H-2          | 311-9004  |
| 1-64NC     | 2            | H-1          | 311-9006  |
| 1-64NC     | 2            | H-2          | 311-9008  |
| 1-72NF     | 2            | H-1          | 311-9010  |
| 1-72NF     | 2            | H-2          | 311-9012  |
| 2-56NC     | 2            | H-2          | 311-9014  |
| 2-64NF     | 2            | H-2          | 311-9016  |
| 3-48NC     | 2            | H-2          | 311-9018  |
| 3-56NF     | 2            | H-2          | 311-9020  |
| 4-40NC     | 2            | H-2          | 311-9022  |
| 4-40NC     | 2            | H-7          | 311-9024  |
| 4-48NF     | 2            | H-2          | 311-9026  |
| 5-40NC     | 2            | H-2          | 311-9028  |
| 5-40NC     | 2            | H-7          | 311-9030  |
| 5-44NF     | 2            | H-2          | 311-9032  |
| 6-32NC     | 2            | H-2          | 311-9034  |
| 6-32NC     | 2            | H-3          | 311-9036  |
| 6-32NC     | 2            | H-7          | 311-9038  |
| 6-40NF     | 2            | H-2          | 311-9040  |
| 8-32NC     | 2            | H-2          | 311-9042  |
| 8-32NC     | 2            | H-3          | 311-9044  |
| 8-32NC     | 2            | H-7          | 311-9046  |
| 8-36NF     | 2            | H-2          | 311-9048  |
| 10-24NC    | 2            | H-2          | 311-9050  |
| 10-24NC    | 2            | H-3          | 311-9052  |
| 10-24NC    | 2            | H-7          | 311-9054  |
| 10-32NF    | 2            | H-2          | 311-9056  |
| 10-32NF    | 2            | H-3          | 311-9058  |
| 10-32NF    | 2            | H-7          | 311-9060  |
| 12-24NC    | 2            | H-3          | 311-9062  |
| 12-28NF    | 2            | H-3          | 311-9064  |
| 1/4-20NC   | 2            | H-2          | 311-9066  |
| 1/4-20NC   | 2            | H-3          | 311-9068  |
| 1/4-20NC   | 2            | H-5          | 311-9070  |
| 1/4-20NC   | 3            | H-2          | 311-9072  |
| 1/4-20NC   | 3            | H-3          | 311-9074  |
| 1/4-20NC   | 3            | H-5          | 311-9076  |
| 1/4-28NF   | 2            | H-2          | 311-9078  |
| 1/4-28NF   | 2            | H-3          | 311-9080  |
| 1/4-28NF   | 3            | H-2          | 311-9082  |
| 1/4-28NF   | 3            | H-3          | 311-9084  |
| 5/16-18NC  | 2            | H-2          | 311-9086  |
| 5/16-18NC  | 2            | H-3          | 311-9088  |
| 5/16"-18NC | 2            | H-5          | 311-9090  |
| 5/16-18NC  | 3            | H-2          | 311-9092  |
| 5/16-18NC  | 3            | H-3          | 311-9094  |
| 5/16-18NC  | 3            | H-5          | 311-9096  |
| 5/16-24NF  | 2            | H2           | 311-9098  |
| 5/16-24NF  | 2            | H3           | 311-9100  |
| 5/16-24NF  | 3            | H3           | 311-9102  |
| 3/8-16NC   | 3            | H2           | 311-9104  |
| 3/8-16NC   | 3            | H3           | 311-9106  |

## Spiral Point Taps-Plug Style Continued

### High Speed Steel, Ground Thread

- Designed for greater strength which enable higher speeds and faster production.
- Shearing action of the point pushes chips ahead of the cutting action to reduce loading of the flutes.



| Size      | No. of Flute | Thread Limit | Order No. |
|-----------|--------------|--------------|-----------|
| 3/8-16NC  | 3            | H5           | 311-9108  |
| 3/8-24NF  | 3            | H2           | 311-9110  |
| 3/8-24NF  | 3            | H3           | 311-9112  |
| 7/16-14NC | 3            | H3           | 311-9114  |
| 7/16-14NC | 3            | H5           | 311-9116  |
| 7/16-20NF | 3            | H3           | 311-9118  |
| 7/16-20NF | 3            | H5           | 311-9120  |
| 1/2-13NC  | 3            | H3           | 311-9122  |
| 1/2-13NC  | 3            | H5           | 311-9124  |
| 1/2-20NF  | 3            | H3           | 311-9126  |
| 1/2-20NF  | 3            | H5           | 311-9128  |
| 9/16-12NC | 3            | H3           | 311-9130  |
| 9/16-12NC | 3            | H5           | 311-9132  |
| 9/16-18NF | 3            | H3           | 311-9134  |
| 9/16-18NF | 3            | H5           | 311-9136  |
| 5/8-11NC  | 3            | H3           | 311-9138  |
| 5/8-11NC  | 3            | H5           | 311-9140  |
| 5/8-18NF  | 3            | H3           | 311-9142  |

| Size       | No. of Flute | Thread Limit | Order No. |
|------------|--------------|--------------|-----------|
| 5/8-18NF   | 3            | H5           | 311-9144  |
| 11/16-11NS | 3            | H3           | 311-9146  |
| 11/16-16NS | 3            | H3           | 311-9148  |
| 3/4-10NC   | 3            | H3           | 311-9150  |
| 3/4-10NC   | 3            | H5           | 311-9152  |
| 3/4-16NF   | 3            | H3           | 311-9154  |
| 3/4-16NF   | 3            | H5           | 311-9156  |
| 7/8-9NC    | 3            | H4           | 311-9158  |
| 7/8-9NC    | 4            | H4           | 311-9160  |
| 7/8-14NF   | 3            | H4           | 311-9162  |
| 7/8-14NF   | 4            | H4           | 311-9164  |
| 1-8NC      | 3            | H4           | 311-9166  |
| 1-8NC      | 4            | H4           | 311-9168  |
| 1-12NF     | 4            | H4           | 311-9170  |
| 1-14NS     | 4            | H4           | 311-9172  |
| 1-12NF     | 3            | H4           | 311-9174  |
| 1-14NS     | 3            | H4           | 311-9176  |

## + .005" Oversized Taps

### High Speed Steel, Ground Thread

#### Plug Type



| Size   | No. of Flute | Order No. | Size    | No. of Flute | Order No. | Size    | No. of Flute | Order No. | Size   | No. of Flute | Order No. |
|--------|--------------|-----------|---------|--------------|-----------|---------|--------------|-----------|--------|--------------|-----------|
| 4-40   | 3            | 312-7030  | 1/4-28  | 4            | 312-7006  | 1/2"-13 | 4            | 312-7013  | 3/4-16 | 4            | 312-7020  |
| 5-40   | 3            | 312-7035  | 5/16-18 | 4            | 312-7007  | 1/2-20  | 4            | 312-7014  | 7/8-9  | 4            | 312-7021  |
| 6-32   | 3            | 312-7001  | 5/16-24 | 4            | 312-7008  | 9/16-12 | 4            | 312-7015  | 7/8-14 | 4            | 312-7022  |
| 8-32   | 4            | 312-7002  | 3/8-16  | 4            | 312-7009  | 9/16-18 | 4            | 312-7016  | 1-8    | 4            | 312-7023  |
| 10-24  | 4            | 312-7003  | 3/8-24  | 4            | 312-7010  | 5/8-11  | 4            | 312-7017  | 1-12   | 4            | 312-7024  |
| 10-32  | 4            | 312-7004  | 7/16-14 | 4            | 312-7011  | 5/8-18  | 4            | 312-7018  | 1-14   | 4            | 312-7025  |
| 1/4-20 | 4            | 312-7005  | 7/16-20 | 4            | 312-7012  | 3/4-10  | 4            | 312-7019  |        |              |           |

### Spiral Point Plug Type



| Size   | No. of Flute | Order No. | Size     | No. of Flute | Order No. | Size    | No. of Flute | Order No. | Size   | No. of Flute | Order No. |
|--------|--------------|-----------|----------|--------------|-----------|---------|--------------|-----------|--------|--------------|-----------|
| 4-40   | 2            | 312-7102  | 1/4-28   | 2            | 312-7116  | 1/2-13  | 3            | 312-7130  | 3/4-10 | 3            | 312-7142  |
| 5-40   | 2            | 312-7104  | 5/16-18  | 2            | 312-7118  | 1/2-20  | 3            | 312-7132  | 3/4-16 | 3            | 312-7144  |
| 6-32   | 2            | 312-7106  | 5/16-24  | 2            | 312-7120  | 9/16-12 | 3            | 312-7134  | 7/8-9  | 3            | 312-7146  |
| 8-32   | 2            | 312-7108  | 3/8-16   | 3            | 312-7122  | 9/16-18 | 3            | 312-7136  | 7/8-14 | 3            | 312-7148  |
| 10-24  | 2            | 312-7110  | 3/8-24   | 3            | 312-7124  | 5/8-11  | 3            | 312-7138  | 1-8    | 3            | 312-7150  |
| 10-32  | 2            | 312-7112  | 7/16-14  | 3            | 312-7126  | 5/8-18  | 3            | 312-7140  |        |              |           |
| 1/4-20 | 2            | 312-7114  | 7/16"-20 | 3            | 312-7128  |         |              |           |        |              |           |

## TiN Coated Hand Taps-Plug Style

### Machine Screw Sizes

| Size | No. of Flute | Thread Length | Order No. | Size  | No. of Flute | Thread Length | Order No. |
|------|--------------|---------------|-----------|-------|--------------|---------------|-----------|
| 0-80 | 2            | 5/16"         | 311-1979  | 8-32  | 4            | 3/4"          | 311-2023  |
| 1-64 | 2            | 3/8           | 311-1982  | 8-36  | 4            | 3/4           | 311-2024  |
| 1-72 | 2            | 3/8           | 311-1985  | 10-24 | 4            | 7/8           | 311-2027  |
| 2-56 | 3            | 7/16          | 311-1988  | 10-32 | 4            | 7/8           | 311-2030  |
| 2-64 | 3            | 7/16          | 311-1993  | 12-24 | 4            | 15/16         | 311-2033  |
| 3-48 | 3            | 1/2           | 311-1994  | 12-28 | 4            | 15/16         | 311-2036  |
| 3-56 | 3            | 1/2           | 311-1997  |       |              |               |           |
| 4-36 | 3            | 9/16          | 311-2001  |       |              |               |           |
| 4-40 | 3            | 5/8           | 311-2003  |       |              |               |           |
| 4-48 | 3            | 9/16          | 311-2006  |       |              |               |           |
| 5-40 | 3            | 5/8           | 311-2009  |       |              |               |           |
| 5-44 | 3            | 5/8           | 311-2012  |       |              |               |           |
| 6-32 | 3            | 11/16         | 311-2015  |       |              |               |           |
| 6-40 | 3            | 11/16         | 311-2018  |       |              |               |           |

### Fractional Sizes



| Size    | No. of Flute | Thread Length | Order No. | Size     | No. of Flute | Thread Length | Order No. |
|---------|--------------|---------------|-----------|----------|--------------|---------------|-----------|
| 1/4"-20 | 4            | 1"            | 311-2039  | 3/4"-10  | 4            | 2"            | 311-2074  |
| 1/4-28  | 4            | 1             | 311-2042  | 3/4-16   | 4            | 2             | 311-2078  |
| 5/16-18 | 4            | 1-1/8         | 311-2045  | 7/8-9    | 4            | 2-7/32        | 311-2083  |
| 5/16-24 | 4            | 1-1/8         | 311-2048  | 7/8-14   | 4            | 2-7/32        | 311-2084  |
| 3/8-16  | 4            | 1-1/4         | 311-2053  | 1-8      | 4            | 2-1/2         | 311-2087  |
| 3/8-24  | 4            | 1-1/4         | 311-2054  | 1-12     | 4            | 2-1/2         | 311-2090  |
| 7/16-14 | 4            | 1-7/16        | 311-2057  | 1-1/8-7  | 4            | 2-9/16        | 311-2093  |
| 7/16-20 | 4            | 1-7/16        | 311-2060  | 1-1/8-12 | 4            | 2-9/16        | 311-2096  |
| 1/2-13  | 4            | 1-21/32       | 311-2063  | 1-1/4-7  | 4            | 2-9/16        | 311-2099  |
| 1/2-20  | 4            | 1-21/32       | 311-2066  | 1-1/4-12 | 4            | 2-9/16        | 311-2102  |
| 9/16-12 | 4            | 1-21/32       | 311-2067  | 1-3/8-6  | 6            | 3             | 311-2105  |
| 9/16-18 | 4            | 1-21/32       | 311-2068  | 1-3/8-12 | 6            | 3             | 311-2108  |
| 5/8-11  | 4            | 1-13/16       | 311-2069  | 1-1/2-6  | 4            | 3             | 311-2113  |
| 5/8-18  | 4            | 1-13/16       | 311-2072  | 1-1/2-12 | 6            | 3             | 311-2114  |

## Special Thread Hand Taps-Plug

High Speed Steel, Ground Thread



| Size    | Order No. | Size      | Order No. | Size       | Order No. | Size        | Order No. | Size        | Order No. |
|---------|-----------|-----------|-----------|------------|-----------|-------------|-----------|-------------|-----------|
| 4-32    | 311-3500  | 5/16"-16  | 311-3720  | 3/4"-14    | 311-3806  | 1-1/4"-20   | 311-4772  | 1-7/8"-20   | 311-4878  |
| 4-36    | 311-3501  | 5/16-20   | 311-4606  | 3/4-18     | 311-4672  | 1-1/4-24    | 311-4773  | 1-15/16-12  | 311-4880  |
| 4-44    | 311-3503  | 5/16-27   | 311-3722  | 3/4-20*    | 311-4674  | 1-1/4-27    | 311-3858  | 1-15/16-16  | 311-4882  |
| 4-56    | 311-3506  | 5/16-28   | 311-3724  | 3/4-24     | 311-4676  | 1-1/4-28    | 311-3860  | 1-15/16-18  | 311-3892  |
| 4-60    | 311-3509  | 5/16-30   | 311-3726  | 3/4-26     | 311-3808  | 1-1/4-32    | 311-4774  | 1-15/16-20  | 311-3894  |
| 5-32    | 311-3512  | 5/16-32*  | 311-4608  | 3/4-27     | 311-4678  | 1-1/4-40    | 311-4775  | 2"-4-1/2    | 311-4884  |
| 5-36    | 311-3515  | 5/16-36   | 311-3728  | 3/4-28     | 311-4679  | 1-5/16-8    | 311-4776  | 2"-6        | 311-4886  |
| 5-48    | 311-3518  | 5/16-40   | 311-4610  | 3/4-32     | 311-4680  | 1-5/16-12   | 311-4778  | 2"-8        | 311-4888  |
| 5-60    | 311-3521  | 5/16-48   | 311-3730  | 3/4-36     | 311-3810  | 1-5/16-16   | 311-4780  | 2"-10       | 311-4890  |
| 6-36    | 311-3524  | 5/16-56   | 311-3732  | 3/4-40     | 311-3812  | 1-5/16-18   | 311-4782  | 2"-12       | 311-4892  |
| 6-48    | 311-3527  | 3/8-14    | 311-4612  | 13/16-10   | 311-3814  | 1-5/16-20   | 311-4783  | 2"-14       | 311-4894  |
| 6-56    | 311-3530  | 3/8-18    | 311-4614  | 13/16-12   | 311-3816  | 1-5/16-24   | 311-3862  | 2"-16       | 311-4896  |
| 6-60    | 311-3533  | 3/8-20    | 311-4616  | 13/16-16   | 311-4682  | 1-5/16-32   | 311-3864  | 2"-18       | 311-3896  |
| 8-24    | 311-3536  | 3/8-26    | 311-3734  | 13/16-18   | 311-3816  | 1-3/8-8     | 311-4784  | 2"-20       | 311-4898  |
| 8-30    | 311-3539  | 3/8-27    | 311-3736  | 13/16-20*  | 311-4684  | 1-3/8-10    | 311-4786  | 2-1/8-8     | 311-4900  |
| 8-40    | 311-3542  | 3/8-28    | 311-3738  | 13/16-24   | 311-3818  | 1-3/8-14    | 311-4788  | 2-1/8-10    | 311-4901  |
| 8-48    | 311-3545  | 3/8-32*   | 311-4618  | 13/16-30   | 311-3822  | 1-3/8-16    | 311-4790  | 2-1/8-12    | 311-4902  |
| 8-56    | 311-3548  | 3/8-36    | 311-3740  | 13/16-32   | 311-4686  | 1-3/8-18*   | 311-4792  | 2-1/8-16    | 311-4903  |
| 8-60    | 311-3551  | 3/8-40    | 311-3742  | 7/8-10     | 311-3824  | 1-3/8-20    | 311-4794  | 2-1/8-18    | 311-4904  |
| 8-64    | 311-3552  | 3/8-48    | 311-3744  | 7/8-12     | 311-4688  | 1-3/8-24    | 311-4795  | 2-1/8-20    | 311-4905  |
| 8-80    | 311-3553  | 3/8-56    | 311-3746  | 7/8-16     | 311-4690  | 1-3/8-32    | 311-3866  | 2-3/16-20   | 311-4906  |
| 10-28   | 311-3554  | 7/16-12   | 311-3748  | 7/8-18     | 311-4692  | 1-3/8-40    | 311-3868  | 2-1/4-4-1/2 | 311-4908  |
| 10-30   | 311-3557  | 7/16-16   | 311-3750  | 7/8-20*    | 311-4694  | 1-7/16-8    | 311-4796  | 2-1/4-6     | 311-3898  |
| 10-36   | 311-3560  | 7/16-18   | 311-3752  | 7/8-24     | 311-3826  | 1-7/16-12   | 311-4797  | 2-1/4-8     | 311-4910  |
| 10-40   | 311-3563  | 7/16-24   | 311-4620  | 7/8-30     | 311-3828  | 1-7/16-16   | 311-4798  | 2-1/4-10    | 311-3900  |
| 10-46   | 311-3566  | 7/16-27   | 311-4622  | 7/8-32     | 311-3830  | 1-7/16-18   | 311-4800  | 2-1/4-12    | 311-4912  |
| 10-48   | 311-3569  | 7/16-28*  | 311-3754  | 7/8-36     | 311-3832  | 1-7/16-36   | 311-3870  | 2-1/4-14    | 311-4914  |
| 10-56   | 311-3572  | 7/16-32   | 311-3756  | 7/8-40     | 311-3834  | 1-1/2-8     | 311-4802  | 2-1/4-16    | 311-4915  |
| 10-60   | 311-3575  | 7/16-36   | 311-3758  | 15/16-8    | 311-3836  | 1-1/2-10    | 311-4804  | 2-1/4-18    | 311-4916  |
| 10-64   | 311-3576  | 7/16-40   | 311-3760  | 15/16-12   | 311-4696  | 1-1/2-14    | 311-4805  | 2-1/4-20    | 311-4917  |
| 10-80   | 311-3577  | 7/16-48   | 311-3762  | 15/16-16   | 311-4698  | 1-1/2-16    | 311-4806  | 2-3/8-4-1/2 | 311-4918  |
| 12-30   | 311-3578  | 15/32-32  | 311-4624  | 15/16-18   | 311-4699  | 1-1/2-18*   | 311-4808  | 2-3/8-8     | 311-4920  |
| 12-32   | 311-3581  | 1/2-12    | 311-4626  | 15/16-20*  | 311-4700  | 1-1/2-20    | 311-4810  | 2-3/8-10    | 311-3902  |
| 12-36   | 311-3584  | 1/2-14    | 311-4628  | 15/16-24   | 311-3838  | 1-1/2-24    | 311-4811  | 2-3/8-12    | 311-4922  |
| 12-40   | 311-3587  | 1/2-16    | 311-4630  | 15/16-27   | 311-4702  | 1-1/2-28    | 311-3872  | 2-3/8-14    | 311-4924  |
| 12-48   | 311-3590  | 1/2-18    | 311-4632  | 15/16-30   | 311-3840  | 1-1/2-32    | 311-3874  | 2-3/8-16    | 311-3906  |
| 12-56   | 311-3593  | 1/2-24    | 311-4634  | 15/16-32   | 311-4704  | 1-9/16-8    | 311-3876  | 2-3/8-18    | 311-3908  |
| 1/16-72 | 311-3596  | 1/2-27    | 311-3764  | 1"-10      | 311-4706  | 1-9/16-12   | 311-4812  | 2-3/8-20    | 311-3910  |
| 3/32-36 | 311-3599  | 1/2-28*   | 311-4633  | 1"-16      | 311-4708  | 1-9/16-16   | 311-4813  | 2-1/2-4     | 311-4926  |
| 3/32-48 | 311-3602  | 1/2-30    | 311-3766  | 1"-18      | 311-4710  | 1-9/16-18   | 311-4814  | 2-1/2-6     | 311-4928  |
| 3/32-50 | 311-3605  | 1/2-32    | 311-4636  | 1"-20*     | 311-4712  | 1-9/16-20   | 311-4816  | 2-1/2-8     | 311-4930  |
| 3/32-56 | 311-3608  | 1/2-36    | 311-3768  | 1"-24      | 311-3842  | 1-5/8-5     | 311-3878  | 2-1/2-12    | 311-4932  |
| 1/8-36  | 311-3611  | 1/2-40    | 311-3770  | 1"-32      | 311-4714  | 1-5/8-5-1/2 | 311-4818  | 2-1/2-16    | 311-4934  |
| 1/8-40  | 311-3614  | 1/2-48    | 311-3772  | 1"-36      | 311-3844  | 1-5/8-8     | 311-4820  | 2-1/2-18    | 311-4936  |
| 5/32-24 | 311-3617  | 9/16-10   | 311-4638  | 1"-40      | 311-3846  | 1-5/8-10    | 311-4822  | 2-1/2-20    | 311-3914  |
| 5/32-26 | 311-3620  | 9/16-14   | 311-3774  | 1"-48      | 311-3848  | 1-5/8-12    | 311-4824  | 2-5/8-8     | 311-4938  |
| 5/32-32 | 311-3623  | 9/16-16   | 311-4640  | 1-1/16-8   | 311-4716  | 1-5/8-14    | 311-4826  | 2-5/8-12    | 311-4940  |
| 5/32-36 | 311-3626  | 9/16-20   | 311-4642  | 1-1/16-10  | 311-4718  | 1-5/8-16    | 311-4828  | 2-5/8-16    | 311-4942  |
| 5/32-38 | 311-3629  | 9/16-24*  | 311-4644  | 1-1/16-12  | 311-4720  | 1-5/8-18    | 311-4830  | 2-5/8-18    | 311-4944  |
| 5/32-40 | 311-3632  | 9/16-27   | 311-3776  | 1-1/16-14  | 311-4722  | 1-5/8-20    | 311-4832  | 2-3/4-4     | 311-4946  |
| 5/32-64 | 311-3635  | 9/16-28   | 311-3778  | 1-1/16-16  | 311-4724  | 1-5/8-24    | 311-4834  | 2-3/4-8     | 311-4948  |
| 3/16-20 | 311-3638  | 9/16-32   | 311-3780  | 1-1/16-18* | 311-4726  | 1-11/16-12  | 311-4836  | 2-3/4-12    | 311-4950  |
| 3/16-24 | 311-3641  | 9/16-36   | 311-3782  | 1-1/16-20  | 311-4728  | 1-11/16-16  | 311-4837  | 2-3/4-16    | 311-4952  |
| 3/16-28 | 311-3644  | 9/16-40   | 311-3784  | 1-1/16-24  | 311-4730  | 1-11/16-18  | 311-4838  | 2-3/4-18    | 311-4954  |
| 3/16-32 | 311-3647  | 5/8-10    | 311-3786  | 1-1/16-32  | 311-4732  | 1-11/16-20  | 311-4839  | 2-7/8-8     | 311-4956  |
| 3/16-36 | 311-3650  | 5/8-12    | 311-4646  | 1-1/8-8    | 311-4734  | 1-11/16-36  | 311-3880  | 2-7/8-12    | 311-4958  |
| 7/32-24 | 311-3653  | 5/8-14    | 311-3788  | 1-1/8-10   | 311-4736  | 1-3/4-5     | 311-4840  | 2-7/8-14    | 311-3916  |
| 7/32-28 | 311-3656  | 5/8-16    | 311-4648  | 1-1/8-14   | 311-3850  | 1-3/4-6     | 311-4842  | 2-7/8-16    | 311-4960  |
| 7/32-32 | 311-3659  | 5/8-20    | 311-4650  | 1-1/8-16   | 311-4738  | 1-3/4-8     | 311-4844  | 2-7/8-18    | 311-3918  |
| 7/32-40 | 311-3662  | 5/8-24*   | 311-4652  | 1-1/8-18*  | 311-4740  | 1-3/4-10    | 311-4846  | 3"-4        | 311-4962  |
| 7/32-48 | 311-3665  | 5/8-27    | 311-3790  | 1-1/8-20   | 311-3852  | 1-3/4-12    | 311-4848  | 3"-8        | 311-4964  |
| 1/4-14  | 311-3668  | 5/8-28    | 311-3791  | 1-1/8-24   | 311-3854  | 1-3/4-14    | 311-3884  | 3"-12       | 311-4966  |
| 1/4-16  | 311-3671  | 5/8-32    | 311-4654  | 1-1/8-27   | 311-3856  | 1-3/4-16    | 311-4850  | 3"-16       | 311-3920  |
| 1/4-18  | 311-3674  | 5/8-36    | 311-4656  | 1-1/8-32   | 311-4742  | 1-3/4-18    | 311-4852  | 3"-18       | 311-3922  |
| 1/4-24  | 311-4600  | 5/8-40    | 311-3792  | 1-3/16-8   | 311-4744  | 1-3/4-20    | 311-4854  | 3-1/4-4     | 311-4968  |
| 1/4-27  | 311-3700  | 5/8-48    | 311-3794  | 1-3/16-10  | 311-4746  | 1-3/4-24    | 311-4856  | 3-1/4-8     | 311-4970  |
| 1/4-30  | 311-3702  | 11/16-11  | 311-4658  | 1-3/16-12  | 311-4748  | 1-13/16-8   | 311-4858  | 3-1/4-12    | 311-4972  |
| 1/4-32* | 311-4602  | 11/16-12  | 311-3796  | 1-3/16-14  | 311-4750  | 1-13/16-16  | 311-4860  | 3-1/2-4     | 311-4974  |
| 1/4-36  | 311-3704  | 11/16-16  | 311-4660  | 1-3/16-16  | 311-4752  | 1-13/16-18  | 311-4862  | 3-1/2-8     | 311-4976  |
| 1/4-40  | 311-4604  | 11/16-18  | 311-4662  | 1-3/16-18* | 311-4754  | 1-13/16-20  | 311-4863  | 3-1/2-12    | 311-4978  |
| 1/4-48  | 311-3706  | 11/16-20  | 311-4664  | 1-3/16-20  | 311-4756  | 1-13/16-28  | 311-3890  | 3-3/4-4     | 311-4980  |
| 1/4-56  | 311-3708  | 11/16-24* | 311-4666  | 1-3/16-24  | 311-4758  | 1-7/8-5     | 311-4864  | 3-3/4-8     | 311-3924  |
| 1/4-60  | 311-3710  | 11/16-27  | 311-3798  | 1-3/16-32  | 311-4760  | 1-7/8-7     | 311-4866  | 3-3/4-12    | 311-4982  |
| 1/4-80  | 311-3711  | 11/16-28  | 311-3800  | 1-1/4-8    | 311-4762  | 1-7/8-8     | 311-4868  | 4"-4        | 311-3926  |
| 9/32-18 | 311-3712  | 11/16-32  | 311-4668  | 1-1/4-10   | 311-4764  | 1-7/8-10    | 311-4870  | 4"-8        | 311-4984  |
| 9/32-24 | 311-3714  | 11/16-36  | 311-3802  | 1-1/4-14   | 311-4766  | 1-7/8-12    | 311-4872  | 4"-12       | 311-4986  |
| 9/32-32 | 311-3716  | 11/16-40  | 311-3804  | 1-1/4-16   | 311-4768  | 1-7/8-16    | 311-4874  | 4"-16       | 311-3928  |
| 5/16-12 | 311-3718  | 3/4-12    | 311-4670  | 1-1/4-18*  | 311-4770  | 1-7/8-18    | 311-4876  |             |           |

\* NEF Thread

## Special Thread Hand Taps-Bottoming

High Speed Steel, Ground Thread

\* NEF Thread



| Size    | Order No. | Size      | Order No. | Size       | Order No. | Size        | Order No. | Size        | Order No. |
|---------|-----------|-----------|-----------|------------|-----------|-------------|-----------|-------------|-----------|
| 4-32    | 313-3500  | 5/16"-16  | 313-3720  | 3/4"-14    | 313-3806  | 1-1/4"-20   | 313-4772  | 1-7/8"-20   | 313-4878  |
| 4-36    | 313-3501  | 5/16-20   | 313-4606  | 3/4-18     | 313-4672  | 1-1/4-24    | 313-4773  | 1-15/16-12  | 313-4880  |
| 4-44    | 313-3503  | 5/16-27   | 313-3722  | 3/4-20*    | 313-4674  | 1-1/4-27    | 313-3858  | 1-15/16-16  | 313-4882  |
| 4-56    | 313-3506  | 5/16-28   | 313-3724  | 3/4-24     | 313-4676  | 1-1/4-28    | 313-3860  | 1-15/16-18  | 313-3892  |
| 4-60    | 313-3509  | 5/16-30   | 313-3726  | 3/4-26     | 313-3808  | 1-1/4-32    | 313-4774  | 1-15/16-20  | 313-3894  |
| 5-32    | 313-3512  | 5/16-32*  | 313-4608  | 3/4-27     | 313-4678  | 1-1/4-40    | 313-4775  | 2"-4-1/2    | 313-4884  |
| 5-36    | 313-3515  | 5/16-36   | 313-3728  | 3/4-28     | 313-4679  | 1-5/16-8    | 313-4776  | 2"-6        | 313-4886  |
| 5-48    | 313-3518  | 5/16-40   | 313-4610  | 3/4-32     | 313-4680  | 1-5/16-12   | 313-4778  | 2"-8        | 313-4888  |
| 5-60    | 313-3521  | 5/16-48   | 313-3730  | 3/4-36     | 313-3810  | 1-5/16-16   | 313-4780  | 2"-10       | 313-4890  |
| 6-36    | 313-3524  | 5/16-56   | 313-3732  | 3/4-40     | 313-3812  | 1-5/16-18   | 313-4782  | 2"-12       | 313-4892  |
| 6-48    | 313-3527  | 3/8-14    | 313-4612  | 13/16-10   | 313-3814  | 1-5/16-20   | 313-4783  | 2"-14       | 313-4894  |
| 6-56    | 313-3530  | 3/8-18    | 313-4614  | 13/16-12   | 313-3816  | 1-5/16-24   | 313-3862  | 2"-16       | 313-4896  |
| 6-60    | 313-3533  | 3/8-20    | 313-4616  | 13/16-16   | 313-4682  | 1-5/16-32   | 313-3864  | 2"-18       | 313-3896  |
| 8-24    | 313-3536  | 3/8-26    | 313-3734  | 13/16-18   | 313-3816  | 1-3/8-8     | 313-4784  | 2"-20       | 313-4898  |
| 8-30    | 313-3539  | 3/8-27    | 313-3736  | 13/16-20*  | 313-4684  | 1-3/8-10    | 313-4786  | 2-1/8-8     | 313-4900  |
| 8-40    | 313-3542  | 3/8-28    | 313-3738  | 13/16-24   | 313-3818  | 1-3/8-14    | 313-4788  | 2-1/8-10    | 313-4901  |
| 8-48    | 313-3545  | 3/8-32*   | 313-4618  | 13/16-30   | 313-3822  | 1-3/8-16    | 313-4790  | 2-1/8-12    | 313-4902  |
| 8-56    | 313-3548  | 3/8-36    | 313-3740  | 13/16-32   | 313-4686  | 1-3/8-18*   | 313-4792  | 2-1/8-16    | 313-4903  |
| 8-60    | 313-3551  | 3/8-40    | 313-3742  | 7/8-10     | 313-3824  | 1-3/8-20    | 313-4794  | 2-1/8-18    | 313-4904  |
| 8-64    | 313-3552  | 3/8-48    | 313-3744  | 7/8-12     | 313-4688  | 1-3/8-24    | 313-4795  | 2-1/8-20    | 313-4905  |
| 8-80    | 313-3553  | 3/8-56    | 313-3746  | 7/8-16     | 313-4690  | 1-3/8-32    | 313-3866  | 2-3/16-20   | 313-4906  |
| 10-28   | 313-3554  | 7/16-12   | 313-3748  | 7/8-18     | 313-4692  | 1-3/8-40    | 313-3868  | 2-1/4-4-1/2 | 313-4908  |
| 10-30   | 313-3557  | 7/16-16   | 313-3750  | 7/8-20*    | 313-4694  | 1-7/16-8    | 313-4796  | 2-1/4-6     | 313-3898  |
| 10-36   | 313-3560  | 7/16-18   | 313-3752  | 7/8-24     | 313-3826  | 1-7/16-12   | 313-4797  | 2-1/4-8     | 313-4910  |
| 10-40   | 313-3563  | 7/16-24   | 313-4620  | 7/8-30     | 313-3828  | 1-7/16-16   | 313-4798  | 2-1/4-10    | 313-3900  |
| 10-46   | 313-3566  | 7/16-27   | 313-4622  | 7/8-32     | 313-3830  | 1-7/16-18   | 313-4800  | 2-1/4-12    | 313-4912  |
| 10-48   | 313-3569  | 7/16-28*  | 313-3754  | 7/8-36     | 313-3832  | 1-7/16-36   | 313-3870  | 2-1/4-14    | 313-4914  |
| 10-56   | 313-3572  | 7/16-32   | 313-3756  | 7/8-40     | 313-3834  | 1-1/2-8     | 313-4802  | 2-1/4-16    | 313-4915  |
| 10-60   | 313-3575  | 7/16-36   | 313-3758  | 15/16-8    | 313-3836  | 1-1/2-10    | 313-4804  | 2-1/4-18    | 313-4916  |
| 10-64   | 313-3576  | 7/16-40   | 313-3760  | 15/16-12   | 313-4696  | 1-1/2-14    | 313-4805  | 2-1/4-20    | 313-4917  |
| 10-80   | 313-3577  | 7/16-48   | 313-3762  | 15/16-16   | 313-4698  | 1-1/2-16    | 313-4806  | 2-3/8-4-1/2 | 313-4918  |
| 12-30   | 313-3578  | 15/32-32  | 313-4624  | 15/16-18   | 313-4699  | 1-1/2-18*   | 313-4808  | 2-3/8-8     | 313-4920  |
| 12-32   | 313-3581  | 1/2-12    | 313-4626  | 15/16-20*  | 313-4700  | 1-1/2-20    | 313-4810  | 2-3/8-10    | 313-3902  |
| 12-36   | 313-3584  | 1/2-14    | 313-4628  | 15/16-24   | 313-3838  | 1-1/2-24    | 313-4811  | 2-3/8-12    | 313-4922  |
| 12-40   | 313-3587  | 1/2-16    | 313-4630  | 15/16-27   | 313-4702  | 1-1/2-28    | 313-3872  | 2-3/8-14    | 313-4924  |
| 12-48   | 313-3590  | 1/2-18    | 313-4632  | 15/16-30   | 313-3840  | 1-1/2-32    | 313-3874  | 2-3/8-16    | 313-3906  |
| 12-56   | 313-3593  | 1/2-24    | 313-4634  | 15/16-32   | 313-4704  | 1-9/16-8    | 313-3876  | 2-3/8-18    | 313-3908  |
| 1/16-72 | 313-3596  | 1/2-27    | 313-3764  | 1"-10      | 313-4706  | 1-9/16-12   | 313-4812  | 2-3/8-20    | 313-3910  |
| 3/32-36 | 313-3599  | 1/2-28*   | 313-4633  | 1"-16      | 313-4708  | 1-9/16-16   | 313-4813  | 2-1/2-4     | 313-4926  |
| 3/32-48 | 313-3602  | 1/2-30    | 313-3766  | 1"-18      | 313-4710  | 1-9/16-18   | 313-4814  | 2-1/2-6     | 313-4928  |
| 3/32-50 | 313-3605  | 1/2-32    | 313-4636  | 1"-20*     | 313-4712  | 1-9/16-20   | 313-4816  | 2-1/2-8     | 313-4930  |
| 3/32-56 | 313-3608  | 1/2-36    | 313-3768  | 1"-24      | 313-3842  | 1-5/8-5     | 313-3878  | 2-1/2-12    | 313-4932  |
| 1/8-36  | 313-3611  | 1/2-40    | 313-3770  | 1"-32      | 313-4714  | 1-5/8-5-1/2 | 313-4818  | 2-1/2-16    | 313-4934  |
| 1/8-40  | 313-3614  | 1/2-48    | 313-3772  | 1"-36      | 313-3844  | 1-5/8-8     | 313-4820  | 2-1/2-18    | 313-4936  |
| 5/32-24 | 313-3617  | 9/16-10   | 313-4638  | 1"-40      | 313-3846  | 1-5/8-10    | 313-4822  | 2-1/2-20    | 313-3914  |
| 5/32-26 | 313-3620  | 9/16-14   | 313-3774  | 1"-48      | 313-3848  | 1-5/8-12    | 313-4824  | 2-5/8-8     | 313-4938  |
| 5/32-32 | 313-3623  | 9/16-16   | 313-4640  | 1-1/16-8   | 313-4716  | 1-5/8-14    | 313-4826  | 2-5/8-12    | 313-4940  |
| 5/32-36 | 313-3626  | 9/16-20   | 313-4642  | 1-1/16-10  | 313-4718  | 1-5/8-16    | 313-4828  | 2-5/8-16    | 313-4942  |
| 5/32-38 | 313-3629  | 9/16-24*  | 313-4644  | 1-1/16-12  | 313-4720  | 1-5/8-18    | 313-4830  | 2-5/8-18    | 313-4944  |
| 5/32-40 | 313-3632  | 9/16-27   | 313-3776  | 1-1/16-14  | 313-4722  | 1-5/8-20    | 313-4832  | 2-3/4-4     | 313-4946  |
| 5/32-64 | 313-3635  | 9/16-28   | 313-3778  | 1-1/16-16  | 313-4724  | 1-5/8-24    | 313-4834  | 2-3/4-8     | 313-4948  |
| 3/16-20 | 313-3638  | 9/16-32   | 313-3780  | 1-1/16-18* | 313-4726  | 1-11/16-12  | 313-4836  | 2-3/4-12    | 313-4950  |
| 3/16-24 | 313-3641  | 9/16-36   | 313-3782  | 1-1/16-20  | 313-4728  | 1-11/16-16  | 313-4837  | 2-3/4-16    | 313-4952  |
| 3/16-28 | 313-3644  | 9/16-40   | 313-3784  | 1-1/16-24  | 313-4730  | 1-11/16-18  | 313-4838  | 2-3/4-18    | 313-4954  |
| 3/16-32 | 313-3647  | 5/8-10    | 313-3786  | 1-1/16-32  | 313-4732  | 1-11/16-20  | 313-4839  | 2-7/8-8     | 313-4956  |
| 3/16-36 | 313-3650  | 5/8-12    | 313-4646  | 1-1/8-8    | 313-4734  | 1-11/16-36  | 313-3880  | 2-7/8-12    | 313-4958  |
| 7/32-24 | 313-3653  | 5/8-14    | 313-3788  | 1-1/8-10   | 313-4736  | 1-3/4-5     | 313-4840  | 2-7/8-14    | 313-3916  |
| 7/32-28 | 313-3656  | 5/8-16    | 313-4648  | 1-1/8-14   | 313-3850  | 1-3/4-6     | 313-4842  | 2-7/8-16    | 313-4960  |
| 7/32-32 | 313-3659  | 5/8-20    | 313-4650  | 1-1/8-16   | 313-4738  | 1-3/4-8     | 313-4844  | 2-7/8-18    | 313-3918  |
| 7/32-40 | 313-3662  | 5/8-24*   | 313-4652  | 1-1/8-18*  | 313-4740  | 1-3/4-10    | 313-4846  | 3"-4        | 313-4962  |
| 7/32-48 | 313-3665  | 5/8-27    | 313-3790  | 1-1/8-20   | 313-3852  | 1-3/4-12    | 313-4848  | 3"-8        | 313-4964  |
| 1/4-14  | 313-3668  | 5/8-28    | 313-3791  | 1-1/8-24   | 313-3854  | 1-3/4-14    | 313-3884  | 3"-12       | 313-4966  |
| 1/4-16  | 313-3671  | 5/8-32    | 313-4654  | 1-1/8-27   | 313-3856  | 1-3/4-16    | 313-4850  | 3"-16       | 313-3920  |
| 1/4-18  | 313-3674  | 5/8-36    | 313-4656  | 1-1/8-32   | 313-4742  | 1-3/4-18    | 313-4852  | 3"-18       | 313-3922  |
| 1/4-24  | 313-4600  | 5/8-40    | 313-3792  | 1-3/16-8   | 313-4744  | 1-3/4-20    | 313-4854  | 3-1/4-4     | 313-4968  |
| 1/4-27  | 313-3700  | 5/8-48    | 313-3794  | 1-3/16-10  | 313-4746  | 1-3/4-24    | 313-4856  | 3-1/4-8     | 313-4970  |
| 1/4-30  | 313-3702  | 11/16-11  | 313-4658  | 1-3/16-12  | 313-4748  | 1-13/16-8   | 313-4858  | 3-1/4-12    | 313-4972  |
| 1/4-32* | 313-4602  | 11/16-12  | 313-3796  | 1-3/16-14  | 313-4750  | 1-13/16-16  | 313-4860  | 3-1/2-4     | 313-4974  |
| 1/4-36  | 313-3704  | 11/16-16  | 313-4660  | 1-3/16-16  | 313-4752  | 1-13/16-18  | 313-4862  | 3-1/2-8     | 313-4976  |
| 1/4-40  | 313-4604  | 11/16-18  | 313-4662  | 1-3/16-18* | 313-4754  | 1-13/16-20  | 313-4863  | 3-1/2-12    | 313-4978  |
| 1/4-48  | 313-3706  | 11/16-20  | 313-4664  | 1-3/16-20  | 313-4756  | 1-13/16-28  | 313-3890  | 3-3/4-4     | 313-4980  |
| 1/4-56  | 313-3708  | 11/16-24* | 313-4666  | 1-3/16-24  | 313-4758  | 1-7/8-5     | 313-4864  | 3-3/4-8     | 313-3924  |
| 1/4-60  | 313-3710  | 11/16-27  | 313-3798  | 1-3/16-32  | 313-4760  | 1-7/8-7     | 313-4866  | 3-3/4-12    | 313-4982  |
| 1/4-80  | 313-3711  | 11/16-28  | 313-3800  | 1-1/4-8    | 313-4762  | 1-7/8-8     | 313-4868  | 4"-4        | 313-3926  |
| 9/32-18 | 313-3712  | 11/16-32  | 313-4668  | 1-1/4-10   | 313-4764  | 1-7/8-10    | 313-4870  | 4"-8        | 313-4984  |
| 9/32-24 | 313-3714  | 11/16-36  | 313-3802  | 1-1/4-14   | 313-4766  | 1-7/8-12    | 313-4872  | 4"-12       | 313-4986  |
| 9/32-32 | 313-3716  | 11/16-40  | 313-3804  | 1-1/4-16   | 313-4768  | 1-7/8-16    | 313-4874  | 4"-16       | 313-3928  |
| 5/16-12 | 313-3718  | 3/4-12    | 313-4670  | 1-1/4-18*  | 313-4770  | 1-7/8-18    | 313-4876  |             |           |

### Left Hand Taps-Plug Style

#### Carbon Steel, Ground Thread

- Use for hand and machine tapping in a wide variety of materials to create left hand threaded holes.



| Size | Carbon Steel Order No. | Size    | Carbon Steel Order No. | Size     | Carbon Steel Order No. | Size        | Carbon Steel Order No. |
|------|------------------------|---------|------------------------|----------|------------------------|-------------|------------------------|
| 0-80 | 312-5002               | 10-24   | 312-5152               | 9/16-12  | 312-5302               | 1-1/4-12    | 312-5452               |
| 1-64 | 312-5012               | 10-32   | 312-5162               | 9/16-18  | 312-5312               | 1-3/8-6     | 312-5462               |
| 1-72 | 312-5022               | 12-24   | 312-5172               | 5/8-11   | 312-5322               | 1-3/8-12    | 312-5472               |
| 2-56 | 312-5032               | 12-28   | 312-5182               | 5/8-18   | 312-5332               | 1-1/2-6     | 312-5482               |
| 2-64 | 312-5042               | 14-24   | 312-5192               | 3/4-10   | 312-5342               | 1-1/2-12    | 312-5492               |
| 3-48 | 312-5052               | 1/4-20  | 312-5202               | 3/4-16   | 312-5352               | 1-5/8-5     | 312-5502               |
| 3-56 | 312-5062               | 1/4-28  | 312-5212               | 7/8-9    | 312-5362               | 1-3/4-5     | 312-5512               |
| 4-40 | 312-5072               | 5/16-18 | 312-5222               | 7/8-14   | 312-5372               | 2-6         | 312-5522               |
| 4-48 | 312-5082               | 5/16-24 | 312-5232               | 1-8      | 312-5382               | 2-1/4-4     | 312-5532               |
| 5-40 | 312-5092               | 3/8-16  | 312-5242               | 1-12     | 312-5392               | 2-1/4-4-1/2 | 312-5542               |
| 5-44 | 312-5102               | 3/8-24  | 312-5252               | 1-14     | 312-5402               | 2-1/4-8     | 312-5552               |
| 6-32 | 312-5112               | 7/16-14 | 312-5262               | 1-1/8-7  | 312-5412               | 2-1/2-4     | 312-5562               |
| 6-40 | 312-5122               | 7/16-20 | 312-5272               | 1-1/8-12 | 312-5422               | 2-1/2-6     | 312-5572               |
| 8-32 | 312-5132               | 1/2-13  | 312-5282               | 1-1/4-7  | 312-5432               |             |                        |
| 8-36 | 312-5142               | 1/2"-20 | 312-5292               | 1-1/4-10 | 312-5442               |             |                        |

### Screw Thread Insert Taps (S.T.I)

#### High Speed Steel, Ground Thread, Straight Flute



| Tap Size  | Plug Type Order No. | Bottom Type Order No. | Tap Size   | Plug Type Order No. | Bottom Type Order No. | Tap Size   | Plug Type Order No. | Bottom Type Order No. | Tap Size   | Plug Type Order No. | Bottom Type Order No. |
|-----------|---------------------|-----------------------|------------|---------------------|-----------------------|------------|---------------------|-----------------------|------------|---------------------|-----------------------|
| 2-56 NC   | 311-9200            | 311-9300              | 5/16-18 NC | 311-9218            | 311-9318              | 3-56 NF    | 311-9250            | 311-9350              | 1/2-20 NF  | 311-9268            | 311-9368              |
| 3-48 NC   | 311-9202            | 311-9302              | 3/8-16 NC  | 311-9220            | 311-9320              | 4-48 NF    | 311-9252            | 311-9352              | 9/16-18 NF | 311-9270            | 311-9370              |
| 4-40NC    | 311-9204            | 311-9304              | 7/16-14 NC | 311-9222            | 311-9322              | 6-40 NF    | 311-9254            | 311-9354              | 5/8-18 NF  | 311-9272            | 311-9372              |
| 5-40 NC   | 311-9206            | 311-9306              | 1/2-13 NC  | 311-9224            | 311-9324              | 8-36 NF    | 311-9256            | 311-9356              | 3/4-16 NF  | 311-9274            | 311-9374              |
| 6-32 NC   | 311-9208            | 311-9308              | 9/16-12 NC | 311-9226            | 311-9326              | 10-32 NF   | 311-9258            | 311-9358              | 7/8-14 NF  | 311-9276            | 311-9376              |
| 8-32 NC   | 311-9210            | 311-9310              | 5/8-11 NC  | 311-9228            | 311-9328              | 1/4-28 NF  | 311-9260            | 311-9360              | 1-12 NF    | 311-9278            | 311-9378              |
| 10-24 NC  | 311-9212            | 311-9312              | 3/4-10 NC  | 311-9230            | 311-9330              | 5/16-24 NF | 311-9262            | 311-9362              | 1-14 NF    | 311-9280            | 311-9380              |
| 12-24 NC  | 311-9214            | 311-9314              | 7/8-9 NC   | 311-9232            | 311-9332              | 3/8-24 NF  | 311-9264            | 311-9364              |            |                     |                       |
| 1/4-20 NC | 311-9216            | 311-9316              | 1-8 NC     | 311-9234            | 311-9334              | 7/16-20 NF | 311-9266            | 311-9366              |            |                     |                       |

### Metric Hand Taps & Sets

#### High Speed Steel, Ground Thread



| Size        | Bottoming Order No. | Taper Order No. | 3pc Set Order No. | Size        | Bottoming Order No. | Taper Order No. | 3pc Set Order No. |
|-------------|---------------------|-----------------|-------------------|-------------|---------------------|-----------------|-------------------|
| 2.0x.20mm   | 311-4003            | 311-4001        | 311-4004          | 10.0x1.50mm | 311-4303            | 311-4301        | 311-4304          |
| 2.0x.25mm   | 311-4013            | 311-4011        | 311-4014          | 11.0x1.00mm | 311-4313            | 311-4311        | 311-4314          |
| 2.0x.40mm   | 311-4023            | 311-4021        | 311-4024          | 11.0x1.50mm | 311-4323            | 311-4321        | 311-4324          |
| 2.0x.45mm   | 311-4033            | 311-4031        | 311-4034          | 12.0x1.25mm | 311-4333            | 311-4331        | 311-4334          |
| 2.2x.45mm   | 311-4043            | 311-4041        | 311-4044          | 12.0x1.50mm | 311-4343            | 311-4341        | 311-4344          |
| 2.5x.45mm   | 311-4053            | 311-4051        | 311-4054          | 12.0x1.75mm | 311-4353            | 311-4351        | 311-4354          |
| 3.0x.35mm   | 311-4063            | 311-4061        | 311-4064          | 14.0x1.25mm | 311-4363            | 311-4361        | 311-4364          |
| 3.0x.50mm   | 311-4073            | 311-4071        | 311-4074          | 14.0x1.50mm | 311-4373            | 311-4371        | 311-4374          |
| 3.5x.35mm   | 311-4083            | 311-4081        | 311-4084          | 14.0x2.00mm | 311-4383            | 311-4381        | 311-4384          |
| 3.5x.60mm   | 311-4093            | 311-4091        | 311-4094          | 16.0x1.00mm | 311-4393            | 311-4391        | 311-4394          |
| 4.0x.50mm   | 311-4103            | 311-4101        | 311-4104          | 16.0x1.50mm | 311-4403            | 311-4401        | 311-4404          |
| 4.0x.70mm   | 311-4113            | 311-4111        | 311-4114          | 16.0x2.00mm | 311-4413            | 311-4411        | 311-4414          |
| 4.0x.75mm   | 311-4123            | 311-4121        | 311-4124          | 18.0x1.50mm | 311-4423            | 311-4421        | 311-4424          |
| 4.5x.75mm   | 311-4133            | 311-4131        | 311-4134          | 18.0x2.00mm | 311-4433            | 311-4431        | 311-4434          |
| 5.0x.50mm   | 311-4143            | 311-4141        | 311-4144          | 18.0x2.50mm | 311-4443            | 311-4441        | 311-4444          |
| 5.0x.90mm   | 311-4153            | 311-4151        | 311-4154          | 20.0x2.00mm | 311-4453            | 311-4451        | 311-4454          |
| 5.0x.80mm   | 311-4163            | 311-4161        | 311-4164          | 20.0x2.50mm | 311-4463            | 311-4461        | 311-4464          |
| 5.5x.90mm   | 311-4173            | 311-4171        | 311-4174          | 22.0x2.00mm | 311-4473            | 311-4471        | 311-4474          |
| 6.0x.50mm   | 311-4183            | 311-4181        | 311-4184          | 22.0x2.50mm | 311-4483            | 311-4481        | 311-4484          |
| 6.0x.75mm   | 311-4193            | 311-4191        | 311-4194          | 24.0x2.00mm | 311-4493            | 311-4491        | 311-4494          |
| 6.0x1.00mm  | 311-4203            | 311-4201        | 311-4204          | 24.0x3.00mm | 311-4503            | 311-4501        | 311-4504          |
| 7.0x.75mm   | 311-4213            | 311-4211        | 311-4214          | 26.0x1.50mm | 311-4513            | 311-4511        | 311-4514          |
| 7.0x1.00mm  | 311-4223            | 311-4221        | 311-4224          | 28.0x2.00mm | 311-4523            | 311-4521        | 311-4524          |
| 8.0x1.00mm  | 311-4233            | 311-4231        | 311-4234          | 30.0x2.00mm | 311-4533            | 311-4531        | 311-4534          |
| 8.0x1.25mm  | 311-4243            | 311-4241        | 311-4244          | 30.0x3.50mm | 311-4543            | 311-4541        | 311-4544          |
| 9.0x1.00mm  | 311-4253            | 311-4251        | 311-4254          | 33.0x2.00mm | 311-4553            | 311-4551        | 311-4554          |
| 9.0x1.25mm  | 311-4263            | 311-4261        | 311-4264          | 39.0x3.00mm | 311-4563            | 311-4561        | 311-4564          |
| 10.0x1.00mm | 311-4273            | 311-4271        | 311-4274          | 42.0x2.00mm | 311-4573            | 311-4571        | 311-4574          |
| 10.0x1.25mm | 311-4283            | 311-4281        | 311-4284          | 48.0x2.00mm | 311-4583            | 311-4581        | 311-4584          |
| 10.0x1.00mm | 311-4293            | 311-4291        | 311-4294          |             |                     |                 |                   |

## Metric Hand Taps-Plug Style

High Speed Steel, Ground Thread



| Size        | Thread Limits | No. of Flute | Order No. | Size         | Thread Limits | No. of Flute | Order No. | Size         | Thread Limits | No. of Flute | Order No. |
|-------------|---------------|--------------|-----------|--------------|---------------|--------------|-----------|--------------|---------------|--------------|-----------|
| 1.50x0.35mm | D-1           | 2            | 411-2004  | 8.00x1.25mm  | D-3           | 4            | 411-2114  | 22.00x1.00mm | D-6           | 4            | 411-2244  |
| 1.60x0.35mm | D-1           | 2            | 411-2006  | 8.00x1.25mm  | D-5           | 4            | 411-2116  | 22.00x1.50mm | D-3           | 4            | 411-2246  |
| 1.60x0.35mm | D-3           | 2            | 411-2008  | 9.00x1.25mm  | D-4           | 4            | 411-2122  | 22.00x1.50mm | D-6           | 4            | 411-2248  |
| 1.80x0.35mm | D-1           | 2            | 411-2010  | 10.00x0.75mm | D-5           | 4            | 411-2128  | 22.00x2.00mm | D-6           | 4            | 411-2249  |
| 1.80x0.35mm | D-2           | 2            | 411-2012  | 10.00x1.00mm | D-5           | 4            | 411-2130  | 22.00x2.50mm | D-4           | 4            | 411-2250  |
| 1.80x0.35mm | D-3           | 2            | 411-2014  | 10.00x1.25mm | D-3           | 4            | 411-2132  | 22.00x2.50mm | D-6           | 4            | 411-2252  |
| 2.00x0.40mm | D-1           | 3            | 411-2018  | 10.00x1.25mm | D-5           | 4            | 411-2134  | 22.00x2.50mm | D-7           | 4            | 411-2254  |
| 2.00x0.40mm | D-3           | 3            | 411-2020  | 10.00x1.50mm | D-3           | 4            | 411-2136  | 24.00x1.00mm | D-7           | 4            | 411-2256  |
| 2.00x0.45mm | D-2           | 3            | 411-2022  | 10.00x1.50mm | D-6           | 4            | 411-2138  | 24.00x1.50mm | D-7           | 4            | 411-2258  |
| 2.20x0.45mm | D-1           | 3            | 411-2024  | 11.00x1.00mm | D-3           | 4            | 411-2142  | 24.00x2.00mm | D-4           | 4            | 411-2260  |
| 2.20x0.45mm | D-2           | 3            | 411-2026  | 11.00x1.50mm | D-5           | 4            | 411-2146  | 24.00x2.00mm | D-7           | 4            | 411-2262  |
| 2.20x0.45mm | D-3           | 3            | 411-2028  | 11.00x1.50mm | D-6           | 4            | 411-2147  | 24.00x3.00mm | D-4           | 4            | 411-2264  |
| 2.30x0.40mm | D-3           | 3            | 411-2030  | 12.00x1.00mm | D-5           | 4            | 411-2150  | 24.00x3.00mm | D-8           | 4            | 411-2266  |
| 2.50x0.45mm | D-1           | 3            | 411-2032  | 12.00x1.25mm | D-3           | 4            | 411-2152  | 27.00x1.50mm | D-7           | 4            | 411-2272  |
| 2.50x0.45mm | D-3           | 3            | 411-2034  | 12.00x1.25mm | D-5           | 4            | 411-2154  | 27.00x2.00mm | D-5           | 4            | 411-2274  |
| 2.60x0.45mm | D-2           | 3            | 411-2036  | 12.00x1.50mm | D-5           | 4            | 411-2156  | 27.00x2.00mm | D-7           | 4            | 411-2276  |
| 2.60x0.45mm | D-3           | 3            | 411-2037  | 12.00x1.75mm | D-3           | 4            | 411-2158  | 27.00x3.00mm | D-8           | 4            | 411-2278  |
| 3.00x0.50mm | D-1           | 3            | 411-2040  | 12.00x1.75mm | D-6           | 4            | 411-2160  | 27.00x3.00mm | D-9           | 4            | 411-2280  |
| 3.00x0.50mm | D-3           | 3            | 411-2042  | 14.00x1.00mm | D-6           | 4            | 411-2178  | 30.00x1.50mm | D-7           | 4            | 411-2284  |
| 3.00x0.60mm | D-3           | 3            | 411-2046  | 14.00x1.25mm | H-4           | 4            | 411-2180  | 30.00x2.00mm | D-5           | 4            | 411-2286  |
| 3.50x0.60mm | D-1           | 3            | 411-2050  | 14.00x1.25mm | D-6           | 4            | 411-2181  | 30.00x2.00mm | D-7           | 4            | 411-2288  |
| 3.50x0.60mm | D-4           | 3            | 411-2052  | 14.00x1.50mm | D-3           | 4            | 411-2182  | 30.00x3.50mm | D-5           | 4            | 411-2292  |
| 4.00x0.50mm | D-4           | 4            | 411-2054  | 14.00x1.50mm | D-6           | 4            | 411-2184  | 30.00x3.50mm | D-9           | 4            | 411-2294  |
| 4.00x0.70mm | D-1           | 4            | 411-2056  | 14.00x2.00mm | D-3           | 4            | 411-2188  | 32.00x2.00mm | D-7           | 4            | 411-2296  |
| 4.00x0.70mm | D-4           | 4            | 411-2058  | 14.00x2.00mm | D-7           | 4            | 411-2190  | 32.00x2.00mm | D-7           | 6            | 411-2298  |
| 4.00x0.75mm | D-4           | 4            | 411-2060  | 16.00x1.00mm | D-6           | 4            | 411-2198  | 33.00x2.00mm | D-5           | 4            | 411-2300  |
| 4.50x0.75mm | D-2           | 4            | 411-2066  | 16.00x1.50mm | D-3           | 4            | 411-2202  | 33.00x2.00mm | D-7           | 6            | 411-2301  |
| 4.50x0.75mm | D-4           | 4            | 411-2068  | 16.00x1.50mm | D-6           | 4            | 411-2204  | 33.00x3.50mm | D-5           | 4            | 411-2304  |
| 5.00x0.50mm | D-4           | 4            | 411-2070  | 16.00x2.00mm | D-4           | 4            | 411-2206  | 33.00x3.50mm | D-9           | 4            | 411-2306  |
| 5.00x0.8mm  | D-2           | 4            | 411-2076  | 16.00x2.00mm | D-7           | 4            | 411-2208  | 36.00x3.00mm | D-5           | 4            | 411-2308  |
| 5.00x0.8mm  | D-4           | 4            | 411-2078  | 18.00x1.00mm | D-6           | 4            | 411-2214  | 36.00x3.00mm | D-8           | 4            | 411-2310  |
| 5.00x0.90mm | D-3           | 4            | 411-2080  | 18.00x1.50mm | D-3           | 4            | 411-2218  | 36.00x3.60mm | D-9           | 4            | 411-2312  |
| 6.00x0.50mm | D-4           | 4            | 411-2084  | 18.00x1.50mm | H-4           | 4            | 411-2220  | 36.00x4.00mm | D-5           | 4            | 411-2314  |
| 6.00x0.75mm | D-3           | 4            | 411-2086  | 18.00x1.50mm | D-6           | 4            | 411-2222  | 36.00x4.00mm | D-9           | 4            | 411-2316  |
| 6.00x0.75mm | D-4           | 4            | 411-2087  | 18.00x2.00mm | D-6           | 4            | 411-2223  | 38.00x4.00mm | D-9           | 4            | 411-2317  |
| 6.00x1.00mm | D-3           | 4            | 411-2088  | 18.00x2.50mm | D-4           | 4            | 411-2224  | 39.00x3.00mm | D-6           | 4            | 411-2318  |
| 6.00x1.00mm | D-5           | 4            | 411-2090  | 18.00x2.50mm | D-7           | 4            | 411-2226  | 39.00x3.00mm | D-8           | 6            | 411-2320  |
| 6.30x1.00mm | D-5           | 4            | 411-2094  | 20.00x1.00mm | D-7           | 4            | 411-2230  | 39.00x4.00mm | D-6           | 4            | 411-2322  |
| 7.00x1.00mm | D-3           | 4            | 411-2100  | 20.00x1.50mm | D-3           | 4            | 411-2234  | 39.00x4.00mm | D-9           | 4            | 411-2324  |
| 7.00x1.00mm | D-5           | 4            | 411-2102  | 20.00x1.50mm | D-6           | 4            | 411-2236  | 42.00x4.5mm  | D-1           | 6            | 411-2326  |
| 8.00x0.75mm | D-4           | 4            | 411-2108  | 20.00x2.00mm | D-6           | 4            | 411-2238  | 45.00x4.50mm | D-1           | 6            | 411-2328  |
| 8.00x1.00mm | D-3           | 4            | 411-2110  | 20.00x2.50mm | D-4           | 4            | 411-2240  | 48.00x4.50mm | D-1           | 6            | 411-2330  |
| 8.00x1.00mm | D-5           | 4            | 411-2112  | 20.00x2.50mm | D-7           | 4            | 411-2242  | 48.00x5.00mm | D-1           | 6            | 411-2332  |

## Right &amp; Left Hand Acme Taps

High Speed Steel, Ground Thread



Right Hand

| Size    | Order No. |
|---------|-----------|
| 3/8"-12 | 312-9001  |
| 7/16-12 | 312-9002  |
| 1/2-10  | 312-9003  |
| 5/8-8   | 312-9004  |
| 3/4-6   | 312-9005  |
| 1-5     | 312-9007  |
| 1-1/8-5 | 312-9008  |
| 1-1/4-5 | 312-9009  |
| 1-3/8-4 | 312-9010  |
| 1-1/2-4 | 312-9011  |
| 1-3/4-4 | 312-9012  |

Left Hand

| Size    | Order No. |
|---------|-----------|
| 5/8"-8  | 312-9020  |
| 3/4-6   | 312-9021  |
| 7/8-6   | 312-9022  |
| 1-5     | 312-9023  |
| 1-1/8-5 | 312-9024  |
| 1-1/4-5 | 312-9025  |

## Single Pass Acme Taps

High Speed Steel, Ground Thread, Tandem Style



| Size    | Thread  | Overall Length | Max. Depth of Bronze or Steel Nut | Max. Depth of Brass or Cast Iron Nut | Order No. |
|---------|---------|----------------|-----------------------------------|--------------------------------------|-----------|
| 1/2"-10 | 2-9/16" | 5"             | 1"                                | 1-1/2"                               | 312-0306  |
| 5/8-8   | 3-3/16  | 6-1/4          | 1-1/4                             | 1-7/8                                | 312-0308  |
| 3/4-6   | 4-5/16  | 7-15/16        | 1-1/2                             | 2-1/4                                | 312-0310  |
| 7/8-6   | 4-3/8   | 8-5/8          | 1-3/4                             | 2-5/8                                | 312-0312  |
| 1-5     | 5-1/4   | 10-1/8         | 2                                 | 3                                    | 312-0314  |
| 1-1/8-5 | 5-1/4   | 10-3/4         | 2-1/4                             | 3-3/8                                | 312-0316  |
| 1-1/4-5 | 5-1/4   | 11-1/8         | 2-1/2                             | 3-3/4                                | 312-0318  |
| 1-3/8-4 | 5-7/8   | 12-1/4         | 2-3/4                             | 4-1/8                                | 312-0320  |
| 1-1/2-4 | 5-7/8   | 12-5/8         | 3                                 | 4-1/2                                | 312-0322  |

## Pulley Taps



| Size      | No. of Flute | H limit | Overall Length | Order No. | Size       | No. of Flute | H limit | Overall Length | Order No. | Size      | No. of Flute | H limit | Overall Length | Order No. |
|-----------|--------------|---------|----------------|-----------|------------|--------------|---------|----------------|-----------|-----------|--------------|---------|----------------|-----------|
| 1/4"-20NC | 4            | H-3     | 4"             | 312-0402  | 1/2-20NF   | 4            | H-3     | 6              | 312-0532  | 7/8-9NC   | 4            | H-4     | 8              | 312-0628  |
| 5/16-18NC | 4            | H-3     | 4              | 312-0404  | 5/8-11NC   | 4            | H-3     | 6              | 312-0534  | 1-8NC     | 4            | H-4     | 8              | 312-0630  |
| 3/8-16NC  | 4            | H-3     | 4              | 312-0406  | 5/8-18NF   | 4            | H-3     | 6              | 312-0536  | 3/8-16NC  | 4            | H-3     | 10             | 312-0702  |
| 6-32NC    | 3            | H-3     | 6              | 312-0502  | 3/4-10NC   | 4            | H-3     | 6              | 312-0538  | 3/8-24NF  | 4            | H-3     | 10             | 312-0704  |
| 6-40NF    | 3            | H-2     | 6              | 312-0504  | 7/8-9NC    | 4            | H-4     | 6              | 312-0540  | 7/16-14NC | 4            | H-3     | 10             | 312-0706  |
| 8-32NC    | 3            | H-3     | 6              | 312-0506  | 1/4-20NC   | 4            | H-3     | 8              | 312-0602  | 7/16-20NF | 4            | H-3     | 10             | 312-0708  |
| 8-36NF    | 3            | H-3     | 6              | 312-0508  | 1/4-28NF   | 4            | H-3     | 8              | 312-0604  | 1/2-13NC  | 4            | H-3     | 10             | 312-0709  |
| 10-24NC   | 3            | H-3     | 6              | 312-0510  | 5/16-18NC  | 4            | H-3     | 8              | 312-0606  | 5/8-11NC  | 4            | H-3     | 10             | 312-0710  |
| 10-32NF   | 3            | H-3     | 6              | 312-0512  | 5/16"-24NF | 4            | H-3     | 8              | 312-0608  | 3/4-10NC  | 4            | H-3     | 10             | 312-0712  |
| 1/4-20NC  | 4            | H-3     | 6              | 312-0514  | 3/8-16NC   | 4            | H-3     | 8              | 312-0610  | 7/8-9NC   | 4            | H-4     | 10             | 312-0714  |
| 1/4-28NF  | 4            | H-3     | 6              | 312-0516  | 3/8-24NF   | 4            | H-3     | 8              | 312-0612  | 3/8-16NC  | 4            | H-3     | 12             | 312-0802  |
| 5/16-18NC | 4            | H-3     | 6              | 312-0518  | 7/16-14NC  | 4            | H-3     | 8              | 312-0614  | 7/16-14NC | 4            | H-3     | 12             | 312-0804  |
| 5/16-24NF | 4            | H-3     | 6              | 312-0520  | 7/16-20NF  | 4            | H-3     | 8              | 312-0616  | 1/2-13NC  | 4            | H-3     | 12             | 312-0806  |
| 3/8-16NC  | 4            | H-3     | 6              | 312-0522  | 1/2-13NC   | 4            | H-3     | 8              | 312-0618  | 5/8-11NC  | 4            | H-3     | 12             | 312-0808  |
| 3/8-24NF  | 4            | H-3     | 6              | 312-0524  | 1/2-20NF   | 4            | H-3     | 8              | 312-0620  | 5/8-18NF  | 4            | H-3     | 12             | 312-0810  |
| 7/16-14NC | 4            | H-3     | 6              | 312-0526  | 5/8-11NC   | 4            | H-3     | 8              | 312-0622  | 3/4-10NC  | 4            | H-3     | 12             | 312-0812  |
| 7/16-20NF | 4            | H-3     | 6              | 312-0528  | 5/8-18NF   | 4            | H-3     | 8              | 312-0624  | 1-8NC     | 4            | H-4     | 12             | 312-0814  |
| 1/2-13NC  | 4            | H-3     | 6              | 312-0530  | 3/4-10NC   | 4            | H-3     | 8              | 312-0626  |           |              |         |                |           |

## Single Pass Combination Drill Taps

High Speed Steel, Ground Thread



| Size      | Thread Limit | Drill Length | Drill Length | Drill Size | Overall Length | H.S.S Order No. | TiN-Coated Order No. | Size      | Thread Limit | Drill Length | Drill Length | Drill Size | Overall Length | H.S.S Order No. | TiN-Coated Order No. |
|-----------|--------------|--------------|--------------|------------|----------------|-----------------|----------------------|-----------|--------------|--------------|--------------|------------|----------------|-----------------|----------------------|
| 3x.5mm    | D-3          | 13/32"       | .1015"       | 9/32"      | 1-15/16"       | 312-0162        | 312-0262             | 6x1.00mm  | D-5"         | 25/32"       | .2030"       | 17/32"     | 2-1/2"         | 312-0172        | 312-0272             |
| 3.5x.6mm  | D-4          | 7/16         | .1180        | 5/16       | 2              | 312-0164        | 312-0264             | 7x1.00mm  | D-5          | 15/16        | .2420        | 11/16      | 2-27/32        | 312-0174        | 312-0274             |
| 4x.7mm    | D-4          | 1/2          | .1340        | 3/8        | 2-1/8          | 312-0166        | 312-0266             | 8x1.25mm  | D-5          | 15/16        | .2735        | 11/16      | 2-27/32        | 312-0176        | 312-0276             |
| 4.5x.75mm | D-4          | 5/8          | .1520        | 13/32      | 2-3/8          | 312-0168        | 312-0268             | 10x1.5mm  | D-6          | 1-1/16       | .3440        | 13/16      | 3-3/8          | 312-0178        | 312-0278             |
| 5x.8mm    | D-4          | 5/8          | .1700        | 13/32      | 2-3/8          | 312-0170        | 312-0270             | 12x1.75mm | D-6          | 1-3/8        | .4140        | 1-1/8      | 4-1/16         | 312-0180        | 312-0280             |

| Size    | Thread Limit | Thread Length | Drill Length | Drill Size | Overall Length | H.S.S Order No. | TiN-Coated Order No. | Size      | Thread Limit | Thread Length | Drill Length | Drill Size | Overall Length | H.S.S Order No. | TiN-Coated Order No. |
|---------|--------------|---------------|--------------|------------|----------------|-----------------|----------------------|-----------|--------------|---------------|--------------|------------|----------------|-----------------|----------------------|
| 4-40NC  | H-2          | 9/16"         | 1/4"         | .0890"     | 1-7/8"         | 312-0102        | 312-0202             | 12-28NF   | H-3          | 7/8"          | 15/32"       | .1835"     | 2-3/8"         | 312-0124        | 312-0224             |
| 4-48NF  | H-2          | 9/16          | 1/4          | .0930      | 1-7/8          | 312-0104        | 312-0204             | 1/4-20NC  | H-3          | 15/16         | 17/32        | .2010      | 2-1/2          | 312-0126        | 312-0226             |
| 5-40NC  | H-2          | 5/8           | 9/32         | .1015      | 1-15/16        | 312-0106        | 312-0206             | 1/4-28NF  | H-3          | 15/16         | 17/32        | .2175      | 2-1/2          | 312-0128        | 312-0228             |
| 5-44NF  | H-2          | 5/8           | 9/32         | .1040      | 1-15/16        | 312-0108        | 312-0208             | 5/16-18NC | H-3          | 1-1/8         | 11/16        | .2570      | 3              | 312-0130        | 312-0230             |
| 6-32NC  | H-3          | 11/16         | 5/16         | .1095      | 2              | 312-0110        | 312-0210             | 5/16-24NF | H-3          | 1-1/8         | 11/16        | .2720      | 3              | 312-0132        | 312-0232             |
| 6-40NF  | H-2          | 11/16         | 5/16         | .1150      | 2              | 312-0112        | 312-0212             | 3/8-16NC  | H-3          | 1-1/4         | 13/16        | .3125      | 3-1/2          | 312-0134        | 312-0234             |
| 8-32NC  | H-3          | 3/4           | 3/8          | .1360      | 2-1/8          | 312-0114        | 312-0214             | 3/8-24NF  | H-3          | 1-1/4         | 13/16        | .3345      | 3-1/2          | 312-0136        | 312-0236             |
| 8-36NF  | H-3          | 3/4           | 3/8          | .1385      | 2-1/8          | 312-0116        | 312-0216             | 7/16-14NC | H-3          | 1-7/16        | 1            | .3680      | 3-7/8          | 312-0138        | 312-0238             |
| 10-24NC | H-3          | 7/8           | 13/32        | .1520      | 2-3/8          | 312-0118        | 312-0218             | 7/16-20NF | H-3          | 1-7/16        | 1            | .3890      | 3-7/8          | 312-0140        | 312-0240             |
| 10-32NF | H-3          | 7/8           | 13/32        | .1610      | 2-3/8          | 312-0120        | 312-0220             | 1/2-13NC  | H-3          | 1-21/32       | 1-1/8        | .4250      | 4-1/4          | 312-0142        | 312-0242             |
| 12-24NC | H-3          | 7/8           | 15/32        | .1770      | 2-3/8          | 312-0122        | 312-0222             | 1/2-20N   | H-3          | 1-21/32       | 1-1/8        | .4510      | 4-1/4          | 312-0144        | 312-0244             |

## Metric Nut Taps

DIN 357

High Speed Steel

Right Hand



| Size     | Order No. | Size       | Order No. |
|----------|-----------|------------|-----------|
| M3x.5mm  | 311-1503  | M8x1.25mm  | 311-1508  |
| M4x.7mm  | 311-1504  | M10x1.50mm | 311-1510  |
| M5x.8mm  | 311-1505  | M12x1.75mm | 311-1512  |
| M6x1.0mm | 311-1506  |            |           |

## Metric Single Pass Drill Taps

High Speed Steel,

Ground Thread,

German Pattern



| Size | Drill Length | Thread Length | Overall Length | H.S.S Order No. | TiN-Coated Order No. |
|------|--------------|---------------|----------------|-----------------|----------------------|
| M3   | 5mm          | 6             | 36             | 312-8003        | 312-8103             |
| M4   | 6mm          | 8             | 39             | 312-8004        | 312-8104             |
| M5   | 7mm          | 9             | 41             | 312-8005        | 312-8105             |
| M6   | 8mm          | 11            | 44             | 312-8006        | 312-8106             |
| M8   | 11mm         | 14            | 51             | 312-8008        | 312-8108             |
| M10  | 15mm         | 17            | 59             | 312-8010        | 312-8110             |

## Metric Hand Taps

**BESTOOL®**

### Metric Hand Taps

**DIN 352**

**3 Piece**

**High Speed Steel**



| Size       | Taper<br>Order No. | Plug<br>Order No. | Bottoming<br>Order No. | Set<br>Order No. |
|------------|--------------------|-------------------|------------------------|------------------|
| M2-.4mm    | 324-1020           | 324-2020          | 324-3020               | 311-1219         |
| M2.5-.45mm | 324-1025           | 324-2025          | 324-3025               | 311-1221         |
| M2.6-.45mm | 324-1026           | 324-2026          | 324-3026               | 311-1226         |
| M3-.5mm    | 324-1030           | 324-2030          | 324-3030               | 311-1203         |
| M3.5-.6mm  | 324-1035           | 324-2035          | 324-3035               | 311-1235         |
| M4-.7mm    | 324-1040           | 324-2040          | 324-3040               | 311-1204         |
| M5-.8mm    | 324-1050           | 324-2050          | 324-3050               | 311-1205         |
| M6-1.0mm   | 324-1060           | 324-2060          | 324-3060               | 311-1206         |
| M7-1.0mm   | 324-1070           | 324-2070          | 324-3070               | 311-1207         |
| M8-1.25mm  | 324-1080           | 324-2080          | 324-3080               | 311-1208         |
| M9-1.25mm  | 324-1090           | 324-2090          | 324-3090               | 311-1209         |
| M10-1.50mm | 324-1100           | 324-2100          | 324-3100               | 311-1210         |
| M12-1.75mm | 324-1120           | 324-2120          | 324-3120               | 311-1212         |
| M14-2.0mm  | 324-1140           | 324-2140          | 324-3140               | 311-1214         |
| M16-2.0mm  | 324-1160           | 324-2160          | 324-3160               | 311-1216         |
| M18-2.5mm  | 324-1180           | 324-2180          | 324-3180               | 311-1218         |
| M20-2.5mm  | 324-1200           | 324-2200          | 324-3200               | 311-1220         |
| M22-2.5mm  | 324-1220           | 324-2220          | 324-3220               | 311-1222         |
| M24-3.0mm  | 324-1240           | 324-2240          | 324-3240               | 311-1224         |
| M27-3.0mm  | 324-1270           | 324-2270          | 324-3270               | 311-1227         |
| M30-3.5mm  | 324-1300           | 324-2300          | 324-3300               | 311-1230         |
| M33-3.5mm  | 324-1330           | 324-2330          | 324-3330               | 311-1233         |
| M36-4.0mm  | 324-1360           | 324-2360          | 324-3360               | 311-1236         |
| M39-4.0mm  | 324-1390           | 324-2390          | 324-3390               | 311-1239         |
| M42-4.5mm  | 324-1420           | 324-2420          | 324-3420               | 311-1242         |
| M45-4.5mm  | 324-1450           | 324-2450          | 324-3450               | 311-1245         |
| M48-5.0mm  | 324-1480           | 324-2480          | 324-3480               | 311-1248         |
| M52-5.0mm  | 324-1520           | 324-2520          | 324-3520               | 311-1252         |
| M56-5.5mm  | 324-1560           | 324-2560          | 324-3560               | 311-1256         |
| M60-5.5mm  | 324-1600           | 324-2600          | 324-3600               | 311-1260         |
| M64-6.0mm  | 324-1640           | 324-2640          | 324-3640               | 311-1264         |
| M68-6.0mm  | 324-1680           | 324-2680          | 324-3680               | 311-1268         |

### Metric Hand Tap Sets

**DIN 5157**

**2 Piece, High Speed Steel,**

**Right Hand**



| Size    | Overall<br>Length | Order No. | Size    | Overall<br>Length | Order No. |
|---------|-------------------|-----------|---------|-------------------|-----------|
| 1/8"-28 | 63mm              | 311-1008  | 5/8"-14 | 90mm              | 311-1040  |
| 1/4-19  | 70mm              | 311-1016  | 3/4-14  | 100mm             | 311-1048  |
| 3/8-19  | 70mm              | 311-1024  | 7/8-14  | 100mm             | 311-1056  |
| 1/2-14  | 80mm              | 311-1032  | 1-11    | 110mm             | 311-1064  |

### Metric Hand Tap Sets

**MF DIN 2181**

**2 Piece**

**High Speed Steel**



| Size       | Order No. | Size       | Order No. |
|------------|-----------|------------|-----------|
| M3-.35mm   | 311-1302  | M12-1.5mm  | 311-1324  |
| M4-.35mm   | 311-1304  | M14-1.0mm  | 311-1326  |
| M4-.5mm    | 311-1306  | M14-1.25mm | 311-1328  |
| M5-.5mm    | 311-1308  | M14-1.5mm  | 311-1330  |
| M6-.75mm   | 311-1310  | M16-1.0mm  | 311-1332  |
| M8-.75mm   | 311-1312  | M16-1.5mm  | 311-1334  |
| M8-1.0mm   | 311-1314  | M18-1.5mm  | 311-1336  |
| M10-1.0mm  | 311-1316  | M20-1.5mm  | 311-1338  |
| M10-1.25mm | 311-1318  | M22-1.5mm  | 311-1340  |
| M12-1.0mm  | 311-1320  | M24-1.5mm  | 311-1342  |
| M12-1.25mm | 311-1322  |            |           |

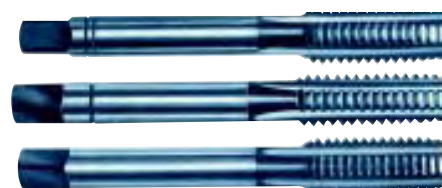
### Metric Hand Tap Sets

**DIN 351**

**3 Piece**

**High Speed Steel**

**Right Hand**



| Size     | Overall<br>Length | Order No. | Size        | Overall<br>Length | Order No. |
|----------|-------------------|-----------|-------------|-------------------|-----------|
| 1/16"-60 | 32mm              | 311-3004  | 5/8"-11     | 90mm              | 311-3040  |
| 3/32-48  | 36mm              | 311-3006  | 3/8"-10     | 105mm             | 311-3048  |
| 1/8-40   | 40mm              | 311-3008  | 7/8-9       | 110mm             | 311-3056  |
| 5/32-32  | 45mm              | 311-3010  | 1-8         | 110mm             | 311-3100  |
| 3/16-24  | 50mm              | 311-3012  | 1-1/8-7     | 132mm             | 311-3108  |
| 7/32-24  | 50mm              | 311-3014  | 1-1/4-7     | 132mm             | 311-3116  |
| 1/4-20   | 56mm              | 311-3016  | 1-3/8-6     | 150mm             | 311-3124  |
| 5/16-18  | 63mm              | 311-3020  | 1-1/2-6     | 150mm             | 311-3132  |
| 3/8-16   | 70mm              | 311-3024  | 1-5/8-5     | 160mm             | 311-3140  |
| 7/16-14  | 75mm              | 311-3028  | 1-3/4-5     | 160mm             | 311-3148  |
| 1/2-12   | 80mm              | 311-3032  | 1-7/8-4-1/2 | 190mm             | 311-3156  |
| 9/16-12  | 80mm              | 311-3036  | 2-4-1/2     | 190mm             | 311-3200  |

**Metric Machine Taps**
**DIN 371**
**High Speed Steel**
**Thread Ground**
**Right Hand**

**High Speed Steel**

| Size      | Straight Flute |            | Spiral Flute |           | Spiral Point<br>Order No. |
|-----------|----------------|------------|--------------|-----------|---------------------------|
|           | Taper "A"      | Bottom "C" | 15° Flute    | 35° Flute |                           |
|           | Order No.      | Order No.  | Order No.    | Order No. |                           |
| M2-.4mm   | 311-1602       | 311-1702   | 311-1622     | 311-1722  | 311-1612                  |
| M3-.5mm   | 311-1603       | 311-1703   | 311-1623     | 311-1723  | 311-1613                  |
| M4-.7mm   | 311-1604       | 311-1704   | 311-1624     | 311-1724  | 311-1614                  |
| M5-.8mm   | 311-1605       | 311-1705   | 311-1625     | 311-1725  | 311-1615                  |
| M6-1.0mm  | 311-1606       | 311-1706   | 311-1626     | 311-1726  | 311-1616                  |
| M8-1.25mm | 311-1608       | 311-1708   | 311-1628     | 311-1728  | 311-1618                  |
| M10-1.5mm | 311-1610       | 311-1710   | 311-1630     | 311-1730  | 311-1620                  |

**HSS, TiN Coated**

| Size      | Straight Flute |            | Spiral Flute |           | Spiral Point<br>Order No. |
|-----------|----------------|------------|--------------|-----------|---------------------------|
|           | Taper "A"      | Bottom "C" | 15° Flute    | 35° Flute |                           |
|           | Order No.      | Order No.  | Order No.    | Order No. |                           |
| M2-.4mm   | 311-1632       | 311-1732   | 311-1652     | 311-1752  | 311-1642                  |
| M3-.5mm   | 311-1633       | 311-1733   | 311-1653     | 311-1753  | 311-1643                  |
| M4-.7mm   | 311-1634       | 311-1734   | 311-1654     | 311-1754  | 311-1644                  |
| M5-.8mm   | 311-1635       | 311-1735   | 311-1655     | 311-1755  | 311-1645                  |
| M6-1.0mm  | 311-1636       | 311-1736   | 311-1656     | 311-1756  | 311-1646                  |
| M8-1.25mm | 311-1638       | 311-1738   | 311-1658     | 311-1758  | 311-1648                  |
| M10-1.5mm | 311-1640       | 311-1740   | 311-1660     | 311-1760  | 311-1650                  |

**Metric Machine Taps**
**DIN 376**
**High Speed Steel**
**Thread Ground**
**Right Hand**

**High Speed Steel**

| Size       | Straight Flute |            | Spiral Flute |           | Spiral Point<br>Order No. |
|------------|----------------|------------|--------------|-----------|---------------------------|
|            | Taper "A"      | Bottom "C" | 15° Flute    | 35° Flute |                           |
|            | Order No.      | Order No.  | Order No.    | Order No. |                           |
| M3-0.5mm   | 311-1403       | 311-2403   | 311-1463     | 311-2463  | 311-1433                  |
| M4-0.7mm   | 311-1404       | 311-2404   | 311-1464     | 311-2464  | 311-1434                  |
| M5-0.8mm   | 311-1405       | 311-2405   | 311-1465     | 311-2465  | 311-1435                  |
| M6-1.0mm   | 311-1406       | 311-2406   | 311-1466     | 311-2466  | 311-1436                  |
| M8-1.25mm  | 311-1408       | 311-2408   | 311-1468     | 311-2468  | 311-1438                  |
| M10-1.5mm  | 311-1410       | 311-2410   | 311-1470     | 311-2470  | 311-1440                  |
| M12-1.75mm | 311-1412       | 311-2412   | 311-1472     | 311-2472  | 311-1442                  |
| M14-2.0mm  | 311-1414       | 311-2414   | 311-1474     | 311-2474  | 311-1444                  |
| M16-2.0mm  | 311-1416       | 311-2416   | 311-1476     | 311-2476  | 311-1446                  |
| M18-2.5mm  | 311-1418       | 311-2418   | 311-1478     | 311-2478  | 311-1448                  |
| M20-2.5mm  | 311-1420       | 311-2420   | 311-1480     | 311-2480  | 311-1450                  |
| M22-2.5mm  | 311-1422       | 311-2422   | 311-1482     | 311-2482  | 311-1452                  |
| M24-3.0mm  | 311-1424       | 311-2424   | 311-1484     | 311-2484  | 311-1454                  |
| M27-3.0mm  | 311-1427       | 311-2427   | 311-1487     | 311-2487  | 311-1457                  |
| M30-3.5mm  | 311-1430       | 311-2430   | 311-1490     | 311-2490  | 311-1460                  |

**HSS, TiN Coated**

| Size       | Straight Flute |            | Spiral Flute |           | Spiral Point<br>Order No. |
|------------|----------------|------------|--------------|-----------|---------------------------|
|            | Taper "A"      | Bottom "C" | 15° Flute    | 35° Flute |                           |
|            | Order No.      | Order No.  | Order No.    | Order No. |                           |
| M3-0.5mm   | 311-2503       | 311-2603   | 311-2563     | 311-2663  | 311-2633                  |
| M4-0.7mm   | 311-2504       | 311-2604   | 311-2564     | 311-2664  | 311-2634                  |
| M5-0.8mm   | 311-2505       | 311-2605   | 311-2565     | 311-2665  | 311-2635                  |
| M6-1.0mm   | 311-2506       | 311-2606   | 311-2566     | 311-2666  | 311-2636                  |
| M8-1.25mm  | 311-2508       | 311-2608   | 311-2568     | 311-2668  | 311-2638                  |
| M10-1.5mm  | 311-2510       | 311-2610   | 311-2570     | 311-2670  | 311-2640                  |
| M12-1.75mm | 311-2512       | 311-2612   | 311-2572     | 311-2672  | 311-2642                  |
| M14-2.0mm  | 311-2514       | 311-2614   | 311-2574     | 311-2674  | 311-2644                  |
| M16-2.0mm  | 311-2516       | 311-2616   | 311-2576     | 311-2676  | 311-2646                  |
| M18-2.5mm  | 311-2518       | 311-2618   | 311-2578     | 311-2678  | 311-2648                  |
| M20-2.5mm  | 311-2520       | 311-2620   | 311-2580     | 311-2680  | 311-2650                  |
| M22-2.5mm  | 311-2522       | 311-2622   | 311-2582     | 311-2682  | 311-2652                  |
| M24-3.0mm  | 311-2524       | 311-2624   | 311-2584     | 311-2684  | 311-2654                  |
| M27-3.0mm  | 311-2527       | 311-2627   | 311-2587     | 311-2687  | 311-2657                  |
| M30-3.5mm  | 311-2530       | 311-2630   | 311-2590     | 311-2690  | 311-2660                  |

## Pipe Taps

### NPT Taper Pipe Taps

Carbon Steel, Ground Thread



| Size          | Order No.       | Size          | Order No.       |
|---------------|-----------------|---------------|-----------------|
| 1/8"-27       | <b>312-6010</b> | 1-1/2"-11-1/2 | <b>312-6045</b> |
| 1/4-18        | <b>312-6015</b> | 2-11-1/2      | <b>312-6050</b> |
| 3/8-18        | <b>312-6020</b> | 2-1/2"-8      | <b>312-6055</b> |
| 1/2-14        | <b>312-6025</b> | 3-8           | <b>312-6060</b> |
| 3/4-14        | <b>312-6030</b> | 3-1/2-8       | <b>312-6065</b> |
| 1-11-1/2      | <b>312-6035</b> | 4"-8          | <b>312-6070</b> |
| 1-1/4"-11-1/2 | <b>312-6040</b> |               |                 |

### NPT & NPTF Taper Pipe Taps

High Speed Steel, Ground Thread



| Size         | No. of Flute | Flute Length | Overall Length | NPT Order No.   | NPTF Order No.  |
|--------------|--------------|--------------|----------------|-----------------|-----------------|
| 1/16"-27     | 4            | 11/16"       | 2-1/8"         | <b>311-6005</b> | <b>311-6205</b> |
| *1/8-27      | 4            | 3/4          | 2-1/8          | <b>311-6010</b> | <b>311-6208</b> |
| 1/8-27       | 4            | 3/4          | 2-1/8          | <b>311-6011</b> | <b>311-6210</b> |
| 1/4-18       | 4            | 1-1/16       | 2-7/16         | <b>311-6015</b> | <b>311-6215</b> |
| 3/8-18       | 4            | 1-1/16       | 2-9/16         | <b>311-6020</b> | <b>311-6220</b> |
| 1/2-14       | 4            | 1-3/8        | 3-1/8          | <b>311-6025</b> | <b>311-6225</b> |
| 3/4-14       | 5            | 1-3/8        | 3-1/4          | <b>311-6030</b> | <b>311-6230</b> |
| 1-11-1/2     | 5            | 1-3/4        | 3-1/4          | <b>311-6035</b> | <b>311-6235</b> |
| 1-1/4-11-1/2 | 5            | 1-3/4        | 4              | <b>311-6040</b> | <b>311-6240</b> |
| 1-1/2-11-1/2 | 7            | 1-3/4        | 4-1/4          | <b>311-6045</b> | <b>311-6245</b> |
| 2-11-1/2     | 7            | 1-3/4        | 4-1/2          | <b>311-6050</b> | <b>311-6250</b> |
| 2-1/2-8      | 8            | 2-9/16       | 5-1/2          | <b>311-6055</b> | <b>311-6255</b> |
| 3-8          | 8            | 2-5/8        | 6              | <b>311-6060</b> | <b>311-6260</b> |
| 3-1/2-8      | 8            | 2-11/16      | 6-1/2          | <b>311-6065</b> | <b>311-6265</b> |

\* Small Shank

### NPT Taper Pipe Taps-Interrupted Thread

High Speed Steel, Ground Thread



| Size         | No. of Flute | Thread Length | Overall Length | Order No.       |
|--------------|--------------|---------------|----------------|-----------------|
| 1/16"-27     | 5            | 3/4"          | 2-1/8"         | <b>311-6105</b> |
| *1/8-27      | 5            | 3/4           | 2-1/8          | <b>311-6110</b> |
| 1/8-27       | 5            | 3/4           | 2-1/8          | <b>311-6111</b> |
| 1/4-18       | 5            | 1-1/16        | 2-7/16         | <b>311-6115</b> |
| 3/8-18       | 5            | 1-1/16        | 2-9/16         | <b>311-6120</b> |
| 1/2-14       | 5            | 1-3/8         | 3-1/8          | <b>311-6125</b> |
| 3/4"-14      | 5            | 1-3/8"        | 3-1/4"         | <b>311-6130</b> |
| 1-11-1/2     | 5            | 1-3/4         | 3-3/4          | <b>311-6135</b> |
| 1-1/4-11-1/2 | 5            | 1-3/4         | 4              | <b>311-6140</b> |
| 1-1/2-11-1/2 | 7            | 1-3/4         | 4-1/4          | <b>311-6145</b> |
| 2-11-1/2     | 7            | 1-3/4         | 4-1/2          | <b>311-6150</b> |

\*0.3125"Shank, \*\*0.4375"Shank

### Interrupted NPS Straight Pipe Taps

High Speed Steel, Ground Thread

- Use for tapping holes to be used with tapered \* 0.4375"Shank, \*\*0.3125"Shank threading pipe and fittings in low pressure applications when a sealer is used
- Adheres to be same specifications as taper pipe taps except the threads straight



| Size  | Threads Per Inch | No. of Flutes | Thread Length | Overall Length | Interrupted NPS Order No. |
|-------|------------------|---------------|---------------|----------------|---------------------------|
| 1/16  | 27               | 4             | 11/16         | 2-1/8          | <b>311-6905</b>           |
| *1/8  | 27               | 4             | 3/4           | 2-1/8          | <b>311-6908</b>           |
| **1/8 | 27               | 4             | 3/4           | 2-1/8          | <b>311-6910</b>           |
| 1/4   | 18               | 4             | 1-1/16        | 2-7/16         | <b>311-6915</b>           |
| 3/8   | 18               | 4             | 1-1/16        | 2-9/16         | <b>311-6920</b>           |
| 1/2   | 14               | 4             | 1-3/8         | 3-1/8          | <b>311-6925</b>           |
| 3/4   | 14               | 5             | 1-3/8         | 3-1/4          | <b>311-6930</b>           |
| 1     | 11-1/2           | 5             | 1-3/4         | 3-3/4          | <b>311-6935</b>           |
| 1-1/4 | 11-1/2           | 5             | 1-3/4         | 4              | <b>311-6940</b>           |
| 1-1/2 | 11-1/2           | 7             | 1-3/4         | 4-1/4          | <b>311-6945</b>           |
| 2     | 11-1/2           | 7             | 1-3/4         | 4-1/2          | <b>311-6950</b>           |
| 2-1/2 | 8                | 8             | 2-9/16        | 5-1/2          | <b>311-6955</b>           |
| 3     | 8                | 8             | 2-5/8         | 6              | <b>311-6960</b>           |
| 3-1/2 | 8                | 8             | 2-11/16       | 6-1/2          | <b>311-6965</b>           |
| 4     | 8                | 8             | 2-3/4         | 6-3/4          | <b>311-6970</b>           |

\*0.3125"Shank, \*\*0.4375"Shank

### NPSF Straight Pipe Taps

High Speed Steel, Ground Thread

- Use for tapping holes to be used with tapered \* 0.4375"Shank, \*\*0.3125"Shank threading pipe and fittings in low pressure applications when a sealer is used
- Adheres to be same specifications as taper pipe taps except the thread is straight



| Size  | Threads Per Inch | No. of Flutes | Thread Length | Overall Length | NPSF Order No.  |
|-------|------------------|---------------|---------------|----------------|-----------------|
| 1/16  | 27               | 4             | 11/16         | 2-1/8          | <b>311-6805</b> |
| *1/8  | 27               | 4             | 3/4           | 2-1/8          | <b>311-6808</b> |
| **1/8 | 27               | 4             | 3/4           | 2-1/8          | <b>311-6810</b> |
| 1/4   | 18               | 4             | 1-1/16        | 2-7/16         | <b>311-6815</b> |
| 3/8   | 18               | 4             | 1-1/16        | 2-9/16         | <b>311-6820</b> |
| 1/2   | 14               | 4             | 1-3/8         | 3-1/8          | <b>311-6825</b> |
| 3/4   | 14               | 5             | 1-3/8         | 3-1/4          | <b>311-6830</b> |
| 1     | 11-1/2           | 5             | 1-3/4         | 3-3/4          | <b>311-6835</b> |
| 1-1/4 | 11-1/2           | 5             | 1-3/4         | 4              | <b>311-6840</b> |
| 1-1/2 | 11-1/2           | 7             | 1-3/4         | 4-1/4          | <b>311-6845</b> |
| 2     | 11-1/2           | 7             | 1-3/4         | 4-1/2          | <b>311-6850</b> |
| 2-1/2 | 8                | 8             | 2-9/16        | 5-1/2          | <b>311-6855</b> |
| 3     | 8                | 8             | 2-5/8         | 6              | <b>311-6860</b> |
| 3-1/2 | 8                | 8             | 2-11/16       | 6-1/2          | <b>311-6865</b> |
| 4     | 8                | 8             | 2-3/4         | 6-3/4          | <b>311-6870</b> |

\*0.4375"Shank, \*\*0.3125"Shank

### NPS Straight Pipe Taps

High Speed Steel,  
Ground Thread



| Size    | Order No. | Size         | Order No. | Size     | Order No. |
|---------|-----------|--------------|-----------|----------|-----------|
| 1/8"-27 | 311-6310  | 3/4-14       | 311-6330  | 2-11-1/2 | 311-6350  |
| 1/4-18  | 311-6315  | 1-11-1/2     | 311-6335  | 3-8      | 311-6360  |
| 3/8-18  | 311-6320  | 1-1/4-11-1/2 | 311-6340  |          |           |
| 1/2-14  | 311-6325  | 1-1/2-11-1/2 | 311-6345  |          |           |

### TiN Coated Taper Pipe Taps



| Tap Size | No. of Flute | Thread Length | Overall Length | Order No. |
|----------|--------------|---------------|----------------|-----------|
| 1/16"-27 | 5            | 11/16"        | 2-1/8"         | 318-3305  |
| 1/8-27   | 5            | 3/4           | 2-1/8          | 318-3310  |
| 1/4-18   | 5            | 1-1/16        | 2-7/8          | 318-3315  |
| 3/8-18   | 5            | 1-1/16        | 2-9/16         | 318-3320  |
| 1/2-14   | 5            | 1-3/8         | 3-1/8          | 318-3325  |
| 3/4-14   | 5            | 1-3/8         | 3-1/4          | 318-3330  |
| 1-11-1/2 | 5            | 1-3/4         | 3-3/4          | 318-3335  |

### TiN Coated Straight Pipe Taps



| Tap Size | No. of Flute | Thread Length | Overall Length | Order No. |
|----------|--------------|---------------|----------------|-----------|
| 1/8"-27  | 4            | 3/4"          | 2-1/8"         | 318-3403  |
| 1/4-18   | 4            | 1-1/16        | 2-1/8          | 318-3406  |
| 1/4-18   | 4            | 1-1/16        | 2-9/16         | 318-3409  |
| 3/8-18   | 4            | 1-1/16        | 2-9/16         | 318-3412  |
| 1/2-14   | 4            | 1-3/8         | 3-1/8          | 318-3415  |

### HSS NPT Long Taper Pipe Taps



| Size  | Threads Per Inch | Thread Length | OAL | Order No. |
|-------|------------------|---------------|-----|-----------|
| 1/8"  | 27               | 3/4"          | 4"  | 311-6702  |
| 1/4   | 18               | 1-1/16        | 4   | 311-6712  |
| 3/8   | 18               | 1-1/16        | 4   | 311-6717  |
| 1/2   | 14               | 1-3/8         | 4   | 311-6722  |
| 3/4   | 14               | 1-3/8         | 4   | 311-6722  |
| 1     | 11               | 1-3/4         | 4   | 311-6727  |
| 1/8   | 27               | 3/4           | 6   | 311-6732  |
| 1/4   | 18               | 1-1/16        | 6   | 311-6737  |
| 3/8   | 18               | 1-1/16        | 6   | 311-6742  |
| 1/2   | 14               | 1-3/8         | 6   | 311-6747  |
| 3/4   | 14               | 1-3/8         | 6   | 311-6752  |
| 1     | 11-1/2           | 1-3/4         | 6   | 311-6757  |
| 1-1/4 | 11-1/2           | 1-3/4         | 6   | 311-6762  |
| 1-1/2 | 11-1/2           | 1-3/4         | 8   | 311-6767  |

### 55° Whitworth Thread British Pipe Taps

HSS, Right Hand, Ground Thread, Bottoming

- 55° Whitworth thread form.
- BSPP: British standard parallel straight pipe.
- BSPT: British standard taper pipe.



| Tap Size | BSPP Order No. | BSPT Order No. |
|----------|----------------|----------------|
| 1/8"-28  | 311-6530       | 311-6560       |
| 1/4-19   | 311-6531       | 311-6561       |
| 3/8-19   | 311-6532       | 311-6562       |
| 1/2-14   | 311-6533       | 311-6563       |
| 5/8-14   | 311-6534       | 311-6564       |
| 3/4-14   | 311-6535       | 311-6565       |
| 7/8-14   | 311-6536       | 311-6566       |

| Tap Size | BSPP Order No. | BSPT Order No. |
|----------|----------------|----------------|
| 1"-11    | 311-6537       | 311-6567       |
| 1-1/4-11 | 311-6538       | 311-6568       |
| 1-1/2-11 | 311-6539       | 311-6569       |
| 1-3/4-11 | 311-6540       | 311-6570       |
| 2-11     | 311-6541       | 311-6571       |
| 2-1/2-11 | 311-6542       | 311-6572       |
| 3-11     | 311-6543       | 311-6573       |

### Interrupted NPTF Taper Pipe Taps

High Speed Steel

\*0.3125" Shank, \*\*0.4375" shank

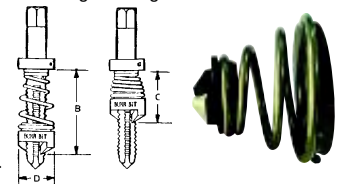


| Thread Size   | Thread length | OAL     | No. of Flutes | Order No.  |
|---------------|---------------|---------|---------------|------------|
| 1/16"-27      | 11/16"        | 2-1/8"  | 4             | 312-6105   |
| *1/8"-27      | 3/4"          | 2-1/8"  | 4             | 312-6108*  |
| **1/8"-27     | 3/4"          | 2-1/8"  | 4             | 312-6110** |
| 1/4"-18       | 1-1/16"       | 2-7/16" | 4             | 312-6115   |
| 3/8"-18       | 1-1/16"       | 2-9/16" | 4             | 312-6120   |
| 1/2"-14       | 1-3/8"        | 3-1/8"  | 4             | 312-6125   |
| 3/4"-14       | 1-3/8"        | 3-1/4"  | 5             | 312-6130   |
| 1"-11-1/2     | 1-3/4"        | 3-1/4"  | 5             | 312-4135   |
| 1-1/4"-11-1/2 | 1-3/4"        | 4"      | 5             | 312-6140   |
| 1-1/2"-11-1/2 | 1-3/4"        | 4-1/4"  | 7             | 312-6145   |
| 2"-11-1/2     | 1-3/4"        | 4-1/2"  | 7             | 312-6150   |
| 2-1/2"-8      | 2-9/16"       | 5-1/2"  | 8             | 312-6155   |
| 3"-8          | 2-5/8"        | 6"      | 8             | 312-6160   |
| 3-1/2"        | 2-11/16"      | 6-1/2"  | 8             | 312-6165   |

### Pipe Tap Burr-Bit

Taps and deburrs in one operation. Eliminates expensive secondary deburring.

- Deburrs the top of the tapped hole while the tap is being withdrawn from the work piece at standard 120°.
- No reversal cut in the chamfer due to tool cutting only in reverse.
- Creates a chamfer for easy screw insertion; leaves no burr to clog the tapped hole.
- Deburrs to consistent depth even though work pieces vary in thickness.
- No hazardous sharp burrs to cut fingers or snag clothing.
- Easy to install; simply slips over your tap. Resharpenable with simple radial relief grinding fixture.
- Taps not included.
- Available up to size 1-1/4" and in metric sizes
- Also available in 90° based on P.O.A.



| Pipe Tap Size | Dimensions |       |       | Flute Taps | Order No. |
|---------------|------------|-------|-------|------------|-----------|
|               | B          | C     | D     |            |           |
| 1/8"          | 1-1/16     | 19/32 | 21/32 | 4          | 313-2001  |

### Tap Extractor for Pipe Taps

Complete Extractor

- For use with standard pipe taps



5 Flute

| Tap Size | Order No. |
|----------|-----------|
| 1/8"     | 312-8951  |
| 1/4      | 312-8952  |
| 3/8      | 312-8953  |
| 1/2      | 312-8954  |
| 3/4      | 312-8955  |

4 Flute

| Tap Size | Order No. |
|----------|-----------|
| 1/8"     | 312-8941  |
| 1/4      | 312-8942  |
| 3/8      | 312-8943  |
| 1/2      | 312-8944  |

## 30° Slow Spiral Flute Taps

HSS, Ground



| Size | Threads Per Inch | Thread Type | Flutes Limits | No. of Flutes | Order No. | Size | Threads Per Inch | Thread Type | Flutes Limits | No. of Flutes | Order No. |
|------|------------------|-------------|---------------|---------------|-----------|------|------------------|-------------|---------------|---------------|-----------|
| 3    | 48               | NC          | H2            | 2             | 311-8710  | 5/16 | 18               | NC          | H3            | 3             | 311-8742  |
| 3    | 56               | NF          | H2            | 2             | 311-8712  | 5/16 | 24               | NF          | H3            | 3             | 311-8744  |
| 4    | 48               | NC          | H2            | 2             | 311-8714  | 3/8  | 16               | NC          | H3            | 3             | 311-8746  |
| 4    | 40               | NF          | H2            | 2             | 311-8716  | 3/8  | 24               | NF          | H3            | 3             | 311-8748  |
| 5    | 48               | NC          | H2            | 2             | 311-8718  | 7/16 | 14               | NC          | H3            | 3             | 311-8750  |
| 5    | 44               | NF          | H2            | 2             | 311-8720  | 7/16 | 20               | NF          | H3            | 3             | 311-8752  |
| 6    | 32               | NC          | H3            | 2             | 311-8722  | 1/2  | 13               | NC          | H3            | 3             | 311-8754  |
| 6    | 40               | NF          | H3            | 2             | 311-8724  | 1/2  | 20               | NF          | H3            | 4             | 311-8756  |
| 8    | 32               | NC          | H3            | 3             | 311-8726  | 9/16 | 12               | NC          | H3            | 3             | 311-8758  |
| 8    | 36               | NF          | H3            | 3             | 311-8728  | 9/16 | 18               | NF          | H3            | 3             | 311-8760  |
| 10   | 24               | NC          | H3            | 3             | 311-8730  | 5/8  | 11               | NC          | H3            | 4             | 311-8762  |
| 10   | 32               | NF          | H3            | 3             | 311-8732  | 5/8  | 18               | NF          | H3            | 4             | 311-8764  |
| 12   | 24               | NC          | H3            | 3             | 311-8734  | 3/4  | 10               | NC          | H3            | 4             | 311-8766  |
| 12   | 28               | NF          | H3            | 3             | 311-8736  | 3/4  | 16               | NF          | H3            | 4             | 311-8768  |
| 1/4  | 20               | NC          | H3            | 3             | 311-8738  | 7/8  | 9                | NC          | H3            | 3             | 311-8770  |
| 1/4  | 28               | NF          | H3            | 3             | 311-8740  |      |                  |             |               |               |           |

## 45° Fast Spiral Flute Taps

HSS, Ground



- Fast spiral improves chip drawing action in relatively deep blind holes
- Suited for tapping aluminum, magnesium, brass, copper and zinc die cast materials
- Surface treated to resist loading and galling

### Bottoming

| Size | Threads Per Inch | Thread Type | Flutes Limits | No. of Flutes | Order No. |
|------|------------------|-------------|---------------|---------------|-----------|
| 3    | 48               | NC          | H2            | 2             | 311-8510  |
| 3    | 56               | NF          | H2            | 2             | 311-8512  |
| 4    | 40               | NC          | H2            | 2             | 311-8514  |
| 4    | 48               | NF          | H2            | 2             | 311-8516  |
| 5    | 40               | NC          | H2            | 2             | 311-8518  |
| 5    | 44               | NF          | H2            | 2             | 311-8520  |
| 6    | 32               | NC          | H3            | 2             | 311-8522  |
| 6    | 40               | NF          | H3            | 2             | 311-8524  |
| 8    | 32               | NC          | H3            | 3             | 311-8526  |
| 8    | 36               | NF          | H3            | 3             | 311-8528  |
| 10   | 24               | NC          | H3            | 3             | 311-8530  |
| 10   | 32               | NF          | H3            | 3             | 311-8532  |
| 12   | 24               | NC          | H3            | 3             | 311-8534  |
| 12   | 28               | NF          | H3            | 3             | 311-8536  |
| 1/4  | 20               | NC          | H3            | 3             | 311-8538  |
| 1/4  | 28               | NF          | H3            | 3             | 311-8540  |
| 5/16 | 18               | NC          | H3            | 3             | 311-8542  |
| 5/16 | 24               | NF          | H3            | 3             | 311-8544  |
| 3/8  | 16               | NC          | H3            | 3             | 311-8546  |
| 3/8  | 24               | NF          | H3            | 3             | 311-8548  |
| 7/16 | 14               | NC          | H3            | 3             | 311-8550  |
| 7/16 | 20               | NF          | H3            | 3             | 311-8552  |
| 1/2  | 13               | NC          | H3            | 3             | 311-8554  |
| 1/2  | 20               | NF          | H3            | 4             | 311-8556  |
| 9/16 | 12               | NC          | H3            | 3             | 311-8558  |
| 9/16 | 18               | NF          | H3            | 3             | 311-8560  |
| 5/8  | 11               | NC          | H3            | 4             | 311-8562  |
| 5/8  | 18               | NF          | H3            | 4             | 311-8564  |
| 3/4  | 10               | NC          | H3            | 4             | 311-8566  |
| 3/4  | 16               | NF          | H3            | 4             | 311-8568  |

### Plug

| Size  | Threads Per Inch | Thread Type | Flutes Limits | No. of Flutes | Order No. |
|-------|------------------|-------------|---------------|---------------|-----------|
| 3     | 48               | NC          | H2            | 2             | 311-8410  |
| 3     | 56               | NF          | H2            | 2             | 311-8412  |
| 4     | 40               | NC          | H2            | 2             | 311-8414  |
| 4     | 48               | NF          | H2            | 2             | 311-8416  |
| 5     | 40               | NC          | H2            | 2             | 311-8418  |
| 5     | 44               | NF          | H2            | 2             | 311-8420  |
| 6     | 32               | NC          | H3            | 2             | 311-8422  |
| 6     | 40               | NF          | H3            | 2             | 311-8424  |
| 8     | 32               | NC          | H3            | 3             | 311-8426  |
| 8     | 32               | NC          | H3            | 2             | 311-8427  |
| 8     | 36               | NF          | H3            | 3             | 311-8428  |
| 10    | 24               | NC          | H3            | 3             | 311-8430  |
| 10    | 32               | NF          | H3            | 3             | 311-8432  |
| 10    | 32               | NF          | H3            | 2             | 311-8433  |
| 12    | 24               | NC          | H3            | 3             | 311-8434  |
| 12    | 28               | NF          | H3            | 3             | 311-8436  |
| 1/4   | 20               | NC          | H3            | 3             | 311-8438  |
| 1/4   | 28               | NF          | H3            | 3             | 311-8440  |
| 5/16  | 18               | NC          | H3            | 3             | 311-8442  |
| 5/16  | 24               | NF          | H3            | 3             | 311-8444  |
| 3/8   | 16               | NC          | H3            | 3             | 311-8446  |
| 3/8   | 24               | NF          | H3            | 3             | 311-8448  |
| 7/16  | 14               | NC          | H3            | 3             | 311-8450  |
| 7/16  | 20               | NF          | H3            | 3             | 311-8452  |
| 1/2   | 13               | NC          | H3            | 3             | 311-8454  |
| 1/2   | 20               | NF          | H3            | 3             | 311-8456  |
| 9/16  | 12               | NC          | H3            | 3             | 311-8458  |
| 9/16  | 18               | NF          | H3            | 3             | 311-8460  |
| 5/8   | 11               | NC          | H3            | 4             | 311-8462  |
| 5/8   | 18               | NF          | H3            | 3             | 311-8464  |
| 3/4   | 10               | NC          | H3            | 4             | 311-8466  |
| 3/4   | 16               | NF          | H3            | 3             | 311-8468  |
| 7/8   | 9                | NC          | H3            | 3             | 311-8470  |
| 7/8   | 14               | NF          | H3            | 3             | 311-8472  |
| 1     | 8                | NC          | H4            | 3             | 311-8474  |
| 1-1/2 | 12               | NF          | H4            | 3             | 311-8476  |
| 1-1/2 | 14               | NS          | H4            | 3             | 311-8478  |

### Adjustable Round Dies

Carbon Steel, Standard Thread, Right Hand Cutting



#### 13/16" O.D.

| Size    | Order No. |
|---------|-----------|
| 2-56    | 314-3000  |
| 5-40    | 314-3001  |
| 2-64    | 314-3002  |
| 8-32    | 314-3003  |
| 6-40    | 314-3004  |
| 8-36    | 314-3005  |
| 10-32   | 314-3006  |
| 12-24   | 314-3008  |
| 12-28   | 314-3010  |
| 14-20   | 314-3012  |
| 14-24   | 314-3014  |
| 1/4-20  | 314-3016  |
| 1/4-28  | 314-3018  |
| 5/16-24 | 314-3020  |

#### 1" O.D.

| Size    | Order No. | Size     | Order No. |
|---------|-----------|----------|-----------|
| 5-40    | 314-3102  | 3/16"-18 | 314-3121  |
| 5-44    | 314-3104  | 1/4-20   | 314-3122  |
| 6-32    | 314-3106  | 1/4-28   | 314-3123  |
| 8-32    | 314-3108  | 5/16-18  | 314-3124  |
| 8-36    | 314-3110  | 5/16-24  | 314-3126  |
| 10-32   | 314-3111  | 3/8-16   | 314-3127  |
| 12-24   | 314-3112  | 3/8-24   | 314-3128  |
| 12-28   | 314-3114  | 7/16-14  | 314-3130  |
| 14-20   | 314-3116  | 7/16-20  | 314-3132  |
| 14-24   | 314-3118  | 1/2-13   | 314-3134  |
| 3/16-24 | 314-3120  | 1/2-20   | 314-3136  |

#### 1-1/2" O.D.

| Size    | Order No. |
|---------|-----------|
| 12-24   | 314-3208  |
| 12-28   | 314-3210  |
| 14-20   | 314-3212  |
| 14-24   | 314-3214  |
| 1/4-20  | 314-3216  |
| 1/4-28  | 314-3218  |
| 5/16-18 | 314-3220  |
| 5/16-24 | 314-3222  |
| 3/8-24  | 314-3224  |
| 7/16-14 | 314-3225  |
| 7/16-20 | 314-3226  |
| 1/2-13  | 314-3227  |
| 9/16-18 | 314-3228  |
| 5/8-11  | 314-3229  |
| 5/8-18  | 314-3230  |
| 3/4-10  | 314-3231  |
| 3/4-16  | 314-3232  |
| 1/2-20  | 314-3236  |
| 9/16-12 | 314-3240  |

#### 2" O.D.

| Size    | Order No. |
|---------|-----------|
| 1/4"-20 | 314-3308  |
| 1/4-28  | 314-3310  |
| 14-20   | 314-3312  |
| 14-28   | 314-3314  |
| 5/16-24 | 314-3315  |
| 5/16-18 | 314-3316  |
| 3/8-24  | 314-3318  |
| 3/8-16  | 314-3319  |
| 7/16-20 | 314-3320  |
| 7/16-14 | 314-3321  |
| 7/16-28 | 314-3322  |
| 1/2-13  | 314-3324  |
| 1/2-20  | 314-3326  |
| 3/4-10  | 314-3328  |
| 3/4-16  | 314-3330  |
| 7/8-9   | 314-3331  |
| 7/8-14  | 314-3332  |
| 1-8     | 314-3334  |
| 1-12    | 314-3336  |

#### 2-1/2" O.D.

| Size      | Order No. |
|-----------|-----------|
| 9/16"-12  | 314-3428  |
| 9/16-18   | 314-3430  |
| 5/8-11    | 314-3432  |
| 5/8-18    | 314-3434  |
| 1-12      | 314-3436  |
| 1-1/4-7   | 314-3438  |
| 1-1/4-12  | 314-3440  |
| 1-1/2"-12 | 314-3442  |

#### 3" O.D.

| Size      | Order No. |
|-----------|-----------|
| 1-1/4"-12 | 314-3538  |
| 1-1/4-7   | 314-3539  |
| 1-1/8-7   | 314-3540  |
| 1-3/8-6   | 314-3542  |
| 1-3/8-12  | 314-3544  |
| 1-1/2"-6  | 314-3545  |
| 1-5/8-5   | 314-3546  |

### Adjustable Round Dies

High Speed Steel, Standard Thread, Right Hand Cutting



#### 13/16" O.D.

| Size    | Order No. |
|---------|-----------|
| 0-80    | 314-1000  |
| 1-64    | 314-1002  |
| 1-72    | 314-1004  |
| 2-56    | 314-1006  |
| 2-64    | 314-1008  |
| 3-48    | 314-1010  |
| 3-56    | 314-1012  |
| 4-40    | 314-1014  |
| 4-48    | 314-1016  |
| 5-40    | 314-1018  |
| 5-44    | 314-1020  |
| 6-32    | 314-1022  |
| 6-40    | 314-1024  |
| 8-32    | 314-1026  |
| 8-36    | 314-1028  |
| 10-24   | 314-1030  |
| 10-32   | 314-1032  |
| 12-24   | 314-1034  |
| 12-28   | 314-1036  |
| 14-24   | 314-1038  |
| 1/4-20  | 314-1040  |
| 1/4-28  | 314-1042  |
| 5/16-18 | 314-1044  |
| 5/16-24 | 314-1046  |

#### 1" O.D.

| Size    | Order No. |
|---------|-----------|
| 1-64    | 314-1102  |
| 1-72    | 314-1104  |
| 2-56    | 314-1106  |
| 2-64    | 314-1108  |
| 3-48    | 314-1110  |
| 3-56    | 314-1112  |
| 4-40    | 314-1114  |
| 4-48    | 314-1116  |
| 5-40    | 314-1118  |
| 5-44    | 314-1120  |
| 6-32    | 314-1122  |
| 6-40    | 314-1124  |
| 8-32    | 314-1126  |
| 8-36    | 314-1128  |
| 10-24   | 314-1130  |
| 10-32   | 314-1132  |
| 12-24   | 314-1134  |
| 12-28   | 314-1136  |
| 14-24   | 314-1138  |
| 1/4-20  | 314-1140  |
| 1/4-28  | 314-1142  |
| 5/16-18 | 314-1144  |
| 5/16-24 | 314-1146  |
| 3/8-16  | 314-1148  |
| 3/8-24  | 314-1150  |
| 7/16-14 | 314-1152  |
| 7/16-20 | 314-1154  |
| 1/2-13  | 314-1156  |
| 1/2-20  | 314-1158  |

#### 1-1/2" O.D.

| Size    | Order No. |
|---------|-----------|
| 1/4"-20 | 314-1240  |
| 1/4-28  | 314-1242  |
| 5/16-18 | 314-1244  |
| 5/16-24 | 314-1246  |
| 3/8-16  | 314-1248  |
| 3/8-24  | 314-1250  |
| 7/16-14 | 314-1252  |
| 7/16-20 | 314-1256  |
| 1/2-13  | 314-1258  |
| 1/2-20  | 314-1260  |
| 9/16-12 | 314-1262  |
| 9/16-18 | 314-1264  |
| 5/8-11  | 314-1266  |
| 5/8-18  | 314-1268  |
| 3/4-10  | 314-1270  |
| 3/4-16  | 314-1272  |

#### 2" O.D.

| Size    | Order No. |
|---------|-----------|
| 1/4"-20 | 314-1340  |
| 1/4-28  | 314-1342  |
| 5/16-18 | 314-1344  |
| 5/16-24 | 314-1346  |
| 3/8-16  | 314-1348  |
| 3/8-24  | 314-1350  |
| 7/16-14 | 314-1352  |
| 7/16-20 | 314-1354  |
| 1/2-13  | 314-1356  |
| 1/2-20  | 314-1358  |
| 9/16-12 | 314-1360  |
| 9/16-18 | 314-1362  |
| 5/8-11  | 314-1364  |
| 5/8-18  | 314-1366  |
| 3/4-10  | 314-1368  |
| 3/4-16  | 314-1370  |
| 7/8-9   | 314-1372  |
| 7/8-14  | 314-1374  |
| 1-8     | 314-1378  |
| 1-12    | 314-1380  |

#### 2-1/2" O.D.

| Size     | Order No. |
|----------|-----------|
| 3/4"-10  | 314-1468  |
| 3/4-16   | 314-1470  |
| 7/8-9    | 314-1472  |
| 7/8-14   | 314-1474  |
| 1-8      | 314-1476  |
| 1-14     | 314-1478  |
| 1-1/8-7  | 314-1480  |
| 1-1/8-12 | 314-1482  |
| 1-1/4-7  | 314-1484  |
| 1-1/4-12 | 314-1486  |
| 1-3/8-6  | 314-1488  |
| 1-3/8-12 | 314-1490  |
| 1-1/2-6  | 314-1492  |
| 1-1/2-12 | 314-1494  |

#### 3" O.D.

| Size      | Order No. |
|-----------|-----------|
| 1-1/4"-12 | 314-1505  |
| 1-1/4-7   | 314-1507  |
| 1-1/2-6   | 314-1509  |

## Left Hand Adjustable Round Dies

NC&NF Thread, High Speed Steel

13/16" O.D.

1" O.D.

1-1/2" O.D.

2" O.D.

| Size   | Order No. |
|--------|-----------|
| 0-80   | 314-4000  |
| 1-64   | 314-4002  |
| 1-72   | 314-4004  |
| 2-56   | 314-4006  |
| 2-64   | 314-4008  |
| 3-48   | 314-4010  |
| 3-56   | 314-4012  |
| 4-40   | 314-4014  |
| 4-48   | 314-4016  |
| 5-40   | 314-4018  |
| 5-44   | 314-4020  |
| 6-32   | 314-4022  |
| 6-40   | 314-4024  |
| 8-32   | 314-4026  |
| 8-36   | 314-4028  |
| 10-24  | 314-4030  |
| 10-32  | 314-4032  |
| 12-24  | 314-4034  |
| 12-28  | 314-4036  |
| 1/4-20 | 314-4040  |
| 1/4-28 | 314-4042  |

| Size    | Order No. |
|---------|-----------|
| 5-44    | 314-4120  |
| 6-32    | 314-4122  |
| 6-40    | 314-4124  |
| 8-32    | 314-4126  |
| 8-36    | 314-4128  |
| 10-24   | 314-4130  |
| 10-32   | 314-4132  |
| 12-24   | 314-4134  |
| 12-28   | 314-4136  |
| 14-24   | 314-4138  |
| 1/4-20  | 314-4140  |
| 1/4-28  | 314-4142  |
| 5/16-18 | 314-4144  |
| 5/16-24 | 314-4146  |
| 3/8-16  | 314-4148  |
| 3/8-24  | 314-4150  |
| 7/16-14 | 314-4152  |
| 7/16-20 | 314-4154  |
| 1/2-13  | 314-4156  |
| 1/2-20  | 314-4158  |

| Size    | Order No. |
|---------|-----------|
| 1/4"-20 | 314-4240  |
| 1/4-28  | 314-4242  |
| 5/16-18 | 314-4244  |
| 5/16-24 | 314-4246  |
| 3/8-16  | 314-4248  |
| 3/8-24  | 314-4252  |
| 3/8-32  | 314-4254  |
| 7/16-14 | 314-4256  |
| 7/16-20 | 314-4258  |
| 1/2-13  | 314-4260  |
| 1/2-20  | 314-4262  |
| 9/16-12 | 314-4264  |
| 9/16-18 | 314-4266  |
| 5/8-11  | 314-4268  |
| 5/8-18  | 314-4270  |
| 3/4-10  | 314-4272  |
| 3/4-16  | 314-4274  |

| Size    | Order No. |
|---------|-----------|
| 3/4"-10 | 314-4370  |
| 3/4-16  | 314-4372  |
| 7/8-9   | 314-4374  |
| 7/8-14  | 314-4376  |
| 1-8     | 314-4378  |
| 1-12    | 314-4379  |
| 1-14    | 314-4380  |

2-1/2" O.D.

| Size     | Order No. |
|----------|-----------|
| 1-1/8"-7 | 314-4480  |
| 1-1/8-12 | 314-4482  |
| 1-1/4-7  | 314-4484  |
| 1-1/4-12 | 314-4486  |
| 1-3/8-6  | 314-4488  |
| 1-3/8-12 | 314-4490  |
| 1-1/2-6  | 314-4492  |
| 1-1/2-12 | 314-4494  |
| 1-3/4-18 | 314-4496  |

## Adjustable Round Pipe Dies

NPT & NPS, High Speed Steel



| Outside Dia. | Size         | NPT Order No. | NPS Order No. |
|--------------|--------------|---------------|---------------|
| 1"           | 1/16"-27     | 315-2110      | 315-2210      |
| 1            | 1/8-27       | 315-2115      | 315-2215      |
| 1-1/2        | 1/8-27       | 315-2120      | 315-2220      |
| 1-1/2        | 1/4-18       | 315-2122      | 315-2222      |
| 1-1/2        | 3/8-18       | 315-2124      | 315-2224      |
| 2            | 1/4-18       | 315-2130      | 315-2230      |
| 2            | 3/8-18       | 315-2132      | 315-2232      |
| 2            | 1/2-14       | 315-2134      | 315-2234      |
| 2            | 3/4-14       | 315-2136      | 315-2236      |
| 2-1/2        | 1-11-1/2     | 315-2140      | 315-2240      |
| 3            | 1-1/4-11-1/2 | 315-2150      | 315-2250      |
| 3            | 1-1/2-11-1/2 | 315-2152      | 315-2252      |
| 4            | 1-1/2-11-1/2 | 315-2162      | 315-2262      |
| 4            | 2-11-1/2     | 315-2160      | 315-2260      |
| 5            | 2-1/2-8      | 315-2170      | 315-2270      |
| 5            | 3-8          | 315-2171      | 315-2271      |
| 5            | 3-1/2-8      | 315-2172      | 315-2272      |

## Left Hand Adjustable Round Dies

Carbon Steel,  
NC&NF Threads



| Size | Order No. | Size  | Order No. |
|------|-----------|-------|-----------|
| 1-72 | 314-5002  | 6-32  | 314-5018  |
| 2-64 | 314-5004  | 6-40  | 314-5020  |
| 3-48 | 314-5006  | 8-32  | 314-5022  |
| 3-56 | 314-5008  | 8-36  | 314-5024  |
| 4-40 | 314-5010  | 10-24 | 314-5026  |
| 4-48 | 314-5012  | 10-32 | 314-5028  |
| 5-40 | 314-5014  | 12-24 | 314-5030  |
| 5-44 | 314-5016  | 12-28 | 314-5032  |

| Size    | Order No. |
|---------|-----------|
| 1/4"-20 | 314-5140  |
| 5/16-18 | 314-5142  |
| 5/16-24 | 314-5144  |
| 7/16-14 | 314-5146  |
| 7/16-20 | 314-5148  |
| 9/16-12 | 314-5150  |
| 9/16-16 | 314-5152  |
| 5/8-11  | 314-5154  |

| Size    | Order No. | Size     | Order No. |
|---------|-----------|----------|-----------|
| 1/4"-20 | 314-5240  | 9/16"-12 | 314-5258  |
| 1/4-24  | 314-5242  | 9/16-18  | 314-5260  |
| 1/16-18 | 314-5244  | 5/8-11   | 314-5262  |
| 1/16-24 | 314-5246  | 5/8-18   | 314-5264  |
| 3/8-16  | 314-5248  | 3/4-10   | 314-5266  |
| 3/8-24  | 314-5250  | 3/4-16   | 314-5268  |
| 7/16-14 | 314-5252  | 7/8-9    | 314-5270  |
| 1/2-13  | 314-5254  | 7/8-14   | 314-5272  |
| 1/2-20  | 314-5256  | 1-8      | 314-5274  |

## Metric Adjustable Round Dies

High Speed Steel  
Right Hand



| Outside Dia. | Size x Pitch | Order No. |
|--------------|--------------|-----------|
| 1"           | 2.0x0.4mm    | 314-1610  |
| 1            | 2.2x0.45mm   | 314-1612  |
| 1            | 2.3x0.4mm    | 314-1614  |
| 1            | 2.5x0.45mm   | 314-1616  |
| 1            | 2.6x0.45mm   | 314-1618  |
| 1            | 3.0x0.5mm    | 314-1620  |
| 1            | 3.0x0.6mm    | 314-1622  |
| 1            | 3.5x0.6mm    | 314-1624  |
| 1            | 4.0x0.5mm    | 314-1626  |
| 1            | 4.0x0.7mm    | 314-1628  |
| 1            | 5.0x0.5mm    | 314-1630  |
| 1            | 5.0x0.8mm    | 314-1632  |
| 1            | 6.0x0.5mm    | 314-1634  |
| 1            | 6.0x0.75mm   | 314-1636  |
| 1            | 6.0x1.0mm    | 314-1638  |
| 1            | 7.0x1.0mm    | 314-1640  |
| 1            | 8.0x0.75mm   | 314-1642  |
| 1            | 8.0x1.0mm    | 314-1644  |
| 1            | 8.0x1.25mm   | 314-1646  |
| 1            | 9.0x1.25mm   | 314-1648  |

| Outside Dia. | Size x Pitch | Order No. |
|--------------|--------------|-----------|
| 1            | 10.0x0.75mm  | 314-1650  |
| 1            | 10.0x1.0mm   | 314-1652  |
| 1            | 10.0x1.25mm  | 314-1654  |
| 1            | 10.0x1.5mm   | 314-1656  |
| 1            | 11.0x1.5mm   | 314-1658  |
| 1-1/2        | 10.0x1.25mm  | 314-1706  |
| 1-1/2        | 11.0x1.5mm   | 314-1718  |
| 1-1/2        | 12.0x1.0mm   | 314-1720  |
| 1-1/2        | 12.0x1.25mm  | 314-1722  |
| 1-1/2        | 12.0x1.50mm  | 314-1724  |
| 1-1/2        | 12.0x1.75mm  | 314-1726  |
| 1-1/2        | 14.0x1.0mm   | 314-1728  |
| 1-1/2        | 14.0x1.25mm  | 314-1730  |
| 1-1/2        | 14.0x1.5mm   | 314-1732  |
| 1-1/2        | 14.0x2.0mm   | 314-1734  |
| 1-1/2        | 16.0x1.0mm   | 314-1736  |
| 1-1/2        | 16.0x1.5mm   | 314-1738  |
| 1-1/2        | 16.0x2.0mm   | 314-1740  |
| 1-1/2        | 17.0x1.5mm   | 314-1741  |
| 1-1/2        | 18.0x1.0mm   | 314-1742  |
| 1-1/2        | 18.0x1.5mm   | 314-1744  |

| Outside Dia. | Size x Pitch | Order No. |
|--------------|--------------|-----------|
| 1-1/2"       | 18.0x2.0mm   | 314-1746  |
| 1-1/2        | 18.0x2.5mm   | 314-1748  |
| 1-1/2        | 20.0x1.0mm   | 314-1750  |
| 1-1/2        | 20.0x1.5mm   | 314-1752  |
| 1-1/2        | 20.0x2.0mm   | 314-1754  |
| 1-1/2        | 20.0x2.5mm   | 314-1756  |
| 2            | 20.0x1.25mm  | 314-1812  |
| 2            | 22.0x1.0mm   | 314-1830  |
| 2            | 22.0x1.5mm   | 314-1832  |
| 2            | 22.0x2.0mm   | 314-1834  |
| 2            | 22.0x2.5mm   | 314-1836  |
| 2            | 24.0x1.0mm   | 314-1838  |
| 2            | 24.0x1.5mm   | 314-1840  |
| 2            | 24.0x2.0mm   | 314-1842  |
| 2            | 24.0x3.0mm   | 314-1844  |
| 2            | 27.0x1.5mm   | 314-1846  |
| 2            | 27.0x2.0mm   | 314-1848  |
| 2            | 27.0x3.0mm   | 314-1850  |
| 2            | 30.0x1.5mm   | 314-1852  |
| 2            | 30.0x2.0mm   | 314-1854  |
| 2            | 30.0x3.5mm   | 314-1856  |

### Special Pitch Adjustable Dies

High Speed Steel, Right Hand



| Size     | Outside Dia. | Order No. | Size     | Outside Dia. | Order No. | Size       | Outside Dia. | Order No. |
|----------|--------------|-----------|----------|--------------|-----------|------------|--------------|-----------|
| 4-32     | 13/16        | 315-1010  | 5/16"-12 | 1            | 315-1130  | 9/16"-40   | 1-1/2        | 315-1247  |
| 4-36     | 13/16        | 315-1012  | 5/16-16  | 1            | 315-1131  | 9/16-48    | 1-1/2        | 315-1248  |
| 4-56     | 13/16        | 315-1014  | 5/16-20  | 1            | 315-1132  | 5/8-10     | 1-1/2        | 315-1249  |
| 4-60     | 13/16        | 315-1015  | 5/16-27  | 1            | 315-1133  | 5/8-12     | 1-1/2        | 315-1250  |
| 4-64     | 13/16        | 315-1013  | 5/16-28  | 1            | 315-1134  | 5/8-14     | 1-1/2        | 315-1251  |
| 4-72     | 13/16        | 315-3015  | 5/16-32  | 1            | 315-1135  | 5/8-16     | 1-1/2        | 315-1252  |
| 4-80     | 13/16        | 315-1016  | 5/16-36  | 1            | 315-1136  | 5/8-20     | 1-1/2        | 315-1253  |
| 5-32     | 13/16        | 315-1018  | 5/16-40  | 1            | 315-1137  | 5/8-24     | 1-1/2        | 315-1254  |
| 5-36     | 13/16        | 315-1019  | 5/16-48  | 1            | 315-1138  | 5/8-27     | 1-1/2        | 315-1255  |
| 5-48     | 13/16        | 315-1020  | 5/16-56  | 1            | 315-1139  | 5/8-28     | 1-1/2        | 315-1256  |
| 5-56     | 13/16        | 315-3023  | 5/16-64  | 1            | 315-3091  | 5/8-32     | 1-1/2        | 315-1257  |
| 5-60     | 13/16        | 315-1021  | 5/16-72  | 1            | 315-3095  | 5/8-36     | 1-1/2        | 315-1258  |
| 5-64     | 13/16        | 315-3031  | 3/8-14   | 1            | 315-1140  | 5/8-40     | 1-1/2        | 315-1259  |
| 5-72     | 13/16        | 315-3035  | 3/8-18   | 1            | 315-1141  | 5/8-48     | 1-1/2        | 315-1290  |
| 5-80     | 13/16        | 315-1017  | 3/8-20   | 1            | 315-1142  | 5/8-56     | 1-1/2        | 315-1260  |
| 6-30     | 13/16        | 315-1022  | 3/8-26   | 1            | 315-1180  | 5/8-64     | 1-1/2        | 315-3167  |
| 6-36     | 13/16        | 315-1024  | 3/8-27   | 1            | 315-1143  | 11/16-11   | 1-1/2        | 315-1261  |
| 6-48     | 13/16        | 315-1026  | 3/8-28   | 1            | 315-1144  | 11/16-12   | 1-1/2        | 315-3171  |
| 6-56     | 13/16        | 315-1028  | 3/8-30   | 1            | 315-1183  | 11/16-16   | 1-1/2        | 315-1262  |
| 6-60     | 13/16        | 315-1030  | 3/8-32   | 1            | 315-1145  | 11/16-18   | 1-1/2        | 315-1263  |
| 6-64     | 13/16        | 315-3043  | 3/8-36   | 1            | 315-1146  | 11/16-20   | 1-1/2        | 315-1264  |
| 6-72     | 13/16        | 315-3047  | 3/8-40   | 1            | 315-1147  | 11/16-24   | 1-1/2        | 315-1265  |
| 6-80     | 13/16        | 315-1032  | 3/8-48   | 1            | 315-1148  | 11/16-27   | 1-1/2        | 315-1266  |
| 8-24     | 13/16        | 315-1034  | 3/8-56   | 1            | 315-1149  | 11/16-28   | 1-1/2        | 315-1267  |
| 8-30     | 13/16        | 315-1036  | 3/8-60   | 1            | 315-3103  | 11/16-32   | 1-1/2        | 315-1268  |
| 8-40     | 13/16        | 315-1038  | 3/8-64   | 1            | 315-3107  | 11/16-36   | 1-1/2        | 315-1293  |
| 8-48     | 13/16        | 315-1040  | 3/8-72   | 1            | 315-3111  | 11/16-40   | 1-1/2        | 315-1269  |
| 8-56     | 13/16        | 315-1042  | 3/8-80   | 1            | 315-1150  | 3/4-11-1/2 | 1-1/2        | 315-3175  |
| 8-60     | 13/16        | 315-1043  | 7/16-12  | 1            | 315-1185  | 3/4-12     | 1-1/2        | 315-1271  |
| 8-64     | 13/16        | 315-1045  | 7/16-16  | 1            | 315-1151  | 3/4-14     | 1-1/2        | 315-1272  |
| 8-72     | 13/16        | 315-1044  | 7/16-18  | 1            | 315-1152  | 3/4-18     | 1-1/2        | 315-1273  |
| 8-80     | 13/16        | 315-1046  | 7/16-24  | 1            | 315-1153  | 3/4-20     | 1-1/2        | 315-1274  |
| 10-28    | 13/16        | 315-1048  | 7/16-27  | 1            | 315-1154  | 3/4-24     | 1-1/2        | 315-1275  |
| 10-30    | 13/16        | 315-1050  | 7/16-28  | 1            | 315-1155  | 3/4-26     | 1-1/2        | 315-1295  |
| 10-36    | 13/16        | 315-1052  | 7/16-30  | 1            | 315-3119  | 3/4-27     | 1-1/2        | 315-1276  |
| 10-40    | 13/16        | 315-1054  | 7/16-32  | 1            | 315-1156  | 3/4-28     | 1-1/2        | 315-1277  |
| 10-48    | 13/16        | 315-1056  | 7/16-36  | 1            | 315-1157  | 3/4-30     | 1-1/2        | 315-1278  |
| 10-56    | 13/16        | 315-1058  | 7/16-40  | 1            | 315-1158  | 3/4-32     | 1-1/2        | 315-1279  |
| 10-60    | 13/16        | 315-1059  | 7/16-48  | 1            | 315-1159  | 3/4-36     | 1-1/2        | 315-1280  |
| 10-64    | 13/16        | 315-1060  | 7/16-56  | 1            | 315-1186  | 3/4-40     | 1-1/2        | 315-1281  |
| 10-80    | 13/16        | 315-1062  | 7/16-64  | 1            | 315-3127  | 3/4-48     | 1-1/2        | 315-3179  |
| 12-24    | 13/16        | 315-1063  | 1/2-12   | 1            | 315-1160  | 3/4-56     | 1-1/2        | 315-3183  |
| 12-30    | 13/16        | 315-1064  | 1/2-14   | 1            | 315-1161  | 3/4-64     | 1-1/2        | 315-3187  |
| 12-32    | 13/16        | 315-1066  | 1/2-16   | 1            | 315-1162  | 13/16-10   | 2            | 315-1309  |
| 12-36    | 13/16        | 315-1068  | 1/2-18   | 1            | 315-1163  | 13/16-12   | 2            | 315-1310  |
| 12-40    | 13/16        | 315-1070  | 1/2-24   | 1            | 315-1164  | 13/16-14   | 2            | 315-1311  |
| 12-48    | 13/16        | 315-1072  | 1/2-26   | 1            | 315-3131  | 13/16-16   | 2            | 315-1312  |
| 12-56    | 13/16        | 315-1074  | 1/2-27   | 1            | 315-1165  | 13/16-18   | 2            | 315-1313  |
| 12-64    | 13/16        | 315-3047  | 1/2-28   | 1            | 315-1166  | 13/16-20   | 2            | 315-1314  |
| 5/32-40  | 1            | 315-1102  | 1/2-30   | 1            | 315-1167  | 13/16-24   | 2            | 315-1315  |
| 7/32-24  | 1            | 315-1106  | 1/2-32   | 1            | 315-1168  | 13/16-27   | 2            | 315-3195  |
| 7/32-28  | 1            | 315-1107  | 1/2-36   | 1            | 315-1169  | 13/16-28   | 2            | 315-3199  |
| 7/32-32  | 1            | 315-1108  | 1/2-40   | 1            | 315-1170  | 13/16-30   | 2            | 315-1317  |
| 7/32-40  | 1            | 315-1109  | 1/2-48   | 1            | 315-1171  | 13/16-32   | 2            | 315-1316  |
| 1/4-14   | 1            | 315-1112  | 1/2-56   | 1            | 315-1172  | 7/8-10     | 2            | 315-1319  |
| 1/4-16   | 1            | 315-1113  | 1/2-60   | 1            | 315-3135  | 7/8-12     | 2            | 315-1320  |
| 1/4-18   | 1            | 315-1120  | 1/2-64   | 1            | 315-3139  | 7/8-16     | 2            | 315-1321  |
| 1/4-24   | 1            | 315-1121  | 1/2-67   | 1            | 315-3143  | 7/8-18     | 2            | 315-1322  |
| 1/4-27   | 1            | 315-1122  | 1/2-72   | 1            | 315-3147  | 7/8-20     | 2            | 315-1323  |
| 1/4-30   | 1            | 315-1114  | 1/2-80   | 1            | 315-1173  | 7/8-24     | 2            | 315-1324  |
| 1/4-32   | 1            | 315-1123  | 1/4-32   | 1-1/2        | 315-1200  | 7/8-27     | 2            | 315-1325  |
| 1/4-36   | 1            | 315-1124  | 5/16-32  | 1-1/2        | 315-1210  | 7/8-28     | 2            | 315-1326  |
| 1/4-40   | 1            | 315-1125  | 3/8-32   | 1-1/2        | 315-1220  | 7/8-32     | 2            | 315-1327  |
| 1/4-48   | 1            | 315-1126  | 1/2-32   | 1-1/2        | 315-1230  | 7/8-36     | 2            | 315-1328  |
| 1/4-56   | 1            | 315-1127  | 9/16-14  | 1-1/2        | 315-1238  | 7/8-40     | 2            | 315-1329  |
| 1/4-60   | 1            | 315-1119  | 9/16-16  | 1-1/2        | 315-1240  | 15/16-9    | 2            | 315-1337  |
| 1/4-64   | 1            | 315-1128  | 9/16-20  | 1-1/2        | 315-1241  | 15/16-10   | 2            | 315-3219  |
| 1/4-72   | 1            | 315-3079  | 9/16-24  | 1-1/2        | 315-1242  | 15/16-12   | 2            | 315-1330  |
| 1/4-80   | 1            | 315-1129  | 9/16-27  | 1-1/2        | 315-1243  | 15/16-14   | 2            | 315-1338  |
| 9/32-24  | 1            | 315-1116  | 9/16-28  | 1-1/2        | 315-1244  | 15/16-16   | 2            | 315-1331  |
| 9/32-32  | 1            | 315-1118  | 9/16-32  | 1-1/2        | 315-1245  | 15/16-18   | 2            | 315-1332  |
| 15/16-20 | 2            | 315-1333  | 9/16-36  | 1-1/2        | 315-1246  | 15/16-24   | 2            | 315-1334  |

## Special Pitch Adjustable Dies Continued



High Speed Steel, Right Hand

| Size      | Outside Diameter | Order No. | Size        | Outside Diameter | Order No. | Size        | Outside Diameter | Order No. |
|-----------|------------------|-----------|-------------|------------------|-----------|-------------|------------------|-----------|
| 15/16"-27 | 2                | 315-1335  | 1-7/16"-16  | 2-1/2            | 315-1572  | 2"-10       | 3                | 315-1672  |
| 15/16-32  | 2                | 315-1336  | 1-7/16-18   | 2-1/2            | 315-1573  | 2-12        | 3                | 315-1673  |
| 1-10      | 2                | 315-1340  | 1-7/16-20   | 2-1/2            | 315-1574  | 2-14        | 3                | 315-1674  |
| 1-16      | 2                | 315-1341  | 1-7a16-24   | 2-1/2            | 315-1575  | 2-16        | 3                | 315-1675  |
| 1-18      | 2                | 315-1342  | 1-7/16-32   | 2-1/2            | 315-1577  | 2-18        | 3                | 315-1676  |
| 1-20      | 2                | 315-1343  | 1-1/2-8     | 2-1/2            | 315-1580  | 2-20        | 3                | 315-1679  |
| 1-24      | 2                | 315-1344  | 1-1/2-10    | 2-1/2            | 315-1587  | 2-24        | 3                | 315-1680  |
| 1-27      | 2                | 315-1345  | 1-1/2-14    | 2-1/2            | 315-1581  | 2-32        | 3                | 315-3387  |
| 1-28      | 2                | 315-1346  | 1-1/2-16    | 2-1/2            | 315-1582  | 2-1/8-8     | 4                | 315-1710  |
| 1- 32     | 2                | 315-1347  | 1-1/2-18    | 2-1/2            | 315-1583  | 2-1/8-10    | 4                | 315-1711  |
| 1-36      | 2                | 315-1349  | 1-1/2-20    | 2-1/2            | 315-1584  | 2-1/8-12    | 4                | 315-1712  |
| 1-40      | 2                | 315-1348  | 1-1/2-24    | 2-1/2            | 315-1585  | 2-1/8-16    | 4                | 315-1714  |
| 1-48      | 2                | 315-3227  | 1-1/2-28    | 2-1/2            | 315-1588  | 2-1/8-18    | 4                | 315-1716  |
| 1-56      | 2                | 315-1350  | 1-1/2-32    | 2-1/2            | 315-1589  | 2-1/8-20    | 4                | 315-1718  |
| 1-64      | 2                | 315-3235  | 1-1/2-40    | 2-1/2            | 315-1586  | 2-1/4-4-1/2 | 4                | 315-1719  |
| 1-1/16-8  | 2-1/2            | 315-1410  | 1-1/2-27    | 3                | 315-3323  | 2-1/4-8     | 4                | 315-1726  |
| 1-1/16-10 | 2-1/2            | 315-3239  | 1-1/2-28    | 3                | 315-3327  | 2-1/4-10    | 4                | 315-1727  |
| 1-1/16-12 | 2-1/2            | 315-1411  | 1-1/2-32    | 3                | 315-3331  | 2-1/4-12    | 4                | 315-1720  |
| 1-1/16-14 | 2-1/2            | 315-1412  | 1-9/16-12   | 3                | 315-1610  | 2-1/4-16    | 4                | 315-1722  |
| 1-1/16-16 | 2-1/2            | 315-1413  | 1-9/16-16   | 3                | 315-1611  | 2-1/4-18    | 4                | 315-1724  |
| 1-1/16-18 | 2-1/2            | 315-1414  | 1-9/16-18   | 3                | 315-1612  | 2-1/4-20    | 4                | 315-1728  |
| 1-1/16-20 | 2-1/2            | 315-1415  | 1-9/16-20   | 3                | 315-1613  | 2-5/16-14   | 4                | 315-3415  |
| 1-1/16-24 | 2-1/2            | 315-1416  | 1-9/16-24   | 3                | 315-1614  | 2-5/16-16   | 4                | 315-3419  |
| 1-1/16-27 | 2-1/2            | 315-3243  | 1-5/8-4     | 3                | 315-1618  | 2-3/8-8     | 4                | 315-1730  |
| 1-1/16-32 | 2-1/2            | 315-1417  | 1-5/8-5     | 3                | 315-1619  | 2-3/8-10    | 4                | 315-1731  |
| 1-1/8-8   | 2-1/2            | 315-1520  | 1-5/8-5-1/2 | 3                | 315-1620  | 2-3/8-12    | 4                | 315-1732  |
| 1-1/8-10  | 2-1/2            | 315-1527  | 1-5/8-8     | 3                | 315-1621  | 2-3/8-14    | 4                | 315-1733  |
| 1-1/8-14  | 2-1/2            | 315-1521  | 1-5/8-10    | 3                | 315-1622  | 2-3/8-16    | 4                | 315-1734  |
| 1-1/8-16  | 2-1/2            | 315-1522  | 1-5/8-12    | 3                | 315-1623  | 2-3/8-18    | 4                | 315-1736  |
| 1-1/8-18  | 2-1/2            | 315-1523  | 1-5/8-14    | 3                | 315-1624  | 2-3/8-20    | 4                | 315-1738  |
| 1-1/8-20  | 2-1/2            | 315-1524  | 1-5/8-16    | 3                | 315-1625  | 2-1/2-4     | 4                | 315-1740  |
| 1-1/8-24  | 2-1/2            | 315-1525  | 1-5/8-18    | 3                | 315-1626  | 2-1/2-8     | 4                | 315-1742  |
| 1-1/8-27  | 2-1/2            | 315-1528  | 1-5/8-20    | 3                | 315-1627  | 2-1/2-10    | 4                | 315-1743  |
| 1-1/8-32  | 2-1/2            | 315-1526  | 1-5/8-24    | 3                | 315-1628  | 2-1/2-12    | 4                | 315-1744  |
| 1-3/16-8  | 2-1/2            | 315-1535  | 1-11/16-6   | 3                | 315-3343  | 2-1/2-14    | 4                | 315-1745  |
| 1-3/16-12 | 2-1/2            | 315-1530  | 1-11/16-12  | 3                | 315-1633  | 2-1/2-16    | 4                | 315-1746  |
| 1-3/16-14 | 2-1/2            | 315-1536  | 1-11/16-14  | 3                | 315-1635  | 2-1/2-18    | 4                | 315-1748  |
| 1-3/16-16 | 2-1/2            | 315-1531  | 1-11/16-16  | 3                | 315-1630  | 2-1/2-20    | 4                | 315-1750  |
| 1-3/16-18 | 2-1/2            | 315-1532  | 1-11/16-18  | 3                | 315-1631  | 2-5/8-8     | 5                | 315-1820  |
| 1-3/16-20 | 2-1/2            | 315-1533  | 1-11/16-20  | 3                | 315-1632  | 2-5/8-10    | 5                | 315-1821  |
| 1-3/16-24 | 2-1/2            | 315-1534  | 1-11/16-24  | 3                | 315-1634  | 2-5/8-12    | 5                | 315-1822  |
| 1-3/16-32 | 2-1/2            | 315-1537  | 1-3/4-5     | 3                | 315-1640  | 2-5/8-16    | 5                | 315-1824  |
| 1-1/4-8   | 2-1/2            | 315-1540  | 1-3/4-6     | 3                | 315-3359  | 2-5/8-18    | 5                | 315-1826  |
| 1-1/4-10  | 2-1/2            | 315-1541  | 1-3/4-8     | 3                | 315-1641  | 2-3/4-8     | 5                | 315-1830  |
| 1-1/4-14  | 2-1/2            | 315-1542  | 1-3/4-10    | 3                | 315-1642  | 2-3/4-10    | 5                | 315-1831  |
| 1-1/4-16  | 2-1/2            | 315-1543  | 1-3/4-12    | 3                | 315-1643  | 2-3/4-12    | 5                | 315-1832  |
| 1-1/4-18  | 2-1/2            | 315-1544  | 1-3/4-14    | 3                | 315-1644  | 2-3/4-14    | 5                | 315-1833  |
| 1-1/4-20  | 2-1/2            | 315-1545  | 1-3/4-16    | 3                | 315-1645  | 2-3/4-16    | 5                | 315-1834  |
| 1-1/4-24  | 2-1/2            | 315-1546  | 1-3/4-18    | 3                | 315-1646  | 2-3/4-18    | 5                | 315-1836  |
| 1-1/4-27  | 2-1/2            | 315-1547  | 1-3/4-20    | 3                | 315-1647  | 2-7/8-8     | 5                | 315-1840  |
| 1-1/4-28  | 2-1/2            | 315-1548  | 1-3/4-24    | 3                | 315-1648  | 2-7/8-10    | 5                | 315-1841  |
| 1-1/4-32  | 2-1/2            | 315-3275  | 1-3/4-32    | 3                | 315-3363  | 2-7/8-12    | 5                | 315-1842  |
| 1-1/4-40  | 2-1/2            | 315-3279  | 1-13/16-12  | 3                | 315-1650  | 2-7/8-14    | 5                | 315-1843  |
| 1-5/16-8  | 2-1/2            | 315-1554  | 1-13/16-16  | 3                | 315-1651  | 2-7/8-16    | 5                | 315-1844  |
| 1-5/16-12 | 2-1/2            | 315-1550  | 1-13/16-18  | 3                | 315-1652  | 2-7/8-18    | 5                | 315-1846  |
| 1-5/16-16 | 2-1/2            | 315-1551  | 1-13/16-20  | 3                | 315-1653  | 3-4         | 5                | 315-1849  |
| 1-5/16-18 | 2-1/2            | 315-1552  | 1-7/8-5     | 3                | 315-1660  | 3-8         | 5                | 315-1850  |
| 1-5/16-20 | 2-1/2            | 315-1553  | 1-7/8-8     | 3                | 315-1667  | 3-12        | 5                | 315-1852  |
| 1-5/16-24 | 2-1/2            | 315-1557  | 1-7/8-10    | 3                | 315-1661  | 3-16        | 5                | 315-1854  |
| 1-5/16-32 | 2-1/2            | 315-1558  | 1-7/8-12    | 3                | 315-1662  | 3-18        | 5                | 315-1856  |
| 1-3/8-8   | 2-1/2            | 315-1560  | 1-7/8-14    | 3                | 315-1663  | 3-1/4-8     | 5                | 315-1860  |
| 1-3/8-10  | 2-1/2            | 315-1561  | 1-7/8-16    | 3                | 315-1664  | 3-1/4-12    | 5                | 315-1862  |
| 1-3/8-14  | 2-1/2            | 315-1566  | 1-7/8-18    | 3                | 315-1665  | 3-1/2-4     | 5                | 315-1869  |
| 1-3/8-16  | 2-1/2            | 315-1562  | 1-7/8-20    | 3                | 315-1666  | 3-1/2-4-1/2 | 5                | 315-1874  |
| 1-3/8-18  | 2-1/2            | 315-1563  | 1-7/8-24    | 3                | 315-3319  | 3-1/2-8     | 5                | 315-1870  |
| 1-3/8-20  | 2-1/2            | 315-1564  | 1-15/16-12  | 3                | 315-1681  | 3-1/2-12    | 5                | 315-1872  |
| 1-3/8-24  | 2-1/2            | 315-1565  | 1-15/16-16  | 3                | 315-1682  | 3-3/4-8     | 6                | 315-1876  |
| 1-3/8-27  | 2-1/2            | 315-1568  | 1-15/16-18  | 3                | 315-1684  | 3-3/4-12    | 6                | 315-1880  |
| 1-3/8-32  | 2-1/2            | 315-1567  | 1-15/16-20  | 3                | 315-1686  | 4-8         | 6                | 315-1884  |
| 1-7/16-8  | 2-1/2            | 315-1570  | 2-4-1/2     | 3                | 315-1670  | 4-12        | 6                | 315-1888  |
| 1-7/16-12 | 2-1/2            | 315-1571  | 2-6         | 3                | 315-1677  | 4-16        | 6                | 315-1892  |
| 1-7/16-14 | 2-1/2            | 315-3307  | 2-8         | 3                | 315-1671  |             |                  |           |

**Round Dies**
**DIN 223 B**
**High Speed Steel**
**For ISO metric thread as per DIN 13**


| Thread | Pitch | Outside | Order No.       | Thread | Pitch | Outside | Order No.       | Thread | Pitch | Outside | Order No.       |
|--------|-------|---------|-----------------|--------|-------|---------|-----------------|--------|-------|---------|-----------------|
| M2     | .4    | 16x5mm  | <b>314-9001</b> | M10    | 1.5   | 30x11mm | <b>314-9019</b> | M30    | 3.5   | 65x25mm | <b>314-9037</b> |
| M2.5   | .45   | 16x5mm  | <b>314-9003</b> | M12    | 1.75  | 38x14mm | <b>314-9021</b> | M33    | 2.0   | 65x25mm | <b>314-9038</b> |
| M3     | .5    | 20x5mm  | <b>314-9005</b> | M14    | 2.0   | 38x14mm | <b>314-9023</b> | M33    | 3.5   | 65x25mm | <b>314-9039</b> |
| M3.5   | .6    | 20x5mm  | <b>314-9007</b> | M16    | 2.0   | 45x14mm | <b>314-9025</b> | M36    | 4.0   | 65x25mm | <b>314-9041</b> |
| M4     | .7    | 20x5mm  | <b>314-9009</b> | M18    | 2.5   | 45x18mm | <b>314-9027</b> | M39    | 4.0   | 75x30mm | <b>314-9043</b> |
| M5     | .8    | 20x7mm  | <b>314-9011</b> | M20    | 2.5   | 45x18mm | <b>314-9029</b> | M42    | 4.5   | 75x30mm | <b>314-9045</b> |
| M6     | 1.0   | 20x7mm  | <b>314-9013</b> | M22    | 2.5   | 55x22mm | <b>314-9031</b> | M45    | 4.5   | 90x36mm | <b>314-9047</b> |
| M7     | 1.0   | 25x9mm  | <b>314-9015</b> | M24    | 3.0   | 55x22mm | <b>314-9033</b> | M48    | 5.0   | 90x36mm | <b>314-9049</b> |
| M8     | 1.25  | 25x9mm  | <b>314-9017</b> | M27    | 3.0   | 65x25mm | <b>314-9035</b> | M52    | 5.0   | 90x36mm | <b>314-9051</b> |

**DIN 223 B**
**High Speed Steel**

| Thread | Pitch | Outside  | Order No.       | Thread | Pitch | Outside  | Order No.       |
|--------|-------|----------|-----------------|--------|-------|----------|-----------------|
| M3     | 0.5   | 25 x 9mm | <b>314-9103</b> | M8     | 1.25  | 25 x 9mm | <b>314-9108</b> |
| M4     | 0.7   | 25 x 9mm | <b>314-9104</b> | M10    | 1.5   | 25 x 9mm | <b>314-9110</b> |
| M5     | 0.8   | 25 x 9mm | <b>314-9105</b> | M12    | 1.75  | 25 x 9mm | <b>314-9112</b> |
| M6     | 1.0   | 25 x 9mm | <b>314-9106</b> |        |       |          |                 |

**DIN 223**
**High Speed Steel For B.S.W Thread as per DIN 11**

| Threads |          |         |                 | Threads |          |         |                 | Threads |          |         |                 |
|---------|----------|---------|-----------------|---------|----------|---------|-----------------|---------|----------|---------|-----------------|
| Thread  | Per inch | Outside | Order No.       | Thread  | Per inch | Outside | Order No.       | Thread  | Per inch | Outside | Order No.       |
| 1/16"   | 60       | 16mm    | <b>314-1101</b> | 3/8"    | 16       | 30mm    | <b>314-1117</b> | 1-1/8"  | 7        | 65mm    | <b>314-1133</b> |
| 3/32    | 48       | 16mm    | <b>314-1103</b> | 7/16    | 14       | 30mm    | <b>314-1119</b> | 1-1/4"  | 7        | 65mm    | <b>314-1135</b> |
| 1/8     | 40       | 20mm    | <b>314-1105</b> | 1/2     | 12       | 38mm    | <b>314-1121</b> | 1-3/8"  | 6        | 65mm    | <b>314-1137</b> |
| 5/32    | 32       | 20mm    | <b>314-1107</b> | 9/16    | 12       | 38mm    | <b>314-1123</b> | 1-1/2"  | 6        | 75mm    | <b>314-1139</b> |
| 3/16    | 24       | 20mm    | <b>314-1109</b> | 5/8     | 11       | 45mm    | <b>314-1125</b> | 1-5/8"  | 5        | 75mm    | <b>314-1141</b> |
| 7/32    | 24       | 20mm    | <b>314-1111</b> | 3/4     | 10       | 45mm    | <b>314-1127</b> | 1-3/4"  | 5        | 90mm    | <b>314-1143</b> |
| 1/4     | 20       | 20mm    | <b>314-1113</b> | 7/8     | 9        | 55mm    | <b>314-1129</b> | 1-7/8"  | 4-1/2    | 90mm    | <b>314-1145</b> |
| 5/16    | 18       | 25mm    | <b>314-1115</b> | 1       | 8        | 55mm    | <b>314-1131</b> | 2       | 4-1/2    | 90mm    | <b>314-1147</b> |

**DIN 5158**
**High Speed Steel For B.S.P. thread as per DIN 228**

| Threads |          |         |                 | Threads |          |         |                 | Threads |          |         |                 |
|---------|----------|---------|-----------------|---------|----------|---------|-----------------|---------|----------|---------|-----------------|
| Thread  | Per Inch | Outside | Order No.       | Thread  | Per Inch | Outside | Order No.       | Thread  | Per Inch | Outside | Order No.       |
| G1/16   | 28       | 25mm    | <b>314-1023</b> | G1/2    | 14       | 45mm    | <b>314-1007</b> | G1      | 11       | 65mm    | <b>314-1015</b> |
| G1/8    | 28       | 30mm    | <b>314-1001</b> | G5/8    | 14       | 55mm    | <b>314-1009</b> | G1-1/8  | 11       | 75mm    | <b>314-1017</b> |
| G1/4    | 19       | 38mm    | <b>314-1003</b> | G3/4    | 14       | 55mm    | <b>314-1011</b> | G1-1/4  | 11       | 75mm    | <b>314-1019</b> |
| G3/8    | 19       | 45mm    | <b>314-1005</b> | G7/8    | 14       | 65mm    | <b>314-1013</b> | G1-1/2  | 11       | 90mm    | <b>314-1021</b> |

**DIN 223 B**
**For ISO metric fine thread as per DIN 13**
**High Speed Steel**

| Thread (mm) | Pitch (mm) | Outside | Order No.       | Thread (mm) | Pitch (mm) | Outside | Order No.       | Thread (mm) | Pitch (mm) | Outside | Order No.       |
|-------------|------------|---------|-----------------|-------------|------------|---------|-----------------|-------------|------------|---------|-----------------|
| M3          | .35        | 20x5mm  | <b>314-9201</b> | M10         | 1.25       | 30x11mm | <b>314-9215</b> | M20         | 1.0        | 45x14mm | <b>314-9234</b> |
| M4          | .35        | 20x5mm  | <b>314-9203</b> | M12         | 1.0        | 30x11mm | <b>314-9217</b> | M20         | 1.5        | 45x14mm | <b>314-9235</b> |
| M4          | .50        | 20x5mm  | <b>314-9205</b> | M12         | 1.25       | 38x11mm | <b>314-9219</b> | M22         | 1.0        | 55x16mm | <b>314-9236</b> |
| M5          | .50        | 20x5mm  | <b>314-9207</b> | M12         | 1.5        | 38x10mm | <b>314-9221</b> | M22         | 1.5        | 55x16mm | <b>314-9237</b> |
| M6          | .50        | 20x5mm  | <b>314-9208</b> | M14         | 1.0        | 38x10mm | <b>314-9223</b> | M22         | 2.0        | 55x16mm | <b>314-9238</b> |
| M6          | .75        | 25x7mm  | <b>314-9209</b> | M14         | 1.25       | 38x10mm | <b>314-9225</b> | M24         | 1.5        | 55x16mm | <b>314-9239</b> |
| M8          | .50        | 25x9mm  | <b>314-9210</b> | M14         | 1.5        | 38x10mm | <b>314-9227</b> | M24         | 2.0        | 55x16mm | <b>314-9241</b> |
| M8          | .75        | 25x9mm  | <b>314-9211</b> | M16         | 1.0        | 45x14mm | <b>314-9229</b> | M27         | 1.5        | 65x18mm | <b>314-9243</b> |
| M8          | 1.0        | 25x9mm  | <b>314-9212</b> | M16         | 1.5        | 45x14mm | <b>314-9231</b> | M27         | 2.0        | 65x18mm | <b>314-9245</b> |
| M10         | 1.0        | 30x11mm | <b>314-9213</b> | M18         | 1.0        | 45x14mm | <b>314-9232</b> | M30         | 1.5        | 65x18mm | <b>314-9247</b> |
| M10         | .75        | 30x11mm | <b>314-9214</b> | M18         | 1.5        | 45x14mm | <b>314-9233</b> | M30         | 2.0        | 65x18mm | <b>314-9249</b> |

## Hexagon Rethreading Dies



## High Speed Steel and Carbon Steel, Right Hand

- Used for repairing damaging or rusting threads.

## Pipe Thread

|             |              |           | Carbon Steel | HSS       |              |              |           | Carbon Steel | HSS       |
|-------------|--------------|-----------|--------------|-----------|--------------|--------------|-----------|--------------|-----------|
| Size        | Across Flats | Thickness | Order No.    | Order No. | Size         | Across Flats | Thickness | Order No.    | Order No. |
| 1/8"-27 NPT | 25/32"       | 3/8"      | 365-0005     | 367-0005  | 1/2"-14NPT   | 1-7/16"      | 3/4"      | 365-0020     | 367-0020  |
| 1/4"-18NPT  | 1-1/16       | 1/2       | 365-0010     | 367-0010  | 3/4"-14NPT   | 1-13/16      | 1         | 365-0025     | 367-0025  |
| 3/8"-18NPT  | 1-1/4        | 5/8       | 365-0015     | 367-0015  | 1"-11-1/2NPT | 2-3/16       | 1         | 365-0030     | 367-0030  |

## Standard Thread

|             |              |           | Carbon Steel | HSS       |             |              |           | Carbon Steel | HSS       |
|-------------|--------------|-----------|--------------|-----------|-------------|--------------|-----------|--------------|-----------|
| Size        | Across Flats | Thickness | Order No.    | Order No. | Size        | Across Flats | Thickness | Order No.    | Order No. |
| 1/4"-20NC   | 19/32"       | 1/4"      | 365-0161     | 367-0161  | 3/4"-10NC   | 1-7/16"      | 3/4"      | 365-0481     | 367-0481  |
| 1/4"-28NF   | 19/32        | 1/4       | 365-0162     | 367-0162  | 3/4"-16NF   | 1-7/16       | 3/4       | 365-0482     | 367-0482  |
| 5/16"-18NC  | 11/16        | 5/16      | 365-0201     | 367-0201  | 7/8"-9NC    | 1-5/8        | 7/8       | 365-0561     | 367-0561  |
| 5/16"-24NF  | 11/16        | 5/16      | 365-0202     | 367-0202  | 7/8"-14NF   | 1-5/8        | 7/8       | 365-0562     | 367-0562  |
| 3/8"-16NC   | 25/32        | 3/8       | 365-0241     | 367-0241  | 1"-8NC      | 1-13/16      | 1         | 365-0641     | 367-0641  |
| 3/8"-24NF   | 25/32        | 3/8       | 365-0242     | 367-0242  | 1"-12NF     | 1-13/16      | 1         | 365-0642     | 367-0642  |
| 7/16"-14NC  | 7/8          | 7/16      | 365-0281     | 367-0281  | 1"-14NS     | 1-13/16      | 1         | 365-0643     | 367-0643  |
| 7/16"-20NF  | 7/8          | 7/16      | 365-0282     | 367-0282  | 1-1/8"-7NC  | 2            | 1         | 365-1081     | 367-1081  |
| 1/2"-13NC   | 1-1/16       | 1/2       | 365-0321     | 367-0321  | 1-1/8"-12NF | 2            | 1         | 365-1082     | 367-1082  |
| 1/2"-20NF   | 1-1/16       | 1/2       | 365-0322     | 367-0322  | 1-1/4"-7NC  | 2-3/16       | 1         | 365-1161     | 367-1161  |
| 9/16"-12NC  | 1-1/16       | 1/2       | 365-0361     | 367-0361  | 1-1/4"-12NF | 2-3/16       | 1         | 365-1162     | 367-1162  |
| 9/16"-18NF  | 1-1/16       | 1/2       | 365-0362     | 367-0362  | 1-3/8"-6NC  | 2-3/8        | 1         | 365-1241     | 367-1241  |
| 5/8"-11NC   | 1-1/4        | 5/8       | 365-0401     | 367-0401  | 1-3/8"-12NF | 2-3/8        | 1         | 365-1242     | 367-1242  |
| 5/8"-18NF   | 1-1/4        | 5/8       | 365-0402     | 367-0402  | 1-1/2"-6NC  | 2-9/16       | 1         | 365-1321     | 367-1321  |
| 11/16"-11NS | 1-7/16       | 3/4       | 365-0441     | 367-0441  | 1-1/2"-12NF | 2-9/16       | 1         | 365-1322     | 367-1322  |
| 11/16"-16NS | 1-7/16       | 3/4       | 365-0442     | 367-0442  |             |              |           |              |           |

## Metric Hexagon Rethreading Dies



## High Speed Steel and Carbon Steel, Right Hand

Uses for repairing damaging or rusting threads.

|             |              |           | Carbon Steel | HSS       |             |              |           | Carbon Steel | HSS       |
|-------------|--------------|-----------|--------------|-----------|-------------|--------------|-----------|--------------|-----------|
| Size        | Across Flats | Thickness | Order No.    | Order No. | Size        | Across Flats | Thickness | Order No.    | Order No. |
| 5.0x0.5mm   | 19/32"       | 1/4"      | 364-0051     | 367-6051  | 18.0x1.5mm  | 1-7/16"      | 3/4"      | 364-0183     |           |
| 5.0x0.75mm  | 19/32        | 1/4       | 364-0052     |           | 18.0x2.0mm  | 1-7/16       | 3/4       | 364-0184     |           |
| 5.0x0.8mm   | 19/32        | 1/4       | 364-0053     |           | 18.0x2.5mm  | 1-7/16       | 3/4       | 364-0185     |           |
| 5.0x0.9mm   | 19/32        | 1/4       | 364-0054     | 367-6054  | 20.0x1.0mm  | 1-7/16       | 3/4       | 364-0201     | 367-6201  |
| 5.5x0.9mm   | 19/32        | 1/4       | 364-0055     | 367-6055  | 20.0x1.25mm | 1-7/16       | 3/4       | 364-0202     |           |
| 6.0x0.5mm   | 19/32        | 1/4       | 364-0061     |           | 20.0x1.5mm  | 1-7/16       | 3/4       | 364-0203     |           |
| 6.0x0.75mm  | 19/32        | 1/4       | 364-0062     |           | 20.0x2.0mm  | 1-7/16       | 3/4       | 364-0204     |           |
| 6.0x1.0mm   | 19/32        | 1/4       | 364-0063     | 367-6063  | 20.0x2.5mm  | 1-7/16       | 3/4       | 364-0205     |           |
| 7.0x0.75mm  | 11/16        | 5/16      | 364-0072     |           | 22.0x1.25mm | 1-5/8        | 7/8       | 364-0221     |           |
| 7.0x1.0mm   | 11/16        | 5/16      | 364-0073     | 367-6073  | 22.0x1.5mm  | 1-5/8        | 7/8       | 364-0222     |           |
| 8.0x0.75mm  | 11/16        | 5/16      | 364-0081     |           | 22.0x2.5mm  | 1-5/8        | 7/8       | 364-0223     | 367-6223  |
| 8.0x1.0mm   | 11/16        | 5/16      | 364-0082     |           | 24.0x1.5mm  | 1-13/16      | 1         | 364-0241     |           |
| 8.0x1.25mm  | 11/16        | 5/16      | 364-0083     | 367-6083  | 24.0x2.0mm  | 1-13/16      | 1         | 364-0242     | 367-6242  |
| 9.0x0.75mm  | 25/32        | 3/8       | 364-0091     |           | 24.0x3.0mm  | 1-13/16      | 1         | 364-0243     | 367-6243  |
| 9.0x1.0mm   | 25/32        | 3/8       | 364-0092     |           | 26.0x1.5mm  | 2            | 1         | 364-0261     | 367-6261  |
| 9.0x1.25mm  | 25/32        | 3/8       | 364-0093     |           | 27.0x1.5mm  | 2            | 1         | 364-0271     |           |
| 10.0x0.75mm | 25/32        | 3/8       | 364-0101     |           | 27.0x2.0mm  | 2            | 1         | 364-0272     |           |
| 10.0x1.0mm  | 25/32        | 3/8       | 364-0102     |           | 27.0x3.0mm  | 2            | 1         | 364-0273     |           |
| 10.0x1.25mm | 25/32        | 3/8       | 364-0103     |           | 30x1.5mm    | 2-3/16       | 1         | 364-0301     |           |
| 10.0x1.5mm  | 25/32        | 3/8       | 364-0104     | 367-9104  | 30x2.0mm    | 2-3/16       | 1         | 364-0302     |           |
| 11.0x1.0mm  | 7/8          | 7/16      | 364-0111     |           | 30x3.5mm    | 2-3/16       | 1         | 364-0304     | 367-6304  |
| 11.0x1.5mm  | 7/8          | 7/16      | 364-0112     | 367-6112  | 32x2.0mm    | 2-3/16       | 1         | 364-0321     | 367-6321  |
| 12.0x1.0mm  | 1-1/16       | 1/2       | 364-0121     | 367-6121  | 32x3.5mm    | 2-3/16       | 1         | 364-0322     | 367-6322  |
| 12.0x1.25mm | 1-1/16       | 1/2       | 364-0122     |           | 33x2.0mm    | 2-3/16       | 1         | 364-0331     | 367-6331  |
| 12.0x1.5mm  | 1-1/16       | 1/2       | 364-0123     |           | 33x3.5mm    | 2-3/16       | 1         | 364-0332     |           |
| 12.0x1.75mm | 1-1/16       | 1/2       | 364-0124     | 367-6124  | 36x3.0mm    | 2-3/8        | 1         | 364-0361     |           |
| 14.0x1.0mm  | 1-1/16       | 1/2       | 364-0141     |           | 36x4.0mm    | 2-3/8        | 1         | 364-0362     | 367-6362  |
| 14.0x1.25mm | 1-1/16       | 1/2       | 364-0142     |           | 39x3.0mm    | 2-9/16       | 1         | 364-0391     |           |
| 14.0x1.5mm  | 1-1/16       | 1/2       | 364-0143     |           | 39x4.0mm    | 2-9/16       | 1         | 364-0392     | 367-6392  |
| 14.0x2.0mm  | 1-1/16       | 1/2       | 364-0144     | 367-6144  | 42x4.5mm    | 3-1/8        | 1         | 364-0421     | 363-6421  |
| 16.0x1.0mm  | 1-1/4        | 5/8       | 364-0161     |           | 45x4.5mm    | 3-1/8        | 1         | 364-0451     |           |
| 16.0x1.5mm  | 1-1/4        | 5/8       | 364-0162     | 367-6162  | 48x5.0mm    | 3-1/8        | 1-1/4     | 364-0481     |           |
| 16.0x2.0mm  | 1-1/4        | 5/8       | 364-0163     | 367-6163  | 52x5.0mm    | 3-1/8        | 1-1/4     | 364-0521     |           |
| 18.0x1.00mm | 1-7/16       | 3/4       | 364-0181     |           |             |              |           |              |           |

**Left Hand Hexagon Rethreading Dies**
**Carbon Steel**


| Size        | Across Flat | Thickness | Order No. | Size        | Across Flat | Thickness | Order No. |
|-------------|-------------|-----------|-----------|-------------|-------------|-----------|-----------|
| 1/4"-20NC   | 19/32"      | 1/4"      | 366-0161  | 3/4"-10NC   | 1-7/16"     | 3/4"      | 366-0481  |
| 1/4"-28NF   | 19/32       | 1/4       | 366-0162  | 3/4"-16NF   | 1-7/16      | 3/4       | 366-0482  |
| 5/16"-18NC  | 11/16       | 5/16      | 366-0201  | 7/8"-9NC    | 1-5/8       | 7/8       | 366-0561  |
| 5/16"-24NF  | 11/16       | 5/16      | 366-0202  | 7/8"-14NF   | 1-5/8       | 7/8       | 366-0562  |
| 3/8"-16NC   | 25/32       | 3/8       | 366-0241  | 1"-8NC      | 1-13/16     | 1         | 366-0641  |
| 3/8"-24NF   | 25/32       | 3/8       | 366-0242  | 1"-12NF     | 1-13/16     | 1         | 366-0642  |
| 7/16"-14NC  | 7/8         | 7/16      | 366-0281  | 1"-14NS     | 1-13/16     | 1         | 366-0643  |
| 7/16"-20NF  | 7/8         | 7/16      | 366-0282  | 1-1/8"-7NC  | 2           | 1         | 366-1081  |
| 1/2"-13NC   | 1-1/16      | 1/2       | 366-0321  | 1-1/8"-12NF | 2           | 1         | 366-1082  |
| 1/2"-20NF   | 1-1/16      | 1/2       | 366-0322  | 1-1/4"-7NC  | 2-3/16      | 1         | 366-1161  |
| 9/16"-12NC  | 1-1/16      | 1/2       | 366-0361  | 1-1/4"-12NF | 2-3/16      | 1         | 366-1162  |
| 9/16"-18NF  | 1-1/16      | 1/2       | 366-0362  | 1-3/8"-6NC  | 2-3/8       | 1         | 366-1241  |
| 5/8"-11NC   | 1-1/4       | 5/8       | 366-0401  | 1-3/8"-12NF | 2-3/8       | 1         | 366-1242  |
| 5/8"-18NF   | 1-1/4       | 5/8       | 366-0402  | 1-1/2"-6NC  | 2-9/16      | 1         | 366-1321  |
| 11/16"-11NS | 1-7/16      | 3/4       | 366-0441  | 1-1/2"-12NF | 2-9/16      | 1         | 366-1322  |
| 11/16"-16NS | 1-7/16      | 3/4       | 366-0042  |             |             |           |           |

**Special Thread Hexagon Rethreading Dies**
**High Speed Steel & Carbon Steel, Right Hand**


| Size         | Across Flat | Thickness | Carbon Steel<br>Order No. | HSS<br>Order No. | Size      | Across Flat | Thickness | Carbon Steel<br>Order No. | HSS<br>Order No. |
|--------------|-------------|-----------|---------------------------|------------------|-----------|-------------|-----------|---------------------------|------------------|
| 1-1/8"-8     | 2"          | 1"        | 365-1084                  | 367-1084         | 2-1/4"-8  | 3-1/2"      | 1-1/4"    | 365-2165                  | 367-2165         |
| 1-1/8"-16    | 2           | 1         | 365-1085                  | 367-1085         | 2-1/4"-12 | 3-1/2       | 1-1/4     | 365-2166                  | 367-2166         |
| 1-1/8"-18    | 2           | 1         | 365-1086                  | 367-1086         | 2-1/4"-16 | 3-1/2       | 1-1/4     | 365-2167                  | 367-2167         |
| 1-1/4"-8     | 2-3/16      | 1         | 365-1164                  | 367-1164         | 2-1/4"-18 | 3-1/2       | 1-1/4     | 365-2168                  | 367-2168         |
| 1-1/4"-16    | 2-3/16      | 1         | 365-1165                  | 367-1165         | 2-3/8"-8  | 4-1/2       | 1-1/2     | 365-2244                  | 367-2244         |
| 1-1/4"-18    | 2-3/16      | 1         | 365-1166                  | 367-1166         | 2-3/8"-12 | 4-1/2       | 1-1/2     | 365-2245                  | 367-2245         |
| 1-3/8"-8     | 2-3/8       | 1         | 365-1244                  | 367-1244         | 2-1/2"-4  | 4-1/2       | 1-1/2     | 365-2324                  | 367-2324         |
| 1-3/8"-16    | 2-3/8       | 1         | 365-1245                  | 367-1245         | 2-1/2"-8  | 4-1/2       | 1-1/2     | 365-2325                  | 367-2325         |
| 1-3/8"-18    | 2-3/8       | 1         | 365-1246                  | 367-1246         | 2-1/2"-12 | 4-1/2       | 1-1/2     | 365-2326                  | 367-2326         |
| 1-1/2"-8     | 2-9/16      | 1         | 365-1324                  | 367-1324         | 2-5/8"-8  | 4-1/2       | 1-1/2     | 365-2404                  | 367-2404         |
| 1-1/2"-16    | 2-9/16      | 1         | 365-1325                  | 367-1325         | 2-5/8"-12 | 4-1/2       | 1-5/8     | 365-2405                  | 367-2405         |
| 1-1/2"-18    | 2-9/16      | 1         | 365-1326                  | 367-1326         | 2-3/4"-4  | 4-1/2       | 1-5/8     | 365-2484                  | 367-2484         |
| 1-5/8"-5-1/2 | 3-1/8       | 1         | 365-1404                  | 367-1404         | 2-3/4"-8  | 4-1/2       | 1-5/8     | 365-2485                  | 367-2485         |
| 1-5/8"-8     | 3-1/8       | 1         | 365-1405                  | 367-1405         | 2-3/4"-12 | 4-1/2       | 1-5/8     | 365-2486                  | 367-2486         |
| 1-5/8"-12    | 3-1/8       | 1         | 365-1406                  | 367-1406         | 2-7/8"-8  |             |           | 365-2564                  | 367-2564         |
| 1-5/8"-16    | 3-1/8       | 1         | 365-1407                  | 367-1407         | 2-7/8"-12 |             |           | 365-2565                  | 367-2565         |
| 1-5/8"-18    | 3-1/8       | 1         | 365-1408                  | 367-1408         | 3"-4      |             |           | 365-3004                  | 367-3004         |
| 1-3/4"-5     | 3-1/8       | 1         | 365-1484                  | 367-1484         | 3"-8      |             |           | 365-3005                  | 367-3005         |
| 1-3/4"-8     | 3-1/8       | 1         | 365-1485                  | 367-1485         | 3"-12     |             |           | 365-3006                  | 367-3006         |
| 1-3/4"-12    | 3-1/8       | 1         | 365-1486                  | 367-1486         | 3-1/4"-4  |             |           | 365-3164                  | 367-3164         |
| 1-3/4"-16    | 3-1/8       | 1         | 365-1487                  | 367-1487         | 3-1/4"-8  |             |           | 365-3165                  | 367-3165         |
| 1-3/4"-18    | 3-1/8       | 1         | 365-1488                  | 367-1488         | 3-1/4"-12 |             |           | 365-3166                  | 367-3166         |
| 1-7/8"-5     | 3-1/8       | 1-1/4     | 365-1564                  | 367-1564         | 3-1/2"-4  |             |           | 365-3324                  | 367-3324         |
| 1-7/8"-8     | 3-1/8       | 1-1/4     | 365-1565                  | 367-1565         | 3-1/2"-8  |             |           | 365-3325                  | 367-3325         |
| 1-7/8"-12    | 3-1/8       | 1-1/4     | 365-1566                  | 367-1566         | 3-1/2"-12 |             |           | 365-3326                  | 367-3326         |
| 1-7/8"-16    | 3-1/8       | 1-1/4     | 365-1567                  | 367-1567         | 3-3/4"-4  |             |           | 365-3484                  | 367-3484         |
| 1-7/8"-18    | 3-1/8       | 1-1/4     | 365-1568                  | 367-1568         | 3-3/4"-8  |             |           | 365-3485                  | 367-3485         |
| 2"-4-1/2     | 3-1/2       | 1-1/4     | 365-2004                  | 367-2004         | 3-3/4"-12 |             |           | 365-3486                  | 367-3486         |
| 2"-8         | 3-1/2       | 1-1/4     | 365-2005                  | 367-2005         | 4"-8      |             |           | 365-4004                  | 367-4004         |
| 2"-12        | 3-1/2       | 1-1/4     | 365-2006                  | 367-2006         | 4"-12     |             |           | 365-4005                  | 367-4005         |
| 2"-16        | 3-1/2       | 1-1/4     | 365-2007                  | 367-2007         | 4-1/2"-8  |             |           | 365-4324                  | 367-4324         |
| 2"-18        | 3-1/2       | 1-1/4     | 365-2008                  | 367-2008         | 4-1/2"-12 |             |           | 365-4325                  | 367-4325         |
| 2-1/8"-8     | 3-1/2       | 1-1/4     | 365-2084                  | 367-2084         | 5"-8      |             |           | 365-5004                  | 367-5004         |
| 2-1/8"-12    | 3-1/2       | 1-1/4     | 365-2085                  | 367-2085         | 5"-12     |             |           | 365-5005                  | 367-5005         |
| 2-1/4"-4-1/2 | 3-1/2       | 1-1/4     | 365-2164                  | 367-2164         |           |             |           |                           |                  |

## British Standard Hexagon Rethreading Dies

### 55° Thread Angle carbon Steel

Use for rethreading applications.



#### Straight Pipe-BSP

| Size      | Order No. |
|-----------|-----------|
| 1/8"-28   | 365-2708  |
| 1/4"-19   | 365-2716  |
| 3/8"-19   | 365-2724  |
| 1/2"-14   | 365-2732  |
| 5/8"-14   | 365-2740  |
| 3/4"-14   | 365-2748  |
| 7/8"-14   | 365-2756  |
| 1"-11     | 365-2800  |
| 1-1/4"-11 | 365-2816  |
| 1-1/2"-11 | 365-2832  |
| 1-3/4"-11 | 365-2848  |
| 2"-11     | 365-2900  |

#### Taper Pipe-BSPT

| Size      | Order No. |
|-----------|-----------|
| 1/8"-28   | 365-3708  |
| 1/4"-19   | 365-3716  |
| 3/8"-19   | 365-3724  |
| 1/2"-14   | 365-3732  |
| 5/8"-14   | 365-3740  |
| 3/4"-14   | 365-3748  |
| 7/8"-14   | 365-3756  |
| 1"-11     | 365-3800  |
| 1-1/4"-11 | 365-3816  |
| 1-1/2"-11 | 365-3832  |
| 1-3/4"-11 | 365-3848  |
| 2"-11     | 365-3900  |

## Rethreading Hexagon Dies

### British Standard Whitworth (B.S.W.)

### 55° Thread Angle carbon Steel

Use for rethreading applications.



| Size     | Order No. |
|----------|-----------|
| 3/16"-24 | 365-4712  |
| 1/4"-20  | 365-4716  |
| 5/16"-18 | 365-4720  |
| 7/16"-14 | 365-4728  |
| 1/2"-12  | 365-4732  |
| 9/16"-12 | 365-4736  |
| 5/8"-11  | 365-4740  |

| Size     | Order No. |
|----------|-----------|
| 3/4"-10  | 365-4748  |
| 7/8"-9   | 365-4756  |
| 1"-8     | 365-4800  |
| 1-1/4"-7 | 365-4816  |
| 1-3/8"-6 | 365-4820  |
| 1-1/2"-6 | 365-4832  |

## Die Adaptors

- Easily converts round dies to hex dies.
- Great tool to use where conventional die stocks cannot swing due to lack of space.

### 4pcs/set

includes: 13/16"-2"

Order No.318-2290



| Die Dia. | Across Flats | Order No. |
|----------|--------------|-----------|
| 13/16"   | 1-1/16"      | 318-2250  |
| 1        | 1-1/4        | 318-2255  |
| 1-1/2    | 1-31/32      | 318-2260  |
| 2        | 2-9/16       | 318-2265  |
| 2-1/2    | 2-3/4        | 318-2270  |
| 3        | 3.63         | 318-2275  |

## Die Holders

- Ideal for short or medium run threading at shafts.
- Used safely on lathes, milling machines and tapping heads.

| Body                             | Shank    | Die Dia. | Order No. |
|----------------------------------|----------|----------|-----------|
| 1- 1/2" D x 1"                   | 1/2"D    | 13/16"   | 318-2031  |
| 1- 1/2D x1                       | 1/2D x 2 | 1        | 318-2032  |
| 2D x1-1/4                        | 3/4D x 2 | 1-1/2    | 318-2033  |
| 3Pcs/set, one each of above size |          |          | 318-2333  |



## Die Stocks

Die stocks for those dies with 1" outside diameter or under are single screw tightened design.

### 4pcs/set

includes 13/16,1,1-1/2,2"

Order No.318-2320

### 5pcs/set

includes 13/16,1,1-1/2,2, 2-1/2"

Order No.318-2321



| Die Dia. | OAL    | Order No. |
|----------|--------|-----------|
| 5/8"     | 5"     | 318-2302  |
| 13/16    | 6-1/4  | 318-2304  |
| *1       | 9      | 318-2306  |
| *1-1/2"  | 12"    | 318-2308  |
| *2       | 19-1/2 | 318-2310  |
| 2-1/2    | 20     | 318-2312  |
| 3"       | 22"    | 318-2314  |
| 4        | 29     | 318-2316  |
| 5        | 33     | 318-2318  |

\* use with round adjustable dies.

### 2 in 1 Die Stocks

- Black finish.
- Front and back of stock complete with different size for different DieDiameter.
- Attachable threaded handle.

13/16" and 1" Sizes

Order No. 318-2081



### Plain Die Stocks

Hold both hex and round dies

| Die Diameter            | Order No. |
|-------------------------|-----------|
| 5/8" for Hex Dies       | 318-2210  |
| 13/16 for Round Dies    | 318-2220  |
| 1 for Hex or Round Dies | 318-2230  |



### DIN 225 Die Stocks

zinc die casting made



| Size      | Length | For Dies | Order No. |
|-----------|--------|----------|-----------|
| 16 x 5mm  | 160    | M 1-2.6  | 318-2025  |
| 20 x 5mm  | 200    | M 3-4    | 318-2030  |
| 20 x 7mm  | 200    | M 4.5-6  | 318-2035  |
| 25 x 9mm  | 224    | M 7-9    | 318-2040  |
| 30 x 11mm | 280    | M 10-11  | 318-2045  |
| 38 x 14mm | 315    | M 12-14  | 318-2050  |
| 45 x 18mm | 450    | M 16-20  | 318-2055  |
| 55 x 22mm | 560    | M 22-24  | 318-2060  |
| 65 x 25mm | 630    | M 27-36  | 318-2065  |

## Tap Wrenches

### Extension Tap Wrenches

- Attractive finish.
- Made of steel.
- Precision tap extension.
- 4 jaw chuck.



| Tap Capacity       | Order No. |
|--------------------|-----------|
| # 0-1/4" (1.5-6mm) | 318-0140  |
| # 12-1/2" (6-12mm) | 318-0145  |

### DIN 351 Tap Socks



| Size       | Description            | Order No. |
|------------|------------------------|-----------|
| 2.1x60mm   | for tap DIN352 M1-2.6  | 318-5021  |
| 2.4x70mm   |                        | 318-5024  |
| 2.7x80mm   | for tap DIN352 M3      | 318-5027  |
| 3.0x90mm   | for tap DIN352 M3.5    | 318-5030  |
| 3.4x95mm   | for tap DIN352 M4      | 318-5034  |
| 3.8x100mm  |                        | 318-5038  |
| 4.3x105mm  | for tap DIN351NO.10UNC | 318-5043  |
| 4.9x110mm  | for tap DIN352 M4.5-8  | 318-5049  |
| 5.5x115mm  | for tap DIN352 M9-10   | 318-5055  |
| 6.2x120mm  | for tap DIN352 M11     | 318-5062  |
| 7.0x125mm  | for tap DIN352 M12     | 318-5070  |
| 8.0x125mm  |                        | 318-5080  |
| 9.0x130mm  | for tap DIN352 M13-16  | 318-5090  |
| 10.0x140mm |                        | 318-5100  |
| 11.0x150mm | for tap DIN352 M18     | 318-5110  |
| 12.0x155mm | for tap DIN352 M20     | 318-5120  |
| 13.0x160mm |                        | 318-5130  |
| 14.5x175mm | for tap DIN352 M22-24  | 318-5145  |
| 16.0x180mm | for tap DIN352 M27     | 318-5160  |
| 18.0x200mm | for tap DIN352 M30     | 318-5180  |
| 20.0x220mm | for tap DIN352 M32     | 318-5200  |
| 22.0x230mm | for tap DIN352 M36     | 318-5220  |

### DIN 1814 Tap Wrenches

Adjustable zinc die casting made



| Size  | Length | For Taps | Order No. |
|-------|--------|----------|-----------|
| 0     | 125mm  | M 1-8    | 318-0200  |
| 1     | 188mm  | M 1-10   | 318-0215  |
| 1-1/2 | 215mm  | M 1-12   | 318-0220  |
| 2     | 280mm  | M 3.5-12 | 318-0225  |
| 3     | 375mm  | M 5-20   | 318-0230  |
| 4     | 500mm  | M 11-27  | 318-0235  |
| 5     | 700mm  | M 13-32  | 318-0240  |

### Mini Tap Wrenches

- Handy tapping tool.
- Ideally suitable for jewelers, watch makers, and small tapping application



| Tap Capacity | Order No. |
|--------------|-----------|
| 1/4" (6mm)   | 318-0251  |
| 1/2" (12mm)  | 318-0252  |
| 2 piece set  | 318-0254  |

## Tap Wrenches

### Piloted Spindle Tap Wrenches

Used for threading a drilled hole manually at one machine location without moving the workpiece.



| Tap Capacity        | Order No. |
|---------------------|-----------|
| #0-1/4" (1.5mm-6mm) | 318-0180  |
| #12-1/2" (6mm-12mm) | 318-0182  |

### Extra Long Tap Wrenches

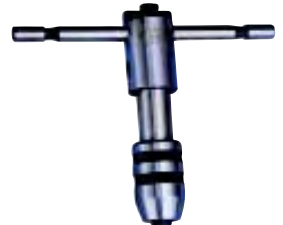
- 13" long.
- Shiny ground finish.
- Jaws are hardened and tempered.
- Jaws are replaceable.



| Tap Capacity      | Plain Type Order No. | Ratchet Type Order No. |
|-------------------|----------------------|------------------------|
| 5/32-1/4" (4-6mm) | 318-0131             | 318-0136               |
| 1/4-1/2" (6-12mm) | 318-0132             | 318-0137               |
| 2 piece set       | 318-0130             | 318-0135               |

### T-Handle Tap Wrenches

1/16 to 1/2"



T-Handle tap wrenches are used for holding taps, reamers and other small tools to be turned by hand

| Tap Capacity         | Plain Order No. | Ratchet Order No. |
|----------------------|-----------------|-------------------|
| 1/16-5/32" (1.5-4mm) | 318-0010        | 318-0050          |
| 5/32-1/4" (4-6mm)    | 318-0015        | 318-0055          |
| 1/4-1/2" (6-12mm)    | 318-0020        | 318-0060          |
| 3 piece set          | 318-0030        | 318-0070          |

### T-Handle Tap Wrenches European Style

Ratchet shift key makes clockwise or counterclockwise rotation



| Description     | Length | Plain Order No. | Ratchet Order No. |
|-----------------|--------|-----------------|-------------------|
| 1/8-3/8"/M3-10  | 85mm   | 318-5305        | 318-5315          |
| 7/32-1/2"/M5-12 | 110mm  | 318-5310        | 318-5320          |
| 1/8-3/8"/M3-10  | 250mm  | 318-5306        | 318-5335          |
| 7/32-1/2"/M5-12 | 300mm  | 318-5311        | 318-5340          |

## E-Z Hand Tappers

### Mini Tapper Specifications

| Descriptions     |          |
|------------------|----------|
| Table Size       | 8-1/2x6" |
| Height           | 9"       |
| Clearance Height | 3-3/4"   |
| Depth of Throat  | 4-1/2"   |
| Approx. Weight   | 12 lbs   |

7Pcs ( #0-5/16" ) Tap Adapters  
Order No. 318-0013



Order No.318-0003

## Hand Tappers

- Assures straight perpendicular tapped holes.
- Can be used vertical, horizontal or inverted.
- Equipped with tap guide, precision ground work table, tap spindle, wrench & nine steel tap adapters: 6, 8, 10, 1/4", 5/16", 3/8", 7/16", 1/2" & 5/8".

Order No. 318-0001

### Specifications

| Descriptions     |             |
|------------------|-------------|
| Table Length     | 12-1/2"     |
| Table Width      | 6-1/2"      |
| Table Area       | 6-1/2 x 10" |
| Height           | 13"         |
| Clearance Height | 7"          |
| Depth of Throat  | 7-1/2"      |
| Weight (Approx.) | 37 lbs.     |



### Adaptors & Set

| Adaptor Sizes | Order No. | Adaptor Sizes | Order No. |
|---------------|-----------|---------------|-----------|
| #6            | 318-0101  | 3/8"          | 318-0106  |
| #8            | 318-0102  | 7/16"         | 318-0107  |
| #10           | 318-0103  | 1/2"          | 318-0108  |
| 1/4"          | 318-0104  | 5/8"          | 318-0109  |
| 5/16"         | 318-0105  | 9Pcs/set      | 318-0119  |

## E-Z Hand Tappers

### Standard Tapper

Perpendicular tapped holes. Both units are complete with tap guide, machined work table, tap spindle wrench, and steel tap adapters for use with spiral point taps.

Order No.318-0007

### Specifications

| Descriptions     |               |
|------------------|---------------|
| Table Size       | 13x8"         |
| Height           | 14"           |
| Clearance Height | 7"            |
| Depth of Throat  | 7-1/2"        |
| Approx. Weight   | 35 lbs        |
| Tap Adapters     | 9 ( #8-3/4" ) |



### Adaptors & Set

| Adaptor Sizes | Order No. | Adaptor Sizes | Order No. |
|---------------|-----------|---------------|-----------|
| #8            | 318-0700  | 7/16"         | 318-0705  |
| #10           | 318-0701  | 1/2"          | 318-0706  |
| 1/4"          | 318-0702  | 5/8"          | 318-0707  |
| 5/16"         | 318-0703  | 3/4"          | 318-0708  |
| 3/8"          | 318-0704  | 9Pcs/set      | 318-0709  |

## Tapping Fixture

Tap Holes up to 1/2" Diameter

- Eliminate tap Breakage.
- Perfect alignment for Tapping and Reaming.
- Including: 1 Tapping Guide, 1Tap Wrench, and a Set of Jaws.



Order No. 318-0000

## Tap Guide

- 1/2" Dia. hardened shank
- 3/16" Dia. hardened tension Pin
- Adjustable tension spring
- Reversible tension pin for male and female hole centering
- With this tool you start every tap straight



Order No. 318-0090

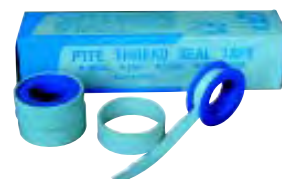
## Machine Taping Guide

- Provide sensitive feel for hand tapping small holes on milling machines, drilling presses, and lathes.
- Starts every hole straight and prevents tap breakage
- Shank dia. 3/8" handle dia. 1"
- 0 to 12 tap capacity



Order No. 318-0095

## Teflon Tapes



| Specification | Order No. |
|---------------|-----------|
| 260" x 1/2"   | 841-0001  |
| 260 x 3/4     | 841-0002  |
| 520 x 1/2     | 841-0003  |
| 520 x 3/4     | 841-0004  |

## Tap & Die Sets

### Ground Thread

#### 3 Piece NPT Taper Pipe Tap Sets

Set includes one each: Taps (3 Sizes).

##### Wooden Case

| Thread Size<br>& Pitch                | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|---------------------------------------|---------------------|---------------------------|
| 1-1/4"-11-1/2 1-1/2"-11-1/2 2"-11-1/2 | 314-9503            | 314-9603                  |



#### 6 Piece NPT Taper Pipe Tap Sets

Set includes one each: Taps (6 Sizes).

##### Wooden Case

| Thread Size<br>& Pitch      | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|-----------------------------|---------------------|---------------------------|
| 1/4"-18 1/2-14 1"-11-1/2    | 314-9506            | 314-9606                  |
| 3/8-18 3/4-14 1-1/4"-11-1/2 |                     |                           |



#### 12 Piece Tap & Die Sets

Set includes one each of:

Taps and 1" O.D. Round Dies(5 Sizes).

Adjustable Die Stock 1".

Straight Handle Tap Wrench1/16"-1/2".



##### Plastic Case

| Thread Size<br>& Pitch       | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|------------------------------|---------------------|---------------------------|
| 1/4"-20NC 3/8-16 NC 1/2-13NC | 314-9513            | 314-9613                  |
| 5/16-18 NC 7/16-14 NC        |                     |                           |

#### 12 Piece Tap & Die Sets

Set includes one each of:

Taps and 1" O.D. Round Dies(5 Sizes).

Adjustable Die Stock 1".

Straight Handle Tap Wrench1/16"-1/2".



##### Plastic Case

| Thread Size<br>& Pitch        | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|-------------------------------|---------------------|---------------------------|
| 1/4"-28 NF 3/8-24 NF 1/2-20NF | 314-9514            | 314-9614                  |
| 5/16-24NF 7/16-20 NF          |                     |                           |

#### 16 Piece Tap & Die Sets

Set includes one each of:

Taps and 1-1/2" O.D. Round Dies (7 Sizes).

Adjustable Die Stock 1-1/2".

Straight Handle Tap Wrench1/4"-3/4".



##### Plastic Case

| Thread Size<br>& Pitch         | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|--------------------------------|---------------------|---------------------------|
| 1/4"-28 NF                     | 314-9516            | 314-9616                  |
| 5/16-24NF 7/16-20 NF 5/8-18 NF |                     |                           |
| 3/8-24 NF 1/2-20NF 3/4-16 NF   |                     |                           |

#### 16 Piece Tap & Die Sets

Set includes one each of:

Taps and 1-1/2" O.D. Round Dies(7Sizes).

Adjustable Die Stock 1-1/2".

Straight Handle Tap Wrench1/4"-3/4".



##### Plastic Case

| Thread Size<br>& Pitch         | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|--------------------------------|---------------------|---------------------------|
| 1/4"-20NC                      | 314-9517            | 314-9617                  |
| 5/16-18 NC 7/16-14 NC 5/8-11NC |                     |                           |
| 3/8-16 NC 1/2-13NC 3/4-10 NC   |                     |                           |

#### 20 Piece Tap & Die Sets

Set includes one each of:

Taps and 1" O.D. Round Dies(9 Sizes).

Adjustable Die Stock.

Straight Handle Tap Wrench.

##### Polyethylene Case

| Thread Size<br>& Pitch     | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|----------------------------|---------------------|---------------------------|
| 6-32NC 12-24NC 3/8-16NC    | 314-9520            | 314-9620                  |
| 8-32NC 1/4-20NC 7/16-14NC  |                     |                           |
| 10-24NC 5/16-18NC 1/2-13NC |                     |                           |



#### 21 Piece Tap & Die Sets

Set includes one each of:

Taps and 1-1/2" O.D. Round dies.(8 Sizes)

Die Stock 1-1/2".

Straight Handle Tap Wrench1/4"-3/4".

T-Tap Wrench 1/4"-1/2"

Screw Driver

Screw Pitch Gage 12-40 Pitch

##### Plastic Case

| Thread Size<br>& Pitch        | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|-------------------------------|---------------------|---------------------------|
| 1/4"-20NC 7/16-14 NC 5/8-11NC | 314-9523            | 314-9623                  |
| 5/16-18 NC 1/2-13NC 3/4-10 NC |                     |                           |
| 3/8-16 NC 9/16-12NC           |                     |                           |



#### 22 Piece Tap & Die Sets

Set includes one each of:

Taps and 1" O.D. round dies. (10Sizes)

Die Stock 1".

Straight Handle Tap Wrench1/16"-1/2".



##### Plastic Case

| Thread Size<br>& Pitch          | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|---------------------------------|---------------------|---------------------------|
| 1/4"-20NC                       | 314-9522            | 314-9622                  |
| 5/16-18 NC 1/2-13NC 3/8-24 NF   |                     |                           |
| 3/8-16 NC 1/4"-28 NF 7/16-20 NF |                     |                           |
| 7/16-14 NC 5/16-24NF 1/2-20NF   |                     |                           |

#### 32 Piece Metric Tap and Die Set

##### DIN 352 Taps & DIN 223 Dies

Set includes one each:

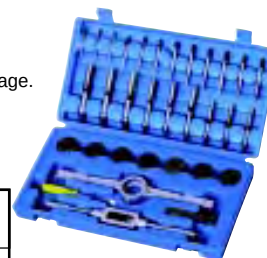
Taps (21 metric thread sizes) Screw pitch gage.

Dies (7 metric thread sizes) Screw driver.

Adjustable die stock.

Adjustable handle tap wrench.

| Descriptions | Plastic Case<br>Order No. |
|--------------|---------------------------|
| H.S.S        | 314-9532                  |
| Carbon Steel | 314-9632                  |



Remark: V= Coarse Tap, M= Middle Tap, F= Fine Tap.

| Size of Dies | Thread Size & Pitch |        |        |
|--------------|---------------------|--------|--------|
| M3x0.5       | M3(V)               | M3(M)  | M3(F)  |
| M4x0.7       | M4(V)               | M4(M)  | M4(F)  |
| M5x0.8       | M5(V)               | M5(M)  | M5(F)  |
| M6x1.0       | M6(V)               | M6(M)  | M6(F)  |
| M8x1.25      | M8(V)               | M8(M)  | M8(F)  |
| M10x1.5      | M10(V)              | M10(M) | M10(F) |
| M12x1.75     | M12(V)              | M12(M) | M12(F) |

## Tap & Die Sets

### 30 Piece Tap & Die Sets

Set includes one each of:

Taps and 1-1/2" O.D. Round Dies. (14 Sizes)

Die Stock 1-1/2".

Straight Handle Tap wrench 1/4"-3/4".



#### Plastic Case

| Thread Size & Pitch                     | H.S.S. Order No. | Carbon Steel Order No. |
|-----------------------------------------|------------------|------------------------|
| 1/4"-20NC 1/2-13NC 5/16-24NF 5/8-18 NF  | 314-9530         | 314-9630               |
| 5/16-18 NC 5/8-11NC 3/8-24 NF 3/4-16 NF |                  |                        |
| 3/8-16 NC 3/4-10 NC 7/16-20 NF          |                  |                        |
| 7/16-14 NC 1/4"-28 NF 1/2-20NF          |                  |                        |

### 39 Piece Tap & Die Sets

Set includes one each of:

Taps and 1" O.D. Round Dies. (17 Sizes)

Die Stock 1".

Straight Handle Tap Wrench 1/16"-1/2"

T handle Tap Wrench 0-1/4".

Screw Driver

Screw Pitch Gage



#### Plastic Case

| Thread Size & Pitch                     | H.S.S. Order No. | Carbon Steel Order No. |
|-----------------------------------------|------------------|------------------------|
| 4-40NC                                  | 314-9540         | 314-9640               |
| 6-32NC 1/4-20NC 1/2-13NC 3/8-24 NF      |                  |                        |
| 8-32NC 5/16-18 NC 10-32NF 7/16-20 NF    |                  |                        |
| 10-24NC 3/8-16 NC 1/4-28 NF 1/2-20NF    |                  |                        |
| 12-24NC 7/16-14 NC 5/16-24NF 1/8-27 NPT |                  |                        |
|                                         |                  |                        |

### 39 Piece Tap & Die Sets

Set includes one each of:

Taps and 1" Hex Dies. (17 Sizes)

Hex Die Stock.

Straight Handle Tap Wrench

1/16"-1/2"

T handle Tap Wrench 0-1/4".

Screw Driver

Screw Pitch Gage



#### Plastic Case

| Thread Size & Pitch                     | H.S.S. Order No. | Carbon Steel Order No. |
|-----------------------------------------|------------------|------------------------|
| 4-40NC                                  | 314-9539         | 314-9639               |
| 6-32NC 1/4-20NC 1/2-13NC 3/8-24 NF      |                  |                        |
| 8-32NC 5/16-18 NC 10-32NF 7/16-20 NF    |                  |                        |
| 10-24NC 3/8-16 NC 1/4-28 NF 1/2-20NF    |                  |                        |
| 12-24NC 7/16-14 NC 5/16-24NF 1/8-27 NPT |                  |                        |
|                                         |                  |                        |

## Drill & Tap Sets

### HSS, Ground



| Sizes                                                                                                                                                        | Order No. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Inch Tap(NC): 6-32, 8-32, 10-24, 10-32, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13; Drill: 36#, 29#, 25#, 21#, 7#, F, 5/16, U, 27/64"                          | 314-9581  |
| Inch Tap(NF): 6-40, 8-36, 10-24, 10-32, 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20; Drill: 33#, 29#, 25#, 21#, 3#, I, Q, 25/64", 29/64"                        | 314-9582  |
| Metric Tap: M2.5x0.45, 3.0x0.5, 3.5x0.6, 4.0x0.7, 5.0x0.8, 6.0x1.0, 8.0x1.25, 10.0x1.50, 12.0x1.75; Drill: 2.05, 2.5, 2.9, 3.3, 4.2, 5.0, 6.7, 8.5, 10.20mm. | 314-9583  |

### Ground Thread

### 41 Piece Tap & Die Sets

Set includes one each of:

Taps and 1-1/2" O.D. Round Dies. (18 Sizes)

Die Stock 1-1/2".

Straight Handle Tap Wrench 1/4"-3/4".

T-Tap Wrench 0-1/4"

Screw Driver

Screw Pitch Gage 12-40 Pitch



#### Plastic Case

| Thread Size & Pitch  | H.S.S. Order No. | Carbon Steel Order No. |
|----------------------|------------------|------------------------|
| 1/4"-20NC 5/16-24NF  | 314-9541         | 314-9641               |
| 5/16-18 NC 3/8-24 NF |                  |                        |
| 3/8-16 NC 7/16-20 NF |                  |                        |
| 7/16-14 NC 1/2-20NF  |                  |                        |
| 1/2-13NC 9/16-18NF   |                  |                        |
| 9/16-12NC 5/8-18 NF  |                  |                        |
| 5/8-11NC 3/4-16 NF   |                  |                        |
| 3/4-10 NC 1/8-27 NPT |                  |                        |
| 1/4"-28 NF 1/4-18NPT |                  |                        |
|                      |                  |                        |

### 44 Piece Tap & Die Sets

Set includes one each:

Plug Taps and Adjustable Dies

for the 20 thread sizes.

Die Stock with Adapter.

Straight Handle Tap Wrench.

T-Handle Tap Wrench.

Screw Driver.



#### Plastic Case

| Thread Size & Pitch  | H.S.S. Order No. | Carbon Steel Order No. |
|----------------------|------------------|------------------------|
| 1/4" -20NC 1-14NF    | 314-9545         | 314-9645               |
| 5/16-18 NC 1/4"-18NF |                  |                        |
| 3/8-16NC 5/16-24NF   |                  |                        |
| 7/16-14NC 3/8-24NF   |                  |                        |
| 1/2-13NC 7/16-20NF   |                  |                        |
| 9/16-12NC 1/2-20NF   |                  |                        |
| 5/8-11NC 9/16-18NF   |                  |                        |
| 3/4-10NC 5/8-18NF    |                  |                        |
| 7/8-9NC 3/4-16NF     |                  |                        |
| 1-8NC 7/8-14NF       |                  |                        |

### 45 Piece Tap & Die Sets

Set includes one each:

Taps and Round Dies. (20 Sizes)

Die Stock 1-1/2".

Adjustable Die Stock 2".

Straight Handle Tap Wrench 1/4"-3/4".

Straight Handle Tap Wrench 3/8"-1".

Screw Driver



#### Plastic Case

| Thread Size & Pitch   | H.S.S. Order No. | Carbon Steel Order No. |
|-----------------------|------------------|------------------------|
| 1/4"-20NC 1/4"-28 NF  | 314-9544         | 314-9644               |
| 5/16-18 NC 5/16-24NF  |                  |                        |
| 3/8-16 NC 3/8-24 NF   |                  |                        |
| 7/16-14 NC 7/16-20 NF |                  |                        |
| 1/2-13NC 1/2-20NF     |                  |                        |
| 9/16-12NC 9/16-18NF   |                  |                        |
| 5/8-11NC 5/8-18 NF    |                  |                        |
| 3/4-10 NC 3/4-16 NF   |                  |                        |
| 7/8-9NC 7/8-14 NF     |                  |                        |
| 1-8 NC 1-14NS         |                  |                        |

## Tap & Die Sets

### 64 Piece Tap & Die Sets

### Ground Thread

#### Set includes one each:

Taps and Round Dies.(28 Sizes)

Die Stock 1" O.D.

Die Stock 1-1/2" O.D.

Die Stock 2" O.D.

Straight Handle Tap Wrench 1/16"-1/2"

Straight Handle Tap Wrench 3/8"-1"

T-Handle Tap Wrench 0-1/4".

Screw Driver

Screw Pitch Gage 12-40 Pitch



#### Plastic Case

| Thread Size<br>& Pitch |            |            |            | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|------------------------|------------|------------|------------|---------------------|---------------------------|
| 4-40NC                 | 3/8-16 NC  | 1-8 NC     | 9/16-18NF  | 314-9564            | 314-9664                  |
| 6-32NC                 | 7/16-14 NC | 10-32NF    | 5/8-18 NF  |                     |                           |
| 8-32NC                 | 1/2-13NC   | 1/4-28 NF  | 3/4-16 NF  |                     |                           |
| 10-24NC                | 9/16-12NC  | 5/16-24NF  | 7/8-14 NF  |                     |                           |
| 12-24NC                | 5/8-11NC   | 3/8-24 NF  | 1/8-27 NPT |                     |                           |
| 1/4-20NC               | 3/4-10 NC  | 7/16-20 NF | 1/4-18NPT  |                     |                           |
| 5/16-18 NC             | 7/8-9NC    | 1/2-20NF   | 1-14NS     |                     |                           |

### 110 Piece Tap & Die Sets

#### Set includes one each:

Taper Taps, Bottom Taps and Round Dies.

(35 Sizes)

Die Stock 1" O.D.

Die Stock 1-1/2" O.D.

Straight Handle Tap Wrench 1/4"-3/4"

Straight Handle Tap Wrench 1/16"-1/2"

T-Handle Tap Wrench 0-1/4".



#### Plastic Case

| Thread Size<br>& Pitch |            |            |          | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|------------------------|------------|------------|----------|---------------------|---------------------------|
| 4-40NC                 | 1/2-13NC   | 1/2-20NF   | M8X1.25  | 314-9596            | 314-9696                  |
| 6-32NC                 | 9/16-12NC  | 9/16-18NF  | M10X1.0  |                     |                           |
| 8-32NC                 | 5/8-11NC   | 5/8-18 NF  | M10X1.5  |                     |                           |
| 10-24NC                | 3/4-10 NC  | 3/4-16 NF  | M11X1.5  |                     |                           |
| 12-24NC                | 10-32NF    | 1/4-24NS   | M12X1.5  |                     |                           |
| 1/4-20NC               | 1/4-28 NF  | 1/4-32NS   | M12X1.75 |                     |                           |
| 5/16-18 NC             | 5/16-24NF  | 1/8-27 NPT | M14X1.25 |                     |                           |
| 3/8-16 NC              | 3/8-24 NF  | 1/4-18NPT  | M18X1.5  |                     |                           |
| 7/16-14 NC             | 7/16-20 NF | M6X1.0     |          |                     |                           |

### 44 Piece Tap & Die Sets

#### Set includes one each:

Taps and Round Dies.(20 Sizes)

2" Adjustable Die Stock with Adapter.

Straight Handle Tap Wrench

T-Handle Tap Wrench.

Screw Driver



#### Plastic Case

| Thread Size<br>& Pitch |            |           | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|------------------------|------------|-----------|---------------------|---------------------------|
| 1/4"-20NC              | 3/4-10 NC  | 1/2-20NF  | 314-9551            | 314-9651                  |
| 5/16-18 NC             | 7/8-9NC    | 9/16-18NF |                     |                           |
| 3/8-16 NC              | 1-8 NC     | 5/8-18 NF |                     |                           |
| 7/16-14 NC             | 1/4"-28 NF | 3/4-16 NF |                     |                           |
| 1/2-13NC               | 5/16-24NF  | 7/8-14 NF |                     |                           |
| 9/16-12NC              | 3/8-24 NF  | 1-14NS    |                     |                           |
| 5/8-11NC               | 7/16-20 NF |           |                     |                           |
|                        |            |           |                     |                           |

### 60 Piece Metric, Inch Tap & Die Sets

#### Set includes one each:

Plug taps and 1" round dies.(27 sizes)

Adjustable die stock.

Adjustable handle tap wrench.

T-Handle tap wrench.

Screw driver.

2 Screw pitch gage.

#### Plastic Case



| Thread Size<br>& Pitch |           |            |           | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|------------------------|-----------|------------|-----------|---------------------|---------------------------|
| 1/4"-20NC              | 8-32NC    | 1/2-20NF   |           | 314-9560            | 314-9660                  |
| 5/16-18NC              | 10-24NC   | 10-32NF    | 7mmx1.0   |                     |                           |
| 3/8-16NC               | 12-24NC   | 1/8-27 NPT | 8mmx1.25  |                     |                           |
| 7/16-14NC              | 1/4"-28NF | 3mmx.5     | 9mmx1.25  |                     |                           |
| 1/2-13NC               | 5/16-24NF | 4mmx.7     | 10mmx1.5  |                     |                           |
| 4-40NC                 | 3/8-24NF  | 5mmx.8     | 10mmx1.0  |                     |                           |
| 6-32NC                 | 7/16-20NF | 6mmx1.0    | 12mmx1.75 |                     |                           |

### 39 Piece Metric Tap & Die Sets

#### 3mm-12mm

#### Set includes one each:

Taps and 1" round dies. Screw pitch gage.

(17 metric thread sizes) Screw driver.

Adjustable die stock.

Adjustable handle tap wrench.

T-Tap wrench



#### Plastic Case

| Thread Size & Pitch |          |           |            | H.S.S. Order No. | Carbon Steel Order No. |
|---------------------|----------|-----------|------------|------------------|------------------------|
| 3mmx0.5             | 5mmx0.9  | 7mmx1.0   | 10mmx1.5   | 314-9535         | 314-9635               |
| 3mmx0.6             | 6mmx0.75 | 8mmx1.0   | 12mmx1.5   |                  |                        |
| 4mmx0.7             | 6mmx1.0  | 8mmx1.25  | 12mmx1.75  |                  |                        |
| 4mmx0.75            | 7mmx0.75 | 10mmx1.25 | 1/8-27 NPT |                  |                        |
| 5mmx0.8             |          |           |            |                  |                        |

### 44 Piece Metric Tap & Die Sets

#### 6mm-24mm

#### Set includes one each:

Taps and adjustable dies.

T-Tap wrench

(20 metric thread sizes)

Screw driver.

Adjustable die stock.

Adjustable handle tap wrench.



#### Plastic Case

| Thread Size<br>& Pitch |           |          |          | H.S.S.<br>Order No. | Carbon Steel<br>Order No. |
|------------------------|-----------|----------|----------|---------------------|---------------------------|
| 6mmx0.75               | 10mmx1.5  | 16mmx1.5 | 20mmx2.5 | 314-9547            | 314-9647                  |
| 6mmx1.0                | 12mmx1.5  | 16mmx2.0 | 22mmx1.5 |                     |                           |
| 8mmx1.0                | 12mmx1.75 | 18mmx1.5 | 22mmx2.5 |                     |                           |
| 8mmx1.25               | 14mmx1.5  | 18mmx2.5 | 24mmx1.5 |                     |                           |
| 10mmx1.25              | 14mmx2.0  | 20mmx1.5 | 24mmx3.0 |                     |                           |
|                        |           |          |          |                     |                           |
|                        |           |          |          |                     |                           |

### 29 Piece Metric Tap and Drill Set,DIN 352

#### Set includes one each:

Taps (21 metric thread sizes)

Drills (7 metric sizes)

Adjustable handle tap wrench.

Remark: V= Coarse Tap, M= Middle Tap, F= Fine Tap.

| Size of Drills | Thread Size & Pitch |        |        |
|----------------|---------------------|--------|--------|
| M3             | M3(V)               | M3(M)  | M3(F)  |
| M4             | M4(V)               | M4(M)  | M4(F)  |
| M5             | M5(V)               | M5(M)  | M5(F)  |
| M6             | M6(V)               | M6(M)  | M6(F)  |
| M8             | M8(V)               | M8(M)  | M8(F)  |
| M10            | M10(V)              | M10(M) | M10(F) |
| M12            | M12(V)              | M12(M) | M12(F) |



Metal Case

Order No. 314-9529

## 3/16" Shank HSS End Mills

Used for small diameter milling, slotting, engraving, pocketing and similar applications.

### 2 Flute Double End Mills



#### Regular Length

| Size  | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------|----------------|--------------|----------------|----------------------|
| 1/32" | 3/32"        | 2-1/4"         | 720-1630     | 721-1630       | 722-1630             |
| 3/64  | 9/64         | 2-1/4          | 720-1632     | 721-1632       | 722-1632             |
| 1/16  | 3/16         | 2-1/4          | 720-1634     | 721-1634       | 722-1634             |
| 5/64  | 15/64        | 2-1/4          | 720-1636     | 721-1636       | 722-1636             |
| 3/32  | 9/32         | 2-1/4          | 720-1638     | 721-1638       | 722-1638             |
| 7/64  | 21/64        | 2-1/4          | 720-1640     | 721-1640       | 722-1640             |
| 1/8   | 3/8          | 2-1/4          | 720-1642     | 721-1642       | 722-1642             |
| 9/64  | 13/32        | 2-1/4          | 720-1644     | 721-1644       | 722-1644             |
| 5/32  | 7/16         | 2-1/4          | 720-1646     | 721-1646       | 722-1646             |
| 11/64 | 1/2          | 2-1/4          | 720-1648     | 721-1648       | 722-1648             |
| 3/16  | 1/2          | 2-1/4          | 720-1650     | 721-1650       | 722-1650             |

#### Stub Length

| Size  | Flute Length | Overall Length | TiN-Coated Order No. | M2AI Order No. | M2 Order No. |
|-------|--------------|----------------|----------------------|----------------|--------------|
| 1/32" | 3/64"        | 2"             | 722-1600             | 721-1600       | 720-1600     |
| 3/64  | 1/16         | 2              | 722-1602             | 721-1602       | 720-1602     |
| 1/16  | 3/32         | 2              | 722-1604             | 721-1604       | 720-1604     |
| 5/64  | 1/8          | 2              | 722-1606             | 721-1606       | 720-1606     |
| 3/32  | 9/64         | 2              | 722-1608             | 721-1608       | 720-1608     |
| 7/64  | 5/32         | 2              | 722-1610             | 721-1610       | 720-1610     |
| 1/8   | 3/16         | 2              | 722-1612             | 721-1612       | 720-1612     |
| 9/64  | 7/32         | 2              | 722-1614             | 721-1614       | 720-1614     |
| 5/32  | 15/64        | 2              | 722-1616             | 721-1616       | 720-1616     |
| 11/64 | 1/4          | 2              | 722-1618             | 721-1618       | 720-1618     |
| 3/16  | 9/32         | 2              | 722-1620             | 721-1620       | 720-1620     |

#### Long Length

| Size  | Length Below Shank | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------------|--------------|----------------|--------------|----------------|----------------------|
| 1/16" | 3/8"               | 7/32"        | 2-1/2"         | 720-1652     | 721-1652       | 722-1652             |
| 5/64  | 3/8                | 1/4          | 2-1/2          | 720-1654     | 721-1654       | 722-1654             |
| 3/32  | 1/2                | 9/32         | 2-5/8          | 720-1656     | 721-1656       | 722-1656             |
| 7/64  | 1/2                | 9/32         | 2-5/8          | 720-1658     | 721-1658       | 722-1658             |
| 1/8   | 3/4                | 3/4          | 3-1/8          | 720-1660     | 721-1660       | 722-1660             |
| 9/64  | 3/4                | 3/4          | 3-1/8          | 720-1662     | 721-1662       | 722-1662             |
| 5/32  | 7/8                | 7/8          | 3-1/4          | 720-1664     | 721-1664       | 722-1664             |
| 11/64 | 7/8                | 7/8          | 3-1/4          | 720-1666     | 721-1666       | 722-1666             |
| 3/16  | 1                  | 1            | 3-3/8          | 720-1668     | 721-1668       | 722-1668             |

### 2 Flute Ball Nose Double End Mills



#### Regular Length

| Size  | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------|----------------|--------------|----------------|----------------------|
| 1/32" | 3/32"        | 2-1/4"         | 720-1730     | 721-1730       | 722-1730             |
| 3/64  | 9/64         | 2-1/4          | 720-1732     | 721-1732       | 722-1732             |
| 1/16  | 3/16         | 2-1/4          | 720-1734     | 721-1734       | 722-1734             |
| 5/64  | 15/64        | 2-1/4          | 720-1736     | 721-1736       | 722-1736             |
| 3/32  | 9/32         | 2-1/4          | 720-1738     | 721-1738       | 722-1738             |
| 7/64  | 21/64        | 2-1/4          | 720-1740     | 721-1740       | 722-1740             |
| 1/8   | 3/8          | 2-1/4          | 720-1742     | 721-1742       | 722-1742             |
| 9/64  | 27/64        | 2-1/4          | 720-1744     | 721-1744       | 722-1744             |
| 5/32  | 7/16         | 2-1/4          | 720-1746     | 721-1746       | 722-1746             |
| 11/64 | 1/2          | 2-1/4          | 720-1748     | 721-1748       | 722-1748             |
| 3/16  | 1/2          | 2-1/4          | 720-1750     | 721-1750       | 722-1750             |

### 2 Flute Ball Nose Double End Mills

#### Stub Length

| Size  | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------|----------------|--------------|----------------|----------------------|
| 1/32" | 3/64"        | 2"             | 720-1700     | 721-1700       | 722-1700             |
| 3/64  | 1/16         | 2              | 720-1702     | 721-1702       | 722-1702             |
| 1/16  | 3/32         | 2              | 720-1704     | 721-1704       | 722-1704             |
| 5/64  | 1/8          | 2              | 720-1706     | 721-1706       | 722-1706             |
| 3/32  | 9/64         | 2              | 720-1708     | 721-1708       | 722-1708             |
| 7/64  | 5/32         | 2              | 720-1710     | 721-1710       | 722-1710             |
| 1/8   | 3/16         | 2              | 720-1712     | 721-1712       | 722-1712             |
| 9/64  | 7/32         | 2              | 720-1714     | 721-1714       | 722-1714             |
| 5/32  | 15/64        | 2              | 720-1716     | 721-1716       | 722-1716             |
| 11/64 | 1/4          | 2              | 720-1718     | 721-1718       | 722-1718             |
| 3/16  | 9/32         | 2              | 720-1720     | 721-1720       | 722-1720             |

#### Long Length

| Size  | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------|----------------|--------------|----------------|----------------------|
| 1/16" | 7/32"        | 2-1/2"         | 720-1752     | 721-1752       | 722-1752             |
| 5/64  | 1/4          | 2-1/2          | 720-1754     | 721-1754       | 722-1754             |
| 3/32  | 9/32         | 2-5/8          | 720-1756     | 721-1756       | 722-1756             |
| 7/64  | 9/32         | 2-5/8          | 720-1758     | 721-1758       | 722-1758             |
| 1/8   | 3/4          | 3-1/8          | 720-1760     | 721-1760       | 722-1760             |
| 9/64  | 3/4          | 3-1/8          | 720-1762     | 721-1762       | 722-1762             |
| 5/32  | 7/8          | 3-1/4          | 720-1764     | 721-1764       | 722-1764             |
| 11/64 | 7/8          | 3-1/4          | 720-1766     | 721-1766       | 722-1766             |
| 3/16  | 1            | 3-3/8          | 720-1768     | 721-1768       | 722-1768             |

### 4 Flute Center Cutting Double End Mills



#### Regular Length

| Size  | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------|----------------|--------------|----------------|----------------------|
| 1/16" | 3/16"        | 2-1/4"         | 720-4318     | 721-4318       | 722-4318             |
| 5/64  | 15/64        | 2-1/4          | 720-4320     | 721-4320       | 722-4320             |
| 3/32  | 9/32         | 2-1/4          | 720-4322     | 721-4322       | 722-4322             |
| 7/64  | 21/64        | 2-1/4          | 720-4324     | 721-4324       | 722-4324             |
| 1/8   | 3/8          | 2-1/4          | 720-4326     | 721-4326       | 722-4326             |
| 9/64  | 13/32        | 2-1/4          | 720-4328     | 721-4328       | 722-4328             |
| 5/32  | 7/16         | 2-1/4          | 720-4330     | 721-4330       | 722-4330             |
| 11/64 | 1/2          | 2-1/4          | 720-4332     | 721-4332       | 722-4332             |
| 3/16  | 1/2          | 2-1/4          | 720-4334     | 721-4334       | 722-4334             |

#### Stub Length

| Size  | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------|----------------|--------------|----------------|----------------------|
| 1/16" | 3/32"        | 2"             | 720-4300     | 721-4300       | 722-4300             |
| 5/64  | 5/32         | 2              | 720-4302     | 721-4302       | 722-4302             |
| 3/32  | 9/64         | 2              | 720-4303     | 721-4303       | 722-4303             |
| 3/32  | 5/32         | 2              | 720-4304     | 721-4304       | 722-4304             |
| 7/64  | 5/32         | 2              | 720-4306     | 721-4306       | 722-4306             |
| 1/8   | 3/16         | 2              | 720-4308     | 721-4308       | 722-4308             |
| 9/64  | 7/32         | 2              | 720-4310     | 721-4310       | 722-4310             |
| 5/32  | 15/64        | 2              | 720-4311     | 721-4311       | 722-4311             |
| 5/32  | 1/4          | 2              | 720-4312     | 721-4312       | 722-4312             |
| 11/64 | 9/32         | 2              | 720-4314     | 721-4314       | 722-4314             |
| 3/16  | 9/32         | 2              | 720-4316     | 721-4316       | 722-4316             |

#### Long Length

| Size  | Length Below Shank | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|--------------------|--------------|----------------|--------------|----------------|----------------------|
| 1/16" | 3/8"               | 7/32"        | 2-1/2"         | 720-4336     | 721-4336       | 722-4336             |
| 5/64  | 3/8                | 1/4          | 2-1/2          | 720-4338     | 721-4338       | 722-4338             |
| 3/32  | 1/2                | 9/32         | 2-5/8          | 720-4340     | 721-4340       | 722-4340             |
| 7/64  | 1/2                | 9/32         | 2-5/8          | 720-4342     | 721-4342       | 722-4342             |
| 1/8   | 3/4                | 3/4          | 3-1/8          | 720-4344     | 721-4344       | 722-4344             |
| 9/64  | 3/4                | 3/4          | 3-1/8          | 720-4346     | 721-4346       | 722-4346             |
| 5/32  | 7/8                | 7/8          | 3-1/4          | 720-4348     | 721-4348       | 722-4348             |
| 11/64 | 7/8                | 7/8          | 3-1/4          | 720-4350     | 721-4350       | 722-4350             |
| 3/16  | 1                  | 1            | 3-3/8          | 720-4352     | 721-4352       | 722-4352             |

## 3/16" Shank HSS Single Miniature End Mills

Used for small diameter milling, slotting, engraving, pocketing and similar applications.

### 2 Flute Single End Mill



| Dia.   | Flute Length | Overall Length | Order No. |
|--------|--------------|----------------|-----------|
| 11/32" | 3/32"        | 1-11/16"       | 720-1902  |
| 3/64   | 5/32         | 1-11/16        | 720-1903  |
| 1/16   | 7/32         | 1-11/16        | 720-1904  |
| 5/64   | 1/4          | 1-1/8          | 720-1905  |
| 3/32   | 5/16         | 1-1/8          | 720-1906  |
| 7/64   | 11/32        | 1-5/16         | 720-1907  |

| Dia.  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/8"  | 3/8"         | 1-5/16"        | 720-1908  |
| 9/64  | 13/32        | 1-7/16         | 720-1909  |
| 5/32  | 7/16         | 1-7/16         | 720-1910  |
| 11/64 | 15/32        | 1-11/16        | 720-1911  |
| 3/16  | 1/2          | 1-11/16        | 720-1902  |

### 4 Flute Single End Mill



| Dia.  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 5/64" | 1/4"         | 1-11/16"       | 720-2900  |
| 3/32  | 5/16         | 1-11/16        | 720-2902  |
| 7/64  | 11/32        | 1-11/16        | 720-2904  |
| 1/8   | 3/8          | 1-11/16        | 720-2906  |
| 9/64  | 13/32        | 1-11/16        | 720-2908  |
| 5/32  | 7/16         | 1-11/16        | 720-2910  |
| 11/64 | 15/32        | 1-11/16        | 720-2912  |
| 3/16  | 1/2          | 1-11/16        | 720-2914  |

## M42 8% Cobalt 3/16" Shank End Mills

use for small diameter milling, slotting, engraving, pocketing and similar applications.

### 2 Flute Double End Mills



#### Regular Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/32" | 3/32"        | 2-1/4"         | 723-1630  |
| 3/64  | 9/64         | 2-1/4          | 723-1632  |
| 1/16  | 3/16         | 2-1/4          | 723-1634  |
| 5/64  | 15/64        | 2-1/4          | 723-1636  |
| 3/32  | 9/32         | 2-1/4          | 723-1638  |
| 7/64  | 21/64        | 2-1/4          | 723-1640  |
| 1/8   | 3/8          | 2-1/4          | 723-1642  |
| 9/64  | 13/32        | 2-1/4          | 723-1644  |
| 5/32  | 7/16         | 2-1/4          | 723-1646  |
| 11/64 | 1/2          | 2-1/4          | 723-1648  |
| 3/16  | 1/2          | 2-1/4          | 723-1650  |

#### Long Length

| Size  | Length Below Shank | Flute Length | Overall Length | Order No. |
|-------|--------------------|--------------|----------------|-----------|
| 1/16" | 3/8"               | 7/32"        | 2-1/2"         | 723-1652  |
| 5/64  | 3/8                | 1/4          | 2-1/2          | 723-1654  |
| 3/32  | 1/2                | 9/32         | 2-5/8          | 723-1656  |
| 7/64  | 1/2                | 9/32         | 2-5/8          | 723-1658  |
| 1/8   | 3/4                | 3/4          | 3-1/8          | 723-1660  |
| 9/64  | 3/4                | 3/4          | 3-1/8          | 723-1662  |
| 5/32  | 7/8                | 7/8          | 3-1/4          | 723-1664  |
| 11/64 | 7/8                | 7/8          | 3-1/4          | 723-1666  |
| 3/16  | 1                  | 1            | 3-3/8          | 723-1668  |

#### Stub Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/32" | 3/64"        | 2"             | 723-1600  |
| 3/64  | 1/16         | 2              | 723-1602  |
| 1/16  | 3/32         | 2              | 723-1604  |
| 5/64  | 1/8          | 2              | 723-1606  |
| 3/32  | 9/64         | 2              | 723-1608  |
| 7/64  | 5/32         | 2              | 723-1610  |
| 1/8   | 3/16         | 2              | 723-1612  |
| 9/64  | 7/32         | 2              | 723-1614  |
| 5/32  | 15/64        | 2              | 723-1616  |
| 11/64 | 1/4          | 2              | 723-1618  |
| 3/16  | 9/32         | 2              | 723-1620  |

### 2 Flute Ball Nose Double End Mills



#### Regular Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/32" | 3/32"        | 2-1/4"         | 723-1730  |
| 3/64  | 9/64         | 2-1/4          | 723-1732  |
| 1/16  | 3/16         | 2-1/4          | 723-1734  |
| 5/64  | 15/64        | 2-1/4          | 723-1736  |
| 3/32  | 9/32         | 2-1/4          | 723-1738  |
| 7/64  | 21/64        | 2-1/4          | 723-1740  |
| 1/8   | 3/8          | 2-1/4          | 723-1742  |
| 9/64  | 27/64        | 2-1/4          | 723-1744  |
| 5/32  | 7/16         | 2-1/4          | 723-1746  |
| 11/64 | 1/2          | 2-1/4          | 723-1748  |
| 3/16  | 1/2          | 2-1/4          | 723-1750  |

#### Long Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/16" | 7/32"        | 2-1/2"         | 723-1752  |
| 5/64  | 1/4          | 2-1/2          | 723-1754  |
| 3/32  | 9/32         | 2-5/8          | 723-1756  |
| 7/64  | 9/32         | 2-5/8          | 723-1758  |
| 1/8   | 3/4          | 3-1/8          | 723-1760  |
| 9/64  | 3/4          | 3-1/8          | 723-1762  |
| 5/32  | 7/8          | 3-1/4          | 723-1764  |
| 11/64 | 7/8          | 3-1/4          | 723-1766  |
| 3/16  | 1            | 3-3/8          | 723-1768  |

#### Stub Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/32" | 3/64"        | 2"             | 723-1700  |
| 3/64  | 1/16         | 2              | 723-1702  |
| 1/16  | 3/32         | 2              | 723-1704  |
| 5/64  | 1/8          | 2              | 723-1706  |
| 3/32  | 9/64         | 2              | 723-1708  |
| 7/64  | 5/32         | 2              | 723-1710  |
| 1/8   | 3/16         | 2              | 723-1712  |
| 9/64  | 7/32         | 2              | 723-1714  |
| 5/32  | 15/64        | 2              | 723-1716  |
| 11/64 | 1/4          | 2              | 723-1718  |
| 3/16  | 9/32         | 2              | 723-1720  |

### 4 Flute Center Cutting Double End Mills



#### Regular Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/16" | 3/16"        | 2-1/4"         | 723-4318  |
| 5/64  | 15/64        | 2-1/4          | 723-4320  |
| 3/32  | 9/32         | 2-1/4          | 723-4322  |
| 7/64  | 21/64        | 2-1/4          | 723-4324  |
| 1/8   | 3/8          | 2-1/4          | 723-4326  |
| 9/64  | 13/32        | 2-1/4          | 723-4328  |
| 5/32  | 7/16         | 2-1/4          | 723-4330  |
| 11/64 | 1/2          | 2-1/4          | 723-4332  |
| 3/16  | 1/2          | 2-1/4          | 723-4334  |

#### Long Length

| Size  | Length Below Shank | Flute Length | Overall Length | Order No. |
|-------|--------------------|--------------|----------------|-----------|
| 1/16" | 3/8"               | 7/32"        | 2-1/2"         | 723-4336  |
| 5/64  | 3/8                | 1/4          | 2-1/2          | 723-4338  |
| 3/32  | 1/2                | 9/32         | 2-5/8          | 723-4340  |
| 7/64  | 1/2                | 9/32         | 2-5/8          | 723-4342  |
| 1/8   | 3/4                | 3/4          | 3-1/8          | 723-4344  |
| 9/64  | 3/4                | 3/4          | 3-1/8          | 723-4346  |
| 5/32  | 7/8                | 7/8          | 3-1/4          | 723-4348  |
| 11/64 | 7/8                | 7/8          | 3-1/4          | 723-4350  |
| 3/16  | 1                  | 1            | 3-3/8          | 723-4352  |

#### Stub Length

| Size  | Flute Length | Overall Length | Order No. |
|-------|--------------|----------------|-----------|
| 1/16" | 3/32"        | 2"             | 723-4300  |
| 5/64  | 5/32         | 2              | 723-4302  |
| 3/32  | 9/64         | 2              | 723-4303  |
| 3/32  | 5/32         | 2              | 723-4304  |
| 7/64  | 5/32         | 2              | 723-4306  |
| 1/8   | 3/16         | 2              | 723-4308  |
| 9/64  | 7/32         | 2              | 723-4310  |
| 5/32  | 15/64        | 2              | 723-4311  |
| 5/32  | 1/4          | 2              | 723-4312  |
| 11/64 | 9/32         | 2              | 723-4314  |
| 3/16  | 9/32         | 2              | 723-4316  |

## 2 Flute End Mills



### 2 Flute Single End Mills

#### High Speed Steel

- Use for milling slots, pockets and plunge cuts.
- 2 Flutes allows maximum space for chip ejection.
- Suitable for use in a wide range of ferrous and non-ferrous materials.
- TiN coating improves tool life and allows elevated speeds and feeds.



#### Regular Length

| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. | Size   | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2AI Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|--------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/8"  | 3/8"       | 3/8"         | 2-5/16"        | 720-1001     | 721-1001       | 722-1001             | 15/16" | 5/8"       | 1-1/2"       | 3-5/8"         | 720-1091     | 721-1091       | 722-1091             |
| 9/64  | 3/8        | 3/8          | 2-5/16         | 720-1003     | 721-1003       | 722-1003             | 15/16  | 3/4        | 1-1/2        | 3-3/4          | 720-1093     | 721-1093       | 722-1093             |
| 5/32  | 3/8        | 7/16         | 2-5/16         | 720-1005     | 721-1005       | 722-1005             | 15/16  | 7/8        | 1-1/2        | 3-3/4          | 720-1095     | 721-1095       | 722-1095             |
| 11/64 | 3/8        | 7/16         | 2-5/16         | 720-1007     | 721-1007       | 722-1007             | 31/32  | 1/2        | 1-1/2        | 3-1/2          | 720-1097     | 721-1097       | 722-1097             |
| 3/16  | 3/8        | 7/16         | 2-5/16         | 720-1009     | 721-1009       | 722-1009             | 1      | 1/2        | 1-1/2        | 3-1/2          | 720-1099     | 721-1099       | 722-1099             |
| 13/64 | 3/8        | 7/16         | 2-5/16         | 720-1011     | 721-1011       | 722-1011             | 1      | 1/2        | 1-1/2        | 3-5/8          | 720-1102     | 721-1102       | 722-1102             |
| 7/32  | 3/8        | 1/2          | 2-5/16         | 720-1012     | 721-1012       | 722-1012             | 1      | 5/8        | 1-1/2        | 3-5/8          | 720-1101     | 721-1101       | 722-1101             |
| 7/32  | 3/8        | 1/2          | 2-3/8          | 720-1013     | 721-1013       | 722-1013             | 1      | 3/4        | 1-1/2        | 3-3/4          | 720-1103     | 721-1103       | 722-1103             |
| 15/64 | 3/8        | 1/2          | 2-3/8          | 720-1015     | 721-1015       | 722-1015             | 1      | 7/8        | 1-1/2        | 3-3/4          | 720-1105     | 721-1105       | 722-1105             |
| 1/4   | 3/8        | 3/8          | 2-1/4          | 720-1016     | 721-1016       | 722-1016             | 1      | 1          | 1-5/8        | 4-1/8          | 720-1107     | 721-1107       | 722-1107             |
| 1/4   | 3/8        | 1/2          | 2-5/16         | 720-1017     | 721-1017       | 722-1017             | 1-1/16 | 3/4        | 1-5/8        | 3-3/4          | 720-1109     | 721-1109       | 722-1109             |
| 17/64 | 3/8        | 9/16         | 2-3/8          | 720-1019     | 721-1019       | 722-1019             | 1-1/16 | 5/8        | 1-5/8        | 3-7/8          | 720-1100     | 721-1100       | 722-1100             |
| 9/32  | 3/8        | 1/2          | 2-5/16         | 720-1020     | 721-1020       | 722-1020             | 1-1/16 | 3/4        | 1-5/8        | 3-7/8          | 720-1108     | 721-1108       | 722-1108             |
| 9/32  | 3/8        | 9/16         | 2-3/8          | 720-1021     | 721-1021       | 722-1021             | 1-1/16 | 7/8        | 1-5/8        | 3-7/8          | 720-1110     | 721-1110       | 722-1110             |
| 19/64 | 3/8        | 9/16         | 2-3/8          | 720-1023     | 721-1023       | 722-1023             | 1-1/8  | 3/4        | 1-1/2        | 3-3/4          | 720-1112     | 721-1112       | 722-1112             |
| 5/16  | 3/8        | 9/16         | 2-5/16         | 720-1025     | 721-1025       | 722-1025             | 1-1/8  | 3/4        | 1-5/8        | 3-7/8          | 720-1111     | 721-1111       | 722-1111             |
| 21/64 | 3/8        | 9/16         | 2-3/8          | 720-1027     | 721-1027       | 722-1027             | 1-1/8  | 7/8        | 1-5/8        | 3-7/8          | 720-1113     | 721-1113       | 722-1113             |
| 11/32 | 3/8        | 9/16         | 2-5/16         | 720-1028     | 721-1028       | 722-1028             | 1-1/8  | 1          | 1-5/8        | 4-1/8          | 720-1115     | 721-1115       | 722-1115             |
| 11/32 | 3/8        | 9/16         | 2-3/8          | 720-1029     | 721-1029       | 722-1029             | 1-3/16 | 3/4        | 1-5/8        | 3-7/8          | 720-1117     | 721-1117       | 722-1117             |
| 23/64 | 3/8        | 9/16         | 2-3/8          | 720-1031     | 721-1031       | 722-1031             | 1-3/16 | 1          | 1-5/8        | 4-1/8          | 720-1118     | 721-1118       | 722-1118             |
| 3/8   | 3/8        | 9/16         | 2-5/16         | 720-1033     | 721-1033       | 722-1033             | 1-1/4  | 3/4        | 1-5/8        | 3-7/8          | 720-1119     | 721-1119       | 722-1119             |
| 13/32 | 3/8        | 13/16        | 2-1/2          | 720-1035     | 721-1035       | 722-1035             | 1-1/4  | 7/8        | 1-5/8        | 3-7/8          | 720-1121     | 721-1121       | 722-1121             |
| 7/16  | 3/8        | 13/16        | 2-1/2          | 720-1037     | 721-1037       | 722-1037             | 1-1/4  | 1          | 1-5/8        | 4-1/8          | 720-1123     | 721-1123       | 722-1123             |
| 15/32 | 3/8        | 13/16        | 2-1/2          | 720-1036     | 721-1036       | 722-1036             | 1-1/4  | 1-1/4      | 1-5/8        | 4-1/8          | 720-1125     | 721-1125       | 722-1125             |
| 15/32 | 1/2        | 7/8          | 2-1/2          | 720-1038     | 721-1038       | 722-1038             | 1-5/16 | 3/4        | 1-5/8        | 3-7/8          | 720-1127     | 721-1127       | 722-1127             |
| 15/32 | 1/2        | 1            | 3              | 720-1039     | 721-1039       | 722-1039             | 1-3/8  | 3/4        | 1-5/8        | 3-7/8          | 720-1129     | 721-1129       | 722-1129             |
| 1/2   | 3/8        | 13/16        | 2-1/2          | 720-1041     | 721-1041       | 722-1041             | 1-3/8  | 3/4        | 1-5/8        | 4              | 720-1130     | 721-1130       | 722-1130             |
| 1/2   | 3/8        | 1            | 3              | 720-1042     | 721-1042       | 722-1042             | 1-3/8  | 1          | 1-5/8        | 4-1/8          | 720-1131     | 721-1131       | 722-1131             |
| 1/2   | 1/2        | 1            | 3              | 720-1043     | 721-1043       | 722-1043             | 1-7/16 | 3/4        | 1-5/8        | 3-7/8          | 720-1133     | 721-1133       | 722-1133             |
| 1/2   | 1/2        | 1-1/8        | 3-1/8          | 720-1044     | 721-1044       | 722-1044             | 1-1/2  | 3/4        | 1-5/8        | 3-7/8          | 720-1135     | 721-1135       | 722-1135             |
| 17/32 | 1/2        | 1-1/8        | 3-1/8          | 720-1045     | 721-1045       | 722-1045             | 1-1/2  | 3/4        | 1-5/8        | 4-1/8          | 720-1136     | 721-1136       | 722-1136             |
| 9/16  | 1/2        | 1-1/8        | 3-1/8          | 720-1047     | 721-1047       | 722-1047             | 1-1/2  | 1          | 1-5/8        | 4-1/8          | 720-1137     | 721-1137       | 722-1137             |
| 19/32 | 1/2        | 1-1/8        | 3-1/8          | 720-1049     | 721-1049       | 722-1049             | 1-1/2  | 1-1/4      | 1-5/8        | 4-1/8          | 720-1139     | 721-1139       | 722-1139             |
| 5/8   | 1/2        | 1-1/8        | 3-1/8          | 720-1051     | 721-1051       | 722-1051             | 1-5/8  | 3/4        | 1-5/8        | 3-7/8          | 720-1141     | 721-1141       | 722-1141             |
| 5/8   | 5/8        | 1-5/16       | 3-7/16         | 720-1053     | 721-1053       | 722-1053             | 1-5/8  | 3/4        | 1-5/8        | 4-1/8          | 720-1142     | 721-1142       | 722-1142             |
| 21/32 | 1/2        | 1-5/16       | 3-5/16         | 720-1055     | 721-1055       | 722-1055             | 1-5/8  | 1-1/4      | 1-5/8        | 4-1/8          | 720-1143     | 721-1143       | 722-1143             |
| 11/16 | 1/2        | 1-5/16       | 3-5/16         | 720-1057     | 721-1057       | 722-1057             | 1-3/4  | 3/4        | 1-5/8        | 3-7/8          | 720-1145     | 721-1145       | 722-1145             |
| 11/16 | 5/8        | 1-5/16       | 3-7/16         | 720-1059     | 721-1059       | 722-1059             | 1-3/4  | 3/4        | 1-5/8        | 4-1/8          | 720-1146     | 721-1146       | 722-1146             |
| 23/32 | 1/2        | 1-5/16       | 3-5/16         | 720-1061     | 721-1061       | 722-1061             | 1-3/4  | 1-1/4      | 1-5/8        | 4-1/8          | 720-1147     | 721-1147       | 722-1147             |
| 3/4   | 1/2        | 1-5/16       | 3-5/16         | 720-1063     | 721-1063       | 722-1063             | 1-7/8  | 3/4        | 1-5/8        | 3-7/8          | 720-1149     | 721-1149       | 722-1149             |
| 3/4   | 5/8        | 1-5/16       | 3-7/16         | 720-1065     | 721-1065       | 722-1065             | 1-7/8  | 3/4        | 1-5/8        | 4-1/8          | 720-1150     | 721-1150       | 722-1150             |
| 3/4   | 3/4        | 1-5/16       | 3-7/16         | 720-1066     | 721-1066       | 722-1066             | 1-7/8  | 1-1/4      | 1-5/8        | 4-1/8          | 720-1151     | 721-1151       | 722-1151             |
| 3/4   | 3/4        | 1-5/16       | 3-9/16         | 720-1067     | 721-1067       | 722-1067             | 2      | 3/4        | 1-5/8        | 3-7/8          | 720-1153     | 721-1153       | 722-1153             |
| 3/4   | 3/4        | 1-3/4        | 4              | 720-1069     | 721-1069       | 722-1069             | 2      | 3/4        | 1-5/8        | 4-1/8          | 720-1154     | 721-1154       | 722-1154             |
| 25/32 | 1/2        | 1-1/2        | 3-1/2          | 720-1071     | 721-1071       | 722-1071             | 2      | 1-1/4      | 1-5/8        | 4-1/8          | 720-1155     | 721-1155       | 722-1155             |
| 13/16 | 1/2        | 1-1/2        | 3-5/16         | 720-1077     | 721-1077       | 722-1077             | 2      | 1-1/4      | 2-1/2        | 5              | 720-1156     | 721-1156       | 722-1156             |
| 13/16 | 1/2        | 1-1/2        | 3-5/8          | 720-1072     | 721-1072       | 722-1072             | 2      | 2          | 2            | 5-3/4          | 720-1157     | 721-1157       | 722-1157             |
| 13/16 | 5/8        | 1-1/2        | 3-5/8          | 720-1073     | 721-1073       | 722-1073             | 2      | 2          | 3            | 6-3/4          | 720-1159     | 721-1159       | 722-1159             |
| 13/16 | 3/4        | 1-1/2        | 3-3/4          | 720-1075     | 721-1075       | 722-1075             | 2      | 2          | 4            | 7-3/4          | 720-1160     | 721-1160       | 722-1160             |
| 27/32 | 1/2        | 1-1/2        | 3-1/2          | 720-1079     | 721-1079       | 722-1079             | 2-1/4  | 1-1/4      | 1-5/8        | 4-1/8          | 720-1161     | 721-1161       | 722-1161             |
| 7/8   | 1/2        | 1-1/2        | 3-1/2          | 720-1081     | 721-1081       | 722-1081             | 2-1/2  | 2          | 4            | 7-5/8          | 720-1162     | 721-1162       | 722-1162             |
| 7/8   | 1/2        | 1-1/2        | 3-5/8          | 720-1082     | 721-1082       | 722-1082             | 2-1/2  | 2          | 4            | 7-3/4          | 720-1163     | 721-1163       | 722-1163             |
| 7/8   | 5/8        | 1-1/2        | 3-5/8          | 720-1083     | 721-1083       | 722-1083             | 2-1/2  | 2          | 6            | 9-5/8          | 720-1164     | 721-1164       | 722-1164             |
| 7/8   | 3/4        | 1-1/2        | 3-3/4          | 720-1085     | 721-1085       | 722-1085             | 2-1/2  | 2          | 6            | 9-3/4          | 720-1165     | 721-1165       | 722-1165             |
| 7/8   | 7/8        | 1-1/2        | 3-3/4          | 720-1087     | 721-1087       | 722-1087             | 3      | 2-1/2      | 4            | 7-3/4          | 720-1167     | 721-1167       | 722-1167             |
| 29/32 | 1/2        | 1-1/2        | 3-1/2          | 720-1089     | 721-1089       | 722-1089             |        |            |              |                |              |                |                      |
| 15/16 | 1/2        | 1-1/2        | 3-5/8          | 720-1090     | 721-1090       | 722-1090             |        |            |              |                |              |                |                      |

## 2 Flute Single End Mills

### Medium Length & Long Length

- Use for milling slots, pockets and plunge cuts.
- TiN coating facilitates chip flow and allows elevated feeds.



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|
| 3/16" | 3/8"       | 3/4"         | 2-5/8"         | 720-1201     | 721-1201       | 722-1201             |
| 7/32  | 3/8        | 1-1/4        | 3-1/8          | 720-1203     | 721-1203       | 722-1203             |
| 1/4   | 3/8        | 1            | 2-3/4          | 720-1204     | 721-1204       | 722-1204             |
| 1/4   | 3/8        | 1            | 3-1/16         | 720-1205     | 721-1205       | 722-1205             |
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | 720-1207     | 721-1207       | 722-1207             |
| 9/32  | 3/8        | 1-3/8        | 3-1/8          | 720-1209     | 721-1209       | 722-1209             |
| 5/16  | 3/8        | 1-1/4        | 3              | 720-1210     | 721-1210       | 722-1210             |
| 5/16  | 3/8        | 1-1/4        | 3-5/16         | 720-1211     | 721-1211       | 722-1211             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 720-1213     | 721-1213       | 722-1213             |
| 11/32 | 3/8        | 1-1/2        | 3-1/4          | 720-1215     | 721-1215       | 722-1215             |
| 3/8   | 3/8        | 1            | 2-3/4          | 720-1217     | 721-1217       | 722-1217             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 720-1219     | 721-1219       | 722-1219             |
| 7/16  | 1/2        | 1-3/4        | 3-3/4          | 720-1221     | 721-1221       | 722-1221             |
| 1/2   | 1/2        | 1-1/2        | 3-1/2          | 720-1223     | 721-1223       | 722-1223             |
| 1/2   | 1/2        | 2            | 4              | 720-1225     | 721-1225       | 722-1225             |
| 1/2   | 1/2        | 3            | 5              | 720-1226     | 721-1226       | 722-1226             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 720-1227     | 721-1227       | 722-1227             |
| 5/8   | 5/8        | 2            | 4-1/8          | 720-1229     | 721-1229       | 722-1229             |
| 5/8   | 5/8        | 2-3/8        | 4-1/2          | 720-1230     | 721-1230       | 722-1230             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 720-1231     | 721-1231       | 722-1231             |
| 5/8   | 5/8        | 3            | 5-1/8          | 720-1233     | 721-1233       | 722-1233             |
| 5/8   | 5/8        | 4            | 6-1/8          | 720-1234     | 721-1234       | 722-1234             |
| 3/4   | 3/4        | 1-3/4        | 4              | 720-1235     | 721-1235       | 722-1235             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 720-1237     | 721-1237       | 722-1237             |
| 3/4   | 3/4        | 2-1/2        | 4-3/4          | 720-1239     | 721-1239       | 722-1239             |
| 3/4   | 3/4        | 3            | 5-1/4          | 720-1241     | 721-1241       | 722-1241             |
| 3/4   | 3/4        | 3-1/2        | 5-3/4          | 720-1243     | 721-1243       | 722-1243             |
| 3/4   | 3/4        | 4            | 6-1/4          | 720-1244     | 721-1244       | 722-1244             |
| 7/8   | 7/8        | 2            | 4-1/4          | 720-1245     | 721-1245       | 722-1245             |
| 7/8   | 7/8        | 2-1/2        | 4-3/4          | 720-1247     | 721-1247       | 722-1247             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 720-1248     | 721-1248       | 722-1248             |
| 1"    | 1"         | 2"           | 4-1/2"         | 720-1249     | 721-1249       | 722-1249             |
| 1     | 1          | 2-1/4        | 4-3/4          | 720-1251     | 721-1251       | 722-1251             |
| 1     | 1          | 2-1/2        | 5              | 720-1253     | 721-1253       | 722-1253             |
| 1     | 1          | 3            | 5-1/2          | 720-1255     | 721-1255       | 722-1255             |
| 1     | 1          | 3-1/2        | 6              | 720-1257     | 721-1257       | 722-1257             |
| 1     | 1          | 4            | 6-1/2          | 720-1259     | 721-1259       | 722-1259             |
| 1     | 1          | 4-5/8        | 7              | 720-1261     | 721-1261       | 722-1261             |
| 1-1/8 | 1          | 2-1/4        | 4-3/4          | 720-1263     | 721-1263       | 722-1263             |
| 1-1/8 | 1          | 3            | 4-3/4          | 720-1265     | 721-1265       | 722-1265             |
| 1-1/8 | 1          | 3            | 5-1/2"         | 720-1266     | 721-1266       | 722-1266             |
| 1-1/4 | 1          | 2-1/4        | 4-3/4          | 720-1267     | 721-1267       | 722-1267             |
| 1-1/4 | 1-1/4      | 2-1/4        | 5-1/2          | 720-1269     | 721-1269       | 722-1269             |
| 1-1/4 | 1          | 3            | 5-1/2          | 720-1271     | 721-1271       | 722-1271             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 720-1273     | 721-1273       | 722-1273             |
| 1-1/4 | 1-1/4      | 3-1/2        | 6              | 720-1274     | 721-1274       | 722-1274             |
| 1-1/4 | 1-1/4      | 4-3/4        | 7-1/4          | 720-1275     | 721-1275       | 722-1275             |
| 1-3/8 | 1          | 2-1/4        | 4-3/4          | 720-1277     | 721-1277       | 722-1277             |
| 1-3/8 | 1          | 3            | 5-1/2          | 720-1279     | 721-1279       | 722-1279             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 720-1280     | 721-1280       | 722-1280             |
| 1-1/2 | 1-1/4      | 2-1/4        | 4-3/4          | 720-1281     | 721-1281       | 722-1281             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 720-1283     | 721-1283       | 722-1283             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 720-1284     | 721-1284       | 722-1284             |
| 1-5/8 | 1-1/4      | 2-1/4        | 4-3/4          | 720-1285     | 721-1285       | 722-1285             |
| 1-5/8 | 1-1/4      | 3            | 5-1/2          | 720-1287     | 721-1287       | 722-1287             |
| 1-3/4 | 1-1/4      | 2-1/4        | 4-3/4          | 720-1289     | 721-1289       | 722-1289             |
| 1-3/4 | 1-1/4      | 3            | 5-1/2          | 720-1291     | 721-1291       | 722-1291             |
| 1-7/8 | 1-1/4      | 2-1/4        | 4-3/4          | 720-1293     | 721-1293       | 722-1293             |
| 1-7/8 | 1-1/4      | 3            | 5-1/2          | 720-1295     | 721-1295       | 722-1295             |
| 2     | 1-1/4      | 2-1/4        | 4-3/4          | 720-1297     | 721-1297       | 722-1297             |
| 2     | 1-1/4      | 3            | 5-1/2          | 720-1299     | 721-1299       | 722-1299             |
| 2     | 1-1/4      | 4            | 6-1/2          | 720-1300     | 721-1300       | 722-1300             |

## 2 Flute Single End Mills continued

### High Speed Steel, Extend Shank

- Use for milling slots, pockets and plunge cuts.
- 2 Flutes allows maximum space for chip ejection.
- Suitable for use in a wide range of ferrous and non-ferrous materials.
- TiN coating improves tool life and allows elevated speeds and feeds.



| Size  | Shank Dia. | Shank Length | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|--------------|----------------|--------------|----------------|----------------------|
| 1/8"  | 3/8"       | 13/16"       | 3/8"         | 2-3/8"         | 720-1171     | 721-1171       | 722-1171             |
| 3/16  | 3/8        | 1-1/8        | 1/2          | 2-11/16        | 720-1173     | 721-1173       | 722-1173             |
| 3/16  | 3/8        | 1-1/2        | 5/8          | 3-1/16         | 720-1172     | 721-1172       | 722-1172             |
| 1/4   | 3/8        | 1            | 5/8          | 3-1/16         | 720-1174     | 721-1174       | 722-1174             |
| 1/4   | 3/8        | 1-1/2        | 5/8          | 3-1/16         | 720-1175     | 721-1175       | 722-1175             |
| 5/16  | 3/8        | 1-3/4        | 3/4          | 3-5/16         | 720-1177     | 721-1177       | 722-1177             |
| 5/16  | 3/8        | 1-1/2        | 3/4          | 3-1/4          | 720-1178     | 721-1178       | 722-1178             |
| 3/8   | 3/8        | 1-3/4        | 3/4          | 3-5/16         | 720-1179     | 721-1179       | 722-1179             |
| 3/8   | 3/8        | 1-3/4        | 7/8          | 3-5/16         | 720-1180     | 721-1180       | 722-1180             |
| 1/2   | 1/2        | 2-1/4        | 1            | 4              | 720-1181     | 721-1181       | 722-1181             |
| 1/2   | 1/2        | 2-1/4        | 1-7/8        | 4              | 720-1182     | 721-1182       | 722-1182             |
| 5/8   | 1/2        | 2-3/4        | 1-3/8        | 4-5/8          | 720-1184     | 721-1184       | 722-1184             |
| 5/8   | 5/8        | 2-3/4        | 1-3/8        | 4-5/8          | 720-1183     | 721-1183       | 722-1183             |
| 5/8   | 5/8        | 2-3/4        | 2            | 4-5/8          | 720-1188     | 721-1188       | 722-1188             |
| 3/4   | 1/2        | 3-3/8        | 1-5/8        | 5-3/8          | 720-1186     | 721-1186       | 722-1186             |
| 3/4   | 3/4        | 3-3/8        | 1-5/8        | 5-3/8          | 720-1185     | 721-1185       | 722-1185             |
| 7/8   | 7/8        | 4            | 2            | 6              | 720-1187     | 721-1187       | 722-1187             |
| 1     | 1          | 5            | 2-1/2        | 7-1/4          | 720-1189     | 721-1189       | 722-1189             |
| 1-1/4 | 1-1/4      | 5            | 3            | 7-1/4          | 720-1191     | 721-1191       | 722-1191             |

## 2 Flute Keyway Single End Mills

### High Speed Steel, Straight Flute

Available -0.001" -0.002" -0.003"

Under Nominal



| Keyway W(In.) | Mill Dia.(In.) | Shank Dia.(In.) | LOC (In.) | OAL (In.) | Order No. |
|---------------|----------------|-----------------|-----------|-----------|-----------|
| 1/8           | 0.1220         | 3/8             | 3/8       | 2-5/16    | 720-0001  |
| 1/8           | 0.1230         | 3/8             | 3/8       | 2-5/16    | 720-0003  |
| 1/8           | 0.1240         | 3/8             | 3/8       | 2-5/16    | 720-0005  |
| 3/16          | 0.1845         | 3/8             | 3/8       | 2-5/16    | 720-0007  |
| 3/16          | 0.1855         | 3/8             | 3/8       | 2-5/16    | 720-0009  |
| 3/16          | 0.1865         | 3/8             | 3/8       | 2-5/16    | 720-0011  |
| 1/4           | 0.2470         | 3/8             | 1/2       | 2-5/16    | 720-0013  |
| 1/4           | 0.2480         | 3/8             | 1/2       | 2-5/16    | 720-0015  |
| 1/4           | 0.2490         | 3/8             | 1/2       | 2-5/16    | 720-0017  |
| 5/16          | 0.3095         | 3/8             | 9/16      | 2-5/16    | 720-0019  |
| 5/16          | 0.3105         | 3/8             | 9/16      | 2-5/16    | 720-0021  |
| 5/16          | 0.3115         | 3/8             | 9/16      | 2-5/16    | 720-0023  |
| 3/8           | 0.3720         | 3/8             | 9/16      | 2-5/16    | 720-0025  |
| 3/8           | 0.3730         | 3/8             | 9/16      | 2-5/16    | 720-0027  |
| 3/8           | 0.3740         | 3/8             | 9/16      | 2-5/16    | 720-0029  |
| 1/2           | 0.4970         | 1/2             | 1         | 3         | 720-0031  |
| 1/2           | 0.4980         | 1/2             | 1         | 3         | 720-0033  |
| 1/2           | 0.4990         | 1/2             | 1         | 3         | 720-0035  |
| 5/8           | 0.6220         | 5/8             | 1-5/16    | 3-7/16    | 720-0037  |
| 5/8           | 0.6230         | 5/8             | 1-5/16    | 3-7/16    | 720-0039  |
| 5/8           | 0.6240         | 5/8             | 1-5/16    | 3-7/16    | 720-0041  |
| 3/4           | 0.7470         | 3/4             | 1-5/16    | 3-9/16    | 720-0043  |
| 3/4           | 0.7480         | 3/4             | 1-5/16    | 3-9/16    | 720-0045  |
| 3/4           | 0.7490         | 3/4             | 1-5/16    | 3-9/16    | 720-0047  |
| 7/8           | 0.8720         | 7/8             | 1-1/2     | 3-3/4     | 720-0049  |
| 7/8           | 0.8730         | 7/8             | 1-1/2     | 3-3/4     | 720-0051  |
| 7/8           | 0.8740         | 7/8             | 1-1/2     | 3-3/4     | 720-0053  |
| 1             | 0.9970         | 1               | 1-5/8     | 4-1/8     | 720-0055  |
| 1             | 0.9980         | 1               | 1-5/8     | 4-1/8     | 720-0057  |
| 1             | 0.9990         | 1               | 1-5/8     | 4-1/8     | 720-0059  |
| 1-1/4         | 1.2470         | 1-1/4           | 1-5/8     | 4-1/8     | 720-0061  |
| 1-1/4         | 1.2480         | 1-1/4           | 1-5/8     | 4-1/8     | 720-0063  |
| 1-1/4         | 1.2490         | 1-1/4           | 1-5/8     | 4-1/8     | 720-0065  |
| 1             | 1.4970         | 1-1/4           | 1-5/8     | 4-1/8     | 720-0067  |
| 1             | 1.4980         | 1-1/4           | 1-5/8     | 4-1/8     | 720-0069  |
| 1             | 1.4990         | 1-1/4           | 1-5/8     | 4-1/8     | 720-0071  |

## 2 Flute End Mills

### 2 Flute Single End Mills For Aluminum

#### Regular Long & Extra long Flute Length



- Recommended for milling aluminum and other non-ferrous materials.
- The helix angle shears the material cleanly and helps eliminate chatter.
- Tin coating adds lubricity to minimize chip packing in the flutes.

| Shank Size | Flute Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/4"       | 3/8"       | 5/8"         | 2-1/2"         | 720-1501     | 721-1501       | 722-1501             |
| 1/4"       | 3/8"       | 1-1/4"       | 3-1/8"         | 720-1503     | 721-1503       | 722-1503             |
| 1/4"       | 3/8"       | 1-3/4"       | 3-1/2"         | 720-1505     | 721-1505       | 722-1505             |
| 5/16"      | 3/8"       | 3/4"         | 2-1/2"         | 720-1507     | 721-1507       | 722-1507             |
| 5/16"      | 3/8"       | 1-3/8"       | 3-1/8"         | 720-1509     | 721-1509       | 722-1509             |
| 5/16"      | 3/8"       | 2"           | 3-3/4"         | 720-1511     | 721-1511       | 722-1511             |
| 3/8"       | 3/8"       | 3/4"         | 2-1/2"         | 720-1513     | 721-1513       | 722-1513             |
| 3/8"       | 3/8"       | 1-1/2"       | 3-1/4"         | 720-1515     | 721-1515       | 722-1515             |
| 3/8"       | 3/8"       | 2-1/2"       | 4-1/4"         | 720-1517     | 721-1517       | 722-1517             |
| 7/16"      | 3/8"       | 1"           | 2-11/16"       | 720-1519     | 721-1519       | 722-1519             |
| 7/16"      | 1/2"       | 1-3/4"       | 3-3/4"         | 720-1521     | 721-1521       | 722-1521             |
| 7/16"      | 1/2"       | 2-3/4"       | 4-3/4"         | 720-1523     | 721-1523       | 722-1523             |
| 1/2"       | 1/2"       | 1"           | 3-1/4"         | 720-1525     | 721-1525       | 722-1525             |
| 1/2"       | 1/2"       | 1-1/4"       | 3-1/4"         | 720-1526     | 721-1526       | 722-1526             |
| 1/2"       | 1/2"       | 2"           | 4"             | 720-1527     | 721-1527       | 722-1527             |
| 1/2"       | 1/2"       | 3"           | 5"             | 720-1529     | 721-1529       | 722-1529             |
| 5/8"       | 1/2"       | 1-3/8"       | 3-3/8"         | 720-1530     | 721-1530       | 722-1530             |
| 5/8"       | 5/8"       | 1-5/8"       | 3-3/4"         | 720-1531     | 721-1531       | 722-1531             |
| 5/8"       | 5/8"       | 2-1/2"       | 4-5/8"         | 720-1533     | 721-1533       | 722-1533             |
| 5/8"       | 5/8"       | 4"           | 6-1/8"         | 720-1535     | 721-1535       | 722-1535             |
| 3/4"       | 1/2"       | 1-5/8"       | 3-5/8"         | 720-1536     | 721-1536       | 722-1536             |
| 3/4"       | 3/4"       | 1-5/8"       | 3-7/8"         | 720-1537     | 721-1537       | 722-1537             |
| 3/4"       | 3/4"       | 3"           | 5-1/4"         | 720-1539     | 721-1539       | 722-1539             |
| 3/4"       | 3/4"       | 4"           | 6-1/4"         | 720-1541     | 721-1541       | 722-1541             |
| 7/8"       | 7/8"       | 1-7/8"       | 4-1/8"         | 720-1543     | 721-1543       | 722-1543             |
| 7/8"       | 7/8"       | 3-1/2"       | 5-3/4"         | 720-1545     | 721-1545       | 722-1545             |
| 7/8"       | 7/8"       | 5"           | 7-1/4"         | 720-1547     | 721-1547       | 722-1547             |
| 1"         | 3/4"       | 1-7/8"       | 4-1/8"         | 720-1551     | 721-1551       | 722-1551             |
| 1"         | 1"         | 2"           | 4-1/2"         | 720-1553     | 721-1553       | 722-1553             |
| 1"         | 1"         | 4"           | 6-1/2"         | 720-1555     | 721-1555       | 722-1555             |
| 1"         | 1"         | 6"           | 8-1/2"         | 720-1557     | 721-1557       | 722-1557             |
| 1-1/4"     | 1-1/4"     | 2"           | 4-1/2"         | 720-1559     | 721-1559       | 722-1559             |
| 1-1/4"     | 1-1/4"     | 4"           | 6-1/2"         | 720-1561     | 721-1561       | 722-1561             |
| 1-1/4"     | 1-1/4"     | 6"           | 8-1/2"         | 720-1563     | 721-1563       | 722-1563             |
| 1-1/2"     | 1-1/4"     | 2"           | 4-1/2"         | 720-1565     | 721-1565       | 722-1565             |
| 1-1/2"     | 1-1/4"     | 4"           | 6-1/2"         | 720-1567     | 721-1567       | 722-1567             |
| 1-1/2"     | 1-1/4"     | 8"           | 10-1/2"        | 720-1569     | 721-1569       | 722-1569             |
| 1-3/4"     | 1-1/4"     | 2"           | 4-1/2"         | 720-1571     | 721-1571       | 722-1571             |
| 1-3/4"     | 1-1/4"     | 4"           | 6-1/2"         | 720-1573     | 721-1573       | 722-1573             |
| 2"         | 1-1/4"     | 2"           | 4-1/2"         | 720-1575     | 721-1575       | 722-1575             |
| 2"         | 1-1/4"     | 4"           | 6-1/2"         | 720-1577     | 721-1577       | 722-1577             |

### M42 8% Cobalt 2 Flute Single End Mills

- Premium 8% cobalt is especially effective for machining high strength, heat-resistant, exotic and difficult-to-machine materials,



#### Regular Length

| Shank Size | Flute Dia. | Flute Length | Overall Length | Order No. | Shank Size | Flute Dia. | Flute Length | Overall Length | Order No. |
|------------|------------|--------------|----------------|-----------|------------|------------|--------------|----------------|-----------|
| 1/8"       | 3/8"       | 3/8"         | 2-5/16"        | 723-1001  | 15/16"     | 5/8"       | 1-1/2"       | 3-5/8"         | 723-1091  |
| 9/64"      | 3/8"       | 3/8"         | 2-5/16"        | 723-1003  | 15/16"     | 3/4"       | 1-1/2"       | 3-5/8"         | 723-1094  |
| 5/32"      | 3/8"       | 7/16"        | 2-5/16"        | 723-1005  | 15/16"     | 3/4"       | 1-1/2"       | 3-3/4"         | 723-1093  |
| 11/64"     | 3/8"       | 7/16"        | 2-5/16"        | 723-1007  | 15/16"     | 7/8"       | 1-1/2"       | 3-3/4"         | 723-1095  |
| 3/16"      | 3/8"       | 7/16"        | 2-5/16"        | 723-1009  | 31/32"     | 1/2"       | 1-1/2"       | 3-1/2"         | 723-1097  |
| 13/64"     | 3/8"       | 7/16"        | 2-5/16"        | 723-1011  | 1"         | 1/2"       | 1-1/2"       | 3-1/2"         | 723-1099  |
| 7/32"      | 3/8"       | 1/2"         | 2-5/16"        | 723-1012  | 1"         | 5/8"       | 1-1/2"       | 3-5/8"         | 723-1101  |
| 7/32"      | 3/8"       | 1/2"         | 2-3/8"         | 723-1013  | 1"         | 1/2"       | 1-1/2"       | 3-5/8"         | 723-1102  |
| 15/64"     | 3/8"       | 1/2"         | 2-3/8"         | 723-1015  | 1"         | 3/4"       | 1-1/2"       | 3-3/4"         | 723-1103  |
| 1/4"       | 3/8"       | 3/8"         | 2-1/4"         | 723-1016  | 1"         | 7/8"       | 1-1/2"       | 3-3/4"         | 723-1105  |
| 1/4"       | 3/8"       | 1/2"         | 2-5/16"        | 723-1017  | 1"         | 5/8"       | 1-5/8"       | 4-1/8"         | 723-1104  |
| 17/64"     | 3/8"       | 9/16"        | 2-3/8"         | 723-1019  | 1"         | 1"         | 1-5/8"       | 4-1/8"         | 723-1107  |
| 9/32"      | 3/8"       | 1/2"         | 2-5/16"        | 723-1020  | 1-1/16"    | 3/4"       | 1-5/8"       | 3-3/4"         | 723-1109  |
| 9/32"      | 3/8"       | 9/16"        | 2-3/8"         | 723-1021  | 1-1/16"    | 5/8"       | 1-5/8"       | 3-7/8"         | 723-1100  |
| 19/64"     | 3/8"       | 9/16"        | 2-3/8"         | 723-1023  | 1-1/16"    | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1108  |
| 5/16"      | 3/8"       | 9/16"        | 2-5/16"        | 723-1025  | 1-1/16"    | 7/8"       | 1-5/8"       | 3-7/8"         | 723-1110  |
| 21/64"     | 3/8"       | 9/16"        | 2-3/8"         | 723-1027  | 1-1/8"     | 3/4"       | 1-1/2"       | 3-3/4"         | 723-1112  |
| 11/32"     | 3/8"       | 9/16"        | 2-5/16"        | 723-1028  | 1-1/8"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1111  |
| 11/32"     | 3/8"       | 9/16"        | 2-3/8"         | 723-1029  | 1-1/8"     | 7/8"       | 1-5/8"       | 3-7/8"         | 723-1113  |
| 23/64"     | 3/8"       | 9/16"        | 2-3/8"         | 723-1031  | 1-1/8"     | 1"         | 1-5/8"       | 3-7/8"         | 723-1114  |
| 3/8"       | 3/8"       | 9/16"        | 2-5/16"        | 723-1033  | 1-1/8"     | 1"         | 1-5/8"       | 4-1/8"         | 723-1115  |
| 13/32"     | 3/8"       | 13/16"       | 2-1/2"         | 723-1035  | 1-3/16"    | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1117  |
| 7/16"      | 3/8"       | 13/16"       | 2-1/2"         | 723-1037  | 1-3/16"    | 1"         | 1-5/8"       | 4-1/8"         | 723-1098  |
| 15/32"     | 3/8"       | 13/16"       | 2-1/2"         | 723-1036  | 1-3/16"    | 1"         | 1-5/8"       | 4-1/8"         | 723-1118  |
| 15/32"     | 1/2"       | 7/8"         | 2-1/2"         | 723-1038  | 1-1/4"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1119  |
| 15/32"     | 1/2"       | 1"           | 3"             | 723-1039  | 1-1/4"     | 7/8"       | 1-5/8"       | 3-7/8"         | 723-1121  |
| 1/2"       | 3/8"       | 13/16"       | 2-1/2"         | 723-1041  | 1-1/4"     | 1"         | 1-5/8"       | 4-1/8"         | 723-1123  |
| 1/2"       | 3/8"       | 1"           | 3"             | 723-1042  | 1-1/4"     | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1125  |
| 1/2"       | 1/2"       | 1"           | 3"             | 723-1043  | 1-5/16"    | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1127  |
| 1/2"       | 1/2"       | 1-1/8"       | 3-1/8"         | 723-1044  | 1-3/8"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1129  |
| 17/32"     | 1/2"       | 1-1/8"       | 3-1/8"         | 723-1045  | 1-3/8"     | 1"         | 1-5/8"       | 3-7/8"         | 723-1132  |
| 9/16"      | 1/2"       | 1-1/8"       | 3-1/8"         | 723-1047  | 1-3/8"     | 3/4"       | 1-5/8"       | 4"             | 723-1130  |
| 19/32"     | 1/2"       | 1-1/8"       | 3-1/8"         | 723-1049  | 1-3/8"     | 3/4"       | 1-5/8"       | 4-1/8"         | 723-1128  |
| 5/8"       | 1/2"       | 1-1/8"       | 3-1/8"         | 723-1051  | 1-3/8"     | 1"         | 1-5/8"       | 4-1/8"         | 723-1131  |
| 5/8"       | 5/8"       | 1-5/16"      | 3-7/16"        | 723-1053  | 1-7/16"    | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1133  |
| 5/8"       | 5/8"       | 2"           | 4-1/8"         | 723-1054  | 1-1/2"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1135  |
| 21/32"     | 1/2"       | 1-5/16"      | 3-5/16"        | 723-1055  | 1-1/2"     | 3/4"       | 1-5/8"       | 4"             | 723-1134  |
| 11/16"     | 1/2"       | 1-5/16"      | 3-5/16"        | 723-1057  | 1-1/2"     | 3/4"       | 1-5/8"       | 4-1/8"         | 723-1136  |
| 11/16"     | 5/8"       | 1-5/16"      | 3-7/16"        | 723-1059  | 1-1/2"     | 1"         | 1-5/8"       | 4-1/8"         | 723-1137  |
| 23/32"     | 1/2"       | 1-5/16"      | 3-5/16"        | 723-1061  | 1-1/2"     | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1139  |
| 3/4"       | 1/2"       | 1-5/16"      | 3-5/16"        | 723-1063  | 1-5/8"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1141  |
| 3/4"       | 5/8"       | 1-5/16"      | 3-7/16"        | 723-1065  | 1-5/8"     | 3/4"       | 1-5/8"       | 4-1/8"         | 723-1142  |
| 3/4"       | 3/4"       | 1-5/16"      | 3-7/16"        | 723-1066  | 1-5/8"     | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1143  |
| 3/4"       | 3/4"       | 1-5/16"      | 3-9/16"        | 723-1067  | 1-3/4"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1145  |
| 3/4"       | 3/4"       | 1-3/4"       | 4"             | 723-1069  | 1-3/4"     | 3/4"       | 1-5/8"       | 4-1/8"         | 723-1146  |
| 3/4"       | 3/4"       | 2-1/4"       | 4-1/2"         | 723-1070  | 1-3/4"     | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1147  |
| 25/32"     | 1/2"       | 1-1/2"       | 3-1/2"         | 723-1071  | 1-7/8"     | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1149  |
| 13/16"     | 1/2"       | 1-1/2"       | 3-5/16"        | 723-1077  | 1-7/8"     | 3/4"       | 1-5/8"       | 4-1/8"         | 723-1150  |
| 13/16"     | 1/2"       | 1-1/2"       | 3-5/8"         | 723-1072  | 1-7/8"     | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1151  |
| 13/16"     | 5/8"       | 1-1/2"       | 3-5/8"         | 723-1073  | 2"         | 3/4"       | 1-5/8"       | 3-7/8"         | 723-1153  |
| 13/16"     | 3/4"       | 1-1/2"       | 3-3/4"         | 723-1075  | 2"         | 3/4"       | 1-5/8"       | 4-1/8"         | 723-1154  |
| 27/32"     | 1/2"       | 1-1/2"       | 3-1/2"         | 723-1079  | 2"         | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1155  |
| 7/8"       | 1/2"       | 1-1/2"       | 3-1/2"         | 723-1081  | 2"         | 1-1/4"     | 2-1/2"       | 5"             | 723-1156  |
| 7/8"       | 1/2"       | 1-1/2"       | 3-5/8"         | 723-1082  | 2"         | 2"         | 2"           | 5-3/4"         | 723-1157  |
| 7/8"       | 5/8"       | 1-1/2"       | 3-5/8"         | 723-1083  | 2"         | 2"         | 3"           | 6-3/4"         | 723-1159  |
| 7/8"       | 3/4"       | 1-1/2"       | 3-5/8"         | 723-1086  | 2"         | 2"         | 4"           | 7-3/4"         | 723-1160  |
| 7/8"       | 7/8"       | 1-1/2"       | 3-5/8"         | 723-1088  | 2-1/4"     | 1-1/4"     | 1-5/8"       | 4-1/8"         | 723-1161  |
| 7/8"       | 5/8"       | 1-1/2"       | 3-3/4"         | 723-1084  | 2-1/2"     | 2"         | 4"           | 7-5/8"         | 723-1162  |
| 7/8"       | 3/4"       | 1-1/2"       | 3-3/4"         | 723-1085  | 2-1/2"     | 2"         | 4"           | 7-3/4"         | 723-1163  |
| 7/8"       | 7/8"       | 1-1/2"       | 3-3/4"         | 723-1087  | 2-1/2"     | 2"         | 6"           | 9-5/8"         | 723-1164  |
| 29/32"     | 1/2"       | 1-1/2"       | 3-1/2"         | 723-1089  | 2-1/2"     | 2"         | 6"           | 9-3/4"         | 723-1165  |
| 15/16"     | 1/2"       | 1-1/2"       | 3-5/8"         | 723-1090  | 3"         | 2-1/2"     | 4"           | 7-3/4"         | 723-1167  |

### M42 8% Cobalt 2 Flute Single End Mills

- Use for milling slots, pockets and plunge cuts.

M-42 cobalt end mills are more economical than high speed steel end mills. They stay sharper longer to allow more cuts between grinds and reduce downtime to give you lower cost per machined workpiece!



#### Medium Length & Long Length

| Shank Flute |      |       |        |                 | Shank Flute |       |       |        |                 |
|-------------|------|-------|--------|-----------------|-------------|-------|-------|--------|-----------------|
| Size        | Dia. | L     | OAL    | Order No.       | Size        | Dia.  | L     | OAL    | Order No.       |
| 3/16"       | 3/8" | 3/4"  | 2-5/8" | <b>723-1201</b> | 1"          | 1"    | 2"    | 4-1/2" | <b>723-1249</b> |
| 7/32        | 3/8  | 1-1/4 | 3-1/8  | <b>723-1203</b> | 1           | 1     | 2-1/4 | 4-3/4  | <b>723-1251</b> |
| 1/4         | 3/8  | 1     | 2-3/4  | <b>723-1204</b> | 1           | 1     | 2-1/2 | 5      | <b>723-1253</b> |
| 1/4         | 3/8  | 1     | 3-1/16 | <b>723-1205</b> | 1           | 1     | 3     | 5-1/2  | <b>723-1255</b> |
| 1/4         | 3/8  | 1-1/4 | 3-1/8  | <b>723-1207</b> | 1           | 1     | 3-1/2 | 6      | <b>723-1257</b> |
| 9/32        | 3/8  | 1-3/8 | 3-1/8  | <b>723-1209</b> | 1           | 1     | 4     | 6-1/2  | <b>723-1259</b> |
| 5/16        | 3/8  | 1-1/4 | 3      | <b>723-1210</b> | 1           | 1     | 4-5/8 | 7      | <b>723-1261</b> |
| 5/16        | 3/8  | 1-1/4 | 3-5/16 | <b>723-1211</b> | 1-1/8       | 1     | 2-1/4 | 4-3/4  | <b>723-1263</b> |
| 5/16        | 3/8  | 1-3/8 | 3-1/8  | <b>723-1213</b> | 1-1/8       | 1     | 3     | 4-3/4  | <b>723-1265</b> |
| 11/32       | 3/8  | 1-1/2 | 3-1/4  | <b>723-1215</b> | 1-1/8       | 1     | 3     | 5-1/2" | <b>723-1266</b> |
| 3/8         | 3/8  | 1     | 2-3/4  | <b>723-1217</b> | 1-1/4       | 1     | 2-1/4 | 4-3/4  | <b>723-1267</b> |
| 3/8         | 3/8  | 1-1/2 | 3-1/4  | <b>723-1219</b> | 1-1/4       | 1-1/4 | 2-1/4 | 5-1/2  | <b>723-1269</b> |
| 7/16        | 1/2  | 1-3/4 | 3-3/4  | <b>723-1221</b> | 1-1/4       | 1     | 3     | 5-1/2  | <b>723-1271</b> |
| 1/2         | 1/2  | 1-1/2 | 3-1/2  | <b>723-1223</b> | 1-1/4       | 1-1/4 | 3     | 5-1/2  | <b>723-1273</b> |
| 1/2         | 1/2  | 2     | 4      | <b>723-1225</b> | 1-1/4       | 1-1/4 | 3-1/2 | 6      | <b>723-1274</b> |
| 1/2         | 1/2  | 3     | 5      | <b>723-1226</b> | 1-1/4       | 1-1/4 | 4-3/4 | 7-1/4  | <b>723-1275</b> |
| 5/8         | 5/8  | 1-5/8 | 3-3/4  | <b>723-1227</b> | 1-3/8       | 1     | 2-1/4 | 4-3/4  | <b>723-1277</b> |
| 5/8         | 5/8  | 2     | 4-1/8  | <b>723-1229</b> | 1-3/8       | 1     | 3     | 5-1/2  | <b>723-1279</b> |
| 5/8         | 5/8  | 2-3/8 | 4-1/2  | <b>723-1230</b> | 1-1/2       | 1-1/4 | 6     | 8-1/2  | <b>723-1280</b> |
| 5/8         | 5/8  | 2-1/2 | 4-5/8  | <b>723-1231</b> | 1-1/2       | 1-1/4 | 2-1/4 | 4-3/4  | <b>723-1281</b> |
| 5/8         | 5/8  | 3     | 5-1/8  | <b>723-1233</b> | 1-1/2       | 1-1/4 | 3     | 5-1/2  | <b>723-1283</b> |
| 5/8         | 5/8  | 4     | 6-1/8  | <b>723-1234</b> | 1-1/2       | 1-1/4 | 4     | 6-1/2  | <b>723-1284</b> |
| 3/4         | 3/4  | 1-3/4 | 4      | <b>723-1235</b> | 1-5/8       | 1-1/4 | 2-1/4 | 4-3/4  | <b>723-1285</b> |
| 3/4         | 3/4  | 2-1/4 | 4-1/2  | <b>723-1237</b> | 1-5/8       | 1-1/4 | 3     | 5-1/2  | <b>723-1287</b> |
| 3/4         | 3/4  | 2-1/2 | 4-3/4  | <b>723-1239</b> | 1-3/4       | 1-1/4 | 2-1/4 | 4-3/4  | <b>723-1289</b> |
| 3/4         | 3/4  | 3     | 5-1/4  | <b>723-1241</b> | 1-3/4       | 1-1/4 | 3     | 5-1/2  | <b>723-1291</b> |
| 3/4         | 3/4  | 3-1/2 | 5-3/4  | <b>723-1243</b> | 1-7/8       | 1-1/4 | 2-1/4 | 4-3/4  | <b>723-1293</b> |
| 3/4         | 3/4  | 4     | 6-1/4  | <b>723-1244</b> | 1-7/8       | 1-1/4 | 3     | 5-1/2  | <b>723-1295</b> |
| 7/8         | 7/8  | 2     | 4-1/4  | <b>723-1245</b> | 2           | 1-1/4 | 2-1/4 | 4-3/4  | <b>723-1297</b> |
| 7/8         | 7/8  | 2-1/2 | 4-3/4  | <b>723-1247</b> | 2           | 1-1/4 | 3     | 5-1/2  | <b>723-1299</b> |
| 7/8         | 7/8  | 3-1/2 | 5-3/4  | <b>723-1248</b> | 2           | 1-1/4 | 4     | 6-1/2  | <b>723-1300</b> |

#### Extend Shank



| Length          |      |        |      |         |           | Length          |       |        |        |       |           |
|-----------------|------|--------|------|---------|-----------|-----------------|-------|--------|--------|-------|-----------|
| S&K Below Flute |      |        |      |         |           | S&K Below Flute |       |        |        |       |           |
| Size            | Dia. | shank  | L    | OAL     | Order No. | Size            | Dia.  | shank  | L      | OAL   | Order No. |
| 1/8"            | 3/8" | 13/16" | 3/8" | 2-3/8"  | 723-1171  | 1/2"            | 1/2"  | 2-1/4" | 1-7/8" | 4"    | 723-1182  |
| 3/16            | 3/8  | 1-1/8  | 1/2  | 2-11/16 | 723-1173  | 5/8             | 1/2   | 2-3/4  | 1-3/8  | 4-5/8 | 723-1184  |
| 3/16            | 3/8  | 1-1/2  | 5/8  | 3-1/16  | 723-1172  | 5/8             | 5/8   | 2-3/4  | 1-3/8  | 4-5/8 | 723-1183  |
| 1/4             | 3/8  | 1      | 5/8  | 3-1/16  | 723-1174  | 5/8             | 5/8   | 2-3/4  | 2      | 4-5/8 | 723-1188  |
| 1/4             | 3/8  | 1-1/2  | 5/8  | 3-1/16  | 723-1175  | 3/4             | 1/2   | 3-3/8  | 1-5/8  | 5-3/8 | 723-1186  |
| 5/16            | 3/8  | 1-3/4  | 3/4  | 3-5/16  | 723-1177  | 3/4             | 3/4   | 3-3/8  | 1-5/8  | 5-3/8 | 723-1185  |
| 5/16            | 3/8  | 1-1/2  | 3/4  | 3-1/4"  | 723-1178  | 7/8             | 7/8   | 4      | 2      | 6     | 723-1187  |
| 3/8             | 3/8  | 1-3/4  | 3/4  | 3-5/16  | 723-1179  | 1               | 1     | 5      | 2-1/2  | 7-1/4 | 723-1189  |
| 3/8             | 3/8  | 1-3/4  | 7/8  | 3-5/16  | 723-1180  | 1-1/4           | 1-1/4 | 4      | 3      | 7-1/4 | 723-1191  |
| 1/2             | 1/2  | 2-1/4  | 1    | 4       | 723-1181  |                 |       |        |        |       |           |

### 2 Flute Double End Mills

#### High Speed Steel

- Use for milling slots, pockets and for plunge cutting in a wide variety of materials.
- More economical in production milling than single end end mills.



#### Regular Length

| Size  | Shank Dia. | Shank Length | Overall Length | M2 Order No.    | M2Al Order No.  | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------------|-----------------|----------------------|
| 5/64" | 3/8"       | 5/16"        | 3-1/16"        | <b>720-2000</b> | <b>721-2000</b> | <b>722-2000</b>      |
| 3/32  | 3/8        | 5/16         | 3-1/16         | <b>720-2002</b> | <b>721-2002</b> | <b>722-2002</b>      |
| 7/64  | 3/8        | 5/16         | 3-1/16         | <b>720-2004</b> | <b>721-2004</b> | <b>722-2004</b>      |
| 1/8   | 3/8        | 3/8          | 3-1/16         | <b>720-2008</b> | <b>721-2008</b> | <b>722-2008</b>      |
| 9/64  | 3/8        | 7/16         | 3-1/8          | <b>720-2010</b> | <b>721-2010</b> | <b>722-2010</b>      |
| 5/32  | 3/8        | 7/16         | 3-1/8          | <b>720-2012</b> | <b>721-2012</b> | <b>722-2012</b>      |
| 11/64 | 3/8        | 7/16         | 3-1/8          | <b>720-2014</b> | <b>721-2014</b> | <b>722-2014</b>      |
| 3/16  | 3/8        | 7/16         | 3-1/8          | <b>720-2016</b> | <b>721-2016</b> | <b>722-2016</b>      |
| 13/64 | 3/8        | 1/2          | 3-1/8          | <b>720-2018</b> | <b>721-2018</b> | <b>722-2018</b>      |
| 7/32  | 3/8        | 1/2          | 3-1/8          | <b>720-2020</b> | <b>721-2020</b> | <b>722-2020</b>      |
| 15/64 | 3/8        | 1/2          | 3-1/8          | <b>720-2022</b> | <b>721-2022</b> | <b>722-2022</b>      |
| 1/4   | 3/8        | 1/2          | 3-1/8          | <b>720-2024</b> | <b>721-2024</b> | <b>722-2024</b>      |
| 17/64 | 3/8        | 9/16         | 3-1/8          | <b>720-2026</b> | <b>721-2026</b> | <b>722-2026</b>      |
| 9/32  | 3/8        | 9/16         | 3-1/8          | <b>720-2028</b> | <b>721-2028</b> | <b>722-2028</b>      |
| 19/64 | 3/8        | 9/16         | 3-1/8          | <b>720-2030</b> | <b>721-2030</b> | <b>722-2030</b>      |
| 5/16  | 3/8        | 9/16         | 3-1/8          | <b>720-2032</b> | <b>721-2032</b> | <b>722-2032</b>      |
| 21/64 | 3/8        | 9/16         | 3-1/8          | <b>720-2034</b> | <b>721-2034</b> | <b>722-2034</b>      |
| 11/32 | 3/8        | 9/16         | 3-1/8          | <b>720-2036</b> | <b>721-2036</b> | <b>722-2036</b>      |
| 23/64 | 3/8        | 9/16         | 3-1/8          | <b>720-2038</b> | <b>721-2038</b> | <b>722-2038</b>      |
| 3/8   | 3/8        | 9/16         | 3-1/16         | <b>720-2039</b> | <b>721-2039</b> | <b>722-2039</b>      |
| 3/8   | 3/8        | 9/16         | 3-1/8          | <b>720-2040</b> | <b>721-2040</b> | <b>722-2040</b>      |
| 25/64 | 1/2        | 13/16        | 3-3/4          | <b>720-2042</b> | <b>721-2042</b> | <b>722-2042</b>      |
| 13/32 | 1/2        | 13/16        | 3-3/4          | <b>720-2044</b> | <b>721-2044</b> | <b>722-2044</b>      |
| 13/32 | 1/2        | 13/16        | 3-13/16        | <b>720-2045</b> | <b>721-2045</b> | <b>722-2045</b>      |
| 27/64 | 1/2"       | 13/16        | 3-3/4          | <b>720-2046</b> | <b>721-2046</b> | <b>722-2046</b>      |
| 7/16  | 1/2        | 13/16        | 3-3/4          | <b>720-2048</b> | <b>721-2048</b> | <b>722-2048</b>      |
| 29/64 | 1/2        | 13/16        | 3-3/4          | <b>720-2050</b> | <b>721-2050</b> | <b>722-2050</b>      |
| 15/32 | 1/2        | 13/16        | 3-3/4          | <b>720-2052</b> | <b>721-2052</b> | <b>722-2052</b>      |
| 31/64 | 1/2        | 13/16        | 3-3/4          | <b>720-2054</b> | <b>721-2054</b> | <b>722-2054</b>      |
| 1/2   | 1/2        | 13/16        | 3-3/4          | <b>720-2056</b> | <b>721-2056</b> | <b>722-2056</b>      |
| 17/32 | 5/8        | 1-1/8        | 4-1/2          | <b>720-2058</b> | <b>721-2058</b> | <b>722-2058</b>      |
| 9/16  | 5/8        | 1-1/8        | 4-1/2          | <b>720-2060</b> | <b>721-2060</b> | <b>722-2060</b>      |
| 19/32 | 5/8        | 1-1/8        | 4-1/2          | <b>720-2062</b> | <b>721-2062</b> | <b>722-2062</b>      |
| 5/8   | 5/8        | 1-1/8        | 4-1/2          | <b>720-2064</b> | <b>721-2064</b> | <b>722-2064</b>      |
| 5/8   | 1/2        | 1-1/8        | 4-1/2          | <b>720-2065</b> | <b>721-2065</b> | <b>722-2065</b>      |
| 21/32 | 3/4        | 1-5/16       | 5              | <b>720-2066</b> | <b>721-2066</b> | <b>722-2066</b>      |
| 11/16 | 3/4        | 1-5/16       | 5              | <b>720-2068</b> | <b>721-2068</b> | <b>722-2068</b>      |
| 23/32 | 3/4        | 1-5/16       | 5              | <b>720-2070</b> | <b>721-2070</b> | <b>722-2070</b>      |
| 3/4   | 3/4        | 1-5/16       | 5              | <b>720-2072</b> | <b>721-2072</b> | <b>722-2072</b>      |
| 25/32 | 7/8        | 1-9/16       | 5-1/2          | <b>720-2074</b> | <b>721-2074</b> | <b>722-2074</b>      |
| 13/16 | 7/8        | 1-9/16       | 5-1/2          | <b>720-2076</b> | <b>721-2076</b> | <b>722-2076</b>      |
| 27/32 | 7/8        | 1-9/16       | 5-1/2          | <b>720-2078</b> | <b>721-2078</b> | <b>722-2078</b>      |
| 7/8   | 7/8        | 1-9/16       | 5-1/2          | <b>720-2080</b> | <b>721-2080</b> | <b>722-2080</b>      |
| 7/8   | 3/4        | 1-9/16       | 5-1/2          | <b>720-2081</b> | <b>721-2081</b> | <b>722-2081</b>      |
| 29/32 | 1          | 1-5/8        | 5-7/8          | <b>720-2082</b> | <b>721-2082</b> | <b>722-2082</b>      |
| 15/16 | 1          | 1-5/8        | 5-7/8          | <b>720-2084</b> | <b>721-2084</b> | <b>722-2084</b>      |
| 31/32 | 1          | 1-5/8        | 5-7/8          | <b>720-2086</b> | <b>721-2086</b> | <b>722-2086</b>      |
| 1     | 1          | 1-5/8        | 5-7/8          | <b>720-2088</b> | <b>721-2088</b> | <b>722-2088</b>      |

## 3 Flute End Mills

### M42 8% Cobalt 2 Flute Double End Mills

- Use for milling slots, pockets and for plunge cutting in a wide variety of materials.
- More economical in production milling than single end end mills.



| Shank Flute OAL |      |        |         |                 | Shank Flute OAL |      |        |         |                 |
|-----------------|------|--------|---------|-----------------|-----------------|------|--------|---------|-----------------|
| Size            | Dia. | Length | 3-1/16" | Order No.       | Size            | Dia. | Length | 3-1/16" | Order No.       |
| 5/64"           | 3/8" | 5/16"  | 3-1/16" | <b>723-2000</b> | 7/64"           | 1/2" | 13/16" | 3-3/4"  | <b>723-2046</b> |
| 3/32            | 3/8  | 5/16   | 3-1/16  | <b>723-2002</b> | 7/16            | 1/2  | 13/16  | 3-3/4   | <b>723-2048</b> |
| 7/64            | 3/8  | 5/16   | 3-1/16  | <b>723-2004</b> | 29/64           | 1/2  | 13/16  | 3-3/4   | <b>723-2050</b> |
| 1/8             | 3/8  | 3/8    | 3-1/8   | <b>723-2008</b> | 15/32           | 1/2  | 13/16  | 3-3/4   | <b>723-2052</b> |
| 9/64            | 3/8  | 7/16   | 3-1/8   | <b>723-2010</b> | 31/64           | 1/2  | 13/16  | 3-3/4   | <b>723-2054</b> |
| 5/32            | 3/8  | 7/16   | 3-1/8   | <b>723-2012</b> | 1/2             | 1/2  | 13/16  | 4-1/2   | <b>723-2056</b> |
| 11/64           | 3/8  | 7/16   | 3-1/8   | <b>723-2014</b> | 17/32           | 5/8  | 1-1/8  | 4-1/2   | <b>723-2058</b> |
| 3/16            | 3/8  | 7/16   | 3-1/8   | <b>723-2016</b> | 9/16            | 5/8  | 1-1/8  | 4-1/2   | <b>723-2060</b> |
| 13/64           | 3/8  | 1/2    | 3-1/8   | <b>723-2018</b> | 19/32           | 5/8  | 1-1/8  | 4-1/2   | <b>723-2062</b> |
| 7/32            | 3/8  | 1/2    | 3-1/8   | <b>723-2020</b> | 5/8             | 5/8  | 1-1/8  | 4-1/2   | <b>723-2064</b> |
| 15/64           | 3/8  | 1/2    | 3-1/8   | <b>723-2022</b> | 5/8             | 1/2  | 1-1/8  | 5       | <b>723-2065</b> |
| 1/4             | 3/8  | 1/2    | 3-1/8   | <b>723-2024</b> | 21/32           | 3/4  | 1-5/16 | 5       | <b>723-2066</b> |
| 17/64           | 3/8  | 9/16   | 3-1/8   | <b>723-2026</b> | 11/16           | 3/4  | 1-5/16 | 5       | <b>723-2068</b> |
| 9/32            | 3/8  | 9/16   | 3-1/8   | <b>723-2028</b> | 23/32           | 3/4  | 1-5/16 | 5       | <b>723-2070</b> |
| 19/64           | 3/8  | 9/16   | 3-1/8   | <b>723-2030</b> | 3/4             | 3/4  | 1-5/16 | 5-1/2   | <b>723-2072</b> |
| 5/16            | 3/8  | 9/16   | 3-1/8   | <b>723-2032</b> | 25/32           | 7/8  | 1-9/16 | 5-1/2   | <b>723-2074</b> |
| 21/64           | 3/8  | 9/16   | 3-1/8   | <b>723-2034</b> | 13/16           | 7/8  | 1-9/16 | 5-1/2   | <b>723-2076</b> |
| 11/32           | 3/8  | 9/16   | 3-1/8   | <b>723-2036</b> | 27/32           | 7/8  | 1-9/16 | 5-1/2   | <b>723-2078</b> |
| 23/64           | 3/8  | 9/16   | 3-1/16  | <b>723-2038</b> | 7/8             | 7/8  | 1-9/16 | 5-1/2   | <b>723-2080</b> |
| 3/8             | 3/8  | 9/16   | 3-1/8   | <b>723-2039</b> | 7/8             | 3/4  | 1-9/16 | 5-7/8   | <b>723-2081</b> |
| 3/8             | 3/8  | 9/16   | 3-3/4   | <b>723-2040</b> | 29/32           | 1    | 1-5/8  | 5-7/8   | <b>723-2082</b> |
| 25/64           | 1/2  | 13/16  | 3-3/4   | <b>723-2042</b> | 15/16           | 1    | 1-5/8  | 5-7/8   | <b>723-2084</b> |
| 13/32           | 1/2  | 13/16  | 3-13/16 | <b>723-2044</b> | 31/32           | 1    | 1-5/8  | 5-7/8   | <b>723-2086</b> |
| 13/32           | 1/2  | 13/16  | 3-3/4   | <b>723-2045</b> | 1               | 1    | 1-5/8  |         | <b>723-2088</b> |

### 1/4" Shank 3 Flute Single End Mills

#### High Speed Steel



#### Stud Length

| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No.    | M2AI Order No.  | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------------|-----------------|----------------------|
| 1/16" | 1/4"       | 3/32"        | 31/32"         | <b>720-3700</b> | <b>721-3700</b> | <b>722-3700</b>      |
| 3/32  | 1/4        | 5/32         | 1-1/64         | <b>720-3702</b> | <b>721-3702</b> | <b>722-3702</b>      |
| 1/8   | 1/4        | 3/16         | 1-3/32         | <b>720-3704</b> | <b>721-3704</b> | <b>722-3704</b>      |
| 5/32  | 1/4        | 1/4          | 1-9/32         | <b>720-3706</b> | <b>721-3706</b> | <b>722-3706</b>      |
| 3/16  | 1/4        | 9/32         | 1-11/32        | <b>720-3708</b> | <b>721-3708</b> | <b>722-3708</b>      |
| 7/32  | 1/4        | 5/16         | 1-13/32        | <b>720-3710</b> | <b>721-3710</b> | <b>722-3710</b>      |
| 1/4   | 1/4        | 3/8          | 1-13/32        | <b>720-3712</b> | <b>721-3712</b> | <b>722-3712</b>      |

#### Long Length

| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No.    | M2AI Order No.  | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------------|-----------------|----------------------|
| 1/16" | 1/4"       | 5/32"        | 1-3/32"        | <b>720-3714</b> | <b>721-3714</b> | <b>722-3714</b>      |
| 3/32  | 1/4        | 1/4          | 1-1/4          | <b>720-3716</b> | <b>721-3716</b> | <b>722-3716</b>      |
| 1/8   | 1/4        | 5/16         | 1-11/32        | <b>720-3718</b> | <b>721-3718</b> | <b>722-3718</b>      |
| 5/32  | 1/4        | 3/8          | 1-17/32        | <b>720-3720</b> | <b>721-3720</b> | <b>722-3720</b>      |
| 3/16  | 1/4        | 7/16         | 1-21/32        | <b>720-3722</b> | <b>721-3722</b> | <b>722-3722</b>      |
| 7/32  | 1/4        | 1/2          | 1-3/4          | <b>720-3724</b> | <b>721-3724</b> | <b>722-3724</b>      |
| 1/4   | 1/4        | 5/8          | 1-3/4          | <b>720-3726</b> | <b>721-3726</b> | <b>722-3726</b>      |

### 3 Flute Single End Mills

#### Center Cutting, High Speed Steel

- Center cutting allows for plunge milling.
- Use in a wide range of ferrous and non-ferrous materials.
- TiN coating improves tool life and allows elevated speeds and feeds.
- Combines the chip carrying ability of 2 flute end mills and the excellent finish produced by 4 flute end mills.



#### Regular Length

| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No.    | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------------|----------------------|
| 3/32" | 3/8"       | 5/16"        | 2-5/16"        | <b>720-3801</b> | <b>722-3801</b>      |
| 1/8   | 3/8        | 3/8          | 2-5/16         | <b>720-3803</b> | <b>722-3803</b>      |
| 3/16  | 3/8        | 1/2          | 2-3/8          | <b>720-3805</b> | <b>722-3805</b>      |
| 1/4   | 3/8        | 5/8          | 2-7/16         | <b>720-3807</b> | <b>722-3807</b>      |
| 5/16  | 3/8        | 3/4          | 2-1/2          | <b>720-3809</b> | <b>722-3809</b>      |
| 3/8   | 3/8        | 3/4          | 2-1/2          | <b>720-3811</b> | <b>722-3811</b>      |
| 7/16  | 3/8        | 1            | 2-11/16        | <b>720-3813</b> | <b>722-3813</b>      |
| 7/16  | 1/2        | 1            | 2-15/16        | <b>720-3815</b> | <b>722-3815</b>      |
| 1/2   | 3/8        | 1            | 2-11/16        | <b>720-3817</b> | <b>722-3817</b>      |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | <b>720-3819</b> | <b>722-3819</b>      |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | <b>720-3821</b> | <b>722-3821</b>      |
| 5/8   | 1/2        | 1-3/8        | 3-3/8          | <b>720-3823</b> | <b>722-3823</b>      |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | <b>720-3825</b> | <b>722-3825</b>      |
| 11/16 | 1/2        | 1-5/8        | 3-5/8          | <b>720-3827</b> | <b>722-3827</b>      |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | <b>720-3829</b> | <b>722-3829</b>      |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | <b>720-3831</b> | <b>722-3831</b>      |
| 3/4   | 1/2        | 1-5/8        | 3-5/8          | <b>720-3833</b> | <b>722-3833</b>      |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | <b>720-3835</b> | <b>722-3835</b>      |
| 13/16 | 5/8        | 1-5/8        | 3-3/4          | <b>720-3837</b> | <b>722-3837</b>      |
| 13/16 | 3/4        | 1-5/8        | 3-7/8          | <b>720-3839</b> | <b>722-3839</b>      |
| 7/8   | 5/8        | 1-7/8        | 4              | <b>720-3841</b> | <b>722-3841</b>      |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | <b>720-3843</b> | <b>722-3843</b>      |
| 7/8   | 7/8        | 1-7/8        | 4-7/8          | <b>720-3845</b> | <b>722-3845</b>      |
| 7/8   | 1/2        | 1-5/8        | 3-5/8          | <b>720-3847</b> | <b>722-3847</b>      |
| 15/16 | 7/8        | 1-7/8        | 4-1/8          | <b>720-3849</b> | <b>722-3849</b>      |
| 15/16 | 5/8        | 1-7/8        | 4              | <b>720-3851</b> | <b>722-3851</b>      |
| 1     | 5/8        | 1-7/8        | 4              | <b>720-3853</b> | <b>722-3853</b>      |
| 1     | 3/4        | 1-7/8        | 4-1/8          | <b>720-3855</b> | <b>722-3855</b>      |
| 1     | 7/8        | 1-7/8        | 4-1/8          | <b>720-3857</b> | <b>722-3857</b>      |
| 1     | 1          | 2            | 4-1/2          | <b>720-3859</b> | <b>722-3859</b>      |
| 1-1/8 | 1          | 2            | 4-1/2          | <b>720-3861</b> | <b>722-3861</b>      |
| 1-1/4 | 1          | 2            | 4-1/2          | <b>720-3863</b> | <b>722-3863</b>      |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | <b>720-3865</b> | <b>722-3865</b>      |
| 1-3/8 | 1          | 2            | 4-1/2          | <b>720-3867</b> | <b>722-3867</b>      |
| 1-3/8 | 1-1/4      | 2            | 4-1/2          | <b>720-3869</b> | <b>722-3869</b>      |
| 1-1/2 | 1          | 2            | 4-1/2          | <b>720-3871</b> | <b>722-3871</b>      |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | <b>720-3873</b> | <b>722-3873</b>      |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | <b>720-3875</b> | <b>722-3875</b>      |
| 2     | 1-1/4      | 2            | 4-1/2          | <b>720-3877</b> | <b>722-3877</b>      |
| 2     | 2          | 3            | 5-3/4          | <b>720-3879</b> | <b>722-3879</b>      |
| 2-1/2 | 2          | 4            | 7-5/8          | <b>720-3881</b> | <b>722-3881</b>      |
| 2-1/2 | 2-1/2      | 4            | 8              | <b>720-3883</b> | <b>722-3883</b>      |

#### Long Length

| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No.    | M2AI Order No.  | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------------|-----------------|----------------------|
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | <b>720-6105</b> | <b>721-6105</b> | <b>722-6105</b>      |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | <b>720-6110</b> | <b>721-6110</b> | <b>722-6110</b>      |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | <b>720-6115</b> | <b>721-6115</b> | <b>722-6115</b>      |
| 7/16  | 1/2        | 1-3/4        | 3-3/4          | <b>720-6120</b> | <b>721-6120</b> | <b>722-6120</b>      |
| 1/2   | 1/2        | 2            | 4              | <b>720-6125</b> | <b>721-6125</b> | <b>722-6125</b>      |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | <b>720-6130</b> | <b>721-6130</b> | <b>722-6130</b>      |
| 3/4   | 3/4        | 3            | 5-1/4          | <b>720-6135</b> | <b>721-6135</b> | <b>722-6135</b>      |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | <b>720-6140</b> | <b>721-6140</b> | <b>722-6140</b>      |
| 1     | 1          | 4            | 6-1/2          | <b>720-6145</b> | <b>721-6145</b> | <b>722-6145</b>      |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | <b>720-6150</b> | <b>721-6150</b> | <b>722-6150</b>      |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | <b>720-6155</b> | <b>721-6155</b> | <b>722-6155</b>      |

### 3 Flute Double End Mills

#### High Speed Steel

- Use in a wide range of ferrous and non-ferrous materials.
- TiN coating improves tool life and allows elevated speeds and feeds.



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|
| 3/32" | 3/8"       | 5/16"        | 3-1/16"        | 720-3002     | 721-3002       | 722-3002             |
| 1/8   | 3/8        | 3/8          | 3-1/16         | 720-3004     | 721-3004       | 722-3004             |
| 5/32  | 3/8        | 7/16         | 3-1/8          | 720-3006     | 721-3006       | 722-3006             |
| 3/16  | 3/8        | 1/2          | 3-1/4          | 720-3008     | 721-3008       | 722-3008             |
| 7/32  | 3/8        | 9/16         | 3-1/4          | 720-3010     | 721-3010       | 722-3010             |
| 1/4   | 3/8        | 5/8          | 3-3/8          | 720-3012     | 721-3012       | 722-3012             |
| 9/32  | 3/8        | 11/16        | 3-3/8          | 720-3014     | 721-3014       | 722-3014             |
| 5/16  | 3/8        | 3/4          | 3-1/2          | 720-3016     | 721-3016       | 722-3016             |
| 11/32 | 3/8        | 3/4          | 3-1/2          | 720-3018     | 721-3018       | 722-3018             |
| 3/8   | 3/8        | 3/4          | 3-1/2          | 720-3020     | 721-3020       | 722-3020             |
| 7/16  | 1/2        | 1            | 4-1/8          | 720-3022     | 721-3022       | 722-3022             |
| 1/2   | 1/2        | 1            | 4-1/8          | 720-3024     | 721-3024       | 722-3024             |
| 9/16  | 5/8        | 1-3/8        | 5              | 720-3026     | 721-3026       | 722-3026             |
| 5/8   | 5/8        | 1-3/8        | 5              | 720-3028     | 721-3028       | 722-3028             |
| 11/16 | 3/4        | 1-1/2        | 5-3/8          | 720-3030     | 721-3030       | 722-3030             |
| 3/4   | 3/4        | 1-1/2        | 5-3/8          | 720-3032     | 721-3032       | 722-3032             |
| 13/16 | 7/8        | 1-3/4        | 5-7/8          | 720-3034     | 721-3034       | 722-3034             |
| 7/8   | 7/8        | 1-3/4        | 5-7/8          | 720-3036     | 721-3036       | 722-3036             |
| 15/16 | 1          | 1-3/4        | 6-1/8          | 720-3038     | 721-3038       | 722-3038             |
| 1     | 1          | 1-3/4        | 6-1/8          | 720-3040     | 721-3040       | 722-3040             |

### M42 8% Cobalt 3 Flute Single End Mills

#### Center Cutting

**Three-Flute End Mills**—Have smoother cutting action with less chatter and flutter than two-flute tools and may eliminate the need for a second finishing cut.

- Center cutting allows for plunge milling.
- Combines the chip carrying ability of 2 flute end mills and the excellent finish produced by 4 flute end mills.
- Use in a wide range of ferrous and non-ferrous materials.
- TiN coating improves tool life and allows elevated speeds and feeds.



#### Regular Length

| Shank Flute |      |        |         | M42       | Shank Flute |       |        |        | M42       |
|-------------|------|--------|---------|-----------|-------------|-------|--------|--------|-----------|
| Size        | Dia. | Length | OAL     | Order No. | Size        | Dia.  | Length | OAL    | Order No. |
| 3/32"       | 3/8" | 5/16"  | 2-5/16" | 723-3801  | 7/8"        | 3/4"  | 1-7/8" | 4-1/8" | 723-3843  |
| 1/8         | 3/8  | 3/8    | 2-5/16  | 723-3803  | 7/8         | 7/8   | 1-7/8  | 4-7/8  | 723-3845  |
| 3/16        | 3/8  | 1/2    | 2-3/8   | 723-3805  | 7/8         | 1/2   | 1-5/8  | 3-5/8  | 723-3847  |
| 1/4         | 3/8  | 5/8    | 2-7/16  | 723-3807  | 15/16       | 7/8   | 1-7/8  | 4-1/8  | 723-3849  |
| 5/16        | 3/8  | 3/4    | 2-1/2   | 723-3809  | 15/16       | 5/8   | 1-7/8  | 4      | 723-3851  |
| 3/8         | 3/8  | 3/4    | 2-1/2   | 723-3811  | 1           | 5/8   | 1-7/8  | 4      | 723-3853  |
| 7/16        | 3/8  | 1      | 2-11/16 | 723-3813  | 1           | 3/4   | 1-7/8  | 4-1/8  | 723-3855  |
| 7/16        | 1/2  | 1      | 2-15/16 | 723-3815  | 1           | 7/8   | 1-7/8  | 4-1/8  | 723-3857  |
| 1/2         | 3/8  | 1      | 2-11/16 | 723-3817  | 1           | 1     | 2      | 4-1/2  | 723-3859  |
| 1/2         | 1/2  | 1-1/4  | 3-1/4   | 723-3819  | 1-1/8       | 1     | 2      | 4-1/2  | 723-3861  |
| 9/16        | 1/2  | 1-3/8  | 3-3/8   | 723-3821  | 1-1/4       | 1     | 2      | 4-1/2  | 723-3863  |
| 5/8         | 1/2  | 1-3/8  | 3-3/8   | 723-3823  | 1-1/4       | 1-1/4 | 2      | 4-1/2  | 723-3865  |
| 5/8         | 5/8  | 1-5/8  | 3-3/4   | 723-3825  | 1-3/8       | 1     | 2      | 4-1/2  | 723-3867  |
| 11/16       | 1/2  | 1-5/8  | 3-5/8   | 723-3827  | 1-3/8       | 1-1/4 | 2      | 4-1/2  | 723-3869  |
| 11/16       | 5/8  | 1-5/8  | 3-3/4   | 723-3829  | 1-1/2       | 1     | 2      | 4-1/2  | 723-3871  |
| 3/4         | 5/8  | 1-5/8  | 3-3/4   | 723-3831  | 1-1/2       | 1-1/4 | 2      | 4-1/2  | 723-3873  |
| 3/4         | 1/2  | 1-5/8  | 3-5/8   | 723-3833  | 1-3/4       | 1-1/4 | 2      | 4-1/2  | 723-3875  |
| 3/4         | 3/4  | 1-5/8  | 3-7/8   | 723-3835  | 2           | 1-1/4 | 2      | 4-1/2  | 723-3877  |
| 13/16       | 5/8  | 1-5/8  | 3-3/4   | 723-3837  | 2           | 2     | 3      | 5-3/4  | 723-3879  |
| 13/16       | 3/4  | 1-5/8  | 3-7/8   | 723-3839  | 2-1/2       | 2     | 4      | 7-5/8  | 723-3881  |
| 7/8         | 5/8  | 1-7/8  | 4       | 723-3841  | 2-1/2       | 2-1/2 | 4      | 8      | 723-3883  |

### M42 8% Cobalt 3 Flute Single End Mills

#### Center Cutting

**Three-Flute End Mills**—Have smoother cutting action with less chatter and flutter than two-flute tools and may eliminate the need for a second finishing cut.



#### Long Length

| Size  | Shank Dia. | Flute Length | Overall Length | M42 Order No. |
|-------|------------|--------------|----------------|---------------|
| 1/4"  | 3/8"       | 1-1/4"       | 3-1/8"         | 723-6105      |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 723-6110      |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 723-6115      |
| 7/16  | 1/2        | 1-3/4        | 3-3/4          | 723-6120      |
| 1/2   | 1/2        | 2            | 4              | 723-6125      |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 723-6130      |
| 3/4   | 3/4        | 3            | 5-1/4          | 723-6135      |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 723-6140      |
| 1     | 1          | 4            | 6-1/2          | 723-6145      |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 723-6150      |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 723-6155      |

### 3 Flute Semi-Roughing & Finishing End Mills

#### M42 8% Cobalt 45° Helical

#### Center Cutting

| Size  | Shank Dia. | Flute Length | Overall Length | Order No. | Tin-Coated Order No. |
|-------|------------|--------------|----------------|-----------|----------------------|
| 1/4"  | 3/8"       | 5/8"         | 2-7/16"        | 723-9708  | 722-9708             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 723-9713  | 722-9713             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 723-9718  | 722-9718             |
| 7/16  | 3/8        | 1            | 2-11/16        | 723-9723  | 722-9723             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 723-9728  | 722-9728             |
| 1/2   | 1/2        | 2            | 4              | 723-9733  | 722-9733             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 723-9738  | 722-9738             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 723-9743  | 722-9743             |
| 3/4   | 5/8        | 1-5/8        | 3-7/8          | 723-9745  | 722-9745             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 723-9748  | 722-9748             |
| 3/4   | 3/4        | 3            | 5-1/4          | 723-9753  | 722-9753             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 723-9758  | 722-9758             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 723-9761  | 722-9761             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 723-9763  | 722-9763             |
| 1     | 3/4        | 2            | 4-1/2          | 723-9768  | 722-9768             |
| 1     | 1          | 2            | 4-1/2          | 723-9773  | 722-9773             |
| 1     | 1          | 4            | 6-1/2          | 723-9778  | 722-9778             |
| 1-1/8 | 3/4        | 2            | 4-1/2          | 723-9781  | 722-9781             |
| 1-1/8 | 1          | 2            | 4-1/2          | 723-9783  | 722-9783             |
| 1-1/4 | 3/4        | 2            | 4-1/2          | 723-9788  | 722-9788             |
| 1-1/4 | 3/4        | 4            | 6-1/2          | 723-9791  | 722-9791             |
| 1-1/4 | 1          | 2            | 4-1/2          | 723-9793  | 722-9793             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 723-9798  | 722-9798             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 723-9803  | 722-9803             |
| 1-1/2 | 3/4        | 2            | 4-1/2          | 723-9808  | 722-9808             |
| 1-1/2 | 3/4        | 4            | 6-1/2          | 723-9811  | 722-9811             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 723-9813  | 722-9813             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 723-9818  | 722-9818             |
| 1-3/4 | 3/4        | 2            | 4-1/2          | 723-9821  | 722-9821             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 723-9823  | 722-9823             |
| 2     | 3/4        | 2            | 4-1/2          | 723-9725  | 722-9725             |
| 2     | 1-1/4      | 2            | 4-1/2          | 723-9828  | 722-9828             |

## Multiple Flute Single End Mills

- Designed for general purpose work including cam milling, die sinking and slot milling.
- Suitable for use in a wide range of ferrous and non-ferrous materials.
- Excellent for use in finishing operations.
- Multi-flute design allows for higher feed rates.



### Regular Length

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------|----------------|----------------------|
| 7/64" | 3/8"       | 3/8"         | 2-5/16"        | 4            | 720-3001     | 721-3001       | 722-3001             |
| 1/8   | 3/8        | 3/8          | 2-5/16         | 4            | 720-3003     | 721-3003       | 722-3003             |
| 9/64  | 3/8        | 3/8          | 2-5/16         | 4            | 720-3005     | 721-3005       | 722-3005             |
| 5/32  | 3/8        | 3/8          | 2-5/16         | 4            | 720-3420     | 721-3420       | 722-3420             |
| 5/32  | 3/8        | 7/16         | 2-3/8          | 4            | 720-3007     | 721-3007       | 722-3007             |
| 11/64 | 3/8        | 7/16         | 2-3/8          | 4            | 720-3009     | 721-3009       | 722-3009             |
| 11/64 | 3/8        | 1/2          | 2-5/16         | 4            | 720-3422     | 721-3422       | 722-3422             |
| 3/16  | 3/8        | 1/2          | 2-3/8          | 4            | 720-3011     | 721-3011       | 722-3011             |
| 13/64 | 3/8        | 1/2          | 2-3/8          | 4            | 720-3013     | 721-3013       | 722-3013             |
| 7/32  | 3/8        | 9/16         | 2-1/2          | 4            | 720-3015     | 721-3015       | 722-3015             |
| 7/32  | 3/8        | 5/8          | 2-1/4          | 4            | 720-3423     | 721-3423       | 722-3423             |
| 7/32  | 3/8        | 5/8          | 2-3/8          | 4            | 720-3425     | 721-3425       | 722-3425             |
| 7/32  | 3/8        | 5/8          | 2-7/16         | 4            | 720-3424     | 721-3424       | 722-3424             |
| 15/64 | 3/8        | 9/16         | 2-1/2          | 4            | 720-3017     | 721-3017       | 722-3017             |
| 1/4   | 3/8        | 5/8          | 2-1/4          | 4            | 720-3427     | 721-3427       | 722-3425             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4            | 720-3428     | 721-3428       | 722-3428             |
| 1/4   | 3/8        | 5/8          | 2-1/2          | 4            | 720-3019     | 721-3019       | 722-3019             |
| 17/64 | 3/8        | 5/8          | 2-1/2          | 4            | 720-3021     | 721-3021       | 722-3021             |
| 9/32  | 3/8        | 5/8          | 2-1/4          | 4            | 720-3429     | 721-3429       | 722-3427             |
| 9/32  | 3/8        | 11/16        | 2-1/2          | 4            | 720-3023     | 721-3023       | 722-3023             |
| 19/64 | 3/8        | 11/16        | 2-1/2          | 4            | 720-3025     | 721-3025       | 722-3025             |
| 5/16  | 3/8        | 3/4          | 2-1/4          | 4            | 720-3431     | 721-3436       | 722-3436             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4            | 720-3027     | 721-3027       | 722-3027             |
| 21/64 | 3/8        | 3/4          | 2-1/2          | 4            | 720-3029     | 721-3029       | 722-3029             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 4            | 720-3031     | 721-3031       | 722-3031             |
| 23/64 | 3/8        | 3/4          | 2-1/2          | 4            | 720-3033     | 721-3033       | 722-3033             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 720-3035     | 721-3035       | 722-3035             |
| 13/32 | 3/8        | 1            | 2-11/16        | 4            | 720-3037     | 721-3037       | 722-3037             |
| 7/16  | 3/8        | 1            | 2-11/16        | 4            | 720-3039     | 721-3039       | 722-3039             |
| 15/32 | 3/8        | 1            | 2-11/16        | 4            | 720-3042     | 721-3042       | 722-3042             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 4            | 720-3041     | 721-3041       | 722-3041             |
| 1/2   | 3/8        | 1            | 2-11/16        | 4            | 720-3043     | 721-3043       | 722-3043             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 720-3045     | 721-3045       | 722-3045             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 6            | 720-3046     | 721-3046       | 722-3046             |
| 17/32 | 1/2        | 1-3/8        | 3-3/8          | 4            | 720-3047     | 721-3047       | 722-3047             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4            | 720-3049     | 721-3049       | 722-3049             |
| 19/32 | 1/2        | 1-3/8        | 3-3/8          | 4            | 720-3051     | 721-3051       | 722-3051             |
| 5/8   | 1/2        | 1-3/8        | 3-3/8          | 4            | 720-3053     | 721-3053       | 722-3053             |
| 5/8   | 5/8        | 1-5/8        | 3-1/4          | 6            | 720-3056     | 721-3056       | 722-3056             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 720-3055     | 721-3055       | 722-3055             |
| 21/32 | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3057     | 721-3057       | 722-3057             |
| 11/16 | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3059     | 721-3059       | 722-3059             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4            | 720-3061     | 721-3061       | 722-3061             |
| 23/32 | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3063     | 721-3063       | 722-3063             |
| 3/4   | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3065     | 721-3065       | 722-3065             |
| 3/4   | 5/8        | 1-5/8        | 3-5/8          | 4            | 720-3066     | 721-3066       | 722-3066             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4            | 720-3067     | 721-3067       | 722-3067             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 4            | 720-3068     | 721-3068       | 722-3068             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 4            | 720-3069     | 721-3069       | 722-3069             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 6            | 720-3070     | 721-3070       | 722-3070             |
| 25/32 | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3071     | 721-3071       | 722-3071             |
| 13/16 | 1/2        | 1-3/4        | 3-3/4          | 4            | 720-3072     | 721-3072       | 722-3072             |
| 13/16 | 5/8        | 1-7/8        | 4              | 4            | 720-3073     | 721-3074       | 722-3074             |
| 13/16 | 5/8        | 1-7/8        | 4              | 6            | 720-3074     | 721-3073       | 722-3073             |
| 13/16 | 3/4        | 1-7/8        | 4-1/8          | 4            | 720-3075     | 721-3075       | 722-3075             |
| 27/32 | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3077     | 721-3077       | 722-3077             |
| 7/8   | 1/2        | 1-5/8        | 3-5/8          | 4            | 720-3079     | 721-3079       | 722-3079             |
| 7/8   | 1/2        | 1-5/8        | 3-5/8          | 6            | 720-3081     | 721-3081       | 722-3081             |
| 7/8   | 1/2        | 1-7/8        | 4              | 4            | 720-3080     | 721-3080       | 722-3080             |
| 7/8   | 1/2        | 1-7/8        | 4              | 6            | 720-3082     | 721-3082       | 722-3082             |
| 7/8   | 5/8        | 1-7/8        | 4              | 6            | 720-3083     | 721-3083       | 722-3083             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 4            | 720-3085     | 721-3085       | 722-3085             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 4            | 720-3087     | 721-3087       | 722-3087             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 6            | 720-3086     | 721-3086       | 722-3086             |
| 29/32 | 1/2        | 1-7/8        | 3-7/8          | 4            | 720-3089     | 721-3089       | 722-3089             |
| 15/16 | 1/2        | 1-7/8        | 4              | 4            | 720-3090     | 721-3090       | 722-3090             |
| 15/16 | 5/8        | 1-7/8        | 4              | 6            | 720-3091     | 721-3091       | 722-3091             |
| 15/16 | 5/8        | 1-7/8        | 4-1/8          | 6            | 720-3438     | 721-3438       | 722-3092             |
| 15/16 | 3/4        | 1-7/8        | 4-1/8          | 4            | 720-3093     | 721-3093       | 722-3093             |
| 15/16 | 3/4        | 1-7/8        | 4-1/8          | 6            | 720-3170     | 721-3170       | 722-3170             |
| 15/16 | 5/8        | 1-7/8        | 4-1/8          | 6            | 720-3092     | 721-3092       | 722-3440             |
| 15/16 | 7/8        | 1-7/8        | 4-1/8          | 4            | 720-3095     | 721-3095       | 722-3095             |
| 15/16 | 7/8        | 1-7/8        | 4-1/8          | 6            | 720-3096     | 721-3096       | 722-3096             |
| 31/32 | 1/2        | 1-7/8        | 3-7/8          | 4            | 720-3097     | 721-3097       | 722-3097             |
| 1     | 1/2        | 1-7/8        | 3-7/8          | 4            | 720-3098     | 721-3098       | 722-3098             |
| 1     | 1/2        | 1-7/8        | 4              | 4            | 720-3099     | 721-3099       | 722-3099             |

| Size    | Shank Dia. | Flute Length | Overall Length | No. of Flute | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|---------|------------|--------------|----------------|--------------|--------------|----------------|----------------------|
| 1"      | 1/2"       | 1-7/8"       | 4"             | 6            | 720-3100     | 721-3100       | 722-3100             |
| 1       | 5/8        | 1-7/8        | 4              | 4            | 720-3102     | 721-3102       | 722-3102             |
| 1       | 5/8        | 1-7/8        | 4              | 6            | 720-3101     | 721-3101       | 722-3101             |
| 1       | 3/4        | 1-7/8        | 4              | 6            | 720-3106     | 721-3106       | 722-3106             |
| 1       | 3/4        | 1-7/8        | 4-1/8          | 4            | 720-3103     | 721-3103       | 722-3103             |
| 1       | 7/8        | 1-7/8        | 4-1/8          | 4            | 720-3105     | 721-3105       | 722-3105             |
| 1       | 3/4        | 2            | 4-1/2          | 4            | 720-3104     | 721-3445       | 722-3445             |
| 1       | 1          | 2            | 4-1/2          | 4            | 720-3107     | 721-3107       | 722-3107             |
| 1       | 1          | 2            | 4-1/2          | 6            | 720-3108     | 721-3108       | 722-3108             |
| 1-1/16  | 3/4        | 2            | 4-1/4          | 4            | 720-3433     | 721-3433       | 722-3429             |
| 1-1/16  | 3/4        | 2            | 4-1/4          | 6            | 720-3109     | 721-3109       | 722-3109             |
| 1-1/8   | 3/4        | 1-1/2        | 3-7/8          | 6            | 720-3171     | 721-3181       | 722-3171             |
| 1-1/8   | 3/4        | 2            | 4-1/8          | 6            | 720-3110     | 721-3110       | 722-3110             |
| 1-1/8   | 3/4        | 2            | 4-1/4          | 4            | 720-3112     | 721-3112       | 722-3112             |
| 1-1/8   | 3/4        | 2            | 4-1/4          | 6            | 720-3111     | 721-3111       | 722-3111             |
| 1-1/8   | 1          | 2            | 4-1/4          | 4            | 720-3114     | 721-3114       | 722-3114             |
| 1-1/8   | 7/8        | 2            | 4-1/4          | 6            | 720-3113     | 721-3113       | 722-3113             |
| 1-1/8   | 3/4        | 2            | 4-1/2          | 6            | 720-3173     | 721-3173       | 722-3173             |
| 1-1/8   | 1          | 2            | 4-1/2          | 6            | 720-3115     | 721-3115       | 722-3115             |
| 1-1/8   | 1          | 2-5/8        | 4-1/2          | 4            | 720-3116     | 721-3116       | 722-3116             |
| 1-3/16  | 3/4        | 2            | 4-1/4          | 6            | 720-3117     | 721-3117       | 722-3117             |
| 1-3/16  | 1          | 2            | 4-1/4          | 6            | 720-3118     | 721-3118       | 722-3118             |
| 1-1/4   | 3/4        | 2            | 4-1/4          | 6            | 720-3119     | 721-3119       | 722-3119             |
| 1-1/4   | 7/8        | 2            | 4-1/4          | 4            | 720-3120     | 721-3120       | 722-3120             |
| 1-1/4   | 7/8        | 2            | 4-1/4          | 6            | 720-3121     | 721-3121       | 722-3121             |
| 1-1/4   | 1          | 2            | 4-1/2          | 6            | 720-3123     | 721-3123       | 722-3123             |
| 1-1/4   | 1-1/4      | 2            | 4-1/2          | 4            | 720-3124     | 721-3171       | 722-3124             |
| 1-1/4   | 1-1/4      | 2            | 4-1/2          | 6            | 720-3125     | 721-3125       | 722-3125             |
| 1-1/4   | 1          | 4            | 6-1/2          | 6            | 720-3122     | 721-3122       | 722-3122             |
| 1-5/16  | 3/4        | 1-5/8        | 3-7/8          | 6            | 720-3435     | 721-3435       | 722-3431             |
| 1-5/16  | 3/4        | 2            | 4-1/2          | 6            | 720-3127     | 721-3127       | 722-3127             |
| 1-3/8   | 3/4        | 2            | 4-1/4          | 4            | 720-3442     | 721-3442       | 722-3433             |
| 1-3/8   | 3/4        | 2            | 4-1/4          | 6            | 720-3128     | 721-3128       | 722-3128             |
| 1-3/8   | 3/4        | 2            | 4-1/2          | 6            | 720-3129     | 721-3129       | 722-3129             |
| 1-3/8   | 1          | 2            | 4-1/2          | 6            | 720-3131     | 721-3131       | 722-3131             |
| 1-3/8   | 1-1/4      | 2            | 4-1/2          | 6            | 720-3130     | 721-3130       | 722-3130             |
| 1-7/16  | 3/4        | 1-5/8        | 3-7/8          | 6            | 720-3132     | 721-3132       | 722-3132             |
| 1-7/16  | 3/4        | 2            | 4-1/2          | 6            | 720-3133     | 721-3133       | 722-3133             |
| 1-1/2   | 3/4        | 2            | 4-3/8          | 4            | 720-3446     | 721-3446       | 722-3435             |
| 1-1/2   | 3/4        | 2            | 4-1/4          | 4            | 720-3134     | 721-3134       | 722-3447             |
| 1-1/2   | 3/4        | 2            | 4-1/2          | 4            | 720-3448     | 721-3448       | 722-3134             |
| 1-1/2   | 3/4        | 2            | 4-1/2          | 6            | 720-3135     | 721-3135       | 722-3135             |
| 1-1/2   | 1          | 2            | 4-1/2          | 4            | 720-3136     | 721-3136       | 722-3136             |
| 1-1/2   | 1          | 2            | 4-1/2          | 6            | 720-3137     | 721-3137       | 722-3137             |
| 1-1/2   | 1-1/4      | 2            | 4-1/2          | 4            | 720-3141     | 721-3141       | 722-3141             |
| 1-1/2   | 1-1/4      | 2            | 4-1/2          | 6            | 720-3139     | 721-3139       | 722-3139             |
| 1-5/8   | 3/4        | 1-5/8        | 3-7/8          | 6            | 720-3142     | 721-3142       | 722-3142             |
| 1-5/8   | 3/4        | 1-5/8        | 4-1/8          | 6            | 720-3437     | 721-3437       | 722-3437             |
| 1-5/8   | 3/4        | 1-5/8        | 4-1/8          | 6            | 720-3140     | 721-3140       | 722-3140             |
| 1-5/8   | 3/4        | 2            | 4-1/2          | 6            | 720-3143     | 721-3143       | 722-3143             |
| 1-5/8   | 1-1/4      | 2            | 4-1/2          | 4            | 720-3144     | 721-3144       | 722-3144             |
| 1-5/8   | 1-1/4      | 2            | 4-1/2          | 6            | 720-3145     | 721-3145       | 722-3145             |
| 1-3/4   | 3/4        | 1-1/2        | 3-7/8          | 6            | 720-3172     | 721-3183       | 722-3172             |
| 1-3/4   | 3/4        | 2            | 4-1/4          | 4            | 720-3148     | 721-3148       | 722-3438             |
| 1-3/4   | 3/4        | 2            | 4-1/2          | 4            | 720-3146     | 721-3146       | 722-3148             |
| 1-3/4   | 3/4        | 2            | 4-1/2          | 6            | 720-3147     | 721-3147       | 722-3147             |
| 1-3/4   | 1-1/4      | 2            | 4-1/2          | 4            | 720-3151     | 721-3151       | 722-3151             |
| 1-3/4   | 1-1/4      | 2            | 4-1/2          | 6            | 720-3149     | 721-3149       | 722-3149             |
| 1-13/16 | 3/4        | 2            | 4-1/4          | 4            | 720-3152     | 721-3152       | 722-3152             |
| 1-7/8   | 3/4        | 2            | 4-3/8          | 4            | 720-3150     | 721-3150       | 722-3150             |
| 1-7/8   | 3/4        | 2            | 4-1/2          | 6            | 720-3153     | 721-3153       | 722-3153             |
| 1-7/8   | 1-1/4      | 2            | 4-1/2          | 6            | 722-3154     | 720-3154       | 721-3154             |
| 1-7/8   | 1-1/4      | 2            | 4-1/2          | 8            | 722-3155     | 720-3155       | 721-3155             |
| 2       | 3/4        | 1-1/2        | 3-7/8          | 6            | 720-3185     | 721-3185       | 722-3185             |
| 2       | 3/4        | 2            | 4-1/4          | 4            | 720-3156     | 721-3156       | 722-3156             |
| 2       | 3/4        | 2            | 4-1/2          | 6            | 720-3157     | 721-3157       | 722-3157             |
| 2       | 3/4        | 2            | 4-1/2          | 8            | 720-3158     | 721-3158       | 722-3158             |
| 2       | 1-1/4      | 2            | 4-1/2          | 4            | 720-3161     | 721-3161       | 722-3161             |
| 2       | 1-1/4      | 2            | 4-1/2          | 6            | 720-3163     | 721-3163       | 722-3163             |
| 2       | 1-1/4      | 2            | 4-1/2          | 8            | 720-3159     | 721-3159       | 722-3159             |
| 2       | 1-1/4      | 2            | 5-1/2          | 6            | 720-3165     | 721-3165       | 722-3165             |
| 2       | 2          | 2            | 5-3/4          | 6            | 720-3166     | 721-3166       | 722-3166             |
| 2-1/4   | 1-1/4      | 2            | 4-1/2          | 6            | 720-3167     | 721-3167       | 722-3167             |
| 2-1/4   | 1-1/4      | 3            | 5-1/2          | 8            | 720-3169     | 721-3169       | 722-3169             |
| 2-1/2   | 2          | 4            | 7-5/8          | 6            | 720-3168     | 721-3168       | 722-3168             |

## Multiple Flute Single End Mills

- Designed for general purpose work including cam milling, die sinking and slot milling.
- Suitable for use in a wide range of ferrous and non-ferrous materials.
- Excellent for use in finishing operations.
- Multi-flute design allows for higher feed rates.



### Long Flute

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|---------------|--------------|----------------|----------------------|
| 1/4"  | 3/8"       | 1-1/4"       | 3-1/16"        | 4             | 720-3501     | 721-3501       | 722-3501             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4             | 720-3503     | 721-3503       | 722-3503             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4             | 720-3505     | 721-3505       | 722-3505             |
| 7/16  | 1/2        | 1-3/4        | 3-3/4          | 4             | 720-3507     | 721-3507       | 722-3507             |
| 1/2   | 1/2        | 2            | 4              | 4             | 720-3509     | 721-3509       | 722-3509             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4             | 720-3511     | 721-3511       | 722-3511             |
| 5/8   | 1/2        | 2-1/2        | 4-5/8          | 4             | 720-3512     | 721-3512       | 722-3512             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4             | 720-3513     | 721-3513       | 722-3513             |
| 3/4   | 1/2        | 3            | 5-1/4          | 4             | 720-3514     | 721-3514       | 722-3514             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 4             | 720-3515     | 721-3515       | 722-3515             |
| 7/8   | 3/4        | 3-1/2        | 5-3/4          | 4             | 720-3516     | 721-3516       | 722-3516             |
| 1     | 1          | 4            | 6-1/2          | 4             | 720-3517     | 721-3517       | 722-3517             |
| 1-1/8 | 1          | 4            | 6-1/2          | 6             | 720-3519     | 721-3519       | 722-3519             |
| 1-1/4 | 3/4        | 4            | 6-1/2          | 6             | 720-3520     | 721-3520       | 722-3520             |
| 1-1/4 | 1          | 4            | 6-1/2          | 6             | 720-3521     | 721-3521       | 722-3521             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 4             | 720-3523     | 721-3523       | 722-3523             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6             | 720-3525     | 721-3525       | 722-3525             |
| 1-3/8 | 1          | 4            | 6-1/2          | 6             | 720-3527     | 721-3527       | 722-3527             |
| 1-1/2 | 1          | 4            | 6-1/2          | 6             | 720-3529     | 721-3529       | 722-3529             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 4             | 720-3531     | 721-3531       | 722-3531             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6             | 720-3533     | 721-3533       | 722-3533             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 4             | 720-3534     | 721-3534       | 722-3534             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6             | 720-3535     | 721-3535       | 722-3535             |
| 2     | 1-1/4      | 4            | 6-1/2          | 4             | 720-3537     | 721-3537       | 722-3537             |
| 2     | 1-1/4      | 4            | 6-1/2          | 6             | 720-3539     | 721-3539       | 722-3539             |
| 2     | 1-1/4      | 4            | 6-1/2          | 8             | 720-3541     | 721-3541       | 722-3541             |
| 2-1/2 | 2          | 4            | 7-5/8          | 6             | 720-3542     | 721-3542       | 722-3542             |

### Extra Long Flute



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|---------------|--------------|----------------|----------------------|
| 1/4"  | 3/8"       | 1-3/4"       | 3-9/16"        | 4             | 720-3601     | 721-3601       | 722-3601             |
| 5/16  | 3/8        | 2            | 3-3/4          | 4             | 720-3603     | 721-3603       | 722-3603             |
| 3/8   | 3/8        | 2-1/2        | 4-1/4          | 4             | 720-3605     | 721-3605       | 722-3605             |
| 1/2   | 1/2        | 3            | 5              | 4             | 720-3607     | 721-3607       | 722-3607             |
| 5/8   | 5/8        | 4            | 6-1/8          | 4             | 720-3609     | 721-3609       | 722-3609             |
| 5/8   | 1/2        | 4            | 6-1/8          | 4             | 720-3610     | 721-3610       | 722-3610             |
| 3/4   | 3/4        | 4            | 6-1/4          | 4             | 720-3611     | 721-3611       | 722-3611             |
| 3/4   | 1/2        | 4            | 6-1/4          | 4             | 720-3612     | 721-3612       | 722-3612             |
| 7/8   | 7/8        | 7-1/4        | 7-1/4          | 4             | 720-3613     | 721-3613       | 722-3613             |
| 1     | 1          | 8-1/2        | 8-1/2          | 4             | 720-3615     | 721-3615       | 722-3615             |
| 1-1/4 | 1-1/4      | 8-1/2        | 8-1/2          | 6             | 720-3617     | 721-3617       | 722-3617             |
| 1-1/4 | 1-1/4      | 8-1/2        | 8-1/2          | 4             | 720-3618     | 721-3618       | 722-3618             |
| 1-1/2 | 1-1/4      | 8-1/2        | 8-1/2          | 6             | 720-3619     | 721-3619       | 722-3619             |
| 1-1/2 | 1-1/4      | 8-1/2        | 8-1/2          | 4             | 720-3620     | 721-3620       | 722-3620             |
| 1-1/2 | 1-1/4      | 10-9/16      | 10-9/16        | 6             | 720-3621     | 721-3621       | 722-3621             |

## Multiple Flute Single End Mills

**Four/Multiple-Flute End Mills**-Produce finer finishes and last longer than two or three-flute tools. Compared to two-flute tools, *four-flute end mills* remove metal faster and can be fed two to three times faster; *six-flute end mills* can be fed three times faster.

### Center Cutting, High Speed Steel

- Recommended for finishing operations in a wide range of ferrous and non-ferrous materials.
- Center cutting design allows for plunge milling into solid material at the beginning of a slotting operation.
- TiN coating increases surface hardness and resists abrasive wear.



### Regular Length

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|---------------|--------------|----------------|----------------------|
| 1/8"  | 3/8"       | 3/8"         | 2-5/16"        | 4             | 720-3201     | 721-3201       | 722-3201             |
| 3/16  | 3/8        | 1/2          | 2-3/8          | 4             | 720-3203     | 721-3203       | 722-3203             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4             | 720-3204     | 721-3204       | 722-3204             |
| 1/4   | 3/8        | 5/8          | 2-1/2          | 4             | 720-3205     | 721-3205       | 722-3205             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4             | 720-3207     | 721-3207       | 722-3207             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4             | 720-3209     | 721-3209       | 722-3209             |
| 7/16  | 3/8        | 13/16        | 2-1/2          | 4             | 720-3208     | 721-3208       | 722-3208             |
| 1/2   | 3/8        | 13/16        | 2-1/2          | 4             | 720-3210     | 721-3210       | 722-3210             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4             | 720-3211     | 721-3211       | 722-3211             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4             | 720-3213     | 721-3213       | 722-3213             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4             | 720-3214     | 721-3214       | 722-3214             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4             | 720-3215     | 721-3215       | 722-3215             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4             | 720-3216     | 721-3216       | 722-3216             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 4             | 720-3217     | 721-3217       | 722-3217             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 4             | 720-3218     | 721-3218       | 722-3218             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 4             | 720-3219     | 721-3219       | 722-3219             |
| 1     | 3/4        | 1-7/8        | 4-1/8          | 4             | 720-3220     | 721-3220       | 722-3220             |
| 1     | 1          | 2            | 4-1/2          | 4             | 720-3221     | 721-3221       | 722-3221             |
| 1-1/8 | 1          | 2            | 4-1/2          | 4             | 720-3223     | 721-3223       | 722-3223             |
| 1-1/8 | 1          | 2            | 4-1/2          | 6             | 720-3225     | 721-3225       | 722-3225             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 4             | 720-3227     | 721-3227       | 722-3227             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 4             | 720-3226     | 721-3226       | 722-3226             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6             | 720-3228     | 721-3228       | 722-3228             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 4             | 720-3229     | 721-3229       | 722-3229             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6             | 720-3230     | 721-3230       | 722-3230             |
| 7/8   | 7/8        | 5            | 7-1/4          | 4             | 720-3265     |                |                      |



### Extra Long Length

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|---------------|--------------|----------------|----------------------|
| 1/4"  | 3/8"       | 1-3/4"       | 3-1/2"         | 4             | 720-3401     | 721-3401       | 722-3401             |
| 1/4   | 3/8        | 1-3/4        | 3-9/16         | 4             | 720-3402     | 721-3402       | 722-3402             |
| 5/16  | 3/8        | 2            | 3-3/4          | 4             | 720-3403     | 721-3403       | 722-3403             |
| 3/8   | 3/8        | 2-1/2        | 4-1/4          | 4             | 720-3405     | 721-3405       | 722-3405             |
| 1/2   | 1/2        | 3            | 5"             | 4             | 720-3407     | 721-3407       | 722-3407             |
| 5/8   | 1/2        | 4            | 6-1/8          | 4             | 720-3410     | 721-3410       | 722-3410             |
| 5/8   | 5/8        | 4            | 6-1/8          | 4             | 720-3409     | 721-3409       | 722-3409             |
| 3/4   | 3/4        | 4            | 6-1/4          | 4             | 720-3411     | 721-3411       | 722-3411             |
| 3/4   | 1/2        | 4            | 6-1/4          | 4             | 720-3412     | 721-3412       | 722-3412             |
| 7/8   | 7/8        | 5            | 7-1/4          | 4             | 720-3413     | 721-3413       | 722-3413             |
| 1     | 1          | 6            | 8-1/2          | 4             | 720-3415     | 721-3415       | 722-3415             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 4             | 720-3417     | 721-3417       | 722-3417             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6             | 720-3418     | 721-3418       | 722-3418             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 4             | 720-3419     | 721-3419       | 722-3419             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6             | 720-3416     | 721-3416       | 722-3416             |
| 1-1/2 | 1-1/4      | 8            | 10-9/16        | 6             | 720-3400     | 721-3400       | 722-3400             |

## Multiple Flute End Mills

### Multiple Flute Single End Mills continued

Center Cutting, HSS

Long Length



|       | Shank | Flute  | Overall | No. of | M2        | M2Al      | TiN-Coated |
|-------|-------|--------|---------|--------|-----------|-----------|------------|
| Size  | Dia.  | Length | Length  | Flutes | Order No. | Order No. | Order No.  |
| 1/4"  | 3/8"  | 1-1/4" | 3-1/16" | 4      | 720-3301  | 721-3301  | 722-3301   |
| 5/16  | 3/8   | 1-3/8  | 3-1/8   | 4      | 720-3303  | 721-3303  | 722-3303   |
| 3/8   | 3/8   | 1-1/2  | 3-1/4   | 4      | 720-3305  | 721-3305  | 722-3305   |
| 7/16  | 1/2   | 1-3/4  | 3-3/4   | 4      | 720-3306  | 721-3306  | 722-3306   |
| 1/2   | 1/2   | 2      | 4       | 4      | 720-3307  | 721-3307  | 722-3307   |
| 5/8   | 1/2   | 2-1/2  | 4-5/8   | 4      | 720-3308  | 721-3308  | 722-3308   |
| 5/8   | 5/8   | 2-1/2  | 4-5/8   | 4      | 720-3309  | 721-3309  | 722-3309   |
| 5/8   | 5/8   | 3      | 5-1/8   | 4      | 720-3311  | 721-3311  | 722-3311   |
| 3/4   | 3/4   | 2      | 4-1/4   | 4      | 720-3315  | 721-3315  | 722-3315   |
| 3/4   | 3/4   | 3      | 5-1/4   | 4      | 720-3313  | 721-3313  | 722-3313   |
| 3/4   | 1/2   | 3      | 5-1/4   | 4      | 720-3318  | 721-3318  | 722-3318   |
| 3/4   | 3/4   | 2      | 4-1/4   | 6      | 720-3317  | 721-3317  | 722-3317   |
| 7/8   | 7/8   | 3-1/2  | 5-3/4   | 4      | 720-3319  | 721-3319  | 722-3319   |
| 1     | 1     | 3      | 5-1/2   | 4      | 720-3321  | 721-3321  | 722-3321   |
| 1     | 3/4   | 4      | 6-1/2   | 4      | 720-3322  | 721-3322  | 722-3322   |
| 1     | 1     | 4      | 6-1/2   | 4      | 720-3325  | 721-3325  | 722-3325   |
| 1     | 1     | 3      | 5-1/2   | 6      | 720-3323  | 721-3323  | 722-3323   |
| 1-1/8 | 1     | 4      | 6-1/2   | 6      | 720-3324  | 721-3324  | 722-3324   |
| 1-1/8 | 3/4   | 4      | 6-1/2   | 6      | 720-3326  | 721-3326  | 722-3326   |
| 1-1/4 | 1-1/4 | 3      | 5-1/2   | 4      | 720-3327  | 721-3327  | 722-3327   |
| 1-1/4 | 1-1/4 | 4      | 6-1/2   | 4      | 720-3331  | 721-3331  | 722-3331   |
| 1-1/4 | 1-1/4 | 3      | 5-1/2   | 6      | 720-3329  | 721-3329  | 722-3329   |
| 1-1/4 | 1     | 4      | 6-1/2   | 6      | 720-3328  | 721-3328  | 722-3328   |
| 1-1/4 | 3/4   | 4      | 6-1/2   | 6      | 720-3330  | 721-3330  | 722-3330   |
| 1-1/4 | 1-1/4 | 4      | 6-1/2   | 6      | 720-3332  | 721-3332  | 722-3332   |
| 1-3/8 | 1     | 4      | 6-1/2   | 6      | 720-3334  | 721-3334  | 722-3334   |
| 1-1/2 | 1-1/4 | 3      | 5-1/2   | 4      | 720-3333  | 721-3333  | 722-3333   |
| 1-1/2 | 1-1/4 | 4      | 6-1/2   | 4      | 720-3338  | 721-3338  | 722-3338   |
| 1-1/2 | 1-1/4 | 3      | 5-1/2   | 6      | 720-3335  | 721-3335  | 722-3335   |
| 1-1/2 | 1-1/4 | 4      | 6-1/2   | 6      | 720-3336  | 721-3336  | 722-3336   |
| 1-1/2 | 1     | 4      | 6-1/2   | 6      | 720-3339  | 721-3339  | 722-3339   |
| 1-3/4 | 1-1/4 | 3      | 5-1/2   | 4      | 720-3337  | 721-3337  | 722-3337   |
| 1-3/4 | 1-1/4 | 4      | 6-1/2   | 6      | 720-3340  | 721-3340  | 722-3340   |
| 2     | 1-1/4 | 4      | 6-1/2   | 4      | 720-3342  | 721-3342  | 722-3342   |
| 2     | 1-1/4 | 4      | 6-1/2   | 6      | 720-3344  | 721-3344  | 722-3344   |
| 2     | 1-1/4 | 4      | 6-1/2   | 8      | 720-3346  | 721-3346  | 722-3346   |
| 2-1/2 | 2     | 4      | 7-5/8   | 6      | 720-3348  | 721-3348  | 722-3348   |

### Multiple Flute Heavy Duty End Mills

- Designed for rough cutting applications in a wide range of materials.
- Positive lock shank provides the grip needed to withstand the high torque generated.

Large Diameter, Positive Lock



| ShankFlute OAL |       |    |        |     | M2        |       | Shank FluteOAL |    |        |     |           | M2    |       |    |        |     |           |
|----------------|-------|----|--------|-----|-----------|-------|----------------|----|--------|-----|-----------|-------|-------|----|--------|-----|-----------|
| Size           | Dia.  | L  | 5-3/4" | Flu | Order No. | Size  | Dia.           | L  | 5-3/4" | Flu | Order No. | Size  | Dia.  | L  | 5-3/4" | Flu | Order No. |
| 2"             | 2"    | 2" | 6-3/4  | 4   | 720-3910  | 2-1/2 | 2-1/2          | 4  | 7-3/4  | 4   | 720-3927  | 2-1/2 | 2-1/2 | 4  | 7-3/4  | 4   | 720-3928  |
| 2              | 2     | 3  | 7-3/4  | 4   | 720-3912  | 2-1/2 | 2-1/2          | 4  | 7-3/4  | 6   | 720-3929  | 2-1/2 | 2-1/2 | 6  | 9-3/4  | 4   | 720-3930  |
| 2              | 2     | 4  | 7-3/4  | 4   | 720-3914  | 2-1/2 | 2-1/2          | 6  | 9-3/4  | 4   | 720-3931  | 2-1/2 | 2-1/2 | 6  | 9-3/4  | 6   | 720-3932  |
| 2              | 2     | 4  | 9-3/4  | 6   | 720-3916  | 2-1/2 | 2-1/2          | 6  | 9-3/4  | 6   | 720-3933  | 2-1/2 | 2-1/2 | 8  | 11-3/4 | 4   | 720-3934  |
| 2              | 2     | 6  | 9-3/4  | 4   | 720-3918  | 2-1/2 | 2-1/2          | 8  | 11-3/4 | 4   | 720-3935  | 2-1/2 | 2-1/2 | 8  | 11-3/4 | 6   | 720-3936  |
| 2              | 2     | 6  | 11-3/4 | 6   | 720-3920  | 2-1/2 | 2-1/2          | 8  | 11-3/4 | 6   | 720-3937  | 2-1/2 | 2-1/2 | 10 | 13-3/4 | 4   | 720-3938  |
| 2              | 2     | 8  | 11-3/4 | 4   | 720-3921  | 2-1/2 | 2-1/2          | 10 | 13-3/4 | 4   | 720-3939  | 2-1/2 | 2-1/2 | 10 | 13-3/4 | 6   | 720-3940  |
| 2              | 2     | 8  | 13-3/4 | 6   | 720-3922  | 2-1/2 | 2-1/2          | 10 | 13-3/4 | 6   | 720-3941  | 3     | 2-1/2 | 4  | 8      | 4   | 720-3942  |
| 2              | 2     | 10 | 13-3/4 | 4   | 720-3923  | 3     | 2-1/2          | 4  | 8      | 4   | 720-3943  | 3     | 2-1/2 | 4  | 8      | 6   | 720-3944  |
| 2              | 2     | 10 | 15-3/4 | 6   | 720-3924  | 3     | 2-1/2          | 6  | 10     | 4   | 720-3945  | 3     | 2-1/2 | 6  | 10     | 4   | 720-3946  |
| 2              | 2     | 12 | 15-3/4 | 4   | 720-3925  | 3     | 2-1/2          | 6  | 10     | 6   | 720-3947  | 3     | 2-1/2 | 8  | 12     | 4   | 720-3948  |
| 2              | 2     | 12 | 7-3/4  | 6   | 720-3926  | 3     | 2-1/2          | 8  | 12     | 4   | 720-3949  | 3     | 2-1/2 | 8  | 12     | 6   | 720-3950  |
| 3              | 2-1/2 | 10 | 14     | 4   | 720-3941  | 3     | 2-1/2          | 8  | 12     | 4   | 720-3951  | 3     | 2-1/2 | 8  | 12     | 6   | 720-3952  |
| 3              | 2-1/2 | 10 | 14     | 6   | 720-3942  | 3     | 2-1/2          | 8  | 12     | 6   | 720-3953  |       |       |    |        |     |           |

### M42 8% Cobalt Multiple Flute Single End Mills

- Designed for general purpose work including cam milling, die sinking and slot milling.
- Suitable for use in a wide range of ferrous and non-ferrous materials.
- Excellent for use in finishing operations.
- Multi-flute design allows for higher feed rates.

**Four/Multiple-Flute End Mills**—Produce finer finishes and last longer than two or three-flute tools. Compared to two-flute tools, *four-flute end mills* remove metal faster and can be fed two to three times faster; *six-flute end mills* can be fed three times faster.



Regular Length

| Shank Flute |      |        |         | No.of |           | Shank Flute |       |        |        | No.of |           |
|-------------|------|--------|---------|-------|-----------|-------------|-------|--------|--------|-------|-----------|
| Size        | Dia. | Length | OAL     | Flute | Order No. | Size        | Dia.  | Length | OAL    | Flute | Order No. |
| 7/64"       | 3/8" | 3/8"   | 2-5/16" | 4     | 723-3001  | 1"          | 1/2"  | 1-7/8" | 3-7/8" | 4"    | 723-3098  |
| 1/8         | 3/8  | 3/8    | 2-5/16  | 4     | 723-3003  | 1           | 1/2   | 1-7/8  | 4      | 4     | 723-3099  |
| 9/64        | 3/8  | 3/8    | 2-5/16  | 4     | 723-3005  | 1           | 1/2   | 1-7/8  | 4      | 6     | 723-3100  |
| 5/32        | 3/8  | 3/8    | 2-5/16  | 4     | 723-3020  | 1           | 5/8   | 1-7/8  | 4      | 6     | 723-3101  |
| 5/32        | 3/8  | 7/16   | 2-3/8   | 4     | 723-3007  | 1           | 5/8   | 1-7/8  | 4      | 4     | 723-3102  |
| 11/64       | 3/8  | 7/16   | 2-3/8   | 4     | 723-3009  | 1           | 3/4   | 1-7/8  | 4      | 6     | 723-3106  |
| 11/64       | 3/8  | 1/2    | 2-5/16  | 4     | 723-3022  | 1           | 3/4   | 1-7/8  | 4-1/8  | 4     | 723-3103  |
| 3/16        | 3/8  | 1/2    | 2-3/8   | 4     | 723-3011  | 1           | 7/8   | 1-7/8  | 4-1/8  | 4     | 723-3105  |
| 13/64       | 3/8  | 1/2    | 2-3/8   | 4     | 723-3013  | 1           | 3/4   | 2      | 4-1/2  | 4     | 723-3104  |
| 7/32        | 3/8  | 9/16   | 2-1/2   | 4     | 723-3015  | 1           | 1     | 2      | 4-1/2  | 4     | 723-3107  |
| 7/32        | 3/8  | 5/8    | 2-7/16  | 4     | 723-3024  | 1           | 1     | 2      | 4-1/2  | 6     | 723-3108  |
| 15/64       | 3/8  | 9/16   | 2-1/2   | 4     | 723-3017  | 1-1/16      | 3/4   | 2      | 4-1/4  | 6     | 723-3109  |
| 1/4         | 3/8  | 5/8    | 2-7/16  | 4     | 723-3026  | 1-1/8       | 3/4   | 1-1/2  | 3-7/8  | 6     | 723-3171  |
| 1/4         | 3/8  | 5/8    | 2-1/2   | 4     | 723-3019  | 1-1/8       | 3/4   | 2      | 4-1/8  | 6     | 723-3110  |
| 17/64       | 3/8  | 5/8    | 2-1/2   | 4     | 723-3021  | 1-1/8       | 3/4   | 2      | 4-1/4  | 4     | 723-3112  |
| 9/32        | 3/8  | 11/16  | 2-1/2   | 4     | 723-3023  | 1-1/8       | 3/4   | 2      | 4-1/4  | 6     | 723-3111  |
| 19/64       | 3/8  | 11/16  | 2-1/2   | 4     | 723-3025  | 1-1/8       | 7/8   | 2      | 4-1/4  | 6     | 723-3113  |
| 5/16        | 3/8  | 3/4    | 2-1/2   | 4     | 723-3027  | 1-1/8       | 1     | 2      | 4-1/4  | 4     | 723-3114  |
| 21/64       | 3/8  | 3/4    | 2-1/2   | 4     | 723-3029  | 1-1/8       | 1     | 2      | 4-1/2  | 6     | 723-3115  |
| 11/32       | 3/8  | 3/4    | 2-1/2   | 4     | 723-3031  | 1-1/8       | 3/4   | 2      | 4-1/2  | 6     | 723-3173  |
| 23/64       | 3/8  | 3/4    | 2-1/2   | 4     | 723-3033  | 1-1/8       | 1     | 2-5/8  | 4-1/2  | 4     | 723-3116  |
| 3/8         | 3/8  | 3/4    | 2-1/2   | 4     | 723-3035  | 1-3/16      | 3/4   | 2      | 4-1/4  | 6     | 723-3117  |
| 13/32       | 3/8  | 1      | 2-11/16 | 4     | 723-3037  | 1-3/16      | 1     | 2      | 4-1/4  | 6     | 723-3118  |
| 7/16        | 3/8  | 1      | 2-11/16 | 4     | 723-3039  | 1-1/4       | 3/4   | 2      | 4-1/4  | 6     | 723-3119  |
| 15/32       | 3/8  | 1      | 2-11/16 | 4     | 723-3042  | 1-1/4       | 7/8   | 2      | 4-1/4  | 4     | 723-3120  |
| 15/32       | 1/2  | 1-1/4  | 3-1/4   | 4     | 723-3041  | 1-1/4       | 7/8   | 2      | 4-1/4  | 6     | 723-3121  |
| 1/2         | 3/8  | 1      | 2-11/16 | 4     | 723-3043  | 1-1/4       | 1     | 2      | 4-1/2  | 6     | 723-3123  |
| 1/2         | 1/2  | 1-1/4  | 3-1/4   | 4     | 723-3045  | 1-1/4       | 1-1/4 | 2      | 4-1/2  | 4     | 723-3124  |
| 1/2         | 1/2  | 1-1/4  | 3-1/4   | 6     | 723-3046  | 1-1/4       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3125  |
| 17/32       | 1/2  | 1-3/8  | 3-3/8   | 4     | 723-3047  | 1-1/4       | 1-1/4 | 2      | 4-1/2  | 4     | 723-3126  |
| 9/16        | 1/2  | 1-3/8  | 3-3/8   | 4     | 723-3049  | 1-1/4       | 1     | 4      | 6-1/2  | 6     | 723-3122  |
| 19/32       | 1/2  | 1-3/8  | 3-3/8   | 4     | 723-3051  | 1-5/16      | 3/4   | 2      | 4-1/2  | 6     | 723-3127  |
| 5/8         | 1/2  | 1-3/8  | 3-3/8   | 4     | 723-3053  | 1-3/8       | 3/4   | 2      | 4-1/4  | 6     | 723-3128  |
| 5/8         | 5/8  | 1-5/8  | 3-1/4   | 6     | 723-3056  | 1-3/8       | 3/4   | 2      | 4-1/2  | 6     | 723-3129  |
| 5/8         | 5/8  | 1-5/8  | 3-3/4   | 4     | 723-3055  | 1-3/8       | 1     | 2      | 4-1/2  | 6     | 723-3131  |
| 21/32       | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3057  | 1-3/8       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3130  |
| 11/16       | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3059  | 1-7/16      | 3/4   | 2      | 4-1/2  | 6     | 723-3133  |
| 11/16       | 5/8  | 1-5/8  | 3-3/4   | 4     | 723-3061  | 1-1/2       | 3/4   | 2      | 4-1/2  | 6     | 723-3135  |
| 23/32       | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3063  | 1-1/2       | 1     | 2      | 4-1/2  | 4     | 723-3136  |
| 3/4         | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3065  | 1-1/2       | 1     | 2      | 4-1/2  | 6     | 723-3137  |
| 3/4         | 5/8  | 1-5/8  | 3-5/8   | 4     | 723-3066  | 1-1/2       | 1-1/4 | 2      | 4-1/2  | 4     | 723-3141  |
| 3/4         | 5/8  | 1-5/8  | 3-3/4   | 4     | 723-3067  | 1-1/2       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3139  |
| 3/4         | 3/4  | 1-5/8  | 3-3/4   | 4     | 723-3069  | 1-5/8       | 3/4   | 1-5/8  | 3-7/8  | 6     | 723-3142  |
| 3/4         | 3/4  | 1-5/8  | 3-3/4   | 6     | 723-3070  | 1-5/8       | 3/4   | 2      | 4-1/2  | 6     | 723-3143  |
| 25/32       | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3071  | 1-5/8       | 1-1/4 | 2      | 4-1/2  | 4     | 723-3144  |
| 13/16       | 5/8  | 1-7/8  | 4       | 4     | 723-3074  | 1-5/8       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3145  |
| 13/16       | 5/8  | 1-7/8  | 4       | 6     | 723-3073  | 1-3/4       | 3/4   | 1-1/2  | 3-7/8  | 6     | 723-3172  |
| 13/16       | 3/4  | 1-7/8  | 4-1/8   | 4     | 723-3075  | 1-3/4       | 3/4   | 2      | 4-1/2  | 4     | 723-3146  |
| 27/32       | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3077  | 1-3/4       | 3/4   | 2      | 4-1/2  | 6     | 723-3147  |
| 7/8         | 1/2  | 1-5/8  | 3-5/8   | 4     | 723-3079  | 1-3/4       | 1-1/4 | 2      | 4-1/2  | 4     | 723-3151  |
| 7/8         | 1/2  | 1-5/8  | 3-5/8   | 6     | 723-3081  | 1-3/4       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3149  |
| 7/8         | 1/2  | 1-7/8  | 4       | 4     | 723-3080  | 1-13/16     | 3/4   | 2      | 4-1/4  | 4     | 723-3152  |
| 7/8         | 1/2  | 1-7/8  | 4       | 6     | 723-3082  | 1-7/8       | 3/4   | 2      | 4-1/2  | 6     | 723-3153  |
| 7/8         | 5/8  | 1-7/8  | 4       | 6     | 723-3083  | 1-7/8       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3154  |
| 7/8         | 3/4  | 1-7/8  | 4-1/8   | 4     | 723-3085  | 1-7/8       | 1-1/4 | 2      | 4-1/2  | 8     | 723-3155  |
| 7/8         | 3/4  | 1-7/8  | 4-1/8   | 6     | 723-3086  | 2           | 3/4   | 2      | 4-1/2  | 6     | 723-3157  |
| 7/8         | 7/8  | 1-7/8  | 4-1/8   | 4     | 723-3087  | 2           | 3/4   | 2      | 4-1/2  | 8     | 723-3158  |
| 29/32       | 1/2  | 1-7/8  | 3-7/8   | 4     | 723-3089  | 2           | 1-1/4 | 2      | 4-1/2  | 4     | 723-3161  |
| 15/16       | 1/2  | 1-7/8  | 4       | 4     | 723-3090  | 2           | 1-1/4 | 2      | 4-1/2  | 6     | 723-3163  |
| 15/16       | 5/8  | 1-7/8  | 4       | 6     | 723-3091  | 2           | 1-1/4 | 2      | 4-1/2  | 8     | 723-3159  |
| 15/16       | 5/8  | 1-7/8  | 4-1/8   | 6     | 723-3092  | 2           | 1-1/4 | 2      | 5-1/2  | 6     | 723-3165  |
| 15/16       | 3/4  | 1-7/8  | 4-1/8   | 4     | 723-3093  | 2           | 2     | 2      | 5-3/4  | 6     | 723-3166  |
| 15/16       | 3/4  | 1-7/8  | 4-1/8   | 6     | 723-3170  | 2-1/4       | 1-1/4 | 2      | 4-1/2  | 6     | 723-3167  |
| 15/16       | 7/8  | 1-7/8  | 4-1/8   | 4     | 723-3095  | 2-1/4       | 1-1/4 | 3      | 5-1/2  | 8     | 723-3169  |
| 15/16       | 7/8  | 1-7/8  | 4-1/8   | 6     | 723-3096  | 2-1/2       | 2     | 4      | 7-5/8  | 6     | 723-3168  |
| 31/32       | 1/2  | 1-7/8  | 3-7/8   | 4     | 723-3097  |             |       |        |        |       |           |

### M42 Co. Multiple Flute Single End Mills

M-42 cobalt end mills are more economical than high speed steel end mills. They stay sharper longer to allow more cuts between grinds and reduce downtime to give you lower cost per machined workpiece!



#### Long Flute

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | Order No. |
|-------|------------|--------------|----------------|---------------|-----------|
| 1/4"  | 3/8"       | 1-1/4"       | 3-1/16"        | 4             | 723-3501  |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4             | 723-3503  |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4             | 723-3505  |
| 7/16  | 1/2        | 1-3/4        | 3-3/4          | 4             | 723-3507  |
| 1/2   | 1/2        | 2            | 4              | 4             | 723-3509  |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4             | 723-3511  |
| 5/8   | 1/2        | 2-1/2        | 4-5/8          | 4             | 723-3512  |
| 3/4   | 3/4        | 3            | 5-1/4          | 4             | 723-3513  |
| 3/4   | 1/2        | 3            | 5-1/4          | 4             | 723-3514  |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 4             | 723-3515  |
| 7/8   | 3/4        | 3-1/2        | 5-3/4          | 4             | 723-3516  |
| 1     | 1          | 4            | 6-1/2          | 4             | 723-3517  |
| 1-1/8 | 1          | 4            | 6-1/2          | 6             | 723-3519  |
| 1-1/4 | 3/4        | 4            | 6-1/2          | 6             | 723-3520  |
| 1-1/4 | 1          | 4            | 6-1/2          | 6             | 723-3521  |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 4             | 723-3523  |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6             | 723-3525  |
| 1-3/8 | 1          | 4            | 6-1/2          | 6             | 723-3527  |
| 1-1/2 | 1          | 4            | 6-1/2          | 6             | 723-3529  |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 4             | 723-3531  |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6             | 723-3533  |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 4             | 723-3534  |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6             | 723-3535  |
| 2     | 1-1/4      | 4            | 6-1/2          | 4             | 723-3537  |
| 2     | 1-1/4      | 4            | 6-1/2          | 6             | 723-3539  |
| 2     | 1-1/4      | 4            | 6-1/2          | 8             | 723-3541  |
| 2-1/2 | 2          | 4            | 7-5/8          | 6             | 723-3542  |

#### Extra Long Flute



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | Order No. |
|-------|------------|--------------|----------------|---------------|-----------|
| 1/4"  | 3/8"       | 1-3/4"       | 3-9/16"        | 4             | 723-3601  |
| 5/16  | 3/8        | 2            | 3-3/4          | 4             | 723-3603  |
| 3/8   | 3/8        | 2-1/2        | 4-1/4          | 4             | 723-3605  |
| 1/2   | 1/2        | 3            | 5              | 4             | 723-3607  |
| 5/8   | 5/8        | 4            | 6-1/8          | 4             | 723-3609  |
| 5/8   | 1/2        | 4            | 6-1/8          | 4             | 723-3610  |
| 3/4   | 3/4        | 4            | 6-1/4          | 4             | 723-3611  |
| 3/4   | 1/2        | 4            | 6-1/4          | 4             | 723-3612  |
| 7/8"  | 7/8"       | 5"           | 7-1/4"         | 4             | 723-3613  |
| 1     | 1          | 6            | 8-1/2          | 4             | 723-3615  |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6             | 723-3617  |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 4             | 723-3618  |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6             | 723-3619  |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 4             | 723-3620  |
| 1-1/2 | 1-1/4      | 8            | 10-9/16        | 6             | 723-3621  |

### M42 8% Co. Multiple Flute Single End Mills

#### Center Cutting

- Suitable for use in a wide range of ferrous and non-ferrous materials.
- Excellent for use in finishing operations.
- Multi-flute design allows for higher feed rates.
- Center cutting is perfect for jobs that require drilling or plunge cutting to start a slot and for spot facing and counterboring.



#### Extra Long Length

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | Order No. |
|-------|------------|--------------|----------------|---------------|-----------|
| 1/4"  | 3/8"       | 1-3/4"       | 3-1/2"         | 4             | 723-3401  |
| 1/4   | 3/8        | 1-3/4        | 3-9/16         | 4             | 723-3402  |
| 5/16  | 3/8        | 2            | 3-3/4          | 4             | 723-3403  |
| 3/8   | 3/8        | 2-1/2        | 4-1/4          | 4             | 723-3405  |
| 1/2   | 1/2        | 3            | 5"             | 4             | 723-3407  |
| 5/8   | 1/2        | 4            | 6-1/8          | 4             | 723-3410  |
| 5/8   | 5/8        | 4            | 6-1/8          | 4             | 723-3409  |
| 3/4   | 3/4        | 4            | 6-1/4          | 4             | 723-3411  |
| 3/4   | 1/2        | 4            | 6-1/4          | 4             | 723-3412  |
| 7/8   | 7/8        | 5            | 7-1/4          | 4             | 723-3413  |
| 1     | 1          | 6            | 8-1/2          | 4             | 723-3414  |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 4             | 723-3425  |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6             | 723-3417  |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 4             | 723-3419  |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6             | 723-3416  |
| 1-1/2 | 1-1/4      | 8            | 10-9/16        | 6             | 723-3420  |

#### Long Length



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | Order No. |
|-------|------------|--------------|----------------|---------------|-----------|
| 1/4"  | 3/8"       | 1-1/4"       | 3-1/16"        | 4             | 723-3301  |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4             | 723-3303  |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4             | 723-3305  |
| 7/16  | 1/2        | 1-3/4        | 3-3/4          | 4             | 723-3306  |
| 1/2   | 1/2        | 2            | 4              | 4             | 723-3307  |
| 5/8   | 1/2        | 2-1/2        | 4-5/8          | 4             | 723-3308  |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4             | 723-3309  |
| 5/8   | 5/8        | 3            | 5-1/8          | 4             | 723-3311  |
| 3/4   | 3/4        | 2            | 4-1/4          | 4             | 723-3315  |
| 3/4   | 3/4        | 3            | 5-1/4          | 4             | 723-3313  |
| 3/4   | 1/2        | 3            | 5-1/4          | 4             | 723-3318  |
| 3/4   | 3/4        | 2            | 4-1/4          | 6             | 723-3317  |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 4             | 723-3319  |
| 1     | 1          | 3            | 5-1/2          | 4             | 723-3321  |
| 1     | 3/4        | 4            | 6-1/2          | 4             | 723-3322  |
| 1     | 1          | 4            | 6-1/2          | 4             | 723-3325  |
| 1     | 1          | 3            | 5-1/2          | 6             | 723-3323  |
| 1-1/8 | 1          | 4            | 6-1/2          | 6             | 723-3324  |
| 1-1/8 | 3/4        | 4            | 6-1/2          | 6             | 723-3326  |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 4             | 723-3327  |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 4             | 723-3331  |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6             | 723-3329  |
| 1-1/4 | 1          | 4            | 6-1/2          | 6             | 723-3328  |
| 1-1/4 | 3/4        | 4            | 6-1/2          | 6             | 723-3330  |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6             | 723-3332  |
| 1-3/8 | 1          | 4            | 6-1/2          | 6             | 723-3334  |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 4             | 723-3333  |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 4             | 723-3338  |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6             | 723-3335  |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6             | 723-3336  |
| 1-1/2 | 1          | 4            | 6-1/2          | 6             | 723-3339  |
| 1-3/4 | 1-1/4      | 3            | 5-1/2          | 4             | 723-3337  |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6             | 723-3340  |
| 2     | 1-1/4      | 4            | 6-1/2          | 4             | 723-3342  |
| 2     | 1-1/4      | 4            | 6-1/2          | 6             | 723-3344  |
| 2     | 1-1/4      | 4            | 6-1/2          | 8             | 723-3346  |
| 2-1/2 | 2          | 4            | 7-5/8          | 6             | 723-3348  |

## M42 8% Co. Multiple Flute Single End Mills

### Center Cutting

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- Excellent for use in finishing operations.
- Multi-flute design allows for higher feed rates.
- Center cutting is perfect for jobs that require drilling or plunge cutting to start a slot and for spot facing and counterboring.



### Regular Length

| Size   | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|--------|------------|--------------|----------------|--------------|-----------|
| 1/8"   | 3/8"       | 3/8"         | 2-5/16"        | 4            | 723-3201  |
| 3/16   | 3/8        | 1/2          | 2-3/8          | 4            | 723-3203  |
| 1/4    | 3/8        | 5/8          | 2-7/16         | 4            | 723-3204  |
| 1/4    | 3/8        | 5/8          | 2-1/2          | 4            | 723-3205  |
| 5/16   | 3/8        | 3/4          | 2-1/2          | 4            | 723-3207  |
| 3/8    | 3/8        | 3/4          | 2-1/2          | 4            | 723-3209  |
| 7/16   | 3/8        | 13/16        | 2-1/2          | 4            | 723-3208  |
| 7/16   | 3/8        | 1            | 2-11/16        | 4            | 723-3901  |
| 1/2    | 3/8        | 13/16        | 2-1/2          | 4            | 723-3210  |
| 1/2    | 3/8        | 1            | 2-11/16        | 4            | 723-3903  |
| 1/2    | 1/2        | 1-1/4        | 3-1/4          | 4            | 723-3211  |
| 9/16   | 1/2        | 1-1/8        | 3-3/8          | 4            | 723-3214  |
| 5/8    | 1/2        | 1-3/8        | 3-3/8          | 4            | 723-3905  |
| 5/8    | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-3213  |
| 11/16  | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-3215  |
| 3/4    | 1/2        | 1-5/8        | 3-5/8          | 4            | 723-3907  |
| 3/4    | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-3216  |
| 3/4    | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-3217  |
| 13/16  | 3/4        | 1-7/8        | 4-1/8          | 4            | 723-3909  |
| 7/8    | 5/8        | 1-1/2        | 3-5/8          | 4            | 723-3911  |
| 7/8    | 1/2        | 1-5/8        | 3-5/8          | 4            | 723-3913  |
| 7/8    | 1/2        | 1-7/8        | 4              | 4            | 723-3914  |
| 7/8    | 5/8        | 1-7/8        | 4              | 4            | 723-3912  |
| 7/8    | 3/4        | 1-7/8        | 4-1/8          | 4            | 723-3218  |
| 7/8    | 7/8        | 1-7/8        | 4-1/8          | 4            | 723-3219  |
| 15/16  | 3/4        | 1-7/8        | 4-1/8          | 4            | 723-3916  |
| 15/16  | 7/8        | 1-7/8        | 4-1/8          | 4            | 723-3915  |
| 1      | 1/2        | 1-7/8        | 3-7/8          | 4            | 723-3917  |
| 1      | 5/8        | 1-7/8        | 4              | 4            | 723-3920  |
| 1      | 5/8        | 1-7/8        | 4              | 6            | 723-3919  |
| 1      | 1/2        | 1-7/8        | 4-1/8          | 4            | 723-3918  |
| 1      | 3/4        | 1-7/8        | 4-1/8          | 4            | 723-3220  |
| 1      | 1          | 2            | 4-1/2          | 4            | 723-3221  |
| 1      | 1          | 3            | 5-1/2          | 4            | 723-3222  |
| 1-1/16 | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-3921  |
| 1-1/16 | 3/4        | 1-5/8        | 3-7/8          | 6            | 723-3922  |
| 1-1/8  | 3/4        | 1-1/2        | 3-7/8          | 6            | 723-3924  |
| 1-1/8  | 7/8        | 2            | 4-1/4          | 6            | 723-3923  |
| 1-1/8  | 1          | 2            | 4-1/2          | 4            | 723-3223  |
| 1-1/8  | 1          | 2            | 4-1/2          | 6            | 723-3225  |
| 1-3/16 | 3/4        | 1-1/2        | 3-7/8          | 6            | 723-3926  |
| 1-3/16 | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-3925  |
| 1-1/4  | 3/4        | 1-1/2        | 3-7/8          | 6            | 723-3928  |
| 1-1/4  | 1-1/4      | 2            | 4-1/2          | 4            | 723-3227  |
| 1-1/4  | 1          | 2            | 4-1/2          | 6            | 723-3927  |
| 1-1/4  | 1-1/4      | 2            | 4-1/2          | 6            | 723-3228  |
| 1-1/4  | 1-1/4      | 3            | 5-1/2          | 4            | 723-3226  |
| 1-5/16 | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-3929  |
| 1-5/16 | 3/4        | 2            | 4-3/8          | 6            | 723-3930  |
| 1-3/8  | 3/4        | 2            | 4-3/8          | 6            | 723-3932  |
| 1-3/8  | 1          | 2            | 4-1/2          | 6            | 723-3931  |
| 1-3/8  | 1-1/4      | 2            | 4-1/2          | 4            | 723-3933  |
| 1-7/16 | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-3935  |
| 1-7/16 | 3/4        | 2            | 4-3/8          | 6            | 723-3936  |
| 1-1/2  | 3/4        | 2            | 4-3/8          | 6            | 723-3938  |
| 1-1/2  | 1-1/4      | 2            | 4-1/2          | 4            | 723-3229  |
| 1-1/2  | 1          | 2            | 4-1/2          | 6            | 723-3937  |
| 1-1/2  | 1-1/4      | 2            | 4-1/2          | 6            | 723-3230  |
| 1-5/8  | 3/4        | 1-5/8        | 4-1/8          | 4            | 723-3939  |
| 1-5/8  | 3/4        | 2            | 4-1/2          | 6            | 723-3940  |
| 1-5/8  | 1-1/4      | 2            | 4-1/2          | 6            | 723-3941  |
| 1-3/4  | 1-1/4      | 2            | 4-1/2          | 4            | 723-3943  |
| 1-3/4  | 3/4        | 2            | 4-1/2          | 6            | 723-3944  |
| 1-3/4  | 1-1/4      | 2            | 4-1/2          | 6            | 723-3231  |
| 1-7/8  | 3/4        | 2            | 4-3/8          | 6            | 723-3951  |
| 1-7/8  | 1-1/4      | 2            | 4-3/8          | 6            | 723-3953  |
| 2      | 3/4        | 2            | 4-1/2          | 6            | 723-3955  |
| 2      | 1-1/4      | 2            | 4-1/2          | 4            | 723-3947  |
| 2      | 1-1/4      | 2            | 4-1/2          | 6            | 723-3239  |
| 2      | 1-1/4      | 2            | 4-1/2          | 8            | 723-3945  |

## 4 Flute Double End Mills

### High Speed Steel

- Recommended for finishing operations in a wide range of ferrous and non-ferrous materials.
- Multiple flutes generate higher surface finish than 2 flute end mills.
- More economical in production milling than single end mills.



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|
| 7/64" | 3/8"       | 3/8"         | 3-1/16"        | 720-4002     | 721-4002       | 722-4002             |
| 1/8   | 3/8        | 3/8          | 3-1/16         | 720-4004     | 721-4004       | 722-4004             |
| 9/64  | 3/8        | 7/16         | 3-1/8          | 720-4006     | 721-4006       | 722-4006             |
| 5/32  | 3/8        | 7/16         | 3-1/8          | 720-4008     | 721-4008       | 722-4008             |
| 11/64 | 3/8        | 7/16         | 3-1/8          | 720-4011     | 721-4011       | 722-4011             |
| 11/64 | 3/8        | 1/2          | 3-1/4          | 720-4010     | 721-4010       | 722-4010             |
| 3/16  | 3/8        | 1/2          | 3-1/4          | 720-4012     | 721-4012       | 722-4012             |
| 13/64 | 3/8        | 1/2          | 3-1/4          | 720-4013     | 721-4013       | 722-4013             |
| 13/64 | 3/8        | 9/16         | 3-1/4          | 720-4014     | 721-4014       | 722-4014             |
| 7/32  | 3/8        | 9/16         | 3-1/4          | 720-4016     | 721-4016       | 722-4016             |
| 15/64 | 3/8        | 9/16         | 3-1/4          | 720-4017     | 721-4017       | 722-4017             |
| 15/64 | 3/8        | 5/8          | 3-3/8          | 720-4018     | 721-4018       | 722-4018             |
| 1/4   | 3/8        | 5/8          | 3-3/8          | 720-4020     | 721-4020       | 722-4020             |
| 17/64 | 3/8        | 11/16        | 3-3/8          | 720-4022     | 721-4022       | 722-4022             |
| 9/32  | 3/8        | 11/16        | 3-3/8          | 720-4024     | 721-4024       | 722-4024             |
| 19/64 | 3/8        | 11/16        | 3-3/8          | 720-4025     | 721-4025       | 722-4025             |
| 19/64 | 3/8        | 3/4          | 3-1/2          | 720-4026     | 721-4026       | 722-4026             |
| 5/16  | 3/8        | 3/4          | 3-1/2          | 720-4028     | 721-4028       | 722-4028             |
| 21/64 | 3/8        | 3/4          | 3-1/2          | 720-4030     | 721-4030       | 722-4030             |
| 11/32 | 3/8        | 3/4          | 3-1/2          | 720-4032     | 721-4032       | 722-4032             |
| 23/64 | 3/8        | 3/4          | 3-1/2          | 720-4034     | 721-4034       | 722-4034             |
| 3/8   | 3/8        | 3/4          | 3-1/2          | 720-4036     | 721-4036       | 722-4036             |
| 25/64 | 1/2        | 1            | 4-1/8          | 720-4038     | 721-4038       | 722-4038             |
| 13/32 | 1/2        | 1            | 4-1/8          | 720-4040     | 721-4040       | 722-4040             |
| 13/32 | 1/2        | 1            | 4-3/16         | 720-4039     | 721-4039       | 722-4039             |
| 27/64 | 1/2        | 1            | 4-1/8          | 720-4042     | 721-4042       | 722-4042             |
| 7/16  | 1/2        | 1            | 4-1/8          | 720-4044     | 721-4044       | 722-4044             |
| 29/64 | 1/2        | 1            | 4-1/8          | 720-4046     | 721-4046       | 722-4046             |
| 15/32 | 1/2        | 1            | 4-1/8          | 720-4048     | 721-4048       | 722-4048             |
| 31/64 | 1/2        | 1            | 4-1/8          | 720-4050     | 721-4050       | 722-4050             |
| 1/2   | 1/2        | 1            | 4-1/8          | 720-4052     | 721-4052       | 722-4052             |
| 17/32 | 5/8        | 1-3/8        | 5              | 720-4054     | 721-4054       | 722-4054             |
| 9/16  | 5/8        | 1-3/8        | 5              | 720-4056     | 721-4056       | 722-4056             |
| 19/32 | 5/8        | 1-3/8        | 5              | 720-4058     | 721-4058       | 722-4058             |
| 5/8   | 5/8        | 1-3/8        | 5              | 720-4060     | 721-4060       | 722-4060             |
| 21/32 | 3/4        | 1-5/8        | 5-5/8          | 720-4062     | 721-4062       | 722-4062             |
| 11/16 | 3/4        | 1-5/8        | 5-5/8          | 720-4064     | 721-4064       | 722-4064             |
| 23/32 | 3/4        | 1-5/8        | 5-5/8          | 720-4066     | 721-4066       | 722-4066             |
| 3/4   | 3/4        | 1-5/8        | 5-5/8          | 720-4068     | 721-4068       | 722-4068             |
| 25/32 | 7/8        | 1-7/8        | 6-1/8          | 720-4070     | 721-4070       | 722-4070             |
| 13/16 | 7/8        | 1-7/8        | 6-1/8          | 720-4072     | 721-4072       | 722-4072             |
| 27/32 | 7/8        | 1-7/8        | 6-1/8          | 720-4074     | 721-4074       | 722-4074             |
| 7/8   | 7/8        | 1-7/8        | 6-1/8          | 720-4076     | 721-4076       | 722-4076             |
| 29/32 | 1          | 1-7/8        | 6-3/8          | 720-4078     | 721-4078       | 722-4078             |
| 15/16 | 1          | 1-7/8        | 6-3/8          | 720-4080     | 721-4080       | 722-4080             |
| 31/32 | 1          | 1-7/8        | 6-3/8          | 720-4082     | 721-4082       | 722-4082             |
| 1     | 1          | 1-7/8        | 6-3/8          | 720-4084     | 721-4084       | 722-4084             |

### 4 Flute Double End Mills

#### High Speed Steel, Center Cutting

- Center cutting design allows for plunge milling into solid material at the beginning of a slotting operation.



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/8" | 3/8"       | 3/8"         | 3-1/16"        | 720-4102     | 721-4102       | 722-4102             |
| 5/32 | 3/8        | 7/16         | 3-1/8          | 720-4103     | 721-4103       | 722-4103             |
| 3/16 | 3/8        | 1/2          | 3-1/4          | 720-4104     | 721-4104       | 722-4104             |
| 1/4  | 3/8        | 5/8          | 3-3/8          | 720-4106     | 721-4106       | 722-4106             |
| 5/16 | 3/8        | 3/4          | 3-1/2          | 720-4108     | 721-4108       | 722-4108             |
| 3/8  | 3/8        | 3/4          | 3-1/2          | 720-4110     | 721-4110       | 722-4110             |
| 1/2  | 1/2        | 1            | 4-1/8          | 720-4112     | 721-4112       | 722-4112             |
| 5/8  | 5/8        | 1-3/8        | 5              | 720-4114     | 721-4114       | 722-4114             |
| 3/4  | 3/4        | 1-5/8        | 5-5/8          | 720-4116     | 721-4116       | 722-4116             |
| 7/8  | 7/8        | 1-7/8        | 6-1/8          | 720-4118     | 721-4118       | 722-4118             |
| 1    | 1          | 1-7/8        | 6-3/8          | 720-4120     | 721-4120       | 722-4120             |

### M42 8% Cobalt 4 Flute Double End Mills

#### Center Cutting



| Size  | Shank Dia. | Flute Length | Overall Length | Order No. |
|-------|------------|--------------|----------------|-----------|
| 1/8"  | 3/8"       | 3/8"         | 3-1/16"        | 723-4102  |
| 5/32  | 3/8        | 7/16         | 3-1/8          | 723-4103  |
| 3/16  | 3/8        | 1/2          | 3-1/4          | 723-4104  |
| 7/32  | 3/8        | 9/16         | 3-1/4          | 723-4105  |
| 1/4   | 3/8        | 5/8          | 3-3/8          | 723-4106  |
| 9/32  | 3/8        | 11/16        | 3-3/8          | 723-4107  |
| 5/16  | 3/8        | 3/4          | 3-1/2          | 723-4108  |
| 11/32 | 3/8        | 3/4          | 3-1/2          | 723-4109  |
| 3/8   | 3/8        | 3/4          | 3-1/2          | 723-4110  |
| 7/16  | 1/2        | 1            | 4-1/8          | 723-4111  |
| 1/2   | 1/2        | 1            | 4-1/8          | 723-4112  |
| 9/16  | 5/8        | 1-3/8        | 5              | 723-4113  |
| 5/8   | 5/8        | 1-3/8        | 5              | 723-4114  |
| 13/32 | 1/2        | 1            | 4-1/8          | 723-4115  |
| 3/4   | 3/4        | 1-5/8        | 5-5/8          | 723-4116  |
| 15/32 | 1/2        | 1            | 4-1/8          | 723-4117  |
| 7/8   | 7/8        | 1-7/8        | 6-1/8          | 723-4118  |
| 1     | 1          | 1-7/8        | 6-3/8          | 723-4120  |
| 9/64  | 3/8        | 7/16         | 3-1/8          | 723-4122  |
| 5/32  | 3/8        | 7/16         | 3-1/8          | 723-4124  |
| 11/64 | 3/8        | 1/2          | 3-1/4          | 723-4126  |
| 13/64 | 3/8        | 9/16         | 3-1/4          | 723-4128  |

### M42 8% Co. 60° Helical Profiling End Mills

#### Center Cutting



| Size  | Shank Dia. | Flute Length | Overall Length | Flute No. | Order No. |
|-------|------------|--------------|----------------|-----------|-----------|
| 1/4"  | 3/8"       | 5/8"         | 2-7/16"        | 3         | 723-9500  |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3         | 723-9505  |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 3         | 723-9510  |
| 7/16  | 3/8        | 1            | 2-11/16        | 3         | 723-9515  |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 3         | 723-9520  |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 3         | 723-9525  |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 3         | 723-9530  |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 4         | 723-9535  |
| 1     | 1          | 2            | 4-1/2          | 4         | 723-9540  |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 4         | 723-9545  |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 4         | 723-9550  |
| 2     | 1-1/4      | 2            | 4-1/2          | 4         | 723-9555  |

### M42 8% Cobalt 4 Flute Double End Mills

- Recommended for finishing operations in a wide range of ferrous and non-ferrous materials.
- Multiple flutes generate higher surface finish than 2 flute end mills.
- More economical in production milling than single end mills.



| Size  | Shank Dia. | Flute Length | Overall Length | Order No. |
|-------|------------|--------------|----------------|-----------|
| 7/64" | 3/8"       | 3/8"         | 3-1/16"        | 723-4002  |
| 1/8   | 3/8        | 3/8          | 3-1/16         | 723-4004  |
| 9/64  | 3/8        | 7/16         | 3-1/8          | 723-4006  |
| 5/32  | 3/8        | 7/16         | 3-1/8          | 723-4008  |
| 11/64 | 3/8        | 7/16         | 3-1/8          | 723-4011  |
| 11/64 | 3/8        | 1/2          | 3-1/4          | 723-4010  |
| 3/16  | 3/8        | 1/2          | 3-1/4          | 723-4012  |
| 13/64 | 3/8        | 1/2          | 3-1/4          | 723-4013  |
| 13/64 | 3/8        | 9/16         | 3-1/4          | 723-4014  |
| 7/32  | 3/8        | 9/16         | 3-1/4          | 723-4016  |
| 15/64 | 3/8        | 9/16         | 3-1/4          | 723-4017  |
| 15/64 | 3/8        | 5/8          | 3-3/8          | 723-4018  |
| 1/4   | 3/8        | 5/8          | 3-3/8          | 723-4020  |
| 17/64 | 3/8        | 11/16        | 3-3/8          | 723-4022  |
| 9/32  | 3/8        | 11/16        | 3-3/8          | 723-4024  |
| 19/64 | 3/8        | 11/16        | 3-3/8          | 723-4025  |
| 19/64 | 3/8        | 3/4          | 3-1/2          | 723-4026  |
| 5/16  | 3/8        | 3/4          | 3-1/2          | 723-4028  |
| 21/64 | 3/8        | 3/4          | 3-1/2          | 723-4030  |
| 11/32 | 3/8        | 3/4          | 3-1/2          | 723-4032  |
| 23/64 | 3/8        | 3/4          | 3-1/2          | 723-4034  |
| 3/8   | 3/8        | 3/4          | 3-1/2          | 723-4036  |
| 25/64 | 1/2        | 1            | 4-1/8          | 723-4038  |
| 13/32 | 1/2        | 1            | 4-1/8          | 723-4040  |
| 13/32 | 1/2        | 1            | 4-3/16         | 723-4039  |
| 27/64 | 1/2        | 1            | 4-1/8          | 723-4042  |
| 7/16  | 1/2        | 1            | 4-1/8          | 723-4044  |
| 29/64 | 1/2        | 1            | 4-1/8          | 723-4046  |
| 15/32 | 1/2        | 1            | 4-1/8          | 723-4048  |
| 31/64 | 1/2        | 1            | 4-1/8          | 723-4050  |
| 1/2   | 1/2        | 1            | 4-1/8          | 723-4052  |
| 17/32 | 5/8        | 1-3/8        | 5              | 723-4054  |
| 9/16  | 5/8        | 1-3/8        | 5              | 723-4056  |
| 19/32 | 5/8        | 1-3/8        | 5              | 723-4058  |
| 5/8   | 5/8        | 1-3/8        | 5              | 723-4060  |
| 21/32 | 3/4        | 1-5/8        | 5-5/8          | 723-4062  |
| 11/16 | 3/4        | 1-5/8        | 5-5/8          | 723-4064  |
| 23/32 | 3/4        | 1-5/8        | 5-5/8          | 723-4066  |
| 3/4   | 3/4        | 1-5/8        | 5-5/8          | 723-4068  |
| 25/32 | 7/8        | 1-7/8        | 6-1/8          | 723-4070  |
| 13/16 | 7/8        | 1-7/8        | 6              | 723-4072  |
| 27/32 | 7/8        | 1-7/8        | 6-1/8          | 723-4074  |
| 7/8   | 7/8        | 1-7/8        | 6-1/8          | 723-4076  |
| 29/32 | 1          | 1-7/8        | 6-3/8          | 723-4078  |
| 15/16 | 1          | 1-7/8        | 6-3/8          | 723-4080  |
| 31/32 | 1          | 1-7/8        | 6-3/8          | 723-4082  |
| 1     | 1          | 1-7/8        | 6-3/8          | 723-4084  |

### ASP-30(Powdered Cobalt) Single End Mills

#### Center Cutting



| Size | Shank Dia. | Flute Length | Overall Length | Flute No. | Order No. |
|------|------------|--------------|----------------|-----------|-----------|
| 1/4" | 3/8"       | 5/8"         | 2-7/16"        | 3         | 723-9408  |
| 5/16 | 3/8        | 3/4          | 2-1/2          | 3         | 723-9410  |
| 3/8  | 3/8        | 3/4          | 2-1/2          | 3         | 723-9412  |
| 1/2  | 1/2        | 1-1/4        | 3-1/4          | 3         | 723-9416  |
| 5/8  | 5/8        | 1-5/8        | 3-3/4          | 3         | 723-9420  |
| 3/4  | 3/4        | 1-5/8        | 3-7/8          | 3         | 723-9424  |
| 1    | 1          | 2            | 4-1/2          | 4         | 723-9432  |

## Roughing End Mills

**BESTOOL®**

### Roughing End Mills

High Speed Steel



Regular Length

| Size   | Shank Dia. | Flute Length | Overall Length | No. Of Flutes | M2 Order No. | M2Al Order No. |
|--------|------------|--------------|----------------|---------------|--------------|----------------|
| 1/4"   | 3/8"       | 3/4"         | 2-1/2"         | 4             | 720-5001     | 721-5001       |
| 1/4    | 3/8        | 5/8          | 2-7/16         | 4             | 720-5002     | 721-5002       |
| 1/4    | 3/8        | 1-1/4        | 3-1/16         | 4             | 720-5003     | 721-5003       |
| 5/16   | 3/8        | 3/4          | 2-1/2          | 4             | 720-5005     | 721-5005       |
| 5/16   | 3/8        | 1-3/8        | 3-1/8          | 4             | 720-5007     | 721-5007       |
| 3/8    | 3/8        | 3/4          | 2-1/2          | 4             | 720-5008     | 721-5008       |
| 3/8    | 3/8        | 7/8          | 2-5/8          | 4             | 720-5009     | 721-5009       |
| 3/8    | 3/8        | 1-1/2        | 3-1/4          | 4             | 720-5011     | 721-5011       |
| 7/16   | 3/8        | 1            | 2-11/16        | 4             | 720-5012     | 721-5012       |
| 1/2    | 1/2        | 1-1/4        | 3-1/4          | 4             | 720-5013     | 721-5013       |
| 5/8    | 5/8        | 1-5/8        | 3-3/4          | 4             | 720-5017     | 721-5017       |
| 11/16  | 5/8        | 1-5/8        | 3-3/4          | 4             | 720-5019     | 721-5019       |
| 3/4    | 5/8        | 1-5/8        | 3-3/4          | 4             | 720-5020     | 721-5020       |
| 3/4    | 5/8        | 1-5/8        | 3-7/8          | 4             | 720-5021     | 721-5021       |
| 3/4    | 3/4        | 1-5/8        | 3-3/4          | 4             | 720-5025     | 721-5025       |
| 7/8    | 3/4        | 1-5/8        | 4-1/8          | 4             | 720-5027     | 721-5027       |
| 7/8    | 7/8        | 1-7/8        | 4-1/8          | 4             | 720-5029     | 721-5029       |
| 15/16  | 3/4        | 1-7/8        | 4-1/8          | 4             | 720-5031     | 721-5031       |
| 1      | 3/4        | 2            | 4-1/2          | 6             | 720-5033     | 721-5033       |
| 1      | 1          | 2            | 4-1/2          | 6             | 720-5035     | 721-5035       |
| 1-1/8" | 3/4"       | 2"           | 4-1/2"         | 6             | 720-5037     | 721-5037       |
| 1-1/8  | 1          | 2            | 4-1/2          | 6             | 720-5039     | 721-5039       |
| 1-1/4  | 3/4        | 2            | 4-1/2          | 6             | 720-5041     | 721-5041       |
| 1-1/4  | 1-1/4      | 2            | 4-1/2          | 6             | 720-5043     | 721-5043       |
| 1-1/2  | 3/4        | 2            | 4-1/2          | 6             | 720-5045     | 721-5045       |
| 1-1/2  | 1-1/4      | 2            | 4-1/2          | 6             | 720-5047     | 721-5047       |
| 1-3/4  | 3/4        | 2            | 4-1/2          | 6             | 720-5049     | 721-5049       |
| 1-3/4  | 1-1/4      | 2            | 4-1/2          | 6             | 720-5051     | 721-5051       |
| 2      | 3/4        | 2            | 4-1/2          | 8             | 720-5053     | 721-5053       |
| 2      | 1-1/4      | 2            | 4-1/2          | 6             | 720-5054     | 721-5054       |
| 2      | 1-1/4      | 2            | 4-1/2          | 8             | 720-5055     | 721-5055       |
| 2      | 1-1/4      | 2            | 6-1/2          | 8             | 720-5056     | 721-5056       |
| 2      | 2          | 2            | 5-3/4          | 8             | 720-5057     | 721-5057       |
| 2      | 2          | 3            | 6-3/4          | 6             | 720-5058     | 721-5058       |
| 2      | 2          | 4            | 7-3/4          | 8             | 720-5059     | 721-5059       |
| 2      | 2          | 4            | 7-3/4          | 6             | 720-5060     | 721-5060       |
| 2-1/2  | 2          | 4            | 7-3/4          | 8             | 720-5061     | 721-5061       |
| 2-1/2  | 2-1/2      | 4            | 7-3/4          | 8             | 720-5063     | 721-5063       |
| 2      | 2          | 3            | 6-3/4          | 8             | 720-5065     | 721-5065       |

### Roughing End Mills

High Speed Steel



Medium Length

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | M2 Order No. | M2Al Order No. |
|-------|------------|--------------|----------------|---------------|--------------|----------------|
| 2"    | 2"         | 5"           | 8-3/4"         | 8             | 720-5101     | 721-5101       |
| 2     | 2          | 6            | 9-3/4          | 8             | 720-5103     | 721-5103       |
| 2-1/2 | 2          | 6            | 9-3/4          | 8             | 720-5105     | 721-5105       |
| 2-1/2 | 2-1/2      | 6            | 9-3/4          | 8             | 720-5107     | 721-5107       |

### Roughing End Mills

High Speed Steel



Long Length

| Size  | Shank Dia. | Flute Length | Overall Length | No. of flutes | M2 Order No. | M2Al Order No. |
|-------|------------|--------------|----------------|---------------|--------------|----------------|
| 1/2"  | 1/2"       | 2"           | 4"             | 4             | 720-5201     | 721-5201       |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4             | 720-5203     | 721-5203       |
| 3/4   | 5/8        | 3            | 5-1/4          | 4             | 720-5205     | 721-5205       |
| 3/4   | 5/8        | 3            | 5-1/8          | 4             | 720-5207     | 721-5207       |
| 3/4   | 3/4        | 3            | 5-1/4          | 4             | 720-5209     | 721-5209       |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 4             | 720-5211     | 721-5211       |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 4             | 720-5213     | 721-5213       |
| 1     | 1          | 4            | 6-1/2          | 6             | 720-5215     | 721-5215       |
| 1     | 1          | 6            | 8-1/2          | 6             | 720-5217     | 721-5217       |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6             | 720-5218     | 721-5218       |
| 1-1/4 | 3/4        | 4            | 6-1/4          | 6             | 720-5219     | 721-5219       |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6             | 720-5221     | 721-5221       |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6             | 720-5223     | 721-5223       |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6             | 720-5224     | 721-5224       |
| 1-1/2 | 3/4        | 4            | 6-1/4          | 6             | 720-5225     | 721-5225       |
| 1-1/2 | 1-1/4      | 4            | 6-1/2"         | 6             | 720-5227     | 721-5227       |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 6             | 720-5228     | 721-5228       |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6             | 720-5229     | 721-5229       |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6             | 720-5231     | 721-5231       |
| 2     | 1-1/4      | 4            | 6-1/2          | 6             | 720-5232     | 721-5232       |
| 2     | 1-1/4      | 4            | 6-1/2          | 8             | 720-5233     | 721-5233       |
| 2     | 2          | 6            | 9-3/4          | 6             | 720-5234     | 721-5234       |
| 2     | 2          | 7            | 10-3/4         | 8             | 720-5235     | 721-5235       |
| 2     | 2          | 8            | 11-3/4         | 6             | 720-5236     | 721-5236       |
| 2     | 2          | 8            | 11-3/4         | 8             | 720-5237     | 721-5237       |
| 2     | 2          | 10           | 13-3/4         | 8             | 720-5239     | 721-5239       |
| 2     | 2          | 12           | 15-3/4         | 8             | 720-5241     | 721-5241       |
| 2-1/2 | 2          | 8            | 11-3/4         | 8             | 720-5243     | 721-5243       |
| 2-1/2 | 2-1/2      | 8            | 11-3/4         | 8             | 720-5245     | 721-5245       |
| 2-1/2 | 2-1/2      | 10           | 13-3/4         | 8             | 720-5247     | 721-5247       |
| 2-1/2 | 2-1/2      | 12           | 15-3/4         | 8             | 720-5249     | 721-5249       |

### 5 Flute Roughing End Mills

High Speed Steel



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. |
|-------|------------|--------------|----------------|--------------|----------------|
| 7/8"  | 3/4"       | 1-7/8"       | 4-1/8"         | 720-5701     | 721-5701       |
| 7/8   | 3/8        | 3-1/2        | 5-3/4          | 720-5703     | 721-5703       |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 720-5705     | 721-5705       |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 720-5707     | 721-5707       |
| 1     | 3/4        | 2            | 4-1/2          | 720-5709     | 721-5709       |
| 1     | 1          | 2            | 4-1/2          | 720-5711     | 721-5711       |
| 1     | 1          | 4            | 6-1/2          | 720-5713     | 721-5713       |
| 1-1/8 | 1          | 2            | 4-1/2          | 720-5715     | 721-5715       |

## M42 8% Cobalt Coarse Pitch Roughing End Mills

Remove more metal in less time.

Have excellent performance on heavy duty machining.

Need less horsepower.

Tooth form provides excellent heat dissipation during heavy cutting jobs, is effective for cuts on high tensile steels.



### Non Center Cutting

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 3/16" | 3/8"       | 1/2"         | 2-3/8"         | 4            | 723-5703           | 723-6703             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 723-5706           | 723-6706             |
| 1/4   | 3/8        | 5/16         | 2-1/8          | 3            | 723-5705           | 723-6705             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 3            | 723-5708           | 723-6708             |
| 1/4   | 3/8        | 7/8          | 2-11/16        | 3            | 723-5701           | 723-6701             |
| 1/4   | 3/8        | 1-1/8        | 2-15/16        | 3            | 723-5702           | 723-6702             |
| 1/4   | 3/8        | 1-3/8        | 3-1/8          | 3            | 723-5707           | 723-6707             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4            | 723-5930           | 723-6930             |
| 1/4   | 3/8        | 3/4          | 2-1/2          | 4            | 723-5709           | 723-6709             |
| 1/4   | 3/8        | 1-1/8        | 2-15/16        | 4            | 723-5710           | 723-6710             |
| 1/4   | 3/8        | 1-1/4        | 3-1/16         | 4            | 723-5711           | 723-6711             |
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | 4            | 723-5936           | 723-6936             |
| 9/32  | 3/8        | 3/4          | 2-1/2          | 3            | 723-5712           | 723-6712             |
| 5/16  | 3/8        | 7/16         | 2-3/16         | 3            | 723-5714           | 723-6714             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3            | 723-5715           | 723-6715             |
| 5/16  | 3/8        | 1-1/8        | 2-15/16        | 3            | 723-5717           | 723-6717             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4            | 723-5716           | 723-6716             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4            | 723-5941           | 723-6941             |
| 5/16  | 3/8        | 1-3/8        | 3-3/16         | 4            | 723-5942           | 723-6942             |
| 5/16  | 3/8        | 1-3/8        | 3-3/8          | 4            | 723-5713           | 723-6713             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 3            | 723-5725           | 723-6725             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 3            | 723-5718           | 723-6718             |
| 3/8   | 3/8        | 1/2          | 2-5/16         | 3            | 723-5946           | 723-6946             |
| 3/8   | 3/8        | 7/8          | 2-7/8          | 3            | 723-5949           | 723-6949             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 4            | 723-5719           | 723-6719             |
| 3/8   | 3/8        | 7/16         | 2-3/16         | 4            | 723-5720           | 723-6720             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 723-5721           | 723-6721             |
| 3/8   | 3/8        | 7/8          | 2-5/8          | 4            | 723-5722           | 723-6722             |
| 3/8   | 3/8        | 1-1/8        | 2-15/16        | 4            | 723-5726           | 723-6726             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4            | 723-5723           | 723-6723             |
| 3/8   | 3/8        | 1-5/8        | 3-3/16         | 4            | 723-5724           | 723-6724             |
| 13/32 | 3/8        | 1            | 2-11/16        | 4            | 723-5735           | 723-6735             |
| 7/16  | 3/8        | 1            | 2-11/16        | 4            | 723-5727           | 723-6727             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 4            | 723-5728           | 723-6728             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 723-5730           | 723-6730             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 4            | 723-5952           | 723-6952             |
| 1/2   | 1/2        | 5/8          | 2-5/8          | 4            | 723-5731           | 723-6731             |
| 1/2   | 1/2        | 1            | 3              | 4            | 723-5732           | 723-6732             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 723-5733           | 723-6733             |
| 1/2   | 1/2        | 1-5/8        | 3-5/8          | 4            | 723-5734           | 723-6734             |
| 1/2   | 1/2        | 2            | 4              | 4            | 723-5736           | 723-6736             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 4            | 723-5738           | 723-6738             |
| 1/2   | 1/2        | 3            | 5              | 4            | 723-5739           | 723-6739             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4            | 723-5742           | 723-6742             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 3            | 723-5745           | 723-6745             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 4            | 723-5746           | 723-6746             |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 4            | 723-5747           | 723-6747             |
| 5/8   | 5/8        | 1-1/4        | 3-3/8          | 4            | 723-5743           | 723-6743             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-5748           | 723-6748             |
| 5/8   | 5/8        | 2            | 4-1/8          | 4            | 723-5749           | 723-6749             |
| 5/8   | 5/8        | 2-1/8        | 4-1/4          | 4            | 723-5750           | 723-6750             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 723-5751           | 723-6751             |
| 5/8   | 5/8        | 3            | 5-1/4          | 4            | 723-5754           | 723-6754             |
| 5/8   | 5/8        | 3-1/8        | 5-1/4          | 4            | 723-5757           | 723-6757             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-5760           | 723-6760             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-5766           | 723-6766             |
| 3/4   | 5/8        | 1-5/8        | 3-7/8          | 4            | 723-5761           | 723-6761             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 3            | 723-5763           | 723-6763             |
| 3/4   | 3/4        | 7/8          | 3-1/8          | 3            | 723-5765           | 723-6765             |
| 3/4   | 3/4        | 1-1/2        | 3-3/4          | 3            | 723-5768           | 723-6768             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 4            | 723-5764           | 723-6764             |
| 3/4   | 3/4        | 3/4          | 3              | 4            | 723-5762           | 723-6762             |
| 3/4   | 3/4        | 1-1/4        | 3-1/2          | 4            | 723-5767           | 723-6767             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 4            | 723-5769           | 723-6769             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-5770           | 723-6770             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 4            | 723-5771           | 723-6771             |
| 3/4   | 3/4        | 2-1/2        | 4-5/8          | 4            | 723-5772           | 723-6772             |
| 3/4   | 3/4        | 2-1/2        | 4-3/4          | 4            | 723-5773           | 723-6773             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 723-5775           | 723-6775             |
| 3/4   | 3/4        | 4-1/8        | 6-3/8          | 4            | 723-5776           | 723-6776             |
| 13/16 | 3/4        | 1-7/8        | 4-1/8          | 4            | 723-5777           | 723-6777             |
| 7/8   | 3/4        | 7/8          | 3-1/8          | 3            | 723-5778           | 723-6778             |
| 7/8   | 3/4        | 1            | 3-1/4          | 3            | 723-5779           | 723-6779             |

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 7/8"  | 3/4"       | 1-1/8"       | 3-3/8"         | 5            | 723-5780           | 723-6780             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 5            | 723-5781           | 723-6781             |
| 7/8   | 3/4        | 3-1/2        | 5-3/4          | 5            | 723-5782           | 723-6782             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 5            | 723-5784           | 723-6784             |
| 7/8   | 7/8        | 1-1/8        | 3-3/8          | 5            | 723-5786           | 723-6786             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 5            | 723-5787           | 723-6787             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 5            | 723-5789           | 723-6789             |
| 7/8   | 1          | 1-3/4        | 5              | 3            | 723-5955           | 723-6955             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 5            | 723-5792           | 723-6792             |
| 1     | 3/4        | 1-1/2        | 3-3/8          | 5            | 723-5791           | 723-6791             |
| 1     | 3/4        | 1-1/2        | 3-3/4          | 5            | 723-5794           | 723-6794             |
| 1     | 3/4        | 1-7/8        | 4-1/8          | 5            | 723-5793           | 723-6793             |
| 1     | 3/4        | 2            | 4-1/4          | 5            | 723-5795           | 723-6795             |
| 1     | 3/4        | 3            | 5-1/4          | 5            | 723-5796           | 723-6796             |
| 1     | 3/4        | 4            | 6-1/4          | 5            | 723-5797           | 723-6797             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 6            | 723-5790           | 723-6790             |
| 1     | 1          | 1            | 3-1/2          | 3            | 723-5799           | 723-6799             |
| 1     | 1          | 1-3/4        | 5              | 3            | 723-5958           | 723-6958             |
| 1     | 1          | 1            | 3-1/2          | 5            | 723-5800           | 723-6800             |
| 1     | 1          | 1-1/8        | 3-5/8          | 5            | 723-5801           | 723-6801             |
| 1     | 1          | 1-5/8        | 4-1/8          | 5            | 723-5798           | 723-6798             |
| 1     | 1          | 2            | 4-1/2          | 5            | 723-5802           | 723-6802             |
| 1     | 1          | 3            | 5-1/2          | 5            | 723-5805           | 723-6805             |
| 1     | 1          | 4            | 6-1/2          | 5            | 723-5808           | 723-6808             |
| 1     | 1          | 6            | 8-1/2          | 5            | 723-5811           | 723-6811             |
| 1-1/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 723-5814           | 723-6814             |
| 1-1/8 | 3/4        | 2            | 4-1/4          | 6            | 723-5817           | 723-6817             |
| 1-1/8 | 1          | 2            | 4-1/2          | 6            | 723-5820           | 723-6820             |
| 1-1/8 | 1          | 3-1/2        | 6              | 6            | 723-5823           | 723-6823             |
| 1-1/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 723-5826           | 723-6826             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 6            | 723-5829           | 723-6829             |
| 1-1/4 | 1-1/4      | 2            | 5-1/4          | 3            | 723-5836           | 723-6836             |
| 1-1/4 | 1-1/4      | 1-1/4        | 4              | 4            | 723-5833           | 723-6833             |
| 1-1/4 | 1-1/4      | 1-3/8        | 3-7/8          | 6            | 723-5834           | 723-6834             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 723-5835           | 723-6835             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6            | 723-5838           | 723-6838             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 723-5841           | 723-6841             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6            | 723-5844           | 723-6844             |
| 1-3/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 723-5847           | 723-6847             |
| 1-3/8 | 3/4        | 2            | 4-1/4          | 6            | 723-5850           | 723-6850             |
| 1-1/2 | 3/4        | 1-1/8        | 3-3/8          | 6            | 723-5853           | 723-6853             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 6            | 723-5854           | 723-6854             |
| 1-1/2 | 3/4        | 2            | 4-1/4          | 6            | 723-5856           | 723-6856             |
| 1-1/2 | 3/4        | 4            | 6-1/4          | 6            | 723-5858           | 723-6858             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 723-5859           | 723-6859             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6            | 723-5862           | 723-6862             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6            | 723-5865           | 723-6865             |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 6            | 723-5868           | 723-6868             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6            | 723-5871           | 723-6871             |
| 1-1/2 | 1-1/4      | 6-1/8        | 8-5/8          | 6            | 723-5869           | 723-6869             |
| 1-3/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 723-5874           | 723-6874             |
| 1-3/4 | 3/4        | 2            | 4-1/4          | 6            | 723-5877           | 723-6877             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 6            | 723-5880           | 723-6880             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6            | 723-5883           | 723-6883             |
| 2     | 3/4        | 1-1/8        | 3-3/8          | 8            | 723-5886           | 723-6886             |
| 2     | 3/4        | 2            | 4-1/2          | 8            | 723-5889           | 723-6889             |
| 2     | 1-1/4      | 2            | 4-1/2          | 8            | 723-5892           | 723-6892             |
| 2     | 1-1/4      | 3-1/8        | 5-5/8          | 8            | 723-5893           | 723-6893             |
| 2     | 1-1/4      | 4            | 6-1/2          | 8            | 723-5895           | 723-6895             |
| 2     | 1-1/4      | 6-1/8        | 8-5/8          | 8            | 723-5896           | 723-6896             |
| 2     | 2          | 3            | 6-3/4          | 6            | 723-5899           | 723-6899             |
| 2     | 2          | 4            | 7-3/4          | 6            | 723-5902           | 723-6902             |
| 2     | 2          | 6            | 9-3/4          | 6            | 723-5908           | 723-6908             |
| 2     | 2          | 2            | 5-3/4          | 8            | 723-5898           | 723-6898             |
| 2     | 2          | 3            | 6-3/4          | 8            | 723-5901           | 723-6901             |
| 2     | 2          | 4            | 7-3/4          | 8            | 723-5904           | 723-6904             |
| 2     | 2          | 5            | 8-3/4          | 8            | 723-5907           | 723-6907             |
| 2     | 2          | 6            | 9-3/4          | 8            | 723-5910           | 723-6910             |
| 2     | 2          | 7            | 10-3/4         | 8            | 723-5911           | 723-6911             |
| 2     | 2          | 8            | 11-3/4         | 8            | 723-5913           | 723-6913             |
| 2     | 2          | 10           | 13-3/4         | 8            | 723-5916           | 723-6916             |
| 2     | 2          | 12           | 15-3/4         | 8            | 723-5919           | 723-6919             |

## M42 8% Cobalt Coarse Pitch Roughing End Mills

### Center Cutting



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 3/16" | 3/8"       | 1/2"         | 2-3/8"         | 4            | 724-0008           | 724-1008             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-0011           | 724-1011             |
| 1/4   | 3/8        | 5/16         | 2-1/8          | 3            | 724-0014           | 724-1014             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-0017           | 724-1017             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 3            | 724-0020           | 724-1020             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4            | 724-0023           | 724-1023             |
| 1/4   | 3/8        | 7/8          | 2-11/16        | 3            | 724-0026           | 724-1026             |
| 1/4   | 3/8        | 3/4          | 2-1/2          | 4            | 724-0029           | 724-1029             |
| 1/4   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-0032           | 724-1032             |
| 1/4   | 3/8        | 1-1/4        | 3-1/16         | 4            | 724-0035           | 724-1035             |
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | 4            | 724-0038           | 724-1038             |
| 1/4   | 3/8        | 1-3/8        | 3-1/8          | 3            | 724-0041           | 724-1041             |
| 9/32  | 3/8        | 3/4          | 2-1/2          | 3            | 724-0044           | 724-1044             |
| 5/16  | 3/8        | 7/16         | 2-3/16         | 3            | 724-0047           | 724-1047             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3            | 724-0050           | 724-1050             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4            | 724-0053           | 724-1053             |
| 5/16  | 3/8        | 1-1/8        | 2-15/16        | 3            | 724-0056           | 724-1056             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4            | 724-0059           | 724-1059             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 3            | 724-0062           | 724-1062             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 3            | 724-0065           | 724-1065             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 4            | 724-0068           | 724-1068             |
| 3/8   | 3/8        | 7/16         | 2-3/16         | 4            | 724-0071           | 724-1071             |
| 3/8   | 3/8        | 1/2          | 2-5/16         | 3            | 724-0074           | 724-1074             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 724-0077           | 724-1077             |
| 3/8   | 3/8        | 7/8          | 2-5/8          | 4            | 724-0080           | 724-1080             |
| 3/8   | 3/8        | 7/8          | 2-7/8          | 3            | 724-0083           | 724-1083             |
| 3/8   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-0086           | 724-1086             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4            | 724-0089           | 724-1089             |
| 3/8   | 3/8        | 1-5/8        | 3-3/16         | 4            | 724-0092           | 724-1092             |
| 7/16  | 3/8        | 1            | 2-11/16        | 4            | 724-0095           | 724-1095             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-0098           | 724-1098             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 724-0101           | 724-1101             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 4            | 724-0104           | 724-1104             |
| 1/2   | 1/2        | 5/8          | 2-5/8          | 4            | 724-0110           | 724-1110             |
| 1/2   | 1/2        | 1            | 3              | 4            | 724-0113           | 724-1113             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-0116           | 724-1116             |
| 1/2   | 1/2        | 1-5/8        | 3-5/8          | 4            | 724-0119           | 724-1119             |
| 1/2   | 1/2        | 2            | 4              | 4            | 724-0122           | 724-1122             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 4            | 724-0125           | 724-1125             |
| 1/2   | 1/2        | 3            | 5              | 4            | 724-0128           | 724-1128             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4            | 724-0131           | 724-1131             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 3            | 724-0134           | 724-1134             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 4            | 724-0137           | 724-1137             |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 4            | 724-0140           | 724-1140             |
| 5/8   | 5/8        | 1-1/4        | 3-3/8          | 4            | 724-0143           | 724-1143             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-0146           | 724-1146             |
| 5/8   | 5/8        | 2            | 4-1/8          | 4            | 724-0149           | 724-1149             |
| 5/8   | 5/8        | 2-1/8        | 4-1/4          | 4            | 724-0152           | 724-1152             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 724-0155           | 724-1155             |
| 5/8   | 5/8        | 3            | 5-1/4          | 4            | 724-0158           | 724-1158             |
| 5/8   | 5/8        | 3-1/8        | 5-1/4          | 4            | 724-0161           | 724-1161             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-0164           | 724-1164             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-0167           | 724-1167             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 3            | 724-0170           | 724-1170             |
| 3/4   | 3/4        | 3/4          | 3              | 4            | 724-0173           | 724-1173             |
| 3/4   | 3/4        | 7/8          | 3-1/8          | 3            | 724-0176           | 724-1176             |
| 3/4   | 3/4        | 1-1/4        | 3-1/2          | 4            | 724-0179           | 724-1179             |
| 3/4   | 3/4        | 1-1/2        | 3-3/4          | 3            | 724-0182           | 724-1182             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 4            | 724-0185           | 724-1185             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 4            | 724-0187           | 724-1187             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 4            | 724-0188           | 724-1188             |
| 3/4   | 3/4        | 2-1/2        | 4-5/8          | 4            | 724-0191           | 724-1191             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 724-0194           | 724-1194             |
| 3/4   | 3/4        | 4-1/8        | 6-3/8          | 4            | 724-0197           | 724-1197             |
| 13/16 | 3/4        | 1-7/8        | 4-1/8          | 4            | 724-0200           | 724-1200             |
| 7/8   | 3/4        | 7/8          | 3-1/8          | 3            | 724-0203           | 724-1203             |
| 7/8   | 3/4        | 1            | 3-1/4          | 3            | 724-0206           | 724-1206             |

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 7/8"  | 3/4"       | 1-1/8"       | 3-3/8"         | 5            | 724-0209           | 724-1209             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-0212           | 724-1212             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 5            | 724-0215           | 724-1215             |
| 7/8   | 7/8        | 1-1/8        | 3-3/8          | 5            | 724-0218           | 724-1218             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 5            | 724-0221           | 724-1221             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 5            | 724-0224           | 724-1224             |
| 7/8   | 1          | 1-3/4        | 5              | 3            | 724-0227           | 724-1227             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0230           | 724-1230             |
| 1     | 3/4        | 1-1/2        | 3-3/8          | 5            | 724-0233           | 724-1233             |
| 1     | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-0236           | 724-1236             |
| 1     | 3/4        | 2            | 4-1/4          | 5            | 724-0239           | 724-1239             |
| 1     | 3/4        | 3            | 5-1/4          | 5            | 724-0242           | 724-1242             |
| 1     | 3/4        | 4            | 6-1/4          | 5            | 724-0245           | 724-1245             |
| 1     | 1          | 1            | 3-1/2          | 3            | 724-0248           | 724-1248             |
| 1     | 1          | 1            | 3-1/2          | 5            | 724-0251           | 724-1251             |
| 1     | 1          | 1-1/8        | 3-5/8          | 5            | 724-0254           | 724-1254             |
| 1     | 1          | 1-5/8        | 4-1/8          | 5            | 724-0257           | 724-1257             |
| 1     | 1          | 1-3/4        | 5              | 3            | 724-0260           | 724-1260             |
| 1     | 1          | 2            | 4-1/2          | 5            | 724-0263           | 724-1263             |
| 1     | 1          | 3            | 5-1/2          | 5            | 724-0266           | 724-1266             |
| 1     | 1          | 4            | 6-1/2          | 5            | 724-0269           | 724-1269             |
| 1     | 1          | 6            | 8-1/2          | 5            | 724-0272           | 724-1272             |
| 1-1/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0275           | 724-1275             |
| 1-1/8 | 3/4        | 2            | 4-1/4          | 6            | 724-0278           | 724-1278             |
| 1-1/8 | 1          | 2            | 4-1/2          | 6            | 724-0281           | 724-1281             |
| 1-1/8 | 1          | 3-1/2        | 6              | 6            | 724-0284           | 724-1284             |
| 1-1/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0287           | 724-1287             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 6            | 724-0290           | 724-1290             |
| 1-1/4 | 1-1/4      | 1-1/4        | 4              | 4            | 724-0296           | 724-1296             |
| 1-1/4 | 1-1/4      | 1-3/8        | 3-7/8          | 6            | 724-0299           | 724-1299             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-0302           | 724-1302             |
| 1-1/4 | 1-1/4      | 2            | 5-1/4          | 3            | 724-0305           | 724-1305             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6            | 724-0308           | 724-1308             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-0311           | 724-1311             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6            | 724-0314           | 724-1314             |
| 1-3/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0317           | 724-1317             |
| 1-3/8 | 3/4        | 2            | 4-1/4          | 6            | 724-0320           | 724-1320             |
| 1-1/2 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0323           | 724-1323             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 6            | 724-0326           | 724-1326             |
| 1-1/2 | 3/4        | 2            | 4-1/4          | 6            | 724-0329           | 724-1329             |
| 1-1/2 | 3/4        | 4            | 6-1/4          | 6            | 724-0332           | 724-1332             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 724-0335           | 724-1335             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6            | 724-0338           | 724-1338             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6            | 724-0341           | 724-1341             |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 6            | 724-0344           | 724-1344             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6            | 724-0347           | 724-1347             |
| 1-3/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0350           | 724-1350             |
| 1-3/4 | 3/4        | 2            | 4-1/4          | 6            | 724-0353           | 724-1353             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-0356           | 724-1356             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-0359           | 724-1359             |
| 2     | 3/4        | 1-1/8        | 3-3/8          | 8            | 724-0362           | 724-1362             |
| 2     | 3/4        | 2            | 4-1/2          | 8            | 724-0365           | 724-1365             |
| 2     | 1-1/4      | 2            | 4-1/2          | 8            | 724-0368           | 724-1368             |
| 2     | 1-1/4      | 4            | 6-1/2          | 8            | 724-0371           | 724-1371             |
| 2     | 1-1/4      | 6-1/8        | 8-5/8          | 8            | 724-0374           | 724-1374             |
| 2     | 2          | 2            | 5-3/4          | 8            | 724-0377           | 724-1377             |
| 2     | 2          | 3            | 6-3/4          | 6            | 724-0380           | 724-1380             |
| 2     | 2          | 3            | 6-3/4          | 8            | 724-0383           | 724-1383             |
| 2     | 2          | 4            | 7-3/4          | 6            | 724-0386           | 724-1386             |
| 2     | 2          | 4            | 7-3/4          | 8            | 724-0389           | 724-1389             |
| 2     | 2          | 5            | 8-3/4          | 8            | 724-0392           | 724-1392             |
| 2     | 2          | 6            | 9-3/4          | 6            | 724-0395           | 724-1395             |
| 2     | 2          | 6            | 9-3/4          | 8            | 724-0398           | 724-1398             |
| 2     | 2          | 7            | 10-3/4         | 8            | 724-0401           | 724-1401             |
| 2     | 2          | 8            | 11-3/4         | 8            | 724-0404           | 724-1404             |
| 2     | 2          | 10           | 13-3/4         | 8            | 724-0407           | 724-1407             |
| 2     | 2          | 12           | 15-3/4         | 8            | 724-0410           | 724-1410             |

### M42 8% Cobalt Fine Pitch Roughing End Mills

#### Non Center Cutting

- For use in high production milling in variety of exotic materials.
- Coating improves tool life and allows for higher speeds and feeds.
- Fine pitch design provides a better finish than coarse pitch end mills and eliminates chipping in harder materials.



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 3/16" | 3/8"       | 1/2"         | 2-3/8"         | 4            | 724-2008           | 724-3008             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-2011           | 724-3011             |
| 1/4   | 3/8        | 5/16         | 2-1/8          | 3            | 724-2014           | 724-3014             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-2017           | 724-3017             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 3            | 724-2020           | 724-3020             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4            | 724-2023           | 724-3023             |
| 1/4   | 3/8        | 7/8          | 2-11/16        | 3            | 724-2026           | 724-3026             |
| 1/4   | 3/8        | 3/4          | 2-1/2          | 4            | 724-2029           | 724-3029             |
| 1/4   | 3/8        | 1-1/4        | 2-15/16        | 4            | 724-2032           | 724-3032             |
| 1/4   | 3/8        | 1-1/8        | 3-1/8          | 4            | 724-2033           | 724-3033             |
| 1/4   | 3/8        | 1-1/4        | 3-1/16         | 4            | 724-2035           | 724-3035             |
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | 4            | 724-2038           | 724-3038             |
| 1/4   | 3/8        | 1-3/8        | 3-1/8          | 3            | 724-2041           | 724-3041             |
| 9/32  | 3/8        | 3/4          | 2-1/2          | 3            | 724-2044           | 724-3044             |
| 5/16  | 3/8        | 7/16         | 2-3/16         | 3            | 724-2047           | 724-3047             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3            | 724-2050           | 724-3050             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4            | 724-2053           | 724-3053             |
| 5/16  | 3/8        | 1-1/8        | 2-15/16        | 3            | 724-2056           | 724-3056             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4            | 724-2059           | 724-3059             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 3            | 724-2062           | 724-3062             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 3            | 724-2065           | 724-3065             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 4            | 724-2068           | 724-3068             |
| 3/8   | 3/8        | 7/16         | 2-3/16         | 4            | 724-2071           | 724-3071             |
| 3/8   | 3/8        | 1/2          | 2-5/16         | 3            | 724-2074           | 724-3074             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 724-2077           | 724-3077             |
| 3/8   | 3/8        | 7/8          | 2-5/8          | 4            | 724-2080           | 724-3080             |
| 3/8   | 3/8        | 7/8          | 2-7/8          | 3            | 724-2083           | 724-3083             |
| 3/8   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-2086           | 724-3086             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4            | 724-2089           | 724-3089             |
| 3/8   | 3/8        | 1-5/8        | 3-3/16         | 4            | 724-2092           | 724-3092             |
| 7/16  | 3/8        | 1            | 2-5/16         | 3            | 724-2093           | 724-3093             |
| 7/16  | 3/8        | 1            | 2-5/16         | 4            | 724-2094           | 724-3094             |
| 7/16  | 3/8        | 1            | 2-11/16        | 4            | 724-2095           | 724-3095             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-2098           | 724-3098             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 724-2101           | 724-3101             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 4            | 724-2107           | 724-3107             |
| 1/2   | 1/2        | 5/8          | 2-5/8          | 4            | 724-2110           | 724-3110             |
| 1/2   | 1/2        | 1            | 3              | 4            | 724-2113           | 724-3113             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-2116           | 724-3116             |
| 1/2   | 1/2        | 1-5/8        | 3-5/8          | 4            | 724-2119           | 724-3119             |
| 1/2   | 1/2        | 2            | 4              | 4            | 724-2122           | 724-3122             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 4            | 724-2125           | 724-3125             |
| 1/2   | 1/2        | 3            | 5              | 4            | 724-2128           | 724-3128             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4            | 724-2131           | 724-3131             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 3            | 724-2134           | 724-3134             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 4            | 724-2137           | 724-3137             |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 4            | 724-2140           | 724-3140             |
| 5/8   | 5/8        | 1-1/4        | 3-3/8          | 4            | 724-2143           | 724-3143             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-2146           | 724-3146             |
| 5/8   | 5/8        | 2            | 4-1/8          | 4            | 724-2149           | 724-3149             |
| 5/8   | 5/8        | 2-1/8        | 4-1/4          | 4            | 724-2152           | 724-3152             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 724-2155           | 724-3155             |
| 5/8   | 5/8        | 3            | 5-1/4          | 4            | 724-2158           | 724-3158             |
| 5/8   | 5/8        | 3-1/8        | 5-1/4          | 4            | 724-2161           | 724-3161             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-2164           | 724-3164             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-2167           | 724-3167             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 3            | 724-2170           | 724-3170             |
| 3/4   | 3/4        | 3/4          | 3              | 4            | 724-2173           | 724-3173             |
| 3/4   | 3/4        | 7/8          | 3-1/8          | 3            | 724-2176           | 724-3176             |
| 3/4   | 3/4        | 1-1/4        | 3-1/2          | 4            | 724-2179           | 724-3179             |
| 3/4   | 3/4        | 1-1/2        | 3-3/4          | 3            | 724-2182           | 724-3182             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 4            | 724-2185           | 724-3185             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 4            | 724-2188           | 724-3188             |
| 3/4   | 3/4        | 2-1/2        | 4-5/8          | 4            | 724-2191           | 724-3191             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 724-2194           | 724-3194             |
| 3/4   | 3/4        | 4-1/8        | 6-3/8          | 4            | 724-2197           | 724-3197             |
| 13/16 | 3/4        | 1-7/8        | 4-1/8          | 4            | 724-2200           | 724-3200             |
| 7/8   | 3/4        | 7/8          | 3-1/8          | 3            | 724-2203           | 724-3203             |
| 7/8   | 3/4        | 1            | 3-1/4          | 3            | 724-2206           | 724-3206             |

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 7/8"  | 3/4"       | 1-1/8"       | 3-3/8"         | 5            | 724-2209           | 724-3209             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-2212           | 724-3212             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 5            | 724-2215           | 724-3215             |
| 7/8   | 7/8        | 1-1/8        | 3-3/8          | 5            | 724-2218           | 724-3218             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 5            | 724-2221           | 724-3221             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 5            | 724-2224           | 724-3224             |
| 7/8   | 1          | 1-3/4        | 5              | 3            | 724-2227           | 724-3227             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 5            | 724-2229           | 724-3229             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-2230           | 724-3230             |
| 1     | 3/4        | 1-1/2        | 3-3/8          | 5            | 724-2233           | 724-3233             |
| 1     | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-2236           | 724-3236             |
| 1     | 3/4        | 2            | 4-1/4          | 5            | 724-2239           | 724-3239             |
| 1     | 3/4        | 3            | 5-1/4          | 5            | 724-2242           | 724-3242             |
| 1     | 3/4        | 4            | 6-1/4          | 5            | 724-2245           | 724-3245             |
| 1     | 1          | 1            | 3-1/2          | 3            | 724-2248           | 724-3248             |
| 1     | 1          | 1            | 3-1/2          | 5            | 724-2251           | 724-3251             |
| 1     | 1          | 1-1/8        | 3-5/8          | 5            | 724-2254           | 724-3254             |
| 1     | 1          | 1-5/8        | 4-1/8          | 5            | 724-2257           | 724-3257             |
| 1     | 1          | 1-3/4        | 5              | 3            | 724-2260           | 724-3260             |
| 1     | 1          | 2            | 4-1/2          | 5            | 724-2263           | 724-3263             |
| 1     | 1          | 3            | 5-1/2          | 5            | 724-2266           | 724-3266             |
| 1     | 1          | 4            | 6-1/2          | 5            | 724-2269           | 724-3269             |
| 1     | 1          | 6            | 8-1/2          | 5            | 724-2272           | 724-3272             |
| 1-1/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-2275           | 724-3275             |
| 1-1/8 | 3/4        | 2            | 4-1/4          | 6            | 724-2278           | 724-3278             |
| 1-1/8 | 1          | 2            | 4-1/2          | 6            | 724-2281           | 724-3281             |
| 1-1/8 | 1          | 3-1/2        | 6              | 6            | 724-2284           | 724-3284             |
| 1-1/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-2287           | 724-3287             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 6            | 724-2290           | 724-3290             |
| 1-1/4 | 1-1/4      | 1-1/4        | 4              | 4            | 724-2296           | 724-3296             |
| 1-1/4 | 1-1/4      | 1-3/8        | 3-7/8          | 6            | 724-2299           | 724-3299             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-2302           | 724-3302             |
| 1-1/4 | 1-1/4      | 2            | 5-1/4          | 3            | 724-2305           | 724-3305             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6            | 724-2308           | 724-3308             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-2311           | 724-3311             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6            | 724-2314           | 724-3314             |
| 1-3/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-2317           | 724-3317             |
| 1-3/8 | 3/4        | 2            | 4-1/4          | 6            | 724-2320           | 724-3320             |
| 1-1/2 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-2323           | 724-3323             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 6            | 724-2326           | 724-3326             |
| 1-1/2 | 3/4        | 2            | 4-1/4          | 6            | 724-2329           | 724-3329             |
| 1-1/2 | 3/4        | 4            | 6-1/4          | 6            | 724-2332           | 724-3332             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 724-2335           | 724-3335             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6            | 724-2338           | 724-3338             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6            | 724-2341           | 724-3341             |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 6            | 724-2344           | 724-3344             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6            | 724-2347           | 724-3347             |
| 1-3/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-2350           | 724-3350             |
| 1-3/4 | 3/4        | 2            | 4-1/4          | 6            | 724-2353           | 724-3353             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-2356           | 724-3356             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-2359           | 724-3359             |
| 2     | 3/4        | 1-1/8        | 3-3/8          | 8            | 724-2362           | 724-3362             |
| 2     | 3/4        | 2            | 4-1/2          | 8            | 724-2365           | 724-3365             |
| 2     | 1-1/4      | 2            | 4-1/2          | 8            | 724-2368           | 724-3368             |
| 2     | 1-1/4      | 4            | 6-1/2          | 8            | 724-2371           | 724-3371             |
| 2     | 1-1/4      | 6-1/8        | 8-5/8          | 8            | 724-2374           | 724-3374             |
| 2     | 2          | 2            | 5-3/4          | 8            | 724-2377           | 724-3377             |
| 2     | 2          | 3            | 6-3/4          | 6            | 724-2380           | 724-3380             |
| 2     | 2          | 3            | 6-3/4          | 8            | 724-2383           | 724-3383             |
| 2     | 2          | 4            | 7-3/4          | 6            | 724-2386           | 724-3386             |
| 2     | 2          | 4            | 7-3/4          | 8            | 724-2389           | 724-3389             |
| 2     | 2          | 5            | 8-3/4          | 8            | 724-2392           | 724-3392             |
| 2     | 2          | 6            | 9-3/4          | 6            | 724-2395           | 724-3395             |
| 2     | 2          | 6            | 9-3/4          | 8            | 724-2398           | 724-3398             |
| 2     | 2          | 7            | 10-3/4         | 8            | 724-2401           | 724-3401             |
| 2     | 2          | 8            | 11-3/4         | 8            | 724-2404           | 724-3404             |
| 2     | 2          | 10           | 13-3/4         | 8            | 724-2407           | 724-3407             |
| 2     | 2          | 12           | 15-3/4         | 8            | 724-2410           | 724-3410             |

## M42 8% Cobalt Fine Pitch Roughing End Mills

### Center Cutting

- Fine pitch design provides a better finish than coarse pitch end mills and eliminates chipping in harder materials.
- For use in high production milling in variety of exotic materials.
- Coating improves tool life and allows for higher speeds and feeds.



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoate Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|-------------------|----------------------|
| 3/16" | 3/8"       | 1/2"         | 2-3/8"         | 4            | 724-0508          | 724-1508             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-0511          | 724-1511             |
| 1/4   | 3/8        | 5/16         | 2-1/8          | 3            | 724-0514          | 724-1514             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-0517          | 724-1517             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 3            | 724-0520          | 724-1520             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4            | 724-0523          | 724-1523             |
| 1/4   | 3/8        | 7/8          | 2-11/16        | 3            | 724-0526          | 724-1526             |
| 1/4   | 3/8        | 3/4          | 2-1/2          | 4            | 724-0529          | 724-1529             |
| 1/4   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-0532          | 724-1532             |
| 1/4   | 3/8        | 1-1/4        | 3-1/16         | 4            | 724-0535          | 724-1535             |
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | 4            | 724-0538          | 724-1538             |
| 1/4   | 3/8        | 1-3/8        | 3-1/8          | 3            | 724-0541          | 724-1541             |
| 9/32  | 3/8        | 3/4          | 2-1/2          | 3            | 724-0544          | 724-1544             |
| 5/16  | 3/8        | 7/16         | 2-3/16         | 3            | 724-0547          | 724-1547             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3            | 724-0550          | 724-1550             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4            | 724-0553          | 724-1553             |
| 5/16  | 3/8        | 1-1/8        | 2-15/16        | 3            | 724-0556          | 724-1556             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4            | 724-0559          | 724-1559             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 3            | 724-0562          | 724-1562             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 3            | 724-0565          | 724-1565             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 4            | 724-0568          | 724-1568             |
| 3/8   | 3/8        | 7/16         | 2-3/16         | 4            | 724-0571          | 724-1571             |
| 3/8   | 3/8        | 1/2          | 2-5/16         | 3            | 724-0574          | 724-1574             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 724-0577          | 724-1577             |
| 3/8   | 3/8        | 7/8          | 2-5/8          | 4            | 724-0580          | 724-1580             |
| 3/8   | 3/8        | 7/8          | 2-7/8          | 3            | 724-0583          | 724-1583             |
| 3/8   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-0586          | 724-1586             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4            | 724-0589          | 724-1589             |
| 3/8   | 3/8        | 1-5/8        | 3-3/16         | 4            | 724-0592          | 724-1592             |
| 7/16  | 3/8        | 1            | 2-11/16        | 4            | 724-0595          | 724-1595             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-0598          | 724-1598             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 724-0601          | 724-1601             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 724-0604          | 724-1604             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 4            | 724-0607          | 724-1607             |
| 1/2   | 1/2        | 5/8          | 2-5/8          | 4            | 724-0610          | 724-1610             |
| 1/2   | 1/2        | 1            | 3              | 4            | 724-0613          | 724-1613             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-0616          | 724-1616             |
| 1/2   | 1/2        | 1-5/8        | 3-5/8          | 4            | 724-0619          | 724-1619             |
| 1/2   | 1/2        | 2            | 4              | 4            | 724-0622          | 724-1622             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 4            | 724-0625          | 724-1625             |
| 1/2   | 1/2        | 3            | 5              | 4            | 724-0628          | 724-1628             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4            | 724-0631          | 724-1631             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 3            | 724-0634          | 724-1634             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 4            | 724-0637          | 724-1637             |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 4            | 724-0640          | 724-1640             |
| 5/8   | 5/8        | 1-1/4        | 3-3/8          | 4            | 724-0643          | 724-1643             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-0646          | 724-1646             |
| 5/8   | 5/8        | 2            | 4-1/8          | 4            | 724-0649          | 724-1649             |
| 5/8   | 5/8        | 2-1/8        | 4-1/4          | 4            | 724-0652          | 724-1652             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 724-0655          | 724-1655             |
| 5/8   | 5/8        | 3            | 5-1/4          | 4            | 724-0658          | 724-1658             |
| 5/8   | 5/8        | 3-1/8        | 5-1/4          | 4            | 724-0661          | 724-1661             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-0664          | 724-1664             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-0667          | 724-1667             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 3            | 724-0670          | 724-1670             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 4            | 724-0673          | 724-1673             |
| 3/4   | 3/4        | 7/8          | 3-1/8          | 3            | 724-0676          | 724-1676             |
| 3/4   | 3/4        | 1-1/4        | 3-1/2          | 4            | 724-0679          | 724-1679             |
| 3/4   | 3/4        | 1-1/2        | 3-3/4          | 3            | 724-0682          | 724-1682             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 4            | 724-0685          | 724-1685             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 4            | 724-0688          | 724-1688             |
| 3/4   | 3/4        | 2-1/2        | 4-5/8          | 4            | 724-0691          | 724-1691             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 724-0694          | 724-1694             |
| 3/4   | 3/4        | 4-1/8        | 6-3/8          | 4            | 724-0697          | 724-1697             |
| 13/16 | 3/4        | 1-7/8        | 4-1/8          | 4            | 724-0700          | 724-1700             |
| 7/8   | 3/4        | 7/8          | 3-1/8          | 3            | 724-0703          | 724-1703             |
| 7/8   | 3/4        | 1            | 3-1/4          | 3            | 724-0706          | 724-1706             |

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 7/8"  | 3/4"       | 1-1/8"       | 3-3/8"         | 5            | 724-0709           | 724-1709             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-0712           | 724-1712             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 5            | 724-0715           | 724-1715             |
| 7/8   | 7/8        | 1-1/8        | 3-3/8          | 5            | 724-0718           | 724-1718             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 5            | 724-0721           | 724-1721             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 5            | 724-0724           | 724-1724             |
| 7/8   | 1          | 1-3/4        | 5              | 3            | 724-0727           | 724-1727             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0730           | 724-1730             |
| 1     | 3/4        | 1-1/2        | 3-3/8          | 5            | 724-0733           | 724-1733             |
| 1     | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-0736           | 724-1736             |
| 1     | 3/4        | 2            | 4-1/4          | 5            | 724-0739           | 724-1739             |
| 1     | 3/4        | 3            | 5-1/4          | 5            | 724-0742           | 724-1742             |
| 1     | 3/4        | 4            | 6-1/4          | 5            | 724-0745           | 724-1745             |
| 1     | 1          | 1            | 3-1/2          | 3            | 724-0748           | 724-1748             |
| 1     | 1          | 1            | 3-1/2          | 5            | 724-0751           | 724-1751             |
| 1     | 1          | 1-1/8        | 3-5/8          | 5            | 724-0754           | 724-1754             |
| 1     | 1          | 1-5/8        | 4-1/8          | 5            | 724-0757           | 724-1757             |
| 1     | 1          | 1-3/4        | 5              | 3            | 724-0760           | 724-1760             |
| 1     | 1          | 2            | 4-1/2          | 5            | 724-0763           | 724-1763             |
| 1     | 1          | 3            | 5-1/2          | 5            | 724-0766           | 724-1766             |
| 1     | 1          | 4            | 6-1/2          | 5            | 724-0769           | 724-1769             |
| 1     | 1          | 6            | 8-1/2          | 5            | 724-0772           | 724-1772             |
| 1-1/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0775           | 724-1775             |
| 1-1/8 | 3/4        | 2            | 4-1/4          | 6            | 724-0778           | 724-1778             |
| 1-1/8 | 1          | 2            | 4-1/2          | 6            | 724-0781           | 724-1781             |
| 1-1/8 | 1          | 3-1/2        | 6              | 6            | 724-0784           | 724-1784             |
| 1-1/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0787           | 724-1787             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 6            | 724-0790           | 724-1790             |
| 1-1/4 | 1-1/4      | 1-1/4        | 4              | 4            | 724-0796           | 724-1796             |
| 1-1/4 | 1-1/4      | 1-3/8        | 3-7/8          | 6            | 724-0799           | 724-1799             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-0802           | 724-1802             |
| 1-1/4 | 1-1/4      | 2            | 5-1/4          | 3            | 724-0805           | 724-1805             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6            | 724-0808           | 724-1808             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-0811           | 724-1811             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6            | 724-0814           | 724-1814             |
| 1-3/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0817           | 724-1817             |
| 1-3/8 | 3/4        | 2            | 4-1/4          | 6            | 724-0820           | 724-1820             |
| 1-1/2 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0823           | 724-1823             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 6            | 724-0826           | 724-1826             |
| 1-1/2 | 3/4        | 2            | 4-1/4          | 6            | 724-0829           | 724-1829             |
| 1-1/2 | 3/4        | 4            | 6-1/4          | 6            | 724-0832           | 724-1832             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 724-0835           | 724-1835             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6            | 724-0838           | 724-1838             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6            | 724-0841           | 724-1841             |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 6            | 724-0844           | 724-1844             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6            | 724-0847           | 724-1847             |
| 1-3/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-0850           | 724-1850             |
| 1-3/4 | 3/4        | 2            | 4-1/4          | 6            | 724-0853           | 724-1853             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-0856           | 724-1856             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-0859           | 724-1859             |
| 2     | 3/4        | 1-1/8        | 3-3/8          | 8            | 724-0862           | 724-1862             |
| 2     | 3/4        | 2            | 4-1/2          | 8            | 724-0865           | 724-1865             |
| 2     | 1-1/4      | 2            | 4-1/2          | 8            | 724-0868           | 724-1868             |
| 2     | 1-1/4      | 4            | 6-1/2          | 8            | 724-0871           | 724-1871             |
| 2     | 1-1/4      | 6-1/8        | 8-5/8          | 8            | 724-0874           | 724-1874             |
| 2     | 2          | 2            | 5-3/4          | 8            | 724-0877           | 724-1877             |
| 2     | 2          | 3            | 6-3/4          | 6            | 724-0880           | 724-1880             |
| 2     | 2          | 3            | 6-3/4          | 8            | 724-0883           | 724-1883             |
| 2     | 2          | 4            | 7-3/4          | 6            | 724-0886           | 724-1886             |
| 2     | 2          | 4            | 7-3/4          | 8            | 724-0889           | 724-1889             |
| 2     | 2          | 5            | 8-3/4          | 8            | 724-0892           | 724-1892             |
| 2     | 2          | 6            | 9-3/4          | 6            | 724-0895           | 724-1895             |
| 2     | 2          | 6            | 9-3/4          | 8            | 724-0898           | 724-1898             |
| 2     | 2          | 7            | 10-3/4         | 8            | 724-0901           | 724-1901             |
| 2     | 2          | 8            | 11-3/4         | 8            | 724-0904           | 724-1904             |
| 2     | 2          | 10           | 13-3/4         | 8            | 724-0907           | 724-1907             |
| 2     | 2          | 12           | 15-3/4         | 8            | 724-0910           | 724-1910             |

## M42 8% Cobalt Roughing & Finishing End Mills



### Non Center Cutting

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 3/16" | 3/8"       | 1/2"         | 2-3/8"         | 3            | 724-4008           | 724-5008             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-4011           | 724-5011             |
| 1/4   | 3/8        | 5/16         | 2-1/8          | 4            | 724-4014           | 724-5014             |
| 1/4   | 3/8        | 1/4          | 2-1/16         | 3            | 724-4017           | 724-5017             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 3            | 724-4020           | 724-5020             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 4            | 724-4023           | 724-5023             |
| 1/4   | 3/8        | 7/8          | 2-11/16        | 4            | 724-4026           | 724-5026             |
| 1/4   | 3/8        | 3/4          | 2-1/2          | 4            | 724-4029           | 724-5029             |
| 1/4   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-4032           | 724-5032             |
| 1/4   | 3/8        | 1-1/4        | 3-1/16         | 4            | 724-4035           | 724-5035             |
| 1/4   | 3/8        | 1-1/4        | 3-1/8          | 4            | 724-4038           | 724-5038             |
| 1/4   | 3/8        | 1-3/8        | 3-1/8          | 3            | 724-4041           | 724-5041             |
| 9/32  | 3/8        | 3/4          | 2-1/2          | 3            | 724-4044           | 724-5044             |
| 5/16  | 3/8        | 7/16         | 2-3/16         | 4            | 724-4047           | 724-5047             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3            | 724-4050           | 724-5050             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 4            | 724-4053           | 724-5053             |
| 5/16  | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-4056           | 724-5056             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 3            | 724-4058           | 724-5058             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 4            | 724-4059           | 724-5059             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 3            | 724-4062           | 724-5062             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 3            | 724-4065           | 724-5065             |
| 3/8   | 3/8        | 3/8          | 2-5/32         | 4            | 724-4068           | 724-5068             |
| 3/8   | 3/8        | 7/16         | 2-3/16         | 4            | 724-4071           | 724-5071             |
| 3/8   | 3/8        | 1/2          | 2-5/16         | 3            | 724-4074           | 724-5074             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 3            | 724-4076           | 724-5076             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 724-4077           | 724-5077             |
| 3/8   | 3/8        | 7/8          | 2-5/8          | 4            | 724-4080           | 724-5080             |
| 3/8   | 3/8        | 7/8          | 2-7/8          | 3            | 724-4083           | 724-5083             |
| 3/8   | 3/8        | 1-1/8        | 2-15/16        | 4            | 724-4086           | 724-5086             |
| 3/8   | 3/8        | 1-3/8        | 3-3/16         | 4            | 724-4088           | 724-5088             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 4            | 724-4089           | 724-5089             |
| 3/8   | 3/8        | 1-5/8        | 3-3/16         | 4            | 724-4092           | 724-5092             |
| 7/16  | 3/8        | 1            | 2-11/16        | 4            | 724-4095           | 724-5095             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-4098           | 724-5098             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 724-4101           | 724-5101             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 3            | 724-4104           | 724-5104             |
| 1/2   | 1/2        | 1/2          | 2-1/2          | 4            | 724-4107           | 724-5107             |
| 1/2   | 1/2        | 5/8          | 2-5/8          | 4            | 724-4110           | 724-5110             |
| 1/2   | 1/2        | 1            | 3              | 4            | 724-4113           | 724-5113             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 3            | 724-4115           | 724-5115             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-4116           | 724-5116             |
| 1/2   | 1/2        | 1-5/8        | 3-5/8          | 4            | 724-4119           | 724-5119             |
| 1/2   | 1/2        | 2            | 4              | 3            | 724-4121           | 724-5121             |
| 1/2   | 1/2        | 2            | 4              | 4            | 724-4122           | 724-5122             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 4            | 724-4125           | 724-5125             |
| 1/2   | 1/2        | 3            | 5              | 4            | 724-4128           | 724-5128             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 4            | 724-4131           | 724-5131             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 3            | 724-4134           | 724-5134             |
| 5/8   | 5/8        | 5/8          | 2-3/4          | 4            | 724-4137           | 724-5137             |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 4            | 724-4140           | 724-5140             |
| 5/8   | 5/8        | 1-1/4        | 3-3/8          | 4            | 724-4143           | 724-5143             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 3            | 724-4145           | 724-5145             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-4146           | 724-5146             |
| 5/8   | 5/8        | 2            | 4-1/8          | 4            | 724-4149           | 724-5149             |
| 5/8   | 5/8        | 2-1/8        | 4-1/4          | 4            | 724-4152           | 724-5152             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 3            | 724-4154           | 724-5154             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 724-4155           | 724-5155             |
| 5/8   | 5/8        | 3            | 5-1/4          | 4            | 724-4158           | 724-5158             |
| 5/8   | 5/8        | 3-1/8        | 5-1/4          | 4            | 724-4161           | 724-5161             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-4164           | 724-5164             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-4167           | 724-5167             |
| 3/4   | 3/4        | 3/4          | 2-7/8          | 3            | 724-4170           | 724-5170             |
| 3/4   | 3/4        | 3/4          | 3              | 4            | 724-4173           | 724-5173             |
| 3/4   | 3/4        | 7/8          | 3-1/8          | 3            | 724-4176           | 724-5176             |
| 3/4   | 3/4        | 1-1/4        | 3-1/2          | 4            | 724-4179           | 724-5179             |
| 3/4   | 3/4        | 1-1/2        | 3-3/4          | 3            | 724-4182           | 724-5182             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 4            | 724-4185           | 724-5185             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 3            | 724-4186           | 724-5186             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 4            | 724-4188           | 724-5188             |
| 3/4   | 3/4        | 2-1/2        | 4-5/8          | 4            | 724-4191           | 724-5191             |
| 3/4   | 3/4        | 3            | 5-1/4          | 3            | 724-4193           | 724-5193             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 724-4194           | 724-5194             |
| 2     | 2          | 6            | 9-3/4          | 6            | 724-4395           | 724-5395             |
| 2     | 2          | 6            | 9-3/4          | 8            | 724-4398           | 724-5398             |
| 2     | 2          | 7            | 10-3/4         | 8            | 724-4401           | 724-5401             |
| 2     | 2          | 8            | 11-3/4         | 8            | 724-4404           | 724-5404             |
| 2     | 2          | 10           | 13-3/4         | 8            | 724-4407           | 724-5407             |
| 2     | 2          | 12           | 15-3/4         | 8            | 724-4410           | 724-5410             |

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 3/4"  | 3/4"       | 4-1/8"       | 6-3/8"         | 4            | 724-4197           | 724-5197             |
| 13/16 | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-4200           | 724-5200             |
| 7/8   | 3/4        | 7/8          | 3-1/8          | 3            | 724-4203           | 724-5203             |
| 7/8   | 3/4        | 1            | 3-1/4          | 3            | 724-4206           | 724-5206             |
| 7/8   | 3/4        | 1-1/8        | 3-3/8          | 5            | 724-4209           | 724-5209             |
| 7/8   | 3/4        | 1-3/4        | 4              | 3            | 724-4211           | 724-5211             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-4212           | 724-5212             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 5            | 724-4215           | 724-5215             |
| 7/8   | 7/8        | 1-1/8        | 3-3/8          | 5            | 724-4218           | 724-5218             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 5            | 724-4221           | 724-5221             |
| 7/8   | 7/8        | 3-1/2        | 5-3/4          | 5            | 724-4224           | 724-5224             |
| 7/8   | 1          | 1-3/4        | 5              | 3            | 724-4227           | 724-5227             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-4230           | 724-5230             |
| 1     | 3/4        | 1-1/2        | 3-3/8          | 5            | 724-4233           | 724-5233             |
| 1     | 3/4        | 1-1/2        | 3-3/4          | 3            | 724-4234           | 724-5234             |
| 1     | 3/4        | 1-7/8        | 4-1/8          | 5            | 724-4236           | 724-5236             |
| 1     | 3/4        | 2            | 4-1/4          | 5            | 724-4239           | 724-5239             |
| 1     | 3/4        | 3            | 5-1/4          | 5            | 724-4242           | 724-5242             |
| 1     | 3/4        | 4            | 6-1/4          | 4            | 724-4245           | 724-5245             |
| 1     | 1          | 1            | 3-1/2          | 3            | 724-4248           | 724-5248             |
| 1     | 1          | 1            | 3-1/2          | 5            | 724-4251           | 724-5251             |
| 1     | 1          | 1-1/8        | 3-5/8          | 6            | 724-4254           | 724-5254             |
| 1     | 1          | 1-5/8        | 4-1/8          | 6            | 724-4257           | 724-5257             |
| 1     | 1          | 1-3/4        | 5              | 3            | 724-4260           | 724-5260             |
| 1     | 1          | 2            | 4-1/2          | 3            | 724-4262           | 724-5262             |
| 1     | 1          | 2            | 4-1/2          | 6            | 724-4263           | 724-5263             |
| 1     | 1          | 3            | 5-1/2          | 5            | 724-4266           | 724-5266             |
| 1     | 1          | 4            | 6-1/2          | 3            | 724-4268           | 724-5268             |
| 1     | 1          | 4            | 6-1/2          | 5            | 724-4269           | 724-5269             |
| 1     | 1          | 6            | 8-1/2          | 5            | 724-4272           | 724-5272             |
| 1-1/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-4275           | 724-5275             |
| 1-1/8 | 3/4        | 2            | 4-1/4          | 6            | 724-4278           | 724-5278             |
| 1-1/8 | 1          | 2            | 4-1/2          | 6            | 724-4281           | 724-5281             |
| 1-1/8 | 1          | 3-1/2        | 6              | 6            | 724-4284           | 724-5284             |
| 1-1/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-4287           | 724-5287             |
| 1-1/4 | 3/4        | 1-1/2        | 3-3/4          | 3            | 724-4289           | 724-5289             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 6            | 724-4290           | 724-5290             |
| 1-1/4 | 3/4        | 2            | 4-1/2          | 6            | 724-4293           | 724-5293             |
| 1-1/4 | 1-1/4      | 1-1/4        | 4              | 4            | 724-4296           | 724-5296             |
| 1-1/4 | 1-1/4      | 1-3/8        | 3-7/8          | 6            | 724-4299           | 724-5299             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 3            | 724-4301           | 724-5301             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-4302           | 724-5302             |
| 1-1/4 | 1-1/4      | 2            | 5-1/4          | 3            | 724-4305           | 724-5305             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6            | 724-4308           | 724-5308             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 3            | 724-4310           | 724-5310             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-4311           | 724-5311             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 6            | 724-4314           | 724-5314             |
| 1-3/8 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-4317           | 724-5317             |
| 1-3/8 | 3/4        | 2            | 4-1/4          | 6            | 724-4320           | 724-5320             |
| 1-1/2 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-4323           | 724-5323             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 6            | 724-4326           | 724-5326             |
| 1-1/2 | 3/4        | 2            | 4-1/2          | 6            | 724-4329           | 724-5329             |
| 1-1/2 | 3/4        | 4            | 6-1/4          | 6            | 724-4332           | 724-5332             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 3            | 724-4334           | 724-5334             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 724-4335           | 724-5335             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 6            | 724-4338           | 724-5338             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 3            | 724-4340           | 724-5340             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 6            | 724-4341           | 724-5341             |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 6            | 724-4344           | 724-5344             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 6            | 724-4347           | 724-5347             |
| 1-3/4 | 3/4        | 1-1/8        | 3-3/8          | 6            | 724-4350           | 724-5350             |
| 1-3/4 | 3/4        | 2            | 4-1/4          | 6            | 724-4353           | 724-5353             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-4356           | 724-5356             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-4359           | 724-5359             |
| 2     | 3/4        | 1-1/8        | 3-3/8          | 8            | 724-4362           | 724-5362             |
| 2     | 3/4        | 2            | 4-1/2          | 8            | 724-4365           | 724-5365             |
| 2     | 1-1/4      | 2            | 4-1/2          | 3            | 724-4367           | 724-5367             |
| 2     | 1-1/4      | 2            | 4-1/2          | 8            | 724-4368           | 724-5368             |
| 2     | 1-1/4      | 4            | 6-1/2          | 3            | 724-4370           | 724-5370             |
| 2     | 1-1/4      | 4            | 6-1/2          | 8            | 724-4371           | 724-5371             |
| 2     | 1-1/4      | 6-1/8        | 8-5/8          | 8            | 724-4374           | 724-5374             |
| 2     | 2          | 2            | 5-3/4          | 8            | 724-4377           | 724-5377             |
| 2     | 2          | 3            | 6-3/4          | 6            | 724-4380           | 724-5380             |
| 2     | 2          | 3            | 6-3/4          | 8            | 724-4383           | 724-5383             |
| 2     | 2          | 4            | 7-3/4          | 6            | 724-4386           | 724-5386             |
| 2     | 2          | 4            | 7-3/4          | 8            | 724-4389           | 724-5389             |
| 2     | 2          | 5            | 8-3/4          | 8            | 724-4392           | 724-5392             |

## M42 8% Cobalt 3 Flute Roughing End Mills For Aluminum

### Coarse Pitch, Center Cutting



| Size  | Shank Dia. | Flute Length | Overall Length | Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------|----------------------|
| 3/16" | 3/8"       | 1/2"         | 2-3/8"         | 723-4403  | 724-6403             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 723-4406  | 724-6406             |
| 1/4   | 3/8        | 1-1/8        | 2-15/16        | 723-4409  | 724-6409             |
| 1/4   | 3/8        | 1-3/8        | 3-1/8          | 723-4412  | 724-6412             |
| 9/32  | 3/8        | 3/4          | 2-1/2          | 723-4415  | 724-6415             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 723-4418  | 724-6418             |
| 5/16  | 3/8        | 1-1/8        | 2-15/16        | 723-4421  | 724-6421             |
| 5/16  | 3/8        | 1-3/8        | 3-1/8          | 723-4424  | 724-6424             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 723-4427  | 724-6427             |
| 3/8   | 3/8        | 7/16         | 2-3/16         | 723-4430  | 724-6430             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 723-4433  | 724-6433             |
| 3/8   | 3/8        | 1-1/8        | 2-13/16        | 723-4436  | 724-6436             |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 723-4439  | 724-6439             |
| 3/8   | 3/8        | 1-5/8        | 3-3/16         | 723-4442  | 724-6442             |
| 7/16  | 3/8        | 1            | 2-11/16        | 723-4445  | 724-6445             |
| 15/32 | 1/2        | 1-1/4        | 3-1/4          | 723-4448  | 724-6448             |
| 1/2   | 1/2        | 5/8          | 2-5/8          | 723-4451  | 724-6451             |
| 1/2   | 1/2        | 1            | 3              | 723-4454  | 724-6454             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 723-4457  | 724-6457             |
| 1/2   | 1/2        | 1-5/8        | 3-5/8          | 723-4460  | 724-6460             |
| 1/2   | 1/2        | 2            | 4              | 723-4463  | 724-6463             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 723-4466  | 724-6466             |
| 1/2   | 1/2        | 3            | 5              | 723-4469  | 724-6469             |
| 9/16  | 1/2        | 1-3/8        | 3-3/8          | 723-4472  | 724-6472             |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 723-4475  | 724-6475             |
| 5/8   | 5/8        | 1-1/4        | 3-3/8          | 723-4478  | 724-6478             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 723-4481  | 724-6481             |
| 5/8   | 5/8        | 2            | 4-1/8          | 723-4484  | 724-6484             |
| 5/8   | 5/8        | 2-1/8        | 4-1/4          | 723-4487  | 724-6487             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 723-4490  | 724-6490             |
| 5/8   | 5/8        | 3            | 5-1/8          | 723-4493  | 724-6493             |
| 5/8   | 5/8        | 3-1/8        | 5-1/4          | 723-4496  | 724-6496             |
| 11/16 | 5/8        | 1-5/8        | 3-3/4          | 723-4499  | 724-6499             |
| 3/4   | 5/8        | 1-5/8        | 3-3/4          | 723-4502  | 724-6502             |
| 3/4   | 3/4        | 3/4          | 3              | 723-4505  | 724-6505             |
| 3/4   | 3/4        | 1-1/4        | 3-1/2          | 723-4508  | 724-6508             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 723-4511  | 724-6511             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 723-4514  | 724-6514             |
| 3/4   | 3/4        | 2            | 4-1/4          | 723-4517  | 724-6517             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 723-4520  | 724-6520             |
| 3/4   | 3/4        | 2-1/2        | 4-3/4          | 723-4523  | 724-6523             |
| 3/4   | 3/4        | 3            | 5-1/4          | 723-4526  | 724-6526             |
| 3/4   | 3/4        | 4            | 6-1/4          | 723-4529  | 724-6529             |
| 3/4   | 3/4        | 4-1/8        | 6-3/8          | 723-4532  | 724-6532             |
| 7/8   | 3/4        | 1-1/8        | 3-3/8          | 723-4535  | 724-6535             |
| 7/8   | 3/4        | 1-1/2        | 3-3/4          | 723-4538  | 724-6538             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 723-4541  | 724-6541             |
| 7/8   | 3/4        | 3-1/2        | 5-5/8          | 723-4544  | 724-6544             |
| 7/8   | 7/8        | 1-1/8        | 3-3/8          | 723-4547  | 724-6547             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 723-4550  | 724-6550             |
| 1     | 3/4        | 1-1/8        | 3-3/8          | 723-4553  | 724-6553             |
| 1     | 3/4        | 1-1/2        | 3-3/4          | 723-4556  | 724-6556             |
| 1     | 3/4        | 2            | 4-1/4          | 723-4559  | 724-6559             |
| 1     | 3/4        | 3            | 5-1/4          | 723-4562  | 724-6562             |
| 1     | 3/4        | 4            | 6-1/4          | 723-4565  | 724-6565             |
| 1     | 1          | 1-1/8        | 3-5/8          | 723-4568  | 724-6568             |
| 1     | 1          | 1-5/8        | 4-1/8          | 723-4571  | 724-6571             |

| Size  | Shank Dia. | Flute Length | Overall Length | Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|-----------|----------------------|
| 1     | 1          | 2            | 4-1/2          | 723-4574  | 724-6574             |
| 1     | 1          | 3            | 5-1/2          | 723-4577  | 724-6577             |
| 1     | 1          | 4            | 6-1/2          | 723-4580  | 724-6580             |
| 1     | 1          | 6            | 8-1/2          | 723-4583  | 724-6583             |
| 1-1/8 | 3/4        | 1-1/8        | 3-3/8          | 723-4586  | 724-6586             |
| 1-1/4 | 3/4        | 1-1/2        | 3-3/4          | 723-4589  | 724-6589             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 723-4592  | 724-6592             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 723-4595  | 724-6595             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 723-4598  | 724-6598             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 723-4601  | 724-6601             |
| 1-1/4 | 1-1/4      | 6            | 8-1/2          | 723-4604  | 724-6604             |
| 1-3/8 | 3/4        | 2            | 4-1/4          | 723-4607  | 724-6607             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 723-4610  | 724-6610             |
| 1-1/2 | 3/4        | 2            | 4-1/4          | 723-4613  | 724-6613             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 723-4616  | 724-6616             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 723-4619  | 724-6619             |
| 1-1/2 | 1-1/4      | 4            | 6-1/2          | 723-4622  | 724-6622             |
| 1-1/2 | 1-1/4      | 5            | 7-1/2          | 723-4625  | 724-6625             |
| 1-1/2 | 1-1/4      | 6            | 8-1/2          | 723-4628  | 724-6628             |
| 1-1/2 | 1-1/4      | 8            | 10-1/2         | 723-4631  | 724-6631             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 723-4634  | 724-6634             |
| 1-3/4 | 1-1/4      | 4            | 6-1/2          | 723-4637  | 724-6637             |
| 2     | 3/4        | 3/4          | 3              | 723-4640  | 724-6640             |
| 2     | 3/4        | 1-1/8        | 3-1/2          | 723-4643  | 724-6643             |
| 2     | 3/4        | 2            | 4-1/2          | 723-4646  | 724-6646             |
| 2     | 1-1/4      | 2            | 4-1/2          | 723-4649  | 724-6649             |
| 2     | 1-1/4      | 4            | 6-1/2          | 723-4652  | 724-6652             |
| 2     | 2          | 2            | 5-3/4          | 723-4655  | 724-6655             |
| 2     | 2          | 2            | 6-3/4          | 723-4658  | 724-6658             |
| 2     | 2          | 3            | 6-3/4          | 723-4661  | 724-6661             |
| 2     | 2          | 4            | 7-3/4          | 723-4664  | 724-6664             |
| 2     | 2          | 5            | 7-3/4          | 723-4667  | 724-6667             |
| 2     | 2          | 6            | 8-3/4          | 723-4670  | 724-6670             |
| 2     | 2          | 6            | 9-3/4          | 723-4673  | 724-6673             |
| 2     | 2          | 7            | 9-3/4          | 723-4676  | 724-6676             |
| 2     | 2          | 8            | 11-3/4         | 723-4679  | 724-6679             |

## M42 8% Cobalt 3 Flute Stub Roughing End Mills

### Center Cutting

- Offers higher rigidity than regular length.
- Allows increased feeds up to 100%.



| Size | Shank Dia. | Flute Length | Overall Length | Uncoated Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------------|----------------------|
| 1/4" | 3/8"       | 1/4"         | 2-1/16"        | 723-5205           | 723-6205             |
| 3/8  | 3/8        | 3/8          | 2-5/32         | 723-5210           | 723-6210             |
| 1/2  | 1/2        | 1/2          | 2-1/2          | 723-5215           | 723-6215             |
| 5/8  | 5/8        | 5/8          | 2-3/4          | 723-5220           | 723-6220             |
| 3/4" | 3/4"       | 3/4"         | 2-7/8"         | 723-5225           | 723-6225             |
| 7/8  | 3/4        | 7/8          | 3-1/8          | 723-5230           | 723-6230             |
| 1    | 1          | 1            | 3-1/2          | 723-5235           | 723-6235             |

### M42 8% Cobalt 3 Flute Roughing End Mills

Fine Pitch 45° For Aluminum, Center Cutting



| Size  | Shank Dia. | Flute Length | Overall Length | Uncoated Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------------|----------------------|
| 1/4"  | 3/8"       | 5/8"         | 2-7/16"        | 723-5304           | 723-6304             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 723-5308           | 723-6308             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 723-5312           | 723-6312             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 723-5316           | 723-6316             |
| 1/2   | 1/2        | 2            | 4              | 723-5320           | 723-6320             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 723-5324           | 723-6324             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 723-5328           | 723-6328             |
| 3/4   | 3/4        | 1-5/8        | 3-3/4          | 723-5332           | 723-6332             |
| 3/4   | 3/4        | 3            | 5-1/4          | 723-5336           | 723-6336             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 723-5340           | 723-6340             |
| 7/8   | 3/4        | 3-1/2        | 5-3/4          | 723-5344           | 723-6344             |
| 1     | 3/4        | 2            | 4-1/2          | 723-5348           | 723-6348             |
| 1     | 1          | 2            | 4-1/2          | 723-5352           | 723-6352             |
| 1     | 1          | 4            | 6-1/2          | 723-5356           | 723-6356             |
| 1-1/8 | 3/4        | 2            | 4-1/2          | 723-5360           | 723-6360             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 723-5364           | 723-6364             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 723-5368           | 723-6368             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 723-5372           | 723-6372             |
| 1-3/4 | 1-1/4      | 2            | 4-1/2          | 723-5376           | 723-6376             |
| 2     | 1-1/4      | 2            | 4-1/2          | 723-5380           | 723-6380             |
| 2     | 1-1/4      | 4            | 6-1/2          | 723-5384           | 723-6384             |

### M42 8% Cobalt 3 Flute Roughing End Mills

Coarse Pitch for Aluminum,  
Non Center Cutting



| Size  | Shank Dia. | Flute Length | Overall Length | Uncoated Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------------|----------------------|
| 3/8"  | 3/8"       | 3/4"         | 2-1/2"         | 723-7304           | 723-8304             |
| 3/8   | 3/8        | 7/8          | 2-5/8          | 723-7308           | 723-8308             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 723-7312           | 723-8312             |
| 1/2   | 1/2        | 2            | 4              | 723-7316           | 723-8316             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 723-7320           | 723-8320             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 723-7324           | 723-8324             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 723-7328           | 723-8328             |
| 3/4   | 3/4        | 2            | 4-1/4          | 723-7332           | 723-8332             |
| 3/4   | 3/4        | 3            | 5-1/4          | 723-7336           | 723-8336             |
| 7/8   | 3/4        | 1-7/8        | 4-1/8          | 723-7340           | 723-8340             |
| 1     | 3/4        | 1-1/2        | 3-3/4          | 723-7344           | 723-8344             |
| 1     | 3/4        | 2            | 4-1/4          | 723-7348           | 723-8348             |
| 1     | 1          | 2            | 4-1/2          | 723-7352           | 723-8352             |
| 1     | 1          | 3            | 5-1/2          | 723-7356           | 723-8356             |
| 1     | 1          | 4            | 6-1/2          | 723-7360           | 723-8360             |
| 1-1/4 | 3/4        | 1-1/2        | 3-3/4          | 723-7364           | 723-8364             |
| 1-1/4 | 3/4        | 2            | 4-1/4          | 723-7368           | 723-8368             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 723-7372           | 723-8372             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 723-7376           | 723-8376             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 723-7380           | 723-8380             |
| 1-1/2 | 3/4        | 1-1/2        | 3-3/4          | 723-7384           | 723-8384             |
| 1-1/2 | 3/4        | 2            | 4-1/2          | 723-7388           | 723-8388             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 723-7392           | 723-8392             |
| 1-1/2 | 1-1/4      | 3            | 5-1/2          | 723-7396           | 723-8396             |
| 2     | 3/4        | 3/4          | 3              | 723-7400           | 723-8400             |
| 2     | 1-1/4      | 2            | 4-1/2          | 723-7404           | 723-8404             |
| 2     | 1-1/4      | 4            | 6-1/2          | 723-7408           | 723-8408             |
| 2     | 2          | 2            | 5-3/4          | 723-7412           | 723-8412             |
| 2     | 2          | 4            | 7-3/4          | 723-7416           | 723-8416             |

### M42 8% Cobalt Ball Nose Roughing End Mills

- Designed for heavy cuts and high stock removal in radius bottom slots, fillets and special contours.
- Coarse pitch profile can remove metal at the same rate as conventional end mills with considerably less deflection.



Fine Pitch

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Uncoated Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 3/8"  | 3/8"       | 3/4"         | 2-1/2"         | 4            | 724-2502           | 724-2702             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 724-2511           | 724-2711             |
| 1/2   | 1/2        | 2            | 4              | 4            | 724-2520           | 724-2720             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 724-2529           | 724-2729             |
| 5/8   | 5/8        | 2            | 4-1/8          | 4            | 724-2538           | 724-2738             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 724-2547           | 724-2747             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 4            | 724-2556           | 724-2756             |
| 3/4   | 3/4        | 1-3/4        | 4              | 4            | 724-2565           | 724-2765             |
| 3/4   | 3/4        | 2-1/4        | 4-1/2          | 4            | 724-2574           | 724-2774             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 724-2583           | 724-2783             |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 5            | 724-2592           | 724-2792             |
| 1     | 1          | 2            | 4-1/2          | 5            | 724-2601           | 724-2801             |
| 1     | 1          | 3            | 5-1/2          | 5            | 724-2610           | 724-2810             |
| 1     | 1          | 4            | 6-1/2          | 5            | 724-2619           | 724-2819             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 724-2628           | 724-2828             |
| 1-1/4 | 1-1/4      | 3            | 5-1/2          | 6            | 724-2637           | 724-2837             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 724-2646           | 724-2846             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 724-2655           | 724-2855             |
| 2     | 2          | 2            | 5-3/4          | 6            | 724-2664           | 724-2864             |
| 2     | 2          | 4            | 6-3/4          | 6            | 724-2673           | 724-2873             |
| 2     | 2          | 4            | 9-3/4          | 6            | 724-2682           | 724-2882             |

Coarse Pitch

| Size  | Shank Dia. | Flute Length | Overall Length | No. Of Flute | Uncoated Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|--------------------|----------------------|
| 1/4"  | 3/8"       | 5/8"         | 2-7/16"        | 3            | 723-5503           | 723-5603             |
| 1/4   | 3/8        | 5/8          | 2-1/2          | 3            | 723-5505           | 723-5605             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 3            | 723-5510           | 723-5610             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 4            | 723-5515           | 723-5615             |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 4            | 723-5520           | 723-5620             |
| 1/2   | 1/2        | 2-1/2        | 4-1/2          | 4            | 723-5522           | 723-5622             |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 4            | 723-5525           | 723-5625             |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 4            | 723-5527           | 723-5627             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 4            | 723-5530           | 723-5630             |
| 3/4   | 3/4        | 1-3/4        | 4              | 4            | 723-5531           | 723-5631             |
| 3/4   | 3/4        | 3            | 5-1/4          | 4            | 723-5532           | 723-5632             |
| 1     | 3/4        | 2            | 4-1/2          | 5            | 723-5533           | 723-5633             |
| 1     | 1          | 2            | 4-1/2          | 5            | 723-5534           | 723-5634             |
| 1     | 1          | 2            | 4-1/2          | 6            | 723-5535           | 723-5635             |
| 1     | 1          | 4            | 6-1/2          | 5            | 723-5537           | 723-5637             |
| 1-1/4 | 3/4        | 2            | 4-1/2          | 6            | 723-5538           | 723-5638             |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 6            | 723-5540           | 723-5640             |
| 1-1/4 | 1-1/4      | 4            | 6-1/2          | 6            | 723-5542           | 723-5642             |
| 1-1/2 | 3/4        | 2            | 4-1/2          | 6            | 723-5544           | 723-5644             |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 6            | 723-5545           | 723-5645             |
| 1-1/2 | 1-1/2      | 2            | 4-1/2          | 6            | 723-5546           | 723-5646             |
| 1-1/2 | 1-1/2      | 4            | 6-1/2          | 6            | 723-5547           | 723-5647             |
| 2     | 2          | 4            | 7-3/4          | 6            | 723-5550           | 723-5650             |
| 2     | 1-1/4      | 4            | 7-3/4          | 8            | 723-5555           | 723-5655             |
| 2     | 2          | 4            | 7-3/4          | 8            | 723-5556           | 723-5656             |

## 2 Flute Ball Nose Single End Mills

### High Speed Steel

- Designed for milling radius bottom slots, fillets and special contours.
- Center cutting design is used to plunge into solid material at the beginning of a slotting cut.
- 2 Flute design provides excellent chip evacuation.

### Regular Length



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/8"  | 3/8"       | 3/8"         | 2-5/16"        | 720-1401     | 721-1401       | 722-1401             |
| 5/32  | 3/8        | 7/16         | 2-5/16         | 720-1402     | 721-1402       | 722-1402             |
| 3/16  | 3/8        | 1/2          | 2-3/8          | 720-1403     | 721-1403       | 722-1403             |
| 7/32  | 3/8        | 1/2          | 2-3/8          | 720-1404     | 721-1404       | 722-1404             |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 720-1405     | 721-1405       | 722-1405             |
| 9/32  | 3/8        | 9/16         | 2-3/8          | 720-1406     | 721-1406       | 722-1406             |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 720-1407     | 721-1407       | 722-1407             |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 720-1408     | 721-1408       | 722-1408             |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 720-1409     | 721-1409       | 722-1409             |
| 7/16  | 1/2        | 1            | 3              | 720-1411     | 721-1411       | 722-1411             |
| 1/2   | 1/2        | 1            | 3              | 720-1413     | 721-1413       | 722-1413             |
| 9/16  | 1/2        | 1            | 3              | 720-1415     | 721-1415       | 722-1415             |
| 5/8   | 1/2        | 1-1/8        | 3-1/8          | 720-1417     | 721-1417       | 722-1417             |
| 5/8   | 5/8        | 1-3/8        | 3-3/8          | 720-1419     | 721-1419       | 722-1419             |
| 3/4   | 1/2        | 1-5/8        | 3-5/8          | 720-1421     | 721-1421       | 722-1421             |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 720-1423     | 721-1423       | 722-1423             |
| 13/16 | 3/4        | 2            | 4-1/4          | 720-1425     | 721-1425       | 722-1425             |
| 7/8   | 3/4        | 2            | 4-1/4          | 720-1427     | 721-1427       | 722-1427             |
| 7/8   | 7/8        | 2            | 4-1/4          | 720-1429     | 721-1429       | 722-1429             |
| 15/16 | 3/4        | 2-1/4        | 4-1/2          | 720-1431     | 721-1431       | 722-1431             |
| 1     | 3/4        | 2-1/4        | 4-9/16         | 720-1433     | 721-1433       | 722-1433             |
| 1     | 1          | 2-1/4        | 4-3/4          | 720-1435     | 721-1435       | 722-1435             |
| 1-1/8 | 1          | 2-1/4        | 4-3/4          | 720-1437     | 721-1437       | 722-1437             |
| 1-1/4 | 1-1/4      | 2-1/2        | 5              | 720-1439     | 721-1439       | 722-1439             |
| 1-3/8 | 1-1/4      | 2-1/2        | 5              | 720-1441     | 721-1441       | 722-1441             |
| 1-1/2 | 1-1/4      | 2-1/2        | 5              | 720-1443     | 721-1443       | 722-1443             |
| 2     | 1-1/4      | 2-1/2        | 5              | 720-1445     | 721-1445       | 722-1445             |

## 2 Flute Ball Nose Single End Mills

### Extended Shank



| Length |            |              |              |         | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|--------|------------|--------------|--------------|---------|--------------|----------------|----------------------|
| Size   | Shank Dia. | Shank Length | Flute Length | OAL     |              |                |                      |
| 1/8"   | 3/8"       | 13/16"       | 3/8"         | 2-3/8"  | 720-1451     | 721-1451       | 722-1451             |
| 3/16   | 3/8        | 1-1/8        | 1/2          | 2-11/16 | 720-1453     | 721-1453       | 722-1453             |
| 1/4    | 3/8        | 1-1/2        | 5/8          | 3-1/16  | 720-1455     | 721-1455       | 722-1455             |
| 5/16   | 3/8        | 1-3/4        | 3/4          | 3-5/16  | 720-1457     | 721-1457       | 722-1457             |
| 3/8    | 3/8        | 1-3/4        | 3/4          | 3-5/16  | 720-1459     | 721-1459       | 722-1459             |
| 7/16   | 1/2        | 1-7/8        | 1            | 3-11/16 | 720-1461     | 721-1461       | 722-1461             |
| 1/2    | 1/2        | 2-1/4        | 1            | 4       | 720-1463     | 721-1463       | 722-1463             |
| 5/8    | 5/8        | 2-3/4        | 1-3/8        | 4-5/8   | 720-1465     | 721-1465       | 722-1465             |
| 3/4    | 3/4        | 3-3/8        | 1-5/8        | 5-3/8   | 720-1467     | 721-1467       | 722-1467             |
| 1      | 1          | 5            | 2-1/2        | 7-1/4   | 720-1469     | 721-1469       | 722-1469             |

## 2 Flute Ball Nose Single End Mills for Aluminum

### Regular long & Extra Long Flute Length

- Recommended for mill radius bottom slots and special contours in aluminum and other non-ferrous materials.
- The high helix angle shears the material cleanly and helps eliminate chatter.
- TiN coating add lubricity to minimize chip packing in th flutes.



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/4" | 3/8"       | 5/8"         | 2-1/2"         | 720-1601     | 721-1601       | 722-1601             |
| 1/4  | 3/8        | 1-1/4        | 3-1/8          | 720-1603     | 721-1603       | 722-1603             |
| 1/4  | 3/8        | 1-3/4        | 3-1/2          | 720-1605     | 721-1605       | 722-1605             |
| 5/16 | 3/8        | 3/4          | 2-1/2          | 720-1607     | 721-1607       | 722-1607             |
| 5/16 | 3/8        | 1-3/8        | 3-1/8          | 720-1609     | 721-1609       | 722-1609             |
| 5/16 | 3/8        | 2            | 3-3/4          | 720-1611     | 721-1611       | 722-1611             |
| 3/8  | 3/8        | 3/4          | 2-1/2          | 720-1613     | 721-1613       | 722-1613             |
| 3/8  | 3/8        | 1-1/2        | 3-1/4          | 720-1615     | 721-1615       | 722-1615             |
| 3/8  | 3/8        | 2-1/2        | 4-1/4          | 720-1617     | 721-1617       | 722-1617             |
| 7/16 | 3/8        | 1            | 2-11/16        | 720-1619     | 721-1619       | 722-1619             |
| 7/16 | 1/2        | 1-3/4        | 3-3/4          | 720-1621     | 721-1621       | 722-1621             |
| 7/16 | 1/2        | 2-3/4        | 4-3/4          | 720-1623     | 721-1623       | 722-1623             |
| 1/2  | 1/2        | 1            | 3-1/4          | 720-1625     | 721-1625       | 722-1625             |
| 1/2  | 1/2        | 2            | 4              | 720-1627     | 721-1627       | 722-1627             |
| 1/2  | 1/2        | 3            | 5              | 720-1629     | 721-1629       | 722-1629             |
| 5/8  | 5/8        | 1-5/8        | 3-3/4          | 720-1631     | 721-1631       | 722-1631             |
| 5/8  | 5/8        | 2-1/2        | 4-5/8          | 720-1633     | 721-1633       | 722-1633             |
| 5/8  | 5/8        | 4            | 6-1/8          | 720-1635     | 721-1635       | 722-1635             |
| 3/4  | 3/4        | 1-5/8        | 3-7/8          | 720-1637     | 721-1637       | 722-1637             |
| 3/4  | 3/4        | 3            | 5-1/4          | 720-1639     | 721-1639       | 722-1639             |
| 3/4  | 3/4        | 4            | 6-1/4          | 720-1641     | 721-1641       | 722-1641             |
| 7/8  | 1-7/8      | 1-7/8        | 4-1/8          | 720-1643     | 721-1643       | 722-1643             |
| 7/8  | 7/8        | 3-1/2        | 5-3/4          | 720-1645     | 721-1645       | 722-1645             |
| 7/8  | 7/8        | 5            | 7-1/4          | 720-1647     | 721-1647       | 722-1647             |
| 1    | 3/4        | 1-7/8        | 4-1/8          | 720-1651     | 721-1651       | 722-1651             |
| 1    | 1          | 2            | 4-1/2          | 720-1653     | 721-1653       | 722-1653             |
| 1    | 1          | 4            | 6-1/2          | 720-1655     | 721-1655       | 722-1655             |
| 1    | 1          | 6            | 8-1/2          | 720-1657     | 721-1657       | 722-1657             |

## 4 Flute Ball Nose Single End Mills

### High Speed Steel



| Shank Flute |      |       |         | Order No. | Shank Flute |       |        |        | Order No. |
|-------------|------|-------|---------|-----------|-------------|-------|--------|--------|-----------|
| Size        | Dia. | Lth   | OAL     |           | Size        | Dia.  | Lth    | OAL    |           |
| 1/8"        | 3/8" | 3/8"  | 2-5/16" | 320-3700  | 5/8"        | 5/8"  | 1-5/8" | 3-3/4" | 320-3750  |
| 1/4         | 3/8  | 5/8   | 2-1/2   | 320-3705  | 5/8         | 5/8   | 2-1/2  | 4-5/8  | 320-3758  |
| 1/4         | 3/8  | 1-1/4 | 3-1/16  | 320-3708  | 3/4         | 3/4   | 1-5/8  | 3-7/8  | 320-3760  |
| 5/16        | 3/8  | 3/4   | 2-1/2   | 320-3715  | 3/4         | 3/4   | 3      | 5-1/4  | 320-3768  |
| 5/16        | 3/8  | 1     | 2-3/4   | 320-3710  | 7/8         | 7/8   | 1-7/8  | 4-1/8  | 320-3765  |
| 5/16        | 3/8  | 1-1/2 | 3-1/4   | 320-3718  | 1           | 1     | 2      | 4-1/2  | 320-3775  |
| 3/8         | 3/8  | 3/4   | 2-1/2   | 320-3725  | 1           | 1     | 2-1/4  | 4-3/4  | 320-3770  |
| 3/8         | 3/8  | 1     | 2-3/4   | 320-3720  | 1           | 1     | 4      | 6-1/2  | 320-3778  |
| 3/8         | 3/8  | 1-1/2 | 3-1/4   | 320-3728  | 1-1/4       | 1-1/4 | 2      | 4-1/2  | 320-3785  |
| 1/2         | 1/2  | 1     | 2-3/4   | 320-3730  | 1-1/4       | 1-1/4 | 2-1/2  | 5      | 320-3780  |
| 1/2         | 1/2  | 1-1/4 | 3-1/4   | 320-3735  | 1-1/2       | 1-1/2 | 2      | 4-1/2  | 320-3795  |
| 1/2         | 1/2  | 1-1/2 | 3-1/4   | 320-3740  | 1-1/2       | 1-1/2 | 2-1/2  | 5      | 320-3790  |
| 1/2         | 1/2  | 2     | 4       | 320-3748  |             |       |        |        |           |

### 2 Flute Ball Nose Double End Mills

#### High Speed Steel

- Designed for milling radius bottom slots, fillets and special contours.
- Center cutting design is used to plunge into solid material at the beginning of a slotting cut.
- 2 Flute design provides excellent chip evacuation.



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/8"  | 3/8"       | 3/8"         | 3-3/16"        | 720-2100     | 721-2100       | 722-2100             |
| 9/64  | 3/8        | 7/16         | 3-1/8          | 720-2105     | 721-2105       | 722-2105             |
| 5/32  | 3/8        | 1/2          | 3-1/8          | 720-2110     | 721-2110       | 722-2110             |
| 11/64 | 3/8        | 7/16         | 3-1/8          | 720-2115     | 721-2115       | 722-2115             |
| 3/16  | 3/8        | 7/16         | 3-1/8          | 720-2120     | 721-2120       | 722-2120             |
| 13/64 | 3/8        | 1/2          | 3-1/8          | 720-2125     | 721-2125       | 722-2125             |
| 7/32  | 3/8        | 1/2          | 3-1/8          | 720-2130     | 721-2130       | 722-2130             |
| 15/64 | 3/8        | 1/2          | 3-1/8          | 720-2135     | 721-2135       | 722-2135             |
| 1/4   | 3/8        | 1/2          | 3-1/8          | 720-2140     | 721-2140       | 722-2140             |
| 17/64 | 3/8        | 9/16         | 3-1/8          | 720-2145     | 721-2145       | 722-2145             |
| 9/32  | 3/8        | 9/16         | 3-1/8          | 720-2150     | 721-2150       | 722-2150             |
| 19/64 | 3/8        | 9/16         | 3-1/8          | 720-2155     | 721-2155       | 722-2155             |
| 5/16  | 3/8        | 9/16         | 3-1/8          | 720-2160     | 721-2160       | 722-2160             |
| 21/64 | 3/8        | 9/16         | 3-1/8          | 720-2161     | 721-2161       | 722-2161             |
| 11/32 | 3/8        | 9/16         | 3-1/8          | 720-2162     | 721-2162       | 722-2162             |
| 23/64 | 1/2        | 9/16         | 3-1/8          | 720-2163     | 721-2163       | 722-2163             |
| 3/8   | 3/8        | 9/16         | 3-1/8          | 720-2165     | 721-2165       | 722-2165             |
| 13/32 | 1/2        | 13/16        | 3-3/4          | 720-2168     | 721-2168       | 722-2168             |
| 7/16  | 1/2        | 13/16        | 3-3/4          | 720-2170     | 721-2170       | 722-2170             |
| 1/2   | 1/2        | 13/16        | 3-3/4          | 720-2174     | 721-2174       | 722-2174             |
| 5/8   | 5/8        | 1-1/8        | 4-1/2          | 720-2185     | 721-2185       | 722-2185             |
| 3/4   | 3/4        | 1-5/16       | 5              | 720-2188     | 721-2188       | 722-2188             |
| 7/8   | 7/8        | 1-9/16       | 5-1/2          | 720-2190     | 721-2190       | 722-2190             |
| 1     | 1          | 1-5/8        | 5-7/8          | 720-2192     | 721-2192       | 722-2192             |

### 2 Flute High Helix Ball Nose Double End Mills

for Aluminum,  
High Speed Steel



| Size  | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|-------|------------|--------------|----------------|--------------|----------------|----------------------|
| 1/8"  | 3/8"       | 3/8"         | 3-1/16"        | 720-2202     | 721-2202       | 722-2202             |
| 3/16  | 3/8        | 7/16         | 3-1/4          | 720-2204     | 721-2204       | 722-2204             |
| 1/4   | 3/8        | 1/2          | 3-3/8          | 720-2206     | 721-2206       | 722-2206             |
| 5/16  | 3/8        | 9/16         | 3-1/2          | 720-2208     | 721-2208       | 722-2208             |
| 3/8   | 3/8        | 9/16         | 3-1/2          | 720-2210     | 721-2210       | 722-2210             |
| 7/16  | 1/2        | 13/16        | 4-1/8          | 720-2212     | 721-2212       | 722-2212             |
| 1/2   | 1/2        | 13/16        | 4-1/8          | 720-2214     | 721-2214       | 722-2214             |
| 9/16  | 5/8        | 1-1/8        | 5              | 720-2216     | 721-2216       | 722-2216             |
| 5/8   | 5/8        | 1-1/8        | 5              | 720-2218     | 721-2218       | 722-2218             |
| 11/16 | 3/4        | 1-5/16       | 5-5/8          | 720-2220     | 721-2220       | 722-2220             |
| 3/4   | 3/4        | 1-5/16       | 5-5/8          | 720-2222     | 721-2222       | 722-2222             |
| 13/16 | 7/8        | 1-9/16       | 6-1/8          | 720-2224     | 721-2224       | 722-2224             |
| 7/8   | 7/8        | 1-9/16       | 6-1/8          | 720-2226     | 721-2226       | 722-2226             |
| 15/16 | 1          | 1-5/8        | 6-3/8          | 720-2228     | 721-2228       | 722-2228             |
| 1     | 1          | 1-5/8        | 6-3/8          | 720-2230     | 721-2230       | 722-2230             |

### 2 Flute Ball Nose Single End Mills

#### M42 8% Cobalt

- Designed for milling radius bottom slots, fillets and special contours.
- Center cutting design is used to plunge into solid material at the beginning of a slotting cut.
- 2 Flute design provides excellent chip evacuation.



#### Regular Length

| Size  | Shank Dia. | Flute Length | Overall Length | Order No. |
|-------|------------|--------------|----------------|-----------|
| 1/8"  | 3/8"       | 3/8"         | 2-5/16"        | 723-1401  |
| 5/32  | 3/8        | 7/16         | 2-5/16         | 723-1402  |
| 3/16  | 3/8        | 1/2          | 2-3/8          | 723-1403  |
| 7/32  | 3/8        | 1/2          | 2-3/8          | 723-1404  |
| 1/4   | 3/8        | 5/8          | 2-7/16         | 723-1405  |
| 9/32  | 3/8        | 9/16         | 2-3/8          | 723-1406  |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 723-1407  |
| 11/32 | 3/8        | 3/4          | 2-1/2          | 723-1408  |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 723-1409  |
| 7/16  | 1/2        | 1            | 3              | 723-1411  |
| 1/2   | 1/2        | 1            | 3              | 723-1413  |
| 9/16  | 1/2        | 1            | 3              | 723-1415  |
| 5/8   | 1/2        | 1-1/8        | 3-1/8          | 723-1417  |
| 5/8   | 5/8        | 1-3/8        | 3-3/8          | 723-1419  |
| 3/4   | 1/2        | 1-5/8        | 3-5/8          | 723-1421  |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 723-1423  |
| 13/16 | 3/4        | 2            | 4-1/4          | 723-1425  |
| 7/8   | 3/4        | 2            | 4-1/4          | 723-1427  |
| 7/8   | 7/8        | 2            | 4-1/4          | 723-1429  |
| 15/16 | 3/4        | 2-1/4        | 4-1/2          | 723-1431  |
| 1     | 3/4        | 2-1/4        | 4-9/16         | 723-1433  |
| 1     | 1          | 2-1/4        | 4-3/4          | 723-1435  |
| 1-1/8 | 1          | 2-1/4        | 4-3/4          | 723-1437  |
| 1-1/4 | 1-1/4      | 2-1/2        | 5              | 723-1439  |
| 1-3/8 | 1-1/4      | 2-1/2        | 5              | 723-1441  |
| 1-1/2 | 1-1/4      | 2-1/2        | 5              | 723-1443  |
| 2     | 1-1/4      | 2-1/2        | 5              | 723-1445  |

### 2 Flute Ball Nose Single End Mills

#### M42 8% Cobalt



#### Extended Shank

| Size | Shank Dia. | Length Below Shank | Flute Length | Overall Length | Order No. |
|------|------------|--------------------|--------------|----------------|-----------|
| 1/8" | 3/8"       | 13/16"             | 3/8"         | 2-3/8"         | 723-1451  |
| 3/16 | 3/8        | 1-1/8              | 1/2          | 2-11/16        | 723-1453  |
| 1/4  | 3/8        | 1-1/2              | 5/8          | 3-1/16         | 723-1455  |
| 5/16 | 3/8        | 1-3/4              | 3/4          | 3-5/16         | 723-1457  |
| 3/8  | 3/8        | 1-3/4              | 3/4          | 3-5/16         | 723-1459  |
| 7/16 | 1/2        | 1-7/8              | 1            | 3-11/16        | 723-1461  |
| 1/2  | 1/2        | 2-1/4              | 1            | 4              | 723-1463  |
| 5/8  | 5/8        | 2-3/4              | 1-3/8        | 4-5/8          | 723-1465  |
| 3/4  | 3/4        | 3-3/8              | 1-5/8        | 5-3/8          | 723-1467  |
| 1    | 1          | 5                  | 2-1/2        | 7-1/4          | 723-1469  |

## Ball End Mills

### 4 Flute Ball Nose Single End Mills

M42 8% Cobalt



| Size  | Shank Dia. | Flute Length | Overall Length | Order No. |
|-------|------------|--------------|----------------|-----------|
| 1/8"  | 3/8"       | 3/8"         | 2-5/16"        | 723-3700  |
| 3/16  | 3/8        | 1/2          | 2-3/8          | 723-3702  |
| 1/4   | 3/8        | 5/8          | 2-1/2          | 723-3705  |
| 1/4   | 3/8        | 1-1/4        | 3-1/16         | 723-3708  |
| 5/16  | 3/8        | 3/4          | 2-1/2          | 723-3715  |
| 5/16  | 3/8        | 1            | 2-3/4          | 723-3710  |
| 5/16  | 3/8        | 1-1/2        | 3-1/4          | 723-3718  |
| 3/8   | 3/8        | 3/4          | 2-1/2          | 723-3725  |
| 3/8   | 3/8        | 1            | 2-3/4          | 723-3720  |
| 3/8   | 3/8        | 1-1/2        | 3-1/4          | 723-3728  |
| 1/2   | 1/2        | 1            | 2-3/4          | 723-3730  |
| 1/2   | 1/2        | 1-1/4        | 3-1/4          | 723-3735  |
| 1/2   | 1/2        | 1-1/2        | 3-1/4          | 723-3740  |
| 1/2   | 1/2        | 2            | 4              | 723-3748  |
| 5/8   | 5/8        | 1-5/8        | 3-3/4          | 723-3750  |
| 5/8   | 5/8        | 2-1/2        | 4-5/8          | 723-3758  |
| 3/4   | 3/4        | 1-5/8        | 3-7/8          | 723-3760  |
| 3/4   | 3/4        | 3            | 5-1/4          | 723-3768  |
| 7/8   | 7/8        | 1-7/8        | 4-1/8          | 723-3765  |
| 1     | 1          | 2            | 4-1/2          | 723-3775  |
| 1     | 1          | 2-1/4        | 4-3/4          | 723-3770  |
| 1     | 1          | 4            | 6-1/2          | 723-3778  |
| 1-1/4 | 1-1/4      | 2            | 4-1/2          | 723-3785  |
| 1-1/4 | 1-1/4      | 2-1/2        | 5              | 723-3780  |
| 1-1/2 | 1-1/4      | 2            | 4-1/2          | 723-3795  |
| 1-1/2 | 1-1/4      | 2-1/2        | 5              | 723-3790  |

### 2 Flute Ball Nose Double End Mills

M42 8% Cobalt



| Size  | Shank Dia. | Flute Length | Overall Length | Order No. |
|-------|------------|--------------|----------------|-----------|
| 1/8"  | 3/8"       | 3/8"         | 3-3/16"        | 723-2100  |
| 9/64  | 3/8        | 7/16         | 3-1/8          | 723-2105  |
| 5/32  | 3/8        | 1/2          | 3-1/8          | 723-2110  |
| 11/64 | 3/8        | 7/16         | 3-1/8          | 723-2115  |
| 3/16  | 3/8        | 7/16         | 3-1/8          | 723-2120  |
| 13/64 | 3/8        | 1/2          | 3-1/8          | 723-2125  |
| 7/32  | 3/8        | 1/2          | 3-1/8          | 723-2130  |
| 15/64 | 3/8        | 1/2          | 3-1/8          | 723-2135  |
| 1/4   | 3/8        | 1/2          | 3-1/8          | 723-2140  |
| 17/64 | 3/8        | 9/16         | 3-1/8          | 723-2145  |
| 9/32  | 3/8        | 9/16         | 3-1/8          | 723-2150  |
| 19/64 | 3/8        | 9/16         | 3-1/8          | 723-2155  |
| 5/16  | 3/8        | 9/16         | 3-1/8          | 723-2160  |
| 21/64 | 3/8        | 9/16         | 3-1/8          | 723-2161  |
| 11/32 | 3/8        | 9/16         | 3-1/8          | 723-2162  |
| 23/64 | 1/2        | 9/16         | 3-1/8          | 723-2163  |
| 3/8   | 3/8        | 9/16         | 3-1/8          | 723-2165  |
| 13/32 | 1/2        | 13/16        | 3-3/4          | 723-2168  |
| 7/16  | 1/2        | 13/16        | 3-3/4          | 723-2170  |
| 1/2   | 1/2        | 13/16        | 3-3/4          | 723-2174  |
| 5/8   | 5/8        | 1-1/8        | 4-1/2          | 723-2185  |
| 3/4   | 3/4        | 1-5/16       | 5              | 723-2188  |
| 7/8   | 7/8        | 1-9/16       | 5-1/2          | 723-2190  |
| 1     | 1          | 1-5/8        | 5-7/8          | 723-2192  |

### 2 Flute Inch Shank Single End Mills



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 5mm  | 3/8"       | 1/2"         | 2-5/16"        | 720-9050     | 721-9050       | 722-9050             |
| 6mm  | 3/8        | 1/2          | 2-5/16         | 720-9060     | 721-9060       | 722-9060             |
| 7mm  | 3/8        | 9/16         | 2-5/16         | 720-9070     | 721-9070       | 722-9070             |
| 8mm  | 3/8        | 9/16         | 2-5/16         | 720-9080     | 721-9080       | 722-9080             |
| 9mm  | 3/8        | 9/16         | 2-5/16         | 720-9090     | 721-9090       | 722-9090             |
| 10mm | 3/8        | 13/16        | 2-1/2          | 720-9100     | 721-9100       | 722-9100             |
| 11mm | 3/8        | 13/16        | 2-1/2          | 720-9110     | 721-9110       | 722-9110             |
| 12mm | 1/2        | 1            | 3              | 720-9120     | 721-9120       | 722-9120             |
| 13mm | 1/2        | 1-1/8        | 3-1/8          | 720-9130     | 721-9130       | 722-9130             |
| 14mm | 1/2        | 1-1/8        | 3-1/8          | 720-9140     | 721-9140       | 722-9140             |
| 15mm | 1/2        | 1-1/8        | 3-1/8          | 720-9150     | 721-9150       | 722-9150             |
| 16mm | 1/2        | 1-5/16       | 3-5/16         | 720-9160     | 721-9160       | 722-9160             |
| 18mm | 1/2        | 1-5/16       | 3-5/16         | 720-9180     | 721-9180       | 722-9180             |
| 20mm | 3/4        | 1-1/2        | 3-3/4          | 720-9200     | 721-9200       | 722-9200             |
| 22mm | 3/4        | 1-1/2        | 3-3/4          | 720-9222     | 721-9222       | 722-9222             |
| 24mm | 3/4        | 1-1/2        | 3-3/4          | 720-9240     | 721-9240       | 722-9240             |
| 25mm | 1          | 1-5/8        | 4-1/8          | 720-9250     | 721-9250       | 722-9250             |

### 4 Flute Inch Shank Single End Mills

Center Cutting



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 5mm  | 3/8"       | 9/16"        | 2-7/16"        | 720-8050     | 721-8050       | 722-8050             |
| 6mm  | 3/8        | 5/8          | 2-1/2          | 720-8060     | 721-8060       | 722-8060             |
| 7mm  | 3/8        | 5/8          | 2-1/2          | 720-8070     | 721-8070       | 722-8070             |
| 8mm  | 3/8        | 3/4          | 2-1/2          | 720-8080     | 721-8080       | 722-8080             |
| 9mm  | 3/8        | 3/4          | 2-1/2          | 720-8090     | 721-8090       | 722-8090             |
| 10mm | 3/8        | 3/4          | 2-1/2          | 720-8100     | 721-8100       | 722-8100             |
| 11mm | 3/8        | 1            | 2-11/16        | 720-8110     | 721-8110       | 722-8110             |
| 12mm | 3/8        | 1            | 2-11/16        | 720-8120     | 721-8120       | 722-8120             |
| 13mm | 1/2        | 1-1/4        | 3-1/4          | 720-8130     | 721-8130       | 722-8130             |
| 14mm | 1/2        | 1-3/8        | 3-3/8          | 720-8140     | 721-8140       | 722-8140             |
| 15mm | 1/2        | 1-3/8        | 3-3/8          | 720-8150     | 721-8150       | 722-8150             |
| 16mm | 5/8        | 1-5/8        | 3-3/4          | 720-8160     | 721-8160       | 722-8160             |
| 18mm | 3/4        | 1-5/8        | 3-3/4          | 720-8180     | 721-8180       | 722-8180             |
| 20mm | 3/4        | 1-7/8        | 4-1/8          | 720-8200     | 721-8200       | 722-8200             |
| 22mm | 7/8        | 1-7/8        | 4-1/8          | 720-8220     | 721-8220       | 722-8220             |
| 24mm | 7/8        | 1-7/8        | 4-1/8          | 720-8240     | 721-8240       | 722-8240             |
| 25mm | 1          | 2            | 4-1/2          | 720-8250     | 721-8250       | 722-8250             |

### Metric 4 Flute Single End Mills

DIN844B, High Speed Steel, Long Length



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 3mm  | 6          | 12           | 56             | 720-4503     | 721-4503       | 722-4503             |
| 4mm  | 6          | 19           | 63             | 720-4504     | 721-4504       | 722-4504             |
| 5mm  | 6          | 24           | 68             | 720-4505     | 721-4505       | 722-4505             |
| 6mm  | 6          | 24           | 68             | 720-4506     | 721-4506       | 722-4506             |
| 7mm  | 10         | 30           | 80             | 720-4507     | 721-4507       | 722-4507             |
| 8mm  | 10         | 38           | 88             | 720-4508     | 721-4508       | 722-4508             |
| 10mm | 10         | 45           | 95             | 720-4510     | 721-4510       | 722-4510             |
| 12mm | 12         | 53           | 110            | 720-4512     | 721-4512       | 722-4512             |
| 14mm | 12         | 53           | 110            | 720-4514     | 721-4514       | 722-4514             |
| 16mm | 16         | 63           | 123            | 720-4516     | 721-4516       | 722-4516             |
| 18mm | 16         | 63           | 123            | 720-4518     | 721-4518       | 722-4518             |
| 20mm | 20         | 75           | 141            | 720-4520     | 721-4520       | 722-4520             |
| 22mm | 20         | 75           | 141            | 720-4522     | 721-4522       | 722-4522             |
| 25mm | 25         | 90           | 166            | 720-4525     | 721-4525       | 722-4525             |

### Metric 4 Flute Single End Mills

DIN844B, High Speed Steel



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 3mm  | 6          | 8            | 52             | 720-4903     | 721-4903       | 722-4903             |
| 4mm  | 6          | 11           | 55             | 720-4904     | 721-4904       | 722-4904             |
| 5mm  | 6          | 13           | 57             | 720-4905     | 721-4905       | 722-4905             |
| 6mm  | 6          | 13           | 57             | 720-4906     | 721-4906       | 722-4906             |
| 7mm  | 10         | 16           | 66             | 720-4907     | 721-4907       | 722-4907             |
| 8mm  | 10         | 19           | 63             | 720-4908     | 721-4908       | 722-4908             |
| 10mm | 10         | 22           | 72             | 720-4910     | 721-4910       | 722-4910             |
| 12mm | 12         | 26           | 83             | 720-4912     | 721-4912       | 722-4912             |
| 14mm | 12         | 26           | 83             | 720-4914     | 721-4914       | 722-4914             |
| 16mm | 16         | 32           | 92             | 720-4916     | 721-4916       | 722-4916             |
| 18mm | 16         | 32           | 92             | 720-4918     | 721-4918       | 722-4918             |
| 20mm | 20         | 38           | 104            | 720-4920     | 721-4920       | 722-4920             |
| 22mm | 20         | 38           | 104            | 720-4922     | 721-4922       | 722-4922             |
| 25mm | 25         | 45           | 121            | 720-4925     | 721-4925       | 722-4925             |
| 28mm | 25         | 45           | 121            | 720-4928     | 721-4928       | 722-4928             |
| 30mm | 25         | 45           | 121            | 720-4930     | 721-4930       | 722-4930             |

### Metric 2 Flute Single End Mills

DIN327, High Speed Steel



| Size | Shank Dia. | Flute Length | Overall Length | M2 Order No. | M2Al Order No. | TiN-Coated Order No. |
|------|------------|--------------|----------------|--------------|----------------|----------------------|
| 3mm  | 6          | 6            | 50             | 720-2303     | 721-2303       | 722-2303             |
| 4mm  | 6          | 7            | 51             | 720-2304     | 721-2304       | 722-2304             |
| 5mm  | 6          | 8            | 52             | 720-2305     | 721-2305       | 722-2305             |
| 6mm  | 6          | 8            | 52             | 720-2306     | 721-2306       | 722-2306             |
| 7mm  | 10         | 10           | 60             | 720-2307     | 721-2307       | 722-2307             |
| 8mm  | 10         | 11           | 61             | 720-2308     | 721-2308       | 722-2308             |
| 10mm | 10         | 13           | 63             | 720-2310     | 721-2310       | 722-2310             |
| 12mm | 12         | 16           | 73             | 720-2312     | 721-2312       | 722-2312             |
| 14mm | 12         | 16           | 73             | 720-2314     | 721-2314       | 722-2314             |
| 16mm | 16         | 19           | 79             | 720-2316     | 721-2316       | 722-2316             |
| 18mm | 16         | 19           | 79             | 720-2318     | 721-2318       | 722-2318             |
| 20mm | 20         | 22           | 88             | 720-2320     | 721-2320       | 722-2320             |
| 22mm | 20         | 22           | 88             | 720-2322     | 721-2322       | 722-2322             |
| 24mm | 25         | 26           | 102            | 720-2324     | 721-2324       | 722-2324             |
| 25mm | 25         | 26           | 102            | 720-2325     | 721-2325       | 722-2325             |

### M42 8% Cobalt Metric 2 Flute Single End Mills

DIN327



| Size | Shank Dia. | Flute Length | Overall Length | Order No. | Size | Shank Dia. | Flute Length | Overall Length | Order No. |
|------|------------|--------------|----------------|-----------|------|------------|--------------|----------------|-----------|
| 2mm  | 6mm        | 4mm          | 48             | 723-2302  | 15mm | 12mm       | 16mm         | 73             | 723-2315  |
| 3    | 6          | 5            | 49             | 723-2303  | 16   | 16         | 19           | 79             | 723-2316  |
| 4    | 6          | 7            | 51             | 723-2304  | 17   | 16         | 19           | 79             | 723-2317  |
| 5    | 6          | 8            | 52             | 723-2305  | 18   | 16         | 19           | 79             | 723-2318  |
| 6    | 6          | 8            | 52             | 723-2306  | 19   | 16         | 19           | 79             | 723-2319  |
| 7    | 10         | 10           | 60             | 723-2307  | 20   | 20         | 22           | 88             | 723-2320  |
| 8    | 10         | 11           | 61             | 723-2308  | 21   | 20         | 22           | 88             | 723-2321  |
| 9    | 10         | 13           | 63             | 723-2309  | 22   | 20         | 22           | 88             | 723-2322  |
| 10   | 10         | 13           | 63             | 723-2310  | 23   | 20         | 22           | 88             | 723-2323  |
| 11   | 12         | 16           | 73             | 723-2311  | 24   | 25         | 26           | 102            | 723-2324  |
| 12   | 12         | 16           | 73             | 723-2312  | 25   | 25         | 26           | 102            | 723-2325  |
| 13   | 12         | 16           | 73             | 723-2313  | 26   | 25         | 26           | 102            | 723-2326  |
| 14   | 12         | 16           | 73             | 723-2314  | 28   | 25         | 26           | 102            | 723-2328  |

### M42 8% Cobalt Metric 4 Flute Single End Mills

DIN844



| Size | Shank Dia. | Flute Length | Overall Length | Order No. | Size | Shank Dia. | Flute Length | Overall Length | Order No. |
|------|------------|--------------|----------------|-----------|------|------------|--------------|----------------|-----------|
| 2mm  | 6          | 7            | 51             | 723-4902  | 16   | 16         | 32           | 92             | 723-4916  |
| 3    | 6          | 8            | 52             | 723-4903  | 17   | 16         | 32           | 92             | 723-4917  |
| 4    | 6          | 11           | 55             | 723-4904  | 18   | 16         | 32           | 92             | 723-4918  |
| 5    | 6          | 13           | 57             | 723-4905  | 19   | 16         | 32           | 92             | 723-4919  |
| 6    | 6          | 13           | 57             | 723-4906  | 20   | 20         | 38           | 104            | 723-4920  |
| 7    | 10         | 16           | 66             | 723-4907  | 21   | 20         | 38           | 104            | 723-4921  |
| 8    | 10         | 19           | 63             | 723-4908  | 22   | 20         | 38           | 104            | 723-4922  |
| 9    | 10         | 19           | 69             | 723-4909  | 23   | 20         | 38           | 104            | 723-4923  |
| 10   | 10         | 22           | 72             | 723-4910  | 24   | 25         | 45           | 121            | 723-4924  |
| 11   | 12         | 26           | 83             | 723-4911  | 25   | 25         | 45           | 121            | 723-4925  |
| 12   | 12         | 26           | 83             | 723-4912  | 26   | 25         | 45           | 121            | 723-4926  |
| 13   | 12         | 26           | 83             | 723-4913  | 27   | 25         | 45           | 121            | 723-4928  |
| 14   | 12         | 26           | 83             | 723-4914  | 28   | 25         | 45           | 121            | 723-4930  |
| 15   | 12         | 26           | 83             | 723-4915  | 29   | 32         | 53           | 133            | 723-4932  |

### Metric Roughing End Mills

High Speed Steel



| Size | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. | Tin-coated Order No. |
|------|------------|--------------|----------------|--------------|-----------|----------------------|
| 6mm  | 6          | 13           | 57             | 4            | 720-5806  | 722-5806             |
| 8mm  | 10         | 19           | 69             | 4            | 720-5808  | 722-5808             |
| 10mm | 10         | 22           | 72             | 4            | 720-5810  | 722-5810             |
| 11mm | 12         | 22           | 79             | 4            | 720-5811  | 722-5811             |
| 12mm | 12         | 26           | 83             | 4            | 720-5812  | 722-5812             |
| 13mm | 12         | 26           | 83             | 4            | 720-5813  | 722-5813             |
| 14mm | 12         | 26           | 83             | 4            | 720-5814  | 722-5814             |
| 15mm | 12         | 26           | 83             | 4            | 720-5815  | 722-5815             |
| 16mm | 16         | 32           | 92             | 4            | 720-5816  | 722-5816             |
| 17mm | 16         | 32           | 92             | 4            | 720-5817  | 722-5817             |
| 18mm | 16         | 32           | 92             | 4            | 720-5818  | 722-5818             |
| 19mm | 16         | 32           | 92             | 4            | 720-5819  | 722-5819             |
| 20mm | 20         | 38           | 104            | 4            | 720-5820  | 722-5820             |
| 22mm | 20         | 38           | 104            | 4            | 720-5822  | 722-5822             |
| 22mm | 20         | 38           | 104            | 5            | 720-5823  | 722-5823             |
| 24mm | 25         | 45           | 121            | 4            | 720-5824  | 722-5824             |
| 25mm | 25         | 45           | 121            | 4            | 720-5825  | 722-5825             |
| 25mm | 25         | 45           | 121            | 5            | 720-5826  | 722-5826             |
| 26mm | 25         | 45           | 121            | 6            | 720-5827  | 722-5827             |
| 28mm | 25         | 45           | 121            | 6            | 720-5828  | 722-5828             |
| 30mm | 25         | 45           | 121            | 5            | 720-5830  | 722-5830             |
| 30mm | 25         | 45           | 121            | 6            | 720-5831  | 722-5831             |
| 32mm | 32         | 53           | 133            | 5            | 720-5832  | 722-5832             |
| 32mm | 32         | 53           | 133            | 6            | 720-5833  | 722-5833             |
| 38mm | 32         | 53           | 133            | 6            | 720-5838  | 722-5838             |
| 40mm | 40         | 63           | 155            | 6            | 720-5840  | 722-5840             |
| 40mm | 40         | 63           | 155            | 8            | 720-5841  | 722-5841             |
| 45mm | 40         | 63           | 155            | 6            | 720-5845  | 722-5845             |
| 45mm | 40         | 63           | 155            | 8            | 720-5846  | 722-5846             |
| 50mm | 50         | 75           | 177            | 6            | 720-5850  | 722-5850             |
| 50mm | 50         | 75           | 177            | 8            | 720-5851  | 722-5851             |
| 55mm | 50         | 75           | 177            | 6            | 720-5855  | 722-5855             |
| 55mm | 50         | 75           | 177            | 8            | 720-5856  | 722-5856             |
| 63mm | 63         | 90           | 202            | 6            | 720-5863  | 722-5863             |
| 63mm | 63         | 90           | 202            | 8            | 720-5864  | 722-5864             |
| 71mm | 63         | 90           | 202            | 8            | 720-5871  | 722-5871             |

## M42 2 Flute Inch Shank Single End Mills

### Center Cutting

M-42 cobalt end mills are more economical than high speed steel end mills. They stay sharper longer to allow more cuts between grinds and reduce downtime to give you lower cost per machined workpiece!



| Size   | Shank Dia. | Flute Length | Overall Length | Order No. |
|--------|------------|--------------|----------------|-----------|
| 3mm    | 3/8"       | 5/16"        | 2-5/16"        | 723-9029  |
| 3mm    | 3/8        | 3/8"         | 2-5/16         | 723-9030  |
| 3.5mm  | 3/8        | 7/16         | 2-5/16         | 723-9035  |
| 4.0mm  | 3/8        | 7/16         | 2-5/16         | 723-9040  |
| 4.5mm  | 3/8        | 7/16         | 2-5/16         | 723-9045  |
| 5mm    | 3/8        | 1/2          | 2-5/16         | 723-9050  |
| 5.5mm  | 3/8        | 1/2          | 2-3/8          | 723-9055  |
| 6mm    | 3/8        | 1/2          | 2-5/16         | 723-9060  |
| 6.5mm  | 3/8        | 9/16         | 2-3/8          | 723-9065  |
| 7mm    | 3/8        | 9/16         | 2-5/16         | 723-9070  |
| 7.5mm  | 3/8        | 9/16         | 2-5/16         | 723-9075  |
| 8mm    | 3/8        | 9/16         | 2-5/16         | 723-9080  |
| 8.5mm  | 3/8        | 9/16         | 2-5/16         | 723-9085  |
| 9mm    | 3/8        | 9/16         | 2-5/16         | 723-9090  |
| 9.5mm  | 3/8        | 9/16         | 2-5/16         | 723-9095  |
| 10mm   | 3/8        | 13/16        | 2-1/2          | 723-9100  |
| 10.5mm | 3/8        | 13/16        | 2-1/2          | 723-9105  |
| 11mm   | 3/8        | 13/16        | 2-1/2          | 723-9110  |
| 11.5mm | 3/8        | 13/16        | 2-1/2          | 723-9115  |
| 11.5MM | 3/8        | 13/16        | 2-1/2          | 723-9119  |
| 12mm   | 1/2        | 1            | 3              | 723-9120  |
| 12.5mm | 1/2        | 1            | 3              | 723-9125  |
| 13mm   | 1/2        | 1-1/8        | 3-1/8          | 723-9130  |
| 13.5mm | 1/2        | 1-1/8        | 3-1/8          | 723-9135  |
| 14mm   | 1/2        | 1-1/8        | 3-1/8          | 723-9140  |
| 14.5mm | 1/2        | 1-1/8        | 3-1/8          | 723-9145  |
| 15mm   | 1/2        | 1-1/8        | 3-1/8          | 723-9150  |
| 16mm   | 1/2        | 1-5/16       | 3-5/16         | 723-9160  |
| 17mm   | 5/8        | 1-5/16       | 3-7/16         | 723-9170  |
| 18mm   | 5/8        | 1-5/16       | 3-5/16         | 723-9180  |
| 19mm   | 3/4        | 1-5/8        | 3-7/8          | 723-9190  |
| 20mm   | 3/4        | 1-1/2        | 3-3/4          | 723-9200  |
| 21mm   | 3/4        | 1-1/2        | 3-3/4          | 723-9210  |
| 22mm   | 7/8        | 1-1/2        | 3-3/4          | 723-9220  |
| 23mm   | 7/8        | 1-7/8        | 4-1/8          | 723-9230  |
| 24mm   | 1/2        | 1-1/2        | 3-1/2          | 723-9240  |
| 25mm   | 1          | 1-5/8        | 4-1/8          | 723-9250  |
| 28mm   | 1          | 2            | 4-1/2          | 723-9280  |
| 32mm   | 1          | 2            | 4-1/2          | 723-9320  |
| 35mm   | 1          | 2            | 4-1/2          | 723-9350  |
| 36mm   | 1          | 2            | 4-1/2          | 723-9360  |
| 40mm   | 1-1/4      | 2            | 4-1/2          | 723-9400  |
| 45mm   | 1-1/4      | 2            | 4-1/2          | 723-9450  |

## M42 4 Flute Inch Shank Single End Mills

### Center Cutting

M-42 cobalt end mills are more economical than high speed steel end mills. They stay sharper longer to allow more cuts between grinds and reduce downtime to give you lower cost per machined workpiece!



| Size   | Shank Dia. | Flute Length | Overall Length | Order No. |
|--------|------------|--------------|----------------|-----------|
| 3mm    | 3/8"       | 3/8"         | 2-5/16"        | 723-8610  |
| 3.5mm  | 3/8        | 7/16         | 2-5/16         | 723-8613  |
| 4mm    | 3/8        | 1/2          | 2-3/8          | 723-8616  |
| 4.5mm  | 3/8        | 7/16         | 2-5/16         | 723-8619  |
| 5mm    | 3/8        | 9/16         | 2-7/16         | 723-8622  |
| 5.5mm  | 3/8        | 5/8          | 2-1/2          | 723-8625  |
| 6mm    | 3/8        | 5/8          | 2-1/2          | 723-8628  |
| 6.5mm  | 3/8        | 11/16        | 2-1/2          | 723-8631  |
| 7mm    | 3/8        | 5/8          | 2-1/2          | 723-8634  |
| 7.5mm  | 3/8        | 3/4          | 2-1/2          | 723-8637  |
| 8mm    | 3/8        | 3/4          | 2-1/2          | 723-8641  |
| 8.5mm  | 3/8        | 3/4          | 2-1/2          | 723-8644  |
| 9mm    | 3/8        | 3/4          | 2-1/2          | 723-8647  |
| 9.5mm  | 3/8        | 3/4          | 2-1/2          | 723-8650  |
| 10mm   | 3/8        | 3/4          | 2-1/2          | 723-8653  |
| 10.5mm | 3/8        | 1            | 2-11/16        | 723-8656  |
| 11mm   | 3/8        | 1            | 2-11/16        | 723-8659  |
| 11.5mm | 3/8        | 1            | 2-11/16        | 723-8662  |
| 12mm   | 3/8        | 1            | 2-11/16        | 723-8665  |
| 12.5mm | 1/2        | 1-1/4        | 3-1/4          | 723-8668  |
| 13mm   | 1/2        | 1-1/4        | 3-1/4          | 723-8671  |
| 13.5mm | 1/2        | 1-3/8        | 3-3/8          | 723-8674  |
| 14mm   | 1/2        | 1-3/8        | 3-3/8          | 723-8677  |
| 14.5mm | 1/2        | 1-3/8        | 3-3/8          | 723-8680  |
| 15mm   | 1/2        | 1-3/8        | 3-3/8          | 723-8683  |
| 16mm   | 5/8        | 1-5/8        | 3-3/4          | 723-8686  |
| 17mm   | 5/8        | 1-5/8        | 3-3/4          | 723-8689  |
| 18mm   | 3/4        | 1-5/8        | 3-3/4          | 723-8692  |
| 19mm   | 3/4        | 1-5/8        | 3-7/8          | 723-8695  |
| 20mm   | 3/4        | 1-7/8        | 4-1/8          | 723-8698  |
| 21mm   | 3/4        | 1-7/8        | 4-1/8          | 723-8701  |
| 22mm   | 7/8        | 1-7/8        | 4-1/8          | 723-8704  |
| 23mm   | 7/8        | 1-7/8        | 4-1/8          | 723-8707  |
| 24mm   | 7/8        | 1-7/8        | 4-1/8          | 723-8710  |
| 25mm   | 1          | 2            | 4-1/2          | 723-8713  |
| 28mm   | 1          | 2            | 4-1/2          | 723-8718  |
| 32mm   | 1          | 2            | 4-1/2          | 723-8725  |
| 35mm   | 1          | 2            | 4-1/2          | 723-8729  |
| 36mm   | 1          | 2            | 4-1/2          | 723-8732  |
| 40mm   | 1-1/4      | 2            | 4-1/2          | 723-8739  |
| 45mm   | 1-1/4      | 2            | 4-1/2          | 723-8747  |

### Solid Carbide End Mills

**Four Flute End Mills:** Produce finer finishes, recommend for finishing operation.  
**Two Flute End Mills:** Allow maximum chip ejection compare to four flute, recommend for roughing operation.

- Made of micro-grain tungsten carbide material.
- Suitable for general purpose of machining cast Iron, alloy steel, stainless steel, non-ferrous and non-metals material.
- Center cutting allows for three axis profile milling and plunge cutting.
- 30° Helix Flutes for both nonferrous and ferrous materials.
- Better surface finish on work piece.
- Higher feed rates and long tool life.

#### Tolerance

**Shank Diameter :**..... -0.0000"/-0.0005"  
**Cutter Diameter:**  
 1/32" thru 1/4".....+0.000"/-0.002"  
 9/32" thru 1" .....+0.000"/-0.003"

### Single End Mills



| Size  | Shank Dia. | Flute Length | Overall Length | 2 Flute Order No. | 4 Flute Order No. |
|-------|------------|--------------|----------------|-------------------|-------------------|
| 1/16" | 1/8"       | 3/16"        | 1-1/2"         | 244-2204          | 244-2404          |
| 3/32  | 1/8        | 3/8          | 1-1/2          | 244-2210          | 244-2410          |
| 1/8   | 1/8        | 1/2          | 1-1/2          | 244-2216          | 244-2416          |
| 5/32  | 3/16       | 9/16         | 2              | 244-2222          | 244-2422          |
| 3/16  | 3/16       | 5/8          | 2              | 244-2228          | 244-2428          |
| 7/32  | 1/4        | 5/8          | 2-1/2          | 244-2234          | 244-2434          |
| 1/4   | 1/4        | 3/4          | 2-1/2          | 244-2240          | 244-2440          |
| 9/32  | 5/16       | 7/8          | 2-1/2          | 244-2246          | 244-2446          |
| 5/16  | 5/16       | 3/4          | 2-1/2          | 244-2252          | 244-2452          |
| 3/8   | 3/8        | 7/8          | 2-1/2          | 244-2258          | 244-2458          |
| 7/16  | 7/16       | 7/8          | 2-1/2          | 244-2264          | 244-2464          |
| 1/2   | 1/2        | 1            | 3              | 244-2270          | 244-2470          |
| 9/16  | 9/16       | 1-3/8        | 3              | 244-2276          | 244-2476          |
| 5/8   | 5/8        | 1-3/8        | 3-1/2          | 244-2282          | 244-2482          |
| 11/16 | 3/4        | 1-1/2        | 4              | 244-2288          | 244-2488          |
| 3/4   | 3/4        | 1-1/2        | 4              | 244-2294          | 244-2494          |
| 7/8   | 7/8        | 1-1/2        | 4              | 244-2300          | 244-2500          |
| 1     | 1          | 1-1/2        | 4              | 244-2306          | 244-2506          |

### Double End Mills



| Size  | Shank Dia. | Flute Length | Overall Length | 2 Flute Order No. | 4 Flute Order No. |
|-------|------------|--------------|----------------|-------------------|-------------------|
| 1/16" | 1/8"       | 1/8"         | 1-1/2"         | 244-2604          | 244-2804          |
| 3/32  | 1/8        | 3/16         | 1-1/2          | 244-2610          | 244-2810          |
| 1/8   | 1/8        | 1/4          | 1-1/2          | 244-2616          | 244-2816          |
| 5/32  | 3/16       | 5/16         | 2              | 244-2622          | 244-2822          |
| 3/16  | 3/16       | 3/8          | 2              | 244-2628          | 244-2828          |
| 7/32  | 1/4        | 1/2          | 2-1/2          | 244-2634          | 244-2834          |
| 1/4   | 1/4        | 1/2          | 2-1/2          | 244-2640          | 244-2840          |
| 5/16  | 5/16       | 1/2          | 2-1/2          | 244-2652          | 244-2852          |
| 3/8   | 3/8        | 9/16         | 2-1/2          | 244-2658          | 244-2858          |
| 7/16  | 7/16       | 5/8          | 3              | 244-2664          | 244-2864          |
| 1/2   | 1/2        | 5/8          | 3              | 244-2670          | 244-2870          |

### Single End Mills For Mild Steel

**Carbide Tipped ,  
Spiral Flute, Right Hand,  
Straight Shank**



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | Order No. |
|-------|------------|--------------|----------------|---------------|-----------|
| 1/4"  | 3/8"       | 1/2"         | 2-1/2"         | 2             | 243-0020  |
| 5/16  | 3/8        | 5/8          | 2-1/2          | 2             | 243-0040  |
| 3/8   | 3/8        | 5/8          | 2-1/2          | 2             | 243-0060  |
| 7/16  | 3/8        | 1            | 2-11/16        | 2             | 243-0080  |
| 1/2   | 1/2        | 1            | 3-1/4          | 2             | 243-0100  |
| 9/16  | 1/2        | 1            | 3-3/8          | 2             | 243-0120  |
| 5/8   | 1/2        | 1            | 3-3/8          | 4             | 243-0140  |
| 5/8   | 5/8        | 1-1/4        | 3-5/8          | 3             | 243-0145  |
| 3/4   | 5/8        | 1            | 3-5/8          | 4             | 243-0160  |
| 3/4   | 3/4        | 1-1/2        | 4-1/8          | 3             | 243-0165  |
| 7/8   | 5/8        | 1-1/4        | 4              | 4             | 243-0180  |
| 1     | 7/8        | 1-1/4        | 4              | 4             | 243-0200  |
| 1     | 1          | 1-3/4        | 4-3/4          | 4             | 243-0205  |
| 1-1/8 | 1          | 1-1/4        | 4-1/4          | 4             | 243-0220  |
| 1-1/8 | 1          | 1-3/4        | 4-3/4          | 4             | 243-0225  |
| 1-1/4 | 1          | 1-1/4        | 4-1/4          | 4             | 243-0240  |
| 1-1/4 | 1-1/4      | 2-1/8        | 5-1/4          | 4             | 243-0245  |
| 1-3/8 | 1-1/4      | 2-1/8        | 5-1/4          | 4             | 243-0250  |
| 1-1/2 | 1-1/4      | 1-1/2        | 4-1/2          | 4             | 243-0260  |
| 1-1/2 | 1-1/2      | 2-1/2        | 6-1/8          | 4             | 243-0265  |
| 1-3/4 | 1-1/2      | 2-1/2        | 6-1/8          | 4             | 243-0270  |
| 2     | 1-1/4      | 1-1/2        | 4-1/2          | 6             | 243-0300  |
| 2     | 2          | 3            | 7              | 6             | 243-0305  |

### Carbide Tipped Single End Mills For Cast Iron

**Spiral Flute, Right Hand,  
Straight Shank**



| Size  | Shank Dia. | Flute L | OAL     | No. of Flutes | Order No. |
|-------|------------|---------|---------|---------------|-----------|
| 1/4"  | 3/8"       | 1/2"    | 2-1/2"  | 4             | 243-1020  |
| 5/16  | 3/8        | 5/8     | 2-1/2   | 4             | 243-1040  |
| 3/8   | 3/8        | 5/8     | 2-1/2   | 4             | 243-1060  |
| 7/16  | 3/8        | 1       | 2-11/16 | 4             | 243-1080  |
| 1/2   | 1/2        | 1       | 3-1/4   | 4             | 243-1100  |
| 9/16  | 1/2        | 1       | 3-3/8   | 4             | 243-1120  |
| 5/8   | 1/2        | 1       | 3-3/8   | 4             | 243-1140  |
| 3/4   | 5/8        | 1       | 3-5/8   | 4             | 243-1160  |
| 7/8   | 5/8        | 1-1/4   | 4       | 4             | 243-1180  |
| 1     | 7/8        | 1-1/4   | 4       | 4             | 243-1200  |
| 1-1/8 | 1          | 1-1/4   | 4-1/4   | 4             | 243-1220  |
| 1-1/4 | 1          | 1-1/4   | 4-1/4   | 4             | 243-1240  |
| 1-1/2 | 1-1/4      | 1-1/2   | 4-1/2   | 4             | 243-1260  |
| 1-3/4 | 1-1/4      | 1-1/2   | 4-1/2   | 6             | 243-1280  |
| 2     | 1-1/4      | 1-1/2   | 4-1/2   | 6             | 243-1300  |

### Carbide Tipped 2 Flute Single End Mills

**Straight Flute, Positive Rake, 90° Square Shoulder**

- Used for N.C. machines and standard millers.
- Ideal for use in key-way slotting, slab milling, 90° shoulder milling.



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flutes | Order No. |
|-------|------------|--------------|----------------|---------------|-----------|
| 5/16" | 3/8"       | 1/2"         | 2-3/8"         | 2             | 243-0312  |
| 3/8   | 3/8        | 5/8          | 2-5/8          | 2             | 243-0375  |
| 1/2   | 1/2        | 5/8          | 2-3/4          | 2             | 243-0500  |
| 9/16" | 5/8"       | 3/4"         | 2-7/8"         | 2             | 243-0562  |
| 5/8   | 5/8        | 3/4          | 2-7/8          | 2             | 243-0625  |
| 3/4   | 3/4        | 1            | 3-5/32         | 2             | 243-0750  |

## Carbide Tipped Heavy Duty End Mills

- All material can be machined with these ultra micrograin end mills at high or low cutting speeds, and feeds with increased wear resistance.
- Specially designed with a 25° right hand helix.
- Tough carbide grade allows high speed milling operations.
- Ultra Fine. For General Purpose.

### Two Flute Center Cutting

- Suited for the rough machining, heavy cutting and grooving machining as this allows larger chip pocket and increased feeding.



### Three Flute Center Cutting

- Especially three flutes type vibrates less when entering and as result can increase feed rate over two flutes type.



### Four Flute Center Cutting

- Allows better balance for machining.
- Suited for finish and side surface machining as this is less likely to tilt.



| Size  | Shank Dia. | Flute Length | Overall Length | Two Flute Order No. | Three Flute Order No. | Four Flute Order No. |
|-------|------------|--------------|----------------|---------------------|-----------------------|----------------------|
| 5/8"  | 5/8"       | 1-3/16"      | 3-1/2"         | 243-2040            | 243-2240              |                      |
| 3/4   | 3/4        | 1-27/64      | 3-3/4          | 243-2048            | 243-2248              | 243-2448             |
| 7/8   | 3/4        | 1-27/64      | 3-3/4          | 243-2056            | 243-2256              | 243-2456             |
| 1     | 1          | 1-29/64      | 4-1/8          | 243-2064            | 243-2264              | 243-2464             |
| 1-1/8 | 1          | 1-9/16       | 4-1/2          | 243-2072            | 243-2272              |                      |
| 1-1/4 | 1-1/4      | 1-27/32      | 5-1/8          | 243-2080            | 243-2280              | 243-2480             |
| 1-1/2 | 1-1/4      | 2-1/4        | 5-1/2          | 243-2096            | 243-2296              | 243-2496             |
| 1-3/4 | 1-1/4      | 2-5/8        | 6-1/8          | 243-2112            | 243-2312              | 243-2512             |
| 2     | 1-1/4      | 2-5/8        | 6-1/8          | 243-2128            | 243-2328              | 243-2528             |

## 3 Flute Carbide Tipped End Mills

### with Weldon Shank

- Use in finishing operation.
- Three flute's vibration is less than two flute when milling.



| Size   | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|--------|------------|--------------|----------------|--------------|-----------|
| 1/2"   | 1/2"       | 1-1/4"       | 3-1/2"         | 3            | 244-1203  |
| 1/2    | 1/2        | 2            | 4-1/4          | 3            | 244-1206  |
| 1/2    | 1/2        | 3            | 5-1/4          | 3            | 244-1209  |
| 9/16   | 1/2        | 1-3/8        | 3-5/8          | 3            | 244-1212  |
| 5/8    | 5/8        | 1-5/8        | 4              | 3            | 244-1215  |
| 5/8    | 5/8        | 2-1/2        | 4-7/8          | 3            | 244-1218  |
| 5/8    | 5/8        | 4            | 6-3/8          | 3            | 244-1221  |
| 11/16  | 5/8        | 1-5/8        | 4              | 3            | 244-1224  |
| 3/4    | 5/8        | 1-5/8        | 4-5/32         | 3            | 244-1227  |
| 3/4    | 3/4        | 3            | 5-21/32        | 3            | 244-1230  |
| 3/4    | 3/4        | 4            | 6-21/32.4-27/  | 3            | 244-1233  |
| 13/16" | 5/8"       | 1-7/8"       | 64"            | 3            | 244-1236  |
| 7/8    | 7/8        | 1-7/8        | 4-17/32        | 3            | 244-1239  |
| 7/8    | 7/8        | 3-1/2        | 6-5/32         | 3            | 244-1242  |
| 7/8    | 7/8        | 5            | 7-21/32        | 3            | 244-1245  |
| 1      | 7/8        | 1-7/8        | 4-11/16        | 3            | 244-1248  |
| 1      | 1          | 2            | 5-1/16         | 3            | 244-1251  |
| 1      | 1          | 4            | 7-1/16         | 3            | 244-1254  |
| 1      | 1          | 6            | 9-1/16         | 3            | 244-1257  |
| 1-1/8  | 1          | 2            | 5-1/16         | 3            | 244-1260  |
| 1-1/8  | 1          | 4            | 7-1/16         | 3            | 244-1263  |

## 2 Flute Carbide Tipped End Mills

### with Weldon Shank

- 2 flutes are used for machining aluminum alloys, magnesium alloys etc.
- Center Cutting suitable for plunge cutting.
- Carbide tipped cutting edge can be resharped with diamond grinding wheel.



### Center Cutting

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|------------|--------------|----------------|--------------|-----------|
| 5/8"  | 5/8"       | 1-5/16"      | 3-11/16"       | 2            | 244-1109  |
| 5/8   | 5/8        | 1-3/8        | 4-5/8          | 2            | 244-1112  |
| 11/16 | 5/8        | 1-5/16       | 3-11/16        | 2            | 244-1115  |
| 3/4   | 5/8        | 1-5/16       | 3-27/32        | 2            | 244-1118  |
| 3/4   | 3/4        | 1-5/8        | 5-3/8          | 2            | 244-1121  |
| 13/16 | 5/8        | 1-1/2        | 4-1/32         | 2            | 244-1124  |
| 7/8   | 7/8        | 1-1/2        | 4-5/16         | 2            | 244-1127  |
| 1     | 7/8        | 1-1/2        | 4-5/16         | 2            | 244-1130  |
| 1     | 1          | 1-5/8        | 4-11/16        | 2            | 244-1133  |
| 1     | 1          | 2-1/2        | 7-1/4          | 2            | 244-1136  |
| 1-1/8 | 1          | 1-5/8        | 4-11/16        | 2            | 244-1139  |
| 1-1/4 | 1-1/4      | 1-5/8        | 4-11/16        | 2            | 244-1142  |
| 1-1/4 | 1-1/4      | 3            | 7-1/4          | 2            | 244-1145  |
| 1-3/8 | 1          | 1-5/8        | 4-11/16        | 2            | 244-1148  |
| 1-1/2 | 1-1/4      | 1-5/8        | 4-25/32        | 2            | 244-1151  |
| 1-3/4 | 1-1/4      | 1-5/8        | 4-25/32        | 2            | 244-1154  |
| 2     | 1-1/4      | 1-5/8        | 4-25/32        | 2            | 244-1157  |

### Non Center Cutting

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|------------|--------------|----------------|--------------|-----------|
| 1/2"  | 1/2"       | 1"           | 3-1/4"         | 2            | 244-1003  |
| 9/16  | 1/2        | 1-1/8        | 3-3/8          | 2            | 244-1006  |
| 5/8   | 5/8        | 1-5/16       | 3-11/16        | 2            | 244-1009  |
| 5/8   | 5/8        | 1-3/8        | 4-5/8          | 2            | 244-1012  |
| 11/16 | 5/8        | 1-5/16       | 3-11/16        | 2            | 244-1015  |
| 3/4   | 5/8        | 1-5/16       | 3-27/32        | 2            | 244-1018  |
| 3/4   | 3/4        | 1-5/8        | 5-3/8          | 2            | 244-1021  |
| 13/16 | 5/8        | 1-1/2        | 4-1/32         | 2            | 244-1024  |
| 7/8   | 7/8        | 1-1/2        | 4-5/16         | 2            | 244-1027  |
| 1     | 7/8        | 1-1/2        | 4-5/16         | 2            | 244-1030  |
| 1     | 1          | 1-5/8        | 4-11/16        | 2            | 244-1033  |
| 1     | 1          | 2-1/2        | 7-1/4          | 2            | 244-1036  |
| 1-1/8 | 1          | 1-5/8        | 4-11/16        | 2            | 244-1039  |
| 1-1/4 | 1-1/4      | 1-5/8        | 4-11/16        | 2            | 244-1042  |
| 1-1/4 | 1-1/4      | 3            | 7-1/4          | 2            | 244-1045  |
| 1-3/8 | 1          | 1-5/8        | 4-11/16        | 2            | 244-1048  |
| 1-1/2 | 1-1/4      | 1-5/8        | 4-25/32        | 2            | 244-1051  |
| 1-3/4 | 1-1/4      | 1-5/8        | 4-25/32        | 2            | 244-1054  |
| 2     | 1-1/4      | 1-5/8        | 4-25/32        | 2            | 244-1057  |

## Multiple Flute Carbide Tipped End Mills

### Combination Shank

- Use in finishing operation
- multi-flute can efficiently mill a wide range of materials:  
non ferrous materials and ferrous materials, including titanium alloy,  
cast iron, alloy steel, stainless steel, plastic and magnetic material etc.
- Heavy duty machining.



| Size   | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|--------|------------|--------------|----------------|--------------|-----------|
| 1-1/2" | 1-1/2"     | 2-1/2"       | 6-1/8"         | 4            | 244-1406  |
| 2      | 2          | 3            | 7              | 6            | 244-1409  |
| 2      | 2          | 4            | 8              | 4            | 244-1412  |
| 2      | 2          | 4            | 8              | 6            | 244-1415  |
| 2      | 2          | 5            | 9              | 4            | 244-1418  |
| 2      | 2          | 5            | 9              | 6            | 244-1421  |
| 2      | 2          | 6            | 10             | 4            | 244-1424  |
| 2      | 2          | 6            | 10             | 6            | 244-1427  |
| 2      | 2          | 8            | 12             | 4            | 244-1430  |
| 2      | 2          | 8            | 12             | 6            | 244-1433  |
| 2      | 2          | 10           | 14             | 6            | 244-1436  |

## Multiple Flute Carbide Tipped End Mills

### Weldon Shank

- Use in finishing operation
- multi-flute can efficiently mill a wide range of materials:  
non ferrous materials and ferrous materials, including titanium alloy,  
cast iron, alloy steel, stainless steel, plastic and magnetic material etc.
- Heavy duty machining.



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|------------|--------------|----------------|--------------|-----------|
| 1"    | 7/8"       | 1-7/8"       | 4-11/16"       | 4            | 244-1303  |
| 1     | 1          | 2            | 5-1/16         | 4            | 244-1306  |
| 1     | 1          | 4            | 7-1/16         | 4            | 244-1309  |
| 1     | 1          | 6            | 9-1/16         | 4            | 244-1312  |
| 1-1/8 | 1          | 2            | 5-1/16         | 4            | 244-1315  |
| 1-1/8 | 1          | 4            | 7-1/16         | 4            | 244-1318  |
| 1-1/4 | 1-1/4      | 2            | 5-1/16         | 4            | 244-1321  |
| 1-1/4 | 1-1/4      | 4            | 7-1/16         | 4            | 244-1324  |
| 1-1/4 | 1-1/4      | 6            | 9-1/16         | 4            | 244-1327  |
| 1-3/8 | 1          | 2            | 5-1/16         | 4            | 244-1330  |
| 1-1/2 | 1-1/4      | 2            | 5-5/32         | 4            | 244-1333  |
| 1-1/2 | 1-1/4      | 4            | 7-5/32         | 4            | 244-1336  |
| 1-1/2 | 1-1/4      | 8            | 11-5/32        | 4            | 244-1339  |
| 1-3/4 | 1-1/4      | 2            | 5-5/32         | 4            | 244-1342  |
| 1-3/4 | 1-1/4      | 2            | 5-5/32         | 6            | 244-1345  |
| 1-3/4 | 1-1/4      | 4            | 7-5/32         | 4            | 244-1348  |
| 1-3/4 | 1-1/4      | 4            | 7-5/32         | 6            | 244-1351  |
| 2     | 1-1/4      | 2            | 5-5/32         | 4            | 244-1354  |
| 2     | 1-1/4      | 2            | 5-5/32         | 6            | 244-1357  |
| 2     | 1-1/4      | 4            | 7-5/32         | 4            | 244-1360  |
| 2     | 1-1/4      | 4            | 7-5/32         | 6            | 244-1363  |

## "CREST" Cutting Edge Carbide Tipped End Mills

### 3 Flute with Weldon Shank



- Use in roughing milling operation.
- Machining carbon steel, cast iron, alloy steel.
- Heavy duty machining.
- Crest cutting edges compensate cutting forces, minimum vibration and chatter, and offer maximum end mills life.

| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|------------|--------------|----------------|--------------|-----------|
| 5/8"  | 5/8"       | 1-5/8"       | 4"             | 3            | 244-1515  |
| 5/8   | 5/8        | 2-1/2        | 4-7/8          | 3            | 244-1518  |
| 5/8   | 5/8        | 4            | 6-3/8          | 3            | 244-1521  |
| 11/16 | 5/8        | 1-5/8        | 4              | 3            | 244-1524  |
| 3/4   | 5/8        | 1-5/8        | 4-5/32         | 3            | 244-1527  |
| 3/4   | 3/4        | 3            | 5-21/32        | 3            | 244-1530  |
| 3/4   | 3/4        | 4            | 6-21/32        | 3            | 244-1533  |
| 13/16 | 5/8        | 1-7/8        | 4-27/64        | 3            | 244-1536  |
| 7/8   | 7/8        | 1-7/8        | 4-17/32        | 3            | 244-1539  |
| 7/8   | 7/8        | 3-1/2        | 6-5/32         | 3            | 244-1542  |
| 7/8   | 7/8        | 5            | 7-21/32        | 3            | 244-1545  |
| 1     | 7/8        | 1-7/8        | 4-11/16        | 3            | 244-1548  |
| 1     | 1          | 2            | 5-1/16         | 3            | 244-1551  |
| 1     | 1          | 4            | 7-1/16         | 3            | 244-1554  |
| 1     | 1          | 6            | 9-1/16         | 3            | 244-1557  |
| 1-1/8 | 1          | 2            | 5-1/16         | 3            | 244-1560  |
| 1-1/8 | 1          | 4            | 7-1/16         | 3            | 244-1563  |

### 4 & 6 Flute with Weldon Shank



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|------------|--------------|----------------|--------------|-----------|
| 1"    | 7/8"       | 1-7/8"       | 4-11/16"       | 4            | 244-1603  |
| 1     | 1          | 2            | 5-1/16         | 4            | 244-1606  |
| 1     | 1          | 4            | 7-1/16         | 4            | 244-1609  |
| 1     | 1          | 6            | 9-1/16         | 4            | 244-1612  |
| 1-1/8 | 1          | 2            | 5-1/16         | 4            | 244-1615  |
| 1-1/8 | 1          | 4            | 7-1/16         | 4            | 244-1618  |
| 1-1/4 | 1-1/4      | 2            | 5-1/16         | 4            | 244-1621  |
| 1-1/4 | 1-1/4      | 4            | 7-1/16         | 4            | 244-1624  |
| 1-1/4 | 1-1/4      | 6            | 9-1/16         | 4            | 244-1627  |
| 1-3/8 | 1          | 2            | 5-1/16         | 4            | 244-1630  |
| 1-1/2 | 1-1/4      | 2            | 5-5/32         | 4            | 244-1633  |
| 1-1/2 | 1-1/4      | 4            | 7-5/32         | 4            | 244-1636  |
| 1-1/2 | 1-1/4      | 8            | 11-5/32        | 4            | 244-1639  |
| 1-3/4 | 1-1/4      | 2            | 5-5/32         | 4            | 244-1642  |
| 1-3/4 | 1-1/4      | 2            | 5-5/32         | 6            | 244-1645  |
| 1-3/4 | 1-1/4      | 4            | 7-5/32         | 4            | 244-1648  |
| 1-3/4 | 1-1/4      | 4            | 7-5/32         | 6            | 244-1651  |
| 2     | 1-1/4      | 2            | 5-5/32         | 4            | 244-1654  |
| 2     | 1-1/4      | 2            | 5-5/32         | 6            | 244-1657  |
| 2     | 1-1/4      | 4            | 7-5/32         | 4            | 244-1660  |
| 2     | 1-1/4      | 4            | 7-5/32         | 6            | 244-1663  |

### 4 & 6 Flute with Combination Shank

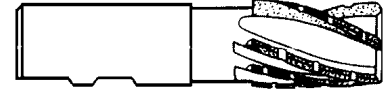


| Size   | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|--------|------------|--------------|----------------|--------------|-----------|
| 1-1/2" | 1-1/2"     | 2-1/2"       | 6-1/8"         | 4            | 244-1706  |
| 2      | 2          | 3            | 7              | 6            | 244-1709  |
| 2      | 2          | 4            | 8              | 4            | 244-1712  |
| 2      | 2          | 4            | 8              | 6            | 244-1715  |
| 2      | 2          | 5            | 9              | 4            | 244-1718  |
| 2      | 2          | 5            | 9              | 6            | 244-1721  |
| 2      | 2          | 6            | 10             | 4            | 244-1724  |
| 2      | 2          | 6            | 10             | 6            | 244-1727  |
| 2      | 2          | 8            | 12             | 4            | 244-1730  |
| 2      | 2          | 8            | 12             | 6            | 244-1733  |
| 2      | 2          | 10           | 14             | 6            | 244-1736  |

## "CHIPBREAKER" Cutting Edge Carbide Tipped End Mills

### 4&6 Flute with Weldon Shank

- Use in semi-finishing operation.
- multi-flute can efficiently mill a wide range of materials: non ferrous materials and ferrous materials, including titanium alloy, cast iron, alloy steel, stainless steel, plastic and magnetic material etc.
- Heavy duty machining.



| Size  | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. | Size   | Shank Dia. | Flute Length | Overall Length | No. of Flute | Order No. |
|-------|------------|--------------|----------------|--------------|-----------|--------|------------|--------------|----------------|--------------|-----------|
| 1"    | 7/8"       | 1-7/8"       | 4-11/16"       | 4            | 244-1803  | 1-1/2" | 1-1/4"     | 4"           | 7-5/32"        | 4            | 244-1836  |
| 1     | 1          | 2            | 5-1/16         | 4            | 244-1806  | 1-1/2  | 1-1/4      | 8            | 11-5/32        | 4            | 244-1839  |
| 1     | 1          | 4            | 7-1/16         | 4            | 244-1809  | 1-3/4  | 1-1/4      | 2            | 5-5/32         | 4            | 244-1842  |
| 1     | 1          | 6            | 9-1/16         | 4            | 244-1812  | 1-3/4  | 1-1/4      | 2            | 5-5/32         | 6            | 244-1845  |
| 1-1/8 | 1          | 2            | 5-1/16         | 4            | 244-1815  | 1-3/4  | 1-1/4      | 4            | 7-5/32         | 4            | 244-1848  |
| 1-1/8 | 1          | 4            | 7-1/16         | 4            | 244-1818  | 1-3/4  | 1-1/4      | 4            | 7-5/32         | 6            | 244-1851  |
| 1-1/4 | 1-1/4      | 2            | 5-1/16         | 4            | 244-1821  | 2      | 1-1/4      | 2            | 5-5/32         | 4            | 244-1854  |
| 1-1/4 | 1-1/4      | 4            | 7-1/16         | 4            | 244-1824  | 2      | 1-1/4      | 2            | 5-5/32         | 6            | 244-1857  |
| 1-1/4 | 1-1/4      | 6            | 9-1/16         | 4            | 244-1827  | 2      | 1-1/4      | 4            | 7-5/32         | 4            | 244-1860  |
| 1-3/8 | 1          | 2            | 5-1/16         | 4            | 244-1830  | 2      | 1-1/4      | 4            | 7-5/32         | 6            | 244-1863  |
| 1-1/2 | 1-1/4      | 2            | 5-5/32         | 4            | 244-1833  |        |            |              |                |              |           |

## Common Terms in Quality Control

**Accuracy:** Conformity of an indicated value to the true value, i.e. an actual or an accepted standard value.

**Allowance:** The degree of variation permitted from a nominal specification; the total tolerance.

**Axis:** A designated line on a drawing machine, gage or part used to denote a linear direction from measurement or reference.

**calibrate:** To graduate a measuring instrument into appropriate units. To determine accuracy of a gage at given point over a gaging area.

**Clearance:** The space between mating parts. On a cutting tool, the angle between the cutting edge and perpendicular axis of the work.

**Concentricity:** The amount of conformity with one another between the centers of two circles.

**Datum:** A point of reference.

**Deviation:** Error, variation, or departure from a standard.

**Dimension:** Any measurable extent or magnitude as length, breadth, or thickness.

**Division:** A mark or graduation denoting an incremental value of a scale, dial or gage.

**Eccentricity:** The deviation of the centers of 2 circles from each other.

**Fit:** The type and closeness of contact between 2 surfaces, usually in reference to mating parts.

**Flatness:** The degree of conformity of a plane or axis to a master or to a specified standard (mean or reference plane).

**Floating Zero:** A characteristic of a machine or gaging system that permits the less than zero reference point on an axis to be established at any point in the travel.

**Graduate:** To mark in a regular manner the increments of measurement, as a rule, scale or dial.

**Graduation:** One of the marked increments described above.

**Interchangeable:** Sufficiently alike in size as to permit replacement without modification.

**Limit:** A specified dimension beyond which variation in size is not permissible for acceptance as to conforming to size.

**Mean:** An average. An intermediate value between two or more values.

**Master:** Any type of gages that is used to check the accuracy of the other gages.

**Precision:** The quality of being sharply or clearly determined; strictly accurate, exact. In a gage, usually one capable of discrimination to .010" or smaller.

**Resolution:** The smallest increment into which a gage is divided. Used interchangeably with discrimination. Also, the least: interval two adjacent discrete details, which can be distinguished from 1 another.

**Squareness:** The degree of conformity of a plane or axis to a corresponding perpendicular axis.

**Straightness:** The degree of conformity of an axis along its length to a standard.

**T.I.R.(Total Indicator Reading):** The difference between the maximum and minimum indicator readings obtained usually in measurement of roundness.

**Tolerance:** The total permissible amount by which a dimension may vary above or below a specified size, usually expressed as plus and/or minus an amount greater or less than the specified dimension.

## Single End Mill Sets

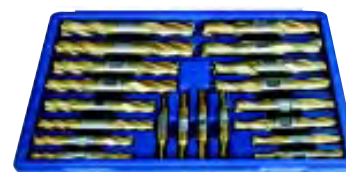
Center Cutting, Ground  
HSS



| Pieces | Flute | Description                                   | Wooden Case      |                         | Plastic Case     |                         |
|--------|-------|-----------------------------------------------|------------------|-------------------------|------------------|-------------------------|
|        |       |                                               | HSS<br>Order No. | TiN-Coated<br>Order No. | HSS<br>Order No. | TiN-Coated<br>Order No. |
| 20     | 2&4   | 1 each of 3/16" to 3/4" by 16ths              | 320-1000         | 320-0000                | 329-1000         | 329-0000                |
| 10     | 2     | 1 each of 3/16" to 3/4" by 16ths              | 320-1001         | 320-0001                | 329-1001         | 329-0001                |
| 10     | 4     | 1 each of 3/16" to 3/4" by 16ths              | 320-1002         | 320-0002                | 329-1002         | 329-0002                |
| 10     | 2&4   | 1 each of 1/4", 3/8", 1/2", 5/8", 3/4"        | 320-1003         | 320-0003                | 329-1003         | 329-0003                |
| 3      | 2     | 1 each of 1/8, 1/4, 3/8"                      | 320-1008         | 320-0008                |                  |                         |
| 3      | 4     | 1 each of 1/8, 1/4, 3/8"                      | 320-1009         | 320-0009                |                  |                         |
| 20     | 4     | 2 each of 3/16" to 3/4" by 16ths              | 320-4001         | 320-3001                | 329-4001         | 329-3001                |
| 20     | 2&4   | 1 each of 3, 4, 5, 6, 8, 10, 12, 14, 18, 20mm | 320-1004         | 320-0004                | 329-1004         | 329-0004                |
| 20     | 2&4   | 1 each of 3, 4, 5, 6, 8, 10, 12, 14, 16, 20mm | 320-1005         | 320-0005                | 329-1005         | 329-0005                |
| 10     | 2     | 1 each of 3, 4, 5, 6, 8, 10, 12, 14, 18, 20mm | 320-1006         | 320-0006                | 329-1006         | 329-0006                |
| 10     | 4     | 1 each of 3, 4, 5, 6, 8, 10, 12, 14, 18, 20mm | 320-1007         | 320-0007                | 329-1007         | 329-0007                |
| 9      | 4     | 1 each of 4, 5, 6, 8, 10, 12, 14, 16, 18mm    | 320-1010         |                         |                  |                         |

## Double End Mill Sets

Center Cutting, Ground  
M2 HSS



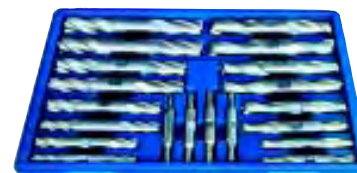
| Pieces | Flute | Description                            | Wooden Case      |                         | Plastic Case     |                         |
|--------|-------|----------------------------------------|------------------|-------------------------|------------------|-------------------------|
|        |       |                                        | HSS<br>Order No. | TiN-Coated<br>Order No. | HSS<br>Order No. | TiN-Coated<br>Order No. |
| 20     | 2&4   | 1 each of 3/16" to 3/4" by 16ths       | 320-9001         | 320-8001                | 329-9001         | 329-8001                |
| 10     | 4     | 1 each of 3/16" to 3/4" by 16ths       | 320-9002         | 320-8002                | 329-9002         | 329-8002                |
| 10     | 2     | 1 each of 3/16" to 3/4" by 16ths       | 320-9003         | 320-8003                | 329-9003         | 329-8003                |
| 10     | 2&4   | 1 each of 1/4", 3/8", 1/2", 5/8", 3/4" | 320-9004         | 320-8004                | 329-9004         | 329-8004                |

## M42 8% Cobalt Single End Mill Sets



| Pieces | Flute | Description                            | Wooden Case<br>Order No. | Plastic Case<br>Order No. |
|--------|-------|----------------------------------------|--------------------------|---------------------------|
| 20     | 2&4   | 1 each of 3/16" to 3/4" by 16ths       | 723-0000                 | 723-0010                  |
| 10     | 2     | 1 each of 3/16" to 3/4" by 16ths       | 723-0001                 | 723-0011                  |
| 10     | 4     | 1 each of 3/16" to 3/4" by 16ths       | 723-0002                 | 723-0012                  |
| 10     | 2&4   | 1 each of 1/4", 3/8", 1/2", 5/8", 3/4" | 723-0003                 | 723-0013                  |

## M42 8% Cobalt Double End Mill Sets



| Pieces | Flute | Description                            | Wooden Case<br>Order No. | Plastic Case<br>Order No. |
|--------|-------|----------------------------------------|--------------------------|---------------------------|
| 20     | 2&4   | 1 each of 3/16" to 3/4" by 16ths       | 723-9000                 | 723-9010                  |
| 10     | 2     | 1 each of 3/16" to 3/4" by 16ths       | 723-9001                 | 723-9011                  |
| 10     | 4     | 1 each of 3/16" to 3/4" by 16ths       | 723-9002                 | 723-9012                  |
| 10     | 2&4   | 1 each of 1/4", 3/8", 1/2", 5/8", 3/4" | 723-9003                 | 723-9013                  |

## End Mill Sets

### Single End Mill Sets

Center Cutting, Ground,  
Wooden stand



HSS

| No. of Piece | No. of Flute | Shank Dia. | Descriptions                       | HSS Order No. | TiN-Coated Order No. |
|--------------|--------------|------------|------------------------------------|---------------|----------------------|
| 6            | 2            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2"    | 320-2006      | 320-5006             |
| 6            | 4            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2"    | 320-2016      | 320-5016             |
| 6            | 2            | 3/4"       | 1", 3/4, 7/8, 1-1/8, 1-1/4, 1-1/2" | 320-2066      | 320-5066             |
| 6            | 4            | 3/4"       | 1", 3/4, 7/8, 1-1/8, 1-1/4, 1-1/2" | 320-2076      | 320-5076             |
| 6            | 4            | 3/4"       | 3/4, 7/8, 1"                       | 320-2086      | 320-5086             |
| 6            | 6            | 3/4"       | 1-1/8, 1-1/4, 1-1/2"               |               |                      |
| 12           | 2&4          | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2"    | 320-2026      | 320-5026             |
| 14           | 2            | 3/8"       | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8"   | 320-2014      | 320-5014             |
|              |              | 1/2        | 1/2, 9/16"                         |               |                      |
|              |              | 5/8        | 5/8, 11/16, 3/4"                   |               |                      |
|              |              | 3/4        | 13/16, 7/8, 1"                     |               |                      |

M42

| No. of Piece | No. of Flute | Shank Dia. | Descriptions                    | M42 Order No. | TiN Coated Order No. |
|--------------|--------------|------------|---------------------------------|---------------|----------------------|
| 4            | 4            | 3/8"       | 1/4, 5/16, 3/8"                 | 723-2544      |                      |
|              |              | 1/2"       | 1/2"                            |               |                      |
| 6            | 2            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2" | 723-2406      |                      |
| 6            | 4            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2" | 723-2416      |                      |
| 8            | 2&4          | 3/8"       | 1/4, 5/16, 3/8 & 1/2"           | 723-2548      |                      |
|              |              | 1/2"       | 1/2"                            |               |                      |
| 12           | 2&4          | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2" | 723-2512      |                      |
| 6            | 2            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8"      | 723-2526      | 723-2626             |
|              |              | 1/2"       | 1/2"                            |               |                      |
| 6            | 4            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8"      | 723-2546      | 723-2646             |
|              |              | 1/2"       | 1/2"                            |               |                      |

### Ball Nose Single End Mill Sets

Center Cutting, Ground, Wooden Stand



| No. of Pieces | Shank Flute | Shank Dia. | Descriptions               | HSS Order No. | TiN Coated Order No. |
|---------------|-------------|------------|----------------------------|---------------|----------------------|
| 4             | 2           | 3/4"       | 7/8, 1, 1-1/4, 1-1/2"      | 320-2004      | 320-5004             |
| 9             | 2           | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8" | 320-2009      | 320-5009             |
|               |             | 1/2"       | 7/16, 1/2, 5/8"            |               |                      |
|               |             | 3/4"       | 3/4"                       |               |                      |
| 6             | 2           | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8" | 320-2007      | 320-5007             |
|               |             | 1/2"       | 1/2"                       |               |                      |
| 6             | 4           | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8" | 320-2046      |                      |
|               |             | 1/2"       | 1/2"                       |               |                      |

### Double End Mill Sets

Center Cutting, Ground,  
Wooden stand



HSS

| No. of Piece | No. of Flute | Shank Dia. | Descriptions                     | HSS Order No. | TiN Coated Order No. |
|--------------|--------------|------------|----------------------------------|---------------|----------------------|
| 6            | 2            | 3/8"       | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8" | 320-2106      | 320-5106             |
| 6            | 4            | 3/8"       | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8" | 320-2116      | 320-5116             |
| 6            | 2            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8"       | 320-2226      | 320-5226             |
|              |              | 1/2        | 1/2"                             |               |                      |
| 6            | 4            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8"       | 320-2246      | 320-5246             |
|              |              | 1/2        | 1/2"                             |               |                      |
| 12           | 2&4          | 3/8"       | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8" | 320-2036      | 320-5036             |
| 14           | 2            | 3/8"       | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8" | 320-2114      | 320-5114             |
|              |              | 1/2        | 1/2"                             |               |                      |
|              |              | 5/8        | 9/16, 5/8"                       |               |                      |
|              |              | 3/4        | 11/16, 3/4"                      |               |                      |
| 14           | 4            | 7/8        | 13/16, 7/8"                      | 320-2214      | 320-5214             |
|              |              | 1          | 1"                               |               |                      |
|              |              | 3/8"       | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8" |               |                      |
|              |              | 1/2        | 1/2"                             |               |                      |
| 14           | 4            | 5/8        | 9/16, 5/8"                       | 320-2214      | 320-5214             |
|              |              | 3/4        | 11/16, 3/4"                      |               |                      |
|              |              | 7/8        | 13/16, 7/8"                      |               |                      |
|              |              | 1          | 1"                               |               |                      |

M42

| No. of Piece | No. of Flute | Shank Dia. | Descriptions                    | Center Cutting Order No. | Order No. |
|--------------|--------------|------------|---------------------------------|--------------------------|-----------|
| 6            | 2            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2" | 723-2226                 | 723-2426  |
| 6            | 4            | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2" | 723-2246                 | 723-2446  |
| 12           | 2&4          | 3/8"       | 1/8, 3/16, 1/4, 5/16, 3/8, 1/2" |                          | 723-2256  |

### Miniature Double End Mill Sets

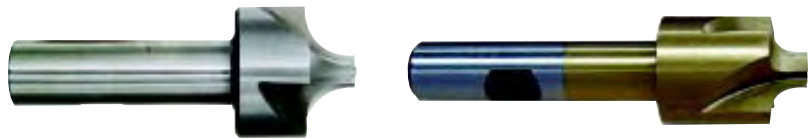
3/16" Shank, Wooden Stand



| No. of Pieces | Flute | Descriptions                                 | HSS Order No. | TiN HSS Order No. | Cobalt Order No. |
|---------------|-------|----------------------------------------------|---------------|-------------------|------------------|
| 5             | 2     | 1/16, 3/32, 1/8, 5/32, 3/16"                 | 320-2305      | 320-5305          |                  |
| 5             | 4     | 1/16, 3/32, 1/8, 5/32, 3/16"                 | 320-2405      | 320-5405          |                  |
| 9             | 4     | Stub Length, 1each of 1/16 to 3/16" by 64ths | 320-2409      | 320-5409          | 723-2409         |
| 9             | 4     | Regular Length, 1each of 1/16-3/16" by 64ths | 320-2419      | 320-5419          | 723-2419         |
| 11            | 2     | Stub Length, 1each of 1/32-3/16" by 64ths    | 320-2411      | 320-5411          | 723-2411         |
| 11            | 2     | Regular Length, 1each of 1/32-3/16" by 64ths | 320-2421      | 320-5421          | 723-2421         |
| 10            | 2 & 4 | 1/16, 3/32, 1/8, 5/32, 3/16"                 | 320-2610      | 320-5610          |                  |

### 4 Flute Corner Rounding End Mills

- Used to mill rounded corners.
- From relieved for longer tool life.
- May be resharpened repeatedly without changing form.
- Ideal for your Bridgeport type machines.



| Radius Size | Shank Dia. | Cutter Dia. | Overall Length | M2 OrderNo. | M2AL Order No. | TiN-Coated Order No. |
|-------------|------------|-------------|----------------|-------------|----------------|----------------------|
| 1/32"       | 3/8"       | 3/8"        | 2-1/2"         | 182-6023    | 181-6023       | 183-6023             |
| 3/64        | 3/8        | 7/16        | 2-1/2          | 182-6031    | 181-6031       | 183-6031             |
| 1/16        | 3/8        | 7/16        | 2-1/2          | 182-6049    | 181-6049       | 183-6049             |
| 5/64        | 3/8        | 1/2         | 2-1/2          | 182-6056    | 181-6056       | 183-6056             |
| 3/32        | 3/8        | 1/2         | 2-1/2          | 182-6064    | 181-6064       | 183-6064             |
| 3/32        | 1/2        | 1/2         | 2-1/2          | 182-6809    | 181-6809       | 182-6809             |
| 7/64        | 3/8        | 5/8         | 2-1/2          | 182-6072    | 181-6072       | 183-6072             |
| 1/8         | 1/2        | 5/8         | 3              | 182-6080    | 181-6080       | 183-6080             |
| 1/8         | 3/8        | 5/8         | 3              | 182-6668    | 181-6668       | 183-6668             |
| 1/8         | 3/4        | 5/8         | 3              | 182-6817    | 181-6817       | 183-6817             |
| 9/64        | 1/2        | 3/4         | 3              | 182-6098    | 181-6098       | 183-6098             |
| 5/32        | 1/2        | 3/4         | 3              | 182-6106    | 181-6106       | 183-6106             |
| 11/64       | 1/2        | 3/4         | 3              | 182-6114    | 181-6114       | 183-6114             |
| 3/16        | 1/2        | 7/8         | 2-15/16        | 182-6121    | 181-6121       | 183-6121             |
| 3/16        | 1/2        | 7/8         | 3              | 182-6122    | 181-6122       | 183-6122             |
| 3/16        | 3/4        | 7/8         | 3-1/8          | 182-6130    | 181-6130       | 183-6130             |
| 13/64       | 1/2        | 7/8         | 3-1/8          | 182-6676    | 181-6676       | 183-6676             |
| 13/64       | 3/4        | 7/8         | 3-1/8          | 182-6684    | 181-6684       | 183-6684             |
| 7/32        | 3/4        | 7/8         | 3-1/4          | 182-6692    | 181-6692       | 183-6692             |
| 7/32        | 1/2        | 7/8         | 3-1/4          | 182-6148    | 181-6148       | 183-6148             |
| 15/64       | 1/2        | 7/8         | 3-1/8          | 182-6155    | 181-6155       | 183-6155             |
| 1/4         | 1/2        | 1           | 3              | 182-6162    | 181-6162       | 183-6162             |
| 1/4         | 1/2        | 1           | 3-1/8          | 182-6163    | 181-6163       | 183-6163             |
| 1/4         | 3/4        | 1           | 3-1/4          | 182-6171    | 181-6171       | 183-6171             |
| 17/64       | 1/2        | 1           | 3-1/8          | 182-6700    | 181-6700       | 183-6700             |
| 17/64       | 3/4        | 1           | 3-1/8          | 182-6718    | 181-6718       | 183-6718             |
| 9/32        | 1/2        | 1-1/8       | 3-1/4          | 182-6189    | 181-6189       | 183-6189             |
| 9/32        | 5/8        | 1           | 3              | 182-6190    | 181-6190       | 183-6190             |
| 9/32        | 3/4        | 1-1/8       | 3-1/4          | 182-6197    | 181-6197       | 183-6197             |
| 19/64       | 1/2        | 1-1/8       | 3-1/4          | 182-6726    | 181-6726       | 183-6726             |
| 19/64       | 3/4        | 1-1/8       | 3-1/4          | 182-6734    | 181-6734       | 183-6734             |
| 5/16        | 1/2        | 1-1/8       | 3-1/4          | 182-6205    | 181-6205       | 183-6205             |
| 5/16        | 3/4        | 1-1/8       | 3-1/4          | 182-6742    | 181-6742       | 183-6742             |
| 5/16        | 5/8        | 1-1/8       | 3-1/2          | 182-6215    | 181-6215       | 183-6215             |
| 5/16        | 7/8        | 1-1/8       | 3-1/2          | 182-6213    | 181-6213       | 183-6213             |
| 21/64       | 1/2        | 1-1/8       | 3-1/4          | 182-6759    | 181-6759       | 183-6759             |
| 21/64       | 3/4        | 1-1/8       | 3-1/4          | 182-6767    | 181-6767       | 183-6767             |
| 11/32       | 1/2        | 1-1/8       | 3-1/2          | 182-6221    | 181-6221       | 183-6221             |
| 11/32       | 3/4        | 1-1/8       | 3-1/2          | 182-6775    | 181-6775       | 183-6775             |
| 3/8         | 1/2        | 1-1/4       | 3-1/2          | 182-6247    | 181-6247       | 183-6247             |
| 3/8"        | 3/4"       | 1-1/4"      | 3-1/2"         | 182-6783    | 181-6783       | 183-6783             |
| 3/8         | 7/8        | 1-1/4       | 3-3/4          | 182-6254    | 181-6254       | 183-6254             |
| 13/32       | 3/4        | 1-1/4       | 3-1/2          | 182-6262    | 181-6262       | 183-6262             |
| 7/16        | 3/4        | 1-3/8       | 3-3/4          | 182-6825    | 181-6825       | 183-6825             |
| 7/16        | 3/4        | 1-3/8       | 4              | 182-6280    | 181-6280       | 183-6280             |
| 7/16        | 1          | 1-3/8       | 4              | 182-6288    | 181-6288       | 183-6288             |
| 15/32       | 3/4        | 1-3/8       | 3-3/4          | 182-6304    | 181-6304       | 183-6304             |
| 1/2         | 1/2        | 1-1/2       | 3-7/8          | 182-6833    | 181-6833       | 183-6833             |
| 1/2         | 3/4        | 1-1/2       | 3-7/8          | 182-6791    | 181-6791       | 183-6791             |
| 1/2         | 1          | 1-1/2       | 4-1/8          | 182-6320    | 181-6320       | 183-6320             |
| 17/32       | 3/4        | 1-1/2       | 3-7/8          | 182-6338    | 181-6338       | 183-6338             |
| 17/32       | 1          | 1-1/2       | 4-1/8          | 182-6346    | 181-6346       | 183-6346             |

| Radius Size | Shank Dia. | Cutter Dia. | Overall Length | M2 Order No. | M2AL Order No. | TiN-Coated Order No. |
|-------------|------------|-------------|----------------|--------------|----------------|----------------------|
| 9/16"       | 3/4"       | 1-5/16"     | 4"             | 182-6353     | 181-6353       | 183-6353             |
| 9/16        | 1          | 1-5/16      | 4-1/4          | 182-6361     | 181-6361       | 183-6361             |
| 19/32       | 3/4        | 1-15/16     | 4              | 182-6379     | 181-6379       | 183-6379             |
| 19/32       | 1          | 1-15/16     | 4-1/4          | 182-6387     | 181-6387       | 183-6387             |
| 5/8         | 3/4        | 1-15/16     | 4              | 182-6403     | 181-6403       | 183-6403             |
| 5/8         | 1          | 1-15/16     | 4-1/4          | 182-6395     | 181-6395       | 183-6395             |
| 21/32       | 3/4        | 1-15/16     | 4              | 182-6411     | 181-6411       | 183-6411             |
| 21/32       | 1          | 1-15/16     | 4-1/4          | 182-6429     | 181-6429       | 183-6429             |
| 11/16       | 3/4        | 2-1/4       | 4-1/8          | 182-6437     | 181-6437       | 183-6437             |
| 11/16       | 1          | 2-1/4       | 4-5/16         | 182-6445     | 181-6445       | 183-6445             |
| 23/32       | 3/4        | 2-1/4       | 4-1/8          | 182-6452     | 181-6452       | 183-6452             |
| 23/32       | 1          | 2-1/4       | 4-5/16         | 182-6460     | 181-6460       | 183-6460             |
| 3/4         | 3/4        | 1-7/8       | 4              | 182-6486     | 181-6486       | 183-6486             |
| 3/4         | 3/4        | 2-1/4       | 4-1/8          | 182-6481     | 181-6481       | 183-6481             |
| 3/4         | 1          | 2-1/4       | 4-5/16         | 182-6478     | 181-6478       | 183-6478             |
| 25/32       | 3/4        | 2-1/4       | 4-1/8          | 182-6494     | 181-6494       | 183-6494             |
| 25/32       | 1          | 2-1/4       | 4-5/16         | 182-6502     | 181-6502       | 183-6502             |
| 13/16       | 3/4        | 2-1/4       | 4-1/8          | 182-6510     | 181-6510       | 183-6510             |
| 13/16       | 1          | 2-1/4       | 4-5/16         | 182-6528     | 181-6528       | 183-6528             |
| 27/32       | 3/4        | 2-1/2       | 4-1/2          | 182-6536     | 181-6536       | 183-6536             |
| 27/32       | 1          | 2-1/2       | 4-1/2          | 182-6544     | 181-6544       | 183-6544             |
| 7/8         | 3/4        | 2-1/2       | 4-1/2          | 182-6551     | 181-6551       | 183-6551             |
| 7/8         | 1          | 2-1/2       | 4-1/2          | 182-6569     | 181-6569       | 183-6569             |
| 15/16       | 3/4        | 2-5/8       | 4-1/2          | 182-6593     | 181-6593       | 183-6593             |
| 15/16       | 1          | 2-5/8       | 4-3/4          | 182-6601     | 181-6601       | 183-6601             |
| 1           | 3/4        | 2-5/8       | 4-1/2          | 182-6635     | 181-6635       | 183-6635             |
| 1           | 1          | 2-5/8       | 4-3/4          | 182-6643     | 181-6643       | 183-6643             |

### Corner Rounding End Mill Sets



4Pcs/set, Wooden Stand

| Pieces | Size                                | Materials  | Order No. |
|--------|-------------------------------------|------------|-----------|
| 4      | 1/2, 9/16, 5/8, 3/4 have 3/4" shank | M2         | 182-6908  |
| 4      | 1/2, 9/16, 5/8, 3/4 have 3/4" shank | M2AL       | 181-6908  |
| 4      | 1/2, 9/16, 5/8, 3/4 have 3/4" shank | Tin-Coated | 183-6908  |

## Corner Rounding End Mills

### M42 8% Cobalt 4 Flute Corner Rounding End Mills

- M-42 8% cobalt end mills are designed to cut difficult to machine materials.



| Radius Size | Shank Dia. | Cutter Dia. | Overall Length | Order No. |
|-------------|------------|-------------|----------------|-----------|
| 1/32"       | 3/8"       | 3/8"        | 2-1/2"         | 723-6405  |
| 3/64        | 3/8        | 7/16        | 2-1/2          | 723-6408  |
| 1/16        | 3/8        | 7/16        | 2-1/2          | 723-6411  |
| 5/64        | 3/8        | 1/2         | 2-1/2          | 723-6414  |
| 3/32        | 3/8        | 1/2         | 2-1/2          | 723-6417  |
| 3/32        | 1/2        | 1/2         | 2-1/2          | 723-6420  |
| 7/64        | 3/8        | 5/8         | 2-1/2          | 723-6423  |
| 1/8         | 3/8        | 5/8         | 3              | 723-6426  |
| 1/8         | 1/2        | 5/8         | 3              | 723-6429  |
| 1/8         | 3/4        | 5/8         | 3              | 723-6432  |
| 9/64        | 1/2        | 3/4         | 3              | 723-6435  |
| 5/32        | 1/2        | 3/4         | 3              | 723-6438  |
| 11/64       | 1/2        | 3/4         | 3              | 723-6441  |
| 3/16        | 1/2        | 7/8         | 3              | 723-6444  |
| 3/16        | 3/4        | 7/8         | 3-1/8          | 723-6447  |
| 13/64       | 1/2        | 7/8         | 3-1/8          | 723-6450  |
| 13/64       | 3/4        | 7/8         | 3-1/8          | 723-6453  |
| 7/32        | 1/2        | 7/8         | 3-1/4          | 723-6456  |
| 7/32        | 3/4        | 7/8         | 3-1/4          | 723-6459  |
| 15/64       | 1/2        | 7/8         | 3-1/8          | 723-6462  |
| 1/4         | 1/2        | 1           | 3-1/8          | 723-6465  |
| 1/4         | 3/4        | 1           | 3-1/4          | 723-6468  |
| 17/64       | 1/2        | 1           | 3-1/8          | 723-6471  |
| 17/64       | 3/4        | 1           | 3-1/8          | 723-6474  |
| 9/32        | 1/2        | 1-1/8       | 3-1/4          | 723-6477  |
| 9/32        | 3/4        | 1-1/8       | 3-1/4          | 723-6480  |
| 19/64       | 1/2        | 1-1/8       | 3-1/4          | 723-6483  |
| 19/64       | 3/4        | 1-1/8       | 3-1/4          | 723-6486  |
| 5/16        | 1/2        | 1-1/8       | 3-1/4          | 723-6489  |
| 5/16        | 3/4        | 1-1/8       | 3-1/4          | 723-6492  |
| 5/16        | 7/8        | 1-1/8       | 3-1/2          | 723-6495  |
| 21/64       | 1/2        | 1-1/8       | 3-1/4          | 723-6498  |
| 21/64       | 3/4        | 1-1/8       | 3-1/4          | 723-6501  |
| 11/32       | 1/2        | 1-1/8       | 3-1/2          | 723-6504  |
| 11/32       | 3/4        | 1-1/8       | 3-1/2          | 723-6507  |
| 3/8         | 1/2        | 1-1/4       | 3-1/2          | 723-6510  |

| Radius Size | Shank Dia. | Cutter Dia. | Overall Length | Order No. |
|-------------|------------|-------------|----------------|-----------|
| 3/8"        | 3/4"       | 1-1/4"      | 3-1/2"         | 723-6513  |
| 3/8         | 7/8        | 1-1/4       | 3-1/4          | 723-6516  |
| 13/32       | 3/4        | 1-1/4       | 3-1/2          | 723-6519  |
| 7/16        | 3/4        | 1-3/8       | 4-3/4          | 723-6522  |
| 7/16        | 1          | 1-3/8       | 4              | 723-6525  |
| 15/32       | 3/4        | 1-3/8       | 3-3/4          | 723-6528  |
| 1/2         | 1/2        | 1-1/2       | 3-7/8          | 723-6531  |
| 1/2         | 3/4        | 1-1/2       | 3-7/8          | 723-6534  |
| 1/2         | 1          | 1-1/2       | 4-1/8          | 723-6537  |
| 17/32       | 3/4        | 1-1/2       | 3-7/8          | 723-6540  |
| 17/32       | 1          | 1-1/2       | 4-1/8          | 723-6543  |
| 9/16        | 3/4        | 1-15/16     | 4              | 723-6546  |
| 9/16        | 1          | 1-15/16     | 4-1/4          | 723-6549  |
| 19/32       | 3/4        | 1-15/16     | 4              | 723-6552  |
| 5/8         | 3/4        | 1-15/16     | 4              | 723-6555  |
| 5/8         | 1          | 1-15/16     | 4-1/4          | 723-6558  |
| 21/32       | 3/4        | 1-15/16     | 4              | 723-6561  |
| 21/32       | 1          | 1-15/16     | 4-1/4          | 723-6564  |
| 11/16       | 3/4        | 2-1/4       | 4-1/8          | 723-6567  |
| 11/16       | 1          | 2-1/4       | 4-5/16         | 723-6570  |
| 23/32       | 3/4        | 2-1/4       | 4-1/8          | 723-6573  |
| 23/32       | 1          | 2-1/4       | 4-5/16         | 723-6576  |
| 3/4         | 3/4        | 2-1/4       | 4-1/8          | 723-6579  |
| 3/4         | 1          | 2-1/4       | 4-5/16         | 723-6582  |
| 25/32       | 3/4        | 2-1/4       | 4-1/8          | 723-6585  |
| 25/32       | 1          | 2-1/4       | 4-5/16         | 723-6588  |
| 13/16       | 3/4        | 2-1/4       | 4-1/8          | 723-6591  |
| 13/16       | 1          | 2-1/4       | 4-5/16         | 723-6594  |
| 27/32       | 3/4        | 2-1/2       | 4-1/2          | 723-6597  |
| 7/8         | 3/4        | 2-1/2       | 4-1/2          | 723-6603  |
| 7/8         | 1          | 2-1/2       | 4-1/2          | 723-6606  |
| 15/16       | 3/4        | 2-5/8       | 4-1/2          | 723-6609  |
| 15/16       | 1          | 2-5/8       | 4-3/4          | 723-6612  |
| 1           | 3/4        | 2-5/8       | 4-1/2          | 723-6615  |
| 1           | 1          | 2-5/8       | 4-3/4          | 723-6618  |

### M42 8% Cobalt Corner Rounding End Mill Sets

| Pieces | Size                                      | Shank Dia. | Order No. |
|--------|-------------------------------------------|------------|-----------|
| 4      | 1/2, 9/16, 5/8, 3/4"                      | 3/4        | 723-6684  |
| 8      | 1/16, 3/32, 1/8                           | 3/8        | 723-6687  |
|        | 5/32, 3/16, 1/4, 5/16, 3/8                | 1/2        |           |
| 8      | 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 | 3/4        | 723-6688  |



### Corner Rounding Milling Cutters

#### High Speed Steel, Right Hand

| Radius of Circle | Hole Diameter | Hole Size | Right Hand Order No. | Left Hand Order No. | Radius of Circle | Hole Diameter | Hole Size | Right Hand Order No. | Left Hand Order No. |
|------------------|---------------|-----------|----------------------|---------------------|------------------|---------------|-----------|----------------------|---------------------|
| 1/8"             | 2"            | 7/8"      | 317-5080             | 317-6088            | 7/16"            | 3-1/4"        | 1"        | 317-5288             | 317-6286            |
| 1/8              | 2-1/2         | 1         | 317-5098             | 317-6096            | 1/2              | 3-1/4         | 1         | 317-5320             | 317-6328            |
| 3/16             | 2-1/2         | 1         | 317-5122             | 317-6120            | 1/2              | 4-1/4         | 1-1/4     | 317-5338             | 317-6336            |
| 1/4              | 2-1/4         | 7/8       | 317-5163             | 317-6161            | 9/16             | 3-1/2         | 1         | 317-5361             | 317-6369            |
| 1/4              | 3             | 1         | 317-5171             | 317-6179            | 5/8              | 3-1/2         | 1         | 317-5403             | 317-6401            |
| 5/16             | 2-3/4         | 1         | 317-5205             | 317-6203            | 5/8              | 4-1/4         | 1-1/4     | 317-5411             | 317-6419            |
| 5/16             | 3             | 1         | 317-5209             | 317-6209            | 3/4              | 3-3/4         | 1         | 317-5486             | 317-6484            |
| 3/8              | 3             | 1         | 317-5247             | 317-6245            | 7/8              | 4-1/2         | 1-1/4     | 317-5569             | 317-6567            |
| 3/8              | 3-3/4         | 1-1/4     | 317-5254             | 317-6252            | 1                | 4-1/2         | 1-1/4     | 317-5643             | 317-6641            |

Use for radius milling



## 1/2" Shank Woodruff Keyseat Cutters

High Speed Steel or M42 Cobalt, Staggered & Straight Tooth

Designed for using together with normal end mills  
for milling standard woodruff keyseat, slots.



| American Standard | Cutter Dia. | Face Width | Overall Length | High Speed Steel            |                              | M42 Cobalt                  |                              |
|-------------------|-------------|------------|----------------|-----------------------------|------------------------------|-----------------------------|------------------------------|
|                   |             |            |                | Straight Tooth<br>Order No. | Staggered Tooth<br>Order No. | Straight Tooth<br>Order No. | Staggered Tooth<br>Order No. |
| 202               | 1/4"        | 1/16"      | 2-1/16"        | 296-2016                    | 297-2016                     | 295-2016                    | 299-2016                     |
| 202-1/2           | 5/16        | 1/16       | 2-1/16         | 296-2065                    | 297-2065                     | 295-2065                    | 299-2065                     |
| 302-1/2           | 5/16        | 3/32       | 2-3/32         | 296-2073                    | 297-2073                     | 295-2073                    | 299-2073                     |
| 203               | 3/8         | 1/16       | 2-1/16         | 296-2115                    | 297-2115                     | 295-2115                    | 299-2115                     |
| 303               | 3/8         | 3/32       | 2-3/32         | 296-2123                    | 297-2123                     | 295-2123                    | 299-2123                     |
| 403               | 3/8         | 1/8        | 2-1/8          | 296-2131                    | 297-2131                     | 295-2131                    | 299-2131                     |
| 204               | 1/2         | 1/16       | 2-1/16         | 296-0010                    | 297-0010                     | 295-0010                    | 299-0010                     |
| 304               | 1/2         | 3/32       | 2-3/32         | 296-0028                    | 297-0028                     | 295-0028                    | 299-0028                     |
| 404               | 1/2         | 1/8        | 2-1/8          | 296-0036                    | 297-0036                     | 295-0036                    | 299-0036                     |
| 305               | 5/8         | 3/32       | 2-3/32         | 296-0044                    | 297-0044                     | 295-0044                    | 299-0044                     |
| 405               | 5/8         | 1/8        | 2-1/8          | 296-0051                    | 297-0051                     | 295-0051                    | 299-0051                     |
| 505               | 5/8         | 5/32       | 2-5/32         | 296-0069                    | 297-0069                     | 295-0069                    | 299-0069                     |
| 605               | 5/8         | 3/16       | 2-3/16         | 296-0614                    | 297-0614                     | 295-0614                    | 299-0614                     |
| 406               | 3/4         | 1/8        | 2-1/8          | 296-0077                    | 297-0077                     | 295-0077                    | 299-0077                     |
| 506               | 3/4         | 5/32       | 2-5/32         | 296-0085                    | 297-0085                     | 295-0085                    | 299-0085                     |
| 606               | 3/4         | 3/16       | 2-3/16         | 296-0093                    | 297-0093                     | 295-0093                    | 299-0093                     |
| 806               | 3/4         | 1/4        | 2-1/4          | 296-0911                    | 297-0911                     | 295-0911                    | 299-0911                     |
| 507               | 7/8         | 5/32       | 2-5/32         | 296-0101                    | 297-0101                     | 295-0101                    | 299-0101                     |
| 607               | 7/8         | 3/16       | 2-3/16         | 296-0119                    | 297-0119                     | 295-0119                    | 299-0119                     |
| 707               | 7/8         | 7/32       | 2-7/32         | 296-0127                    | 297-0127                     | 295-0127                    | 299-0127                     |
| 807               | 7/8         | 1/4        | 2-1/4          | 296-9011                    | 297-9011                     | 295-9011                    | 299-9011                     |
| 608               | 1           | 3/16       | 2-3/16         | 296-0135                    | 297-0135                     | 295-0135                    | 299-0135                     |
| 708               | 1           | 7/32       | 2-7/32         | 296-0143                    | 297-0143                     | 295-0143                    | 299-0143                     |
| 808               | 1           | 1/4        | 2-1/4          | 296-0150                    | 297-0150                     | 295-0150                    | 299-0150                     |
| 1008              | 1           | 5/16       | 2-5/16         | 296-9029                    | 297-9029                     | 295-9029                    | 299-9029                     |
| 1208              | 1           | 3/8        | 2-3/8          | 296-1521                    | 297-1521                     | 295-1521                    | 299-1521                     |
| 609               | 1-1/8       | 3/16       | 2-3/16         | 296-0168                    | 297-0168                     | 295-0168                    | 299-0168                     |
| 709               | 1-1/8       | 7/32       | 2-7/32         | 296-0176                    | 297-0176                     | 295-0176                    | 299-0176                     |
| 809               | 1-1/8       | 1/4        | 2-1/4          | 296-0184                    | 297-0184                     | 295-0184                    | 299-0184                     |
| 1009              | 1-1/8       | 5/16       | 2-5/16         | 296-9037                    | 297-9037                     | 295-9037                    | 299-9037                     |
| 610               | 1-1/4       | 3/16       | 2-3/16         | 296-0192                    | 297-0192                     | 295-0192                    | 299-0192                     |
| 710               | 1-1/4       | 7/32       | 2-7/32         | 296-0200                    | 297-0200                     | 295-0200                    | 299-0200                     |
| 810               | 1-1/4       | 1/4        | 2-1/4          | 296-0218                    | 297-0218                     | 295-0218                    | 299-0218                     |
| 1010              | 1-1/4       | 5/16       | 2-5/16         | 296-9045                    | 297-9045                     | 295-9045                    | 299-9045                     |
| 1210              | 1-1/4       | 3/8        | 2-3/8          | 296-9052                    | 297-9052                     | 295-9052                    | 299-9052                     |
| 811               | 1-3/8       | 1/4        | 2-1/4          | 296-0226                    | 297-0226                     | 295-0226                    | 299-0226                     |
| 1011              | 1-3/8       | 5/16       | 2-5/16         | 296-0234                    | 297-0234                     | 295-0234                    | 299-0234                     |
| 1211              | 1-3/8       | 3/8        | 2-3/8          | 296-9060                    | 297-9060                     | 295-9060                    | 299-9060                     |
| 812               | 1-1/2       | 1/4        | 2-1/4          | 296-0242                    | 297-0242                     | 295-0242                    | 299-0242                     |
| 1012              | 1-1/2       | 5/16       | 2-5/16         | 296-0259                    | 297-0259                     | 295-0259                    | 299-0259                     |
| 1212              | 1-1/2       | 3/8        | 2-3/8          | 296-9078                    | 297-9078                     | 295-9078                    | 299-9078                     |

## 1/2" Shank Woodruff Keyseat Cutter Sets

High Speed Steel or M42 Cobalt, Staggered & Straight Tooth

| Pieces | American Standard                       | High Speed Steel            |                              | M42 Cobalt                  |                              |
|--------|-----------------------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|
|        |                                         | Straight Tooth<br>Order No. | Staggered Tooth<br>Order No. | Straight Tooth<br>Order No. | Staggered Tooth<br>Order No. |
| 10     | 403,204,404,305,505,406,606,806,608,808 | 296-9810                    | 296-9910                     | 296-9811                    | 296-9911                     |
| 41     | 202 thru 1212                           | 296-9841                    | 297-9941                     | 296-9842                    | 297-9942                     |
| 8      | 204,304,305,406,605,606,608,806         |                             | 297-9908                     |                             |                              |



# T-Slot Cutters

## T-Slot Cutters

### High Speed Steel, M35 or M42 Cobalt

- H.S.S. and M35/M42 cobalt T-slot cutters are a rugged design with free cutting features.
- Cutters have positive radial rake, right and left hand spiral, with alternate side cutting teeth for maximum chip clearance.



| Bolt Size | Cutter Dia. | Cutter Width | Neck Dia. | Shank Dia. | Undercut Length | OAL      | Tooth | HSS Order No.   |
|-----------|-------------|--------------|-----------|------------|-----------------|----------|-------|-----------------|
| 1/4"      | 9/16"       | 15/64"       | 17/64"    | 1/2"       | 35/64"          | 2-19/32" | 8     | <b>298-6016</b> |
| 5/16      | 21/32       | 17/64        | 21/64     | 1/2        | 39/64           | 2-11/16  | 8     | <b>298-6020</b> |
| 3/8       | 25/32       | 21/64        | 13/32     | 3/4        | 3/4             | 3-1/4    | 8     | <b>298-6024</b> |
| 1/2       | 31/32       | 25/64        | 17/32     | 3/4        | 3/4             | 3-7/16   | 8     | <b>298-6032</b> |
| 5/8       | 1-1/4       | 31/64        | 21/32     | 1          | 1-9/64          | 3-15/16  | 10    | <b>298-6040</b> |
| 3/4       | 1-15/32     | 5/8          | 25/32     | 1          | 1-1/2           | 4-7/16   | 10    | <b>298-6048</b> |
| 1         | 1-27/32     | 53/64        | 1-1/32    | 1-1/4      | 1-43/64         | 4-13/16  | 10    | <b>298-6064</b> |
| 1-1/4     | 2-7/32      | 1-3/32       | 1-9/32    | 1-1/4      | 1-31/32         | 5-3/8    | 12    | <b>298-6080</b> |
| 1-1/2     | 2-21/32     | 1-11/32      | 1-17/32   | 1-1/4      | 2-1/8           | 5-29/32  | 12    | <b>298-6096</b> |

| Bolt Size | Cutter Dia. | Cutter Width | Neck Dia. | Shank Dia. | Undercut Length | OAL      | Tooth | M35 Order No.   |
|-----------|-------------|--------------|-----------|------------|-----------------|----------|-------|-----------------|
| 1/4"      | 9/16"       | 15/64"       | 17/64"    | 1/2"       | 35/64"          | 2-19/32" | 8     | <b>298-7016</b> |
| 5/16      | 21/32       | 17/64        | 21/64     | 1/2        | 39/64           | 2-11/16  | 8     | <b>298-7020</b> |
| 3/8       | 25/32       | 21/64        | 13/32     | 3/4        | 3/4             | 3-1/4    | 8     | <b>298-7024</b> |
| 1/2       | 31/32       | 25/64        | 17/32     | 3/4        | 3/4             | 3-7/16   | 8     | <b>298-7032</b> |
| 5/8       | 1-1/4       | 31/64        | 21/32     | 1          | 1-9/64          | 3-15/16  | 10    | <b>298-7040</b> |
| 3/4       | 1-15/32     | 5/8          | 25/32     | 1          | 1-1/2           | 4-7/16   | 10    | <b>298-7048</b> |
| 1         | 1-27/32     | 53/64        | 1-1/32    | 1-1/4      | 1-43/64         | 4-13/16  | 10    | <b>298-7064</b> |
| 1-1/4     | 2-7/32      | 1-3/32       | 1-9/32    | 1-1/4      | 1-31/32         | 5-3/8    | 12    | <b>298-7080</b> |
| 1-1/2     | 2-21/32     | 1-11/32      | 1-17/32   | 1-1/4      | 2-1/8           | 5-29/32  | 12    | <b>298-7096</b> |

| Bolt Size | Cutter Dia. | Cutter Width | Neck Dia. | Shank Dia. | Undercut Length | OAL      | Tooth | M42 Order No.   |
|-----------|-------------|--------------|-----------|------------|-----------------|----------|-------|-----------------|
| 1/4"      | 9/16"       | 15/64"       | 17/64"    | 1/2"       | 35/64"          | 2-19/32" | 8     | <b>298-7316</b> |
| 5/16      | 21/32       | 17/64        | 21/64     | 1/2        | 39/64           | 2-11/16  | 8     | <b>298-7320</b> |
| 3/8       | 25/32       | 21/64        | 13/32     | 3/4        | 3/4             | 3-1/4    | 8     | <b>298-7324</b> |
| 1/2       | 31/32       | 25/64        | 17/32     | 3/4        | 3/4             | 3-7/16   | 8     | <b>298-7332</b> |
| 5/8       | 1-1/4       | 31/64        | 21/32     | 1          | 1-9/64          | 3-15/16  | 10    | <b>298-7340</b> |
| 3/4       | 1-15/32     | 5/8          | 25/32     | 1          | 1-1/2           | 4-7/16   | 10    | <b>298-7348</b> |
| 1         | 1-27/32     | 53/64        | 1-1/32    | 1-1/4      | 1-43/64         | 4-13/16  | 10    | <b>298-7364</b> |
| 1-1/4     | 2-7/32      | 1-3/32       | 1-9/32    | 1-1/4      | 1-31/32         | 5-3/8    | 12    | <b>298-7380</b> |
| 1-1/2     | 2-21/32     | 1-11/32      | 1-17/32   | 1-1/4      | 2-1/8           | 5-29/32  | 12    | <b>298-7396</b> |

| Bolt Size | Cutter Dia. | Cutter Width | Neck Dia. | Shank Dia. | Undercut Length | OAL      | Tooth | Tin HSS         |
|-----------|-------------|--------------|-----------|------------|-----------------|----------|-------|-----------------|
| 1/4"      | 9/16"       | 15/64"       | 17/64"    | 1/2"       | 35/64"          | 2-19/32" | 8     | <b>298-7516</b> |
| 5/16      | 21/32       | 17/64        | 21/64     | 1/2        | 39/64           | 2-11/16  | 8     | <b>298-7520</b> |
| 3/8       | 25/32       | 21/64        | 13/32     | 3/4        | 3/4             | 3-1/4    | 8     | <b>298-7524</b> |
| 1/2       | 31/32       | 25/64        | 17/32     | 3/4        | 3/4             | 3-7/16   | 8     | <b>298-7532</b> |
| 5/8       | 1-1/4       | 31/64        | 21/32     | 1          | 1-9/64          | 3-15/16  | 10    | <b>298-7540</b> |
| 3/4       | 1-15/32     | 5/8          | 25/32     | 1          | 1-1/2           | 4-7/16   | 10    | <b>298-7548</b> |
| 1         | 1-27/32     | 53/64        | 1-1/32    | 1-1/4      | 1-43/64         | 4-13/16  | 10    | <b>298-7564</b> |
| 1-1/4     | 2-7/32      | 1-3/32       | 1-9/32    | 1-1/4      | 1-31/32         | 5-3/8    | 12    | <b>298-7580</b> |
| 1-1/2     | 2-21/32     | 1-11/32      | 1-17/32   | 1-1/4      | 2-1/8           | 5-29/32  | 12    | <b>298-7596</b> |

## Cobalt Roughing T-Slot Cutters

### M35 or M42 Cobalt

- Faster Machining than regular T-Slot cutters,
- Roughing tooth design than permits faster cutting and minimizes vibration and chatter



| Bolt Size | Cutter Dia. | Cutter Width | Neck Diameter | Shank Diameter | Overall Length | M35 Order No.   |
|-----------|-------------|--------------|---------------|----------------|----------------|-----------------|
| 1/2"      | 31/32"      | 25/64"       | 17/32"        | 3/4"           | 3-7/16"        | <b>298-8032</b> |
| 5/8       | 1-1/4       | 31/64        | 21/32         | 1              | 3-15/16        | <b>298-8040</b> |
| 3/4       | 1-15/32     | 5/8          | 25/32         | 1              | 4-7/16         | <b>298-8048</b> |
| 1         | 1-27/32     | 53/64        | 1-1/32        | 1-1/4          | 4-13/16        | <b>298-8064</b> |
| 1-1/4     | 2-7/32      | 1-3/32       | 1-9/32        | 1-1/4          | 5-3/8          | <b>298-8080</b> |
| 1-1/2     | 2-21/32     | 1-11/32      | 1-17/32       | 1-1/4          | 5-29/32        | <b>298-8096</b> |

| Bolt Size | Cutter Dia. | Cutter Width | Neck Diameter | Shank Diameter | Overall Length | M42 Order No.   |
|-----------|-------------|--------------|---------------|----------------|----------------|-----------------|
| 1/2"      | 31/32"      | 25/64"       | 17/32"        | 3/4"           | 3-7/16"        | <b>298-8332</b> |
| 5/8       | 1-1/4       | 31/64        | 21/32         | 1              | 3-15/16        | <b>298-8340</b> |
| 3/4       | 1-15/32     | 5/8          | 25/32         | 1              | 4-7/16         | <b>298-8348</b> |
| 1         | 1-27/32     | 53/64        | 1-1/32        | 1-1/4          | 4-13/16        | <b>298-8364</b> |
| 1-1/4     | 2-7/32      | 1-3/32       | 1-9/32        | 1-1/4          | 5-3/8          | <b>298-8380</b> |
| 1-1/2     | 2-21/32     | 1-11/32      | 1-17/32       | 1-1/4          | 5-29/32        | <b>298-8396</b> |

## Long Shank T-Slot Milling Cutters

### High Speed Steel or M42, Staggered Tooth

- Used for milling when greater depth is required.



| Cutter Dia. | Cutter Width | Shank Dia. | Overall Length | Tooth | HSS Order No.   | M42 Order No.   |
|-------------|--------------|------------|----------------|-------|-----------------|-----------------|
| 1"          | 1/8"         | 5/8"       | 4-15/16"       | 8     | <b>298-4100</b> | <b>298-4500</b> |
| 1           | 3/16         | 5/8        | 4-15/16        | 8     | <b>298-4103</b> | <b>298-4503</b> |
| 1           | 1/4          | 5/8        | 4-15/16        | 8     | <b>298-4106</b> | <b>298-4506</b> |
| 1           | 5/16         | 5/8        | 4-15/16        | 8     | <b>298-4109</b> | <b>298-4509</b> |
| 1           | 3/8          | 5/8        | 4-15/16        | 8     | <b>298-4112</b> | <b>298-4512</b> |
| 1           | 1/2          | 5/8        | 4-15/16        | 8     | <b>298-4115</b> | <b>298-4515</b> |
| 1           | 5/8          | 5/8        | 4-15/16        | 8     | <b>298-4118</b> | <b>298-4518</b> |
| 1-1/4       | 1/8          | 3/4        | 5-1/8          | 8     | <b>298-4121</b> | <b>298-4521</b> |
| 1-1/4       | 3/16         | 3/4        | 5-1/8          | 8     | <b>298-4124</b> | <b>298-4524</b> |
| 1-1/4       | 1/4          | 3/4        | 5-1/8          | 8     | <b>298-4127</b> | <b>298-4527</b> |
| 1-1/4       | 5/16         | 3/4        | 5-1/8          | 8     | <b>298-4130</b> | <b>298-4530</b> |
| 1-1/4       | 3/8          | 3/4        | 5-1/8          | 8     | <b>298-4133</b> | <b>298-4533</b> |
| 1-1/4       | 1/2          | 3/4        | 5-1/8          | 8     | <b>298-4136</b> | <b>298-4536</b> |
| 1-1/4       | 5/8          | 3/4        | 5-1/8          | 8     | <b>298-4139</b> | <b>298-4539</b> |
| 1-1/2       | 1/8          | 1          | 5-5/16         | 8     | <b>298-4142</b> | <b>298-4542</b> |
| 1-1/2       | 3/16         | 1          | 5-5/16         | 8     | <b>298-4145</b> | <b>298-4545</b> |
| 1-1/2       | 1/4          | 1          | 5-5/16         | 8     | <b>298-4148</b> | <b>298-4548</b> |
| 1-1/2       | 5/16         | 1          | 5-5/16         | 8     | <b>298-4151</b> | <b>298-4551</b> |
| 1-1/2       | 3/8          | 1          | 5-5/16         | 8     | <b>298-4154</b> | <b>298-4554</b> |
| 1-1/2       | 1/2          | 1          | 5-5/16         | 8     | <b>298-4157</b> | <b>298-4557</b> |
| 1-1/2       | 5/8          | 1          | 5-5/16         | 8     | <b>298-4160</b> | <b>298-4560</b> |
| 2           | 3/16         | 1          | 5-11/16        | 10    | <b>298-4163</b> | <b>298-4563</b> |
| 2           | 1/4          | 1          | 5-11/16        | 10    | <b>298-4166</b> | <b>298-4566</b> |
| 2           | 5/16         | 1          | 5-11/16        | 10    | <b>298-4169</b> | <b>298-4569</b> |
| 2           | 3/8          | 1          | 5-11/16        | 10    | <b>298-4172</b> | <b>298-4572</b> |
| 2           | 1/2          | 1          | 5-11/16        | 10    | <b>298-4175</b> | <b>298-4575</b> |
| 2           | 5/8          | 1          | 5-11/16        | 10    | <b>298-4178</b> | <b>298-4578</b> |
| 2           | 3/4          | 1          | 5-11/16        | 10    | <b>298-4181</b> | <b>298-4581</b> |

### Straight Tooth Side Milling Cutters

#### High Speed Steel

- Used in slotting, light-duty side milling and straddle milling for where deep cutting is required.



| Dia.  | Face Width | Hole Size | Order No. | Dia.   | Face Width | Hole Size | Order No. | Dia. | Face Width | Hole Size | Order No. | Dia. | Face Width | Hole Size | Order No. |
|-------|------------|-----------|-----------|--------|------------|-----------|-----------|------|------------|-----------|-----------|------|------------|-----------|-----------|
| 2"    | 3/16"      | 1/2"      | 301-2127  | 3-1/2" | 5/8"       | 1"        | 301-3570  | 5    | 5/8        | 1         | 301-5401  | 7    | 1/4        | 1-1/4     | 301-7167  |
| 2     | 1/4        | 1/2       | 301-2168  | 3-1/2  | 3/4        | 1         | 301-3580  | 5    | 11/16      | 1         | 301-5423  | 7    | 5/16       | 1-1/4     | 301-7209  |
| 2     | 5/16       | 1/2       | 301-2200  | 3-1/2  | 1          | 1         | 301-3590  | 5    | 3/4        | 1         | 301-5484  | 7    | 3/8        | 1-1/4     | 301-7241  |
| 2     | 3/8        | 1/2       | 301-2242  | 3-1/2  | 3/8        | 1-1/4     | 301-3540  | 5    | 13/16      | 1         | 301-5500  | 7    | 7/16       | 1-1/4     | 301-7282  |
| 2     | 3/16       | 5/8       | 301-2135  | 3-1/2  | 7/16       | 1-1/4     | 301-3544  | 5    | 7/8        | 1         | 301-5513  | 7    | 1/2        | 1-1/4     | 301-7324  |
| 2     | 1/4        | 5/8       | 301-2176  | 3-1/2  | 1/2        | 1-1/4     | 301-3559  | 5    | 15/16      | 1         | 301-5520  | 7    | 9/16       | 1-1/4     | 301-7328  |
| 2     | 5/16       | 5/8       | 301-2218  | 3-1/2  | 5/8        | 1-1/4     | 301-3575  | 5    | 1          | 1         | 301-5616  | 7    | 5/8        | 1-1/4     | 301-7407  |
| 2     | 3/8        | 5/8       | 301-2259  | 4      | 3/16       | 1         | 301-4123  | 5    | 1/4        | 1-1/4     | 301-5179  | 7    | 11/16      | 1-1/4     | 301-7415  |
| 2     | 1/4        | 7/8       | 301-2182  | 4      | 7/32       | 1         | 301-4149  | 5    | 9/32       | 1-1/4     | 301-5195  | 7    | 3/4        | 1-1/4     | 301-7480  |
| 2     | 5/16       | 7/8       | 301-2268  | 4      | 1/4        | 1         | 301-4164  | 5    | 5/16       | 1-1/4     | 301-5211  | 7    | 13/16      | 1-1/4     | 301-7482  |
| 2     | 3/8        | 7/8       | 301-2262  | 4      | 9/32       | 1         | 301-4180  | 5    | 11/32      | 1-1/4     | 301-5231  | 7    | 7/8        | 1-1/4     | 301-7486  |
| 2     | 7/16       | 7/8       | 301-2285  | 4      | 5/16       | 1         | 301-4206  | 5    | 3/8        | 1-1/4     | 301-5252  | 7    | 15/16      | 1-1/4     | 301-7489  |
| 2-1/2 | 3/16       | 7/8       | 301-2506  | 4      | 11/32      | 1         | 301-4222  | 5    | 13/32      | 1-1/4     | 301-5259  | 7    | 1          | 1-1/4     | 301-7647  |
| 2-1/2 | 1/4        | 7/8       | 301-2515  | 4      | 3/8        | 1         | 301-4248  | 5    | 7/16       | 1-1/4     | 301-5263  | 8    | 1/4        | 1         | 301-8165  |
| 2-1/2 | 5/16       | 7/8       | 301-2523  | 4      | 13/32      | 1         | 301-4263  | 5    | 1/2        | 1-1/4     | 301-5336  | 8    | 5/16       | 1         | 301-8207  |
| 2-1/2 | 3/8        | 7/8       | 301-2531  | 4      | 7/16       | 1         | 301-4260  | 5    | 9/16       | 1-1/4     | 301-5342  | 8    | 3/8        | 1         | 301-8249  |
| 2-1/2 | 7/16       | 7/8       | 301-2538  | 4      | 1/2        | 1         | 301-4321  | 5    | 5/8        | 1-1/4     | 301-5419  | 8    | 7/16       | 1         | 301-8260  |
| 2-1/2 | 1/2        | 7/8       | 301-2556  | 4      | 9/16       | 1         | 301-4340  | 5    | 11/16      | 1-1/4     | 301-5426  | 8    | 7/16       | 1         | 301-8280  |
| 2-1/2 | 3/16       | 1         | 301-2614  | 4      | 5/8        | 1         | 301-4404  | 5    | 3/4        | 1-1/4     | 301-5492  | 8    | 1/2        | 1         | 301-8322  |
| 2-1/2 | 1/4        | 1         | 301-2622  | 4      | 11/16      | 1         | 301-4421  | 5    | 13/16      | 1-1/4     | 301-5501  | 8    | 1/4        | 1-1/4     | 301-8173  |
| 2-1/2 | 5/16       | 1         | 301-2630  | 4      | 3/4        | 1         | 301-4487  | 5    | 7/8        | 1-1/4     | 301-5516  | 8    | 5/16       | 1-1/4     | 301-8215  |
| 2-1/2 | 3/8        | 1         | 301-2648  | 4      | 13/16      | 1         | 301-4501  | 5    | 15/16      | 1-1/4     | 301-5522  | 8    | 3/8        | 1-1/4     | 301-8256  |
| 2-1/2 | 7/16       | 1         | 301-2655  | 4      | 7/8        | 1         | 301-4530  | 5    | 1          | 1-1/4     | 301-5641  | 8    | 7/16       | 1-1/4     | 301-8262  |
| 2-1/2 | 1/2        | 1         | 301-2663  | 4      | 15/16      | 1         | 301-4602  | 5    | 1-1/4      | 1-1/4     | 301-5656  | 8    | 1/2        | 1-1/4     | 301-8330  |
| 2-1/2 | 5/8        | 1         | 301-2671  | 4      | 1          | 1         | 301-4583  | 6    | 1/4        | 1         | 301-6169  | 8    | 9/16       | 1-1/4     | 301-8363  |
| 3     | 3/16       | 1         | 301-3125  | 4      | 3/16       | 1-1/4     | 301-4131  | 6    | 5/16       | 1         | 301-6201  | 8    | 5/8        | 1-1/4     | 301-8405  |
| 3     | 7/32       | 1         | 301-3141  | 4      | 7/32       | 1-1/4     | 301-4152  | 6    | 3/8        | 1         | 301-6243  | 8    | 11/16      | 1-1/4     | 301-8447  |
| 3     | 1/4        | 1         | 301-3166  | 4      | 1/4        | 1-1/4     | 301-4172  | 6    | 7/16       | 1         | 301-6251  | 8    | 3/4        | 1-1/4     | 301-8488  |
| 3     | 9/32       | 1         | 301-3182  | 4      | 9/32       | 1-1/4     | 301-4198  | 6    | 1/2        | 1         | 301-6326  | 8    | 13/16      | 1-1/4     | 301-8520  |
| 3     | 5/16       | 1         | 301-3208  | 4      | 5/16       | 1-1/4     | 301-4214  | 6    | 9/16       | 1         | 301-6332  | 8    | 7/8        | 1-1/4     | 301-8561  |
| 3     | 11/32      | 1         | 301-3224  | 4      | 11/32      | 1-1/4     | 301-4235  | 6    | 5/8        | 1         | 301-6345  | 8    | 15/16      | 1-1/4     | 301-8603  |
| 3     | 3/8        | 1         | 301-3240  | 4      | 3/8        | 1-1/4     | 301-4255  | 6    | 11/16      | 1         | 301-6352  | 8    | 1          | 1-1/4     | 301-8645  |
| 3     | 13/32      | 1         | 301-3259  | 4      | 13/32      | 1-1/4     | 301-4269  | 6    | 3/4        | 1         | 301-6482  | 8    | 1/4        | 1-1/2     | 301-8175  |
| 3     | 13/32      | 1         | 301-3265  | 4      | 7/16       | 1-1/4     | 301-4262  | 6    | 13/16      | 1         | 301-6486  | 9    | 1/4        | 1-1/4     | 301-9002  |
| 3     | 7/16       | 1         | 301-3281  | 4      | 1/2        | 1-1/4     | 301-4339  | 6    | 7/8        | 1         | 301-6492  | 9    | 3/8        | 1-1/4     | 301-9004  |
| 3     | 1/2        | 1         | 301-3323  | 4      | 9/16       | 1-1/4     | 301-4342  | 6    | 15/16      | 1         | 301-6494  | 9    | 1/2        | 1-1/4     | 301-9006  |
| 3     | 9/16       | 1         | 301-3335  | 4      | 5/8        | 1-1/4     | 301-4412  | 6    | 1          | 1         | 301-6496  | 9    | 5/8        | 1-1/4     | 301-9008  |
| 3     | 5/8        | 1         | 301-3336  | 4      | 11/16      | 1-1/4     | 301-4423  | 6    | 1-1/4      | 1         | 301-6654  | 9    | 3/4        | 1-1/4     | 301-9012  |
| 3     | 11/16      | 1         | 301-3341  | 4      | 3/4        | 1-1/4     | 301-4495  | 6    | 1/4        | 1-1/4     | 301-6177  | 9    | 1          | 1-1/4     | 301-9014  |
| 3     | 3/4        | 1         | 301-3343  | 4      | 13/16      | 1-1/4     | 301-4503  | 6    | 9/32       | 1-1/4     | 301-6193  | 10   | 5/8        | 1-1/4     | 301-9160  |
| 3     | 13/16      | 1         | 301-3347  | 4      | 7/8        | 1-1/4     | 301-4533  | 6    | 5/16       | 1-1/4     | 301-6219  | 10   | 3/4        | 1-1/4     | 301-9162  |
| 3     | 7/8        | 1         | 301-3348  | 4      | 15/16      | 1-1/4     | 301-4605  | 6    | 11/32      | 1-1/4     | 301-6222  | 10   | 1/4        | 1-1/2     | 301-9163  |
| 3     | 15/16      | 1         | 301-3352  | 4      | 1          | 1-1/4     | 301-4586  | 6    | 3/8        | 1-1/4     | 301-6250  | 10   | 5/16       | 1-1/2     | 301-9205  |
| 3     | 1          | 1         | 301-3354  | 4      | 1-1/8      | 1-1/4     | 301-4701  | 6    | 13/32      | 1-1/4     | 301-6256  | 10   | 3/8        | 1-1/2     | 301-9247  |
| 3     | 1/4        | 1-1/4     | 301-3174  | 4      | 1-1/4      | 1-1/4     | 301-4743  | 6    | 7/16       | 1-1/4     | 301-6253  | 10   | 7/16       | 1-1/2     | 301-9249  |
| 3     | 5/16       | 1-1/4     | 301-3216  | 4      | 1-1/2      | 1-1/4     | 301-4749  | 6    | 1/2        | 1-1/4     | 301-6328  | 10   | 1/2        | 1-1/2     | 301-9320  |
| 3     | 3/8        | 1-1/4     | 301-3257  | 4-1/2  | 3/8        | 1         | 301-4840  | 6    | 9/16       | 1-1/4     | 301-6334  | 10   | 9/16       | 1-1/2     | 301-9326  |
| 3     | 7/16       | 1-1/4     | 301-3263  | 4-1/2  | 1/2        | 1         | 301-4865  | 6    | 5/8        | 1-1/4     | 301-6347  | 10   | 5/8        | 1-1/2     | 301-9403  |
| 3     | 1/2        | 1-1/4     | 301-3331  | 4-1/2  | 3/8        | 1-1/4     | 301-4842  | 6    | 11/16      | 1-1/4     | 301-6355  | 10   | 11/16      | 1-1/2     | 301-9416  |
| 3     | 5/8        | 1-1/4     | 301-3339  | 4-1/2  | 1/2        | 1-1/4     | 301-4867  | 6    | 3/4        | 1-1/4     | 301-6483  | 10   | 3/4        | 1-1/2     | 301-9486  |
| 3     | 3/4        | 1-1/4     | 301-3346  | 5      | 1/4        | 1         | 301-5161  | 6    | 3/4        | 1-1/4     | 301-6490  | 10   | 13/16      | 1-1/2     | 301-9492  |
| 3     | 7/8        | 1-1/4     | 301-3349  | 5      | 9/32       | 1         | 301-5187  | 6    | 13/16      | 1-1/4     | 301-6488  | 10   | 7/8        | 1-1/2     | 301-9569  |
| 3     | 1          | 1-1/4     | 301-3356  | 5      | 5/16       | 1         | 301-5203  | 6    | 7/8        | 1-1/4     | 301-6493  | 10   | 1          | 1-1/2     | 301-9643  |
| 3-1/2 | 3/16       | 1         | 301-3506  | 5      | 11/32      | 1         | 301-5328  | 6    | 15/16      | 1-1/4     | 301-6495  | 10   | 1-1/4      | 1-1/2     | 301-9651  |
| 3-1/2 | 1/4        | 1         | 301-3513  | 5      | 3/8        | 1         | 301-5341  | 6    | 1          | 1-1/4     | 301-6497  | 10   | 1-1/2      | 1-1/2     | 301-9660  |
| 3-1/2 | 5/16       | 1         | 301-3521  | 5      | 13/32      | 1         | 301-5229  | 6    | 1-1/8      | 1-1/4     | 301-6652  |      |            |           |           |
| 3-1/2 | 3/8        | 1         | 301-3539  | 5      | 7/16       | 1         | 301-5245  | 6    | 1-1/4      | 1-1/4     | 301-6659  |      |            |           |           |
| 3-1/2 | 7/16       | 1         | 301-3547  | 5      | 1/2        | 1         | 301-5256  |      |            |           |           |      |            |           |           |
| 3-1/2 | 1/2        | 1         | 301-3554  | 5      | 9/16       | 1         | 301-5261  |      |            |           |           |      |            |           |           |

## Straight Tooth Side Milling Cutters

### Cobalt, M35

- Used in slotting, light-duty side milling and straddle milling



| Dia.<br>(In.) | Face<br>W.(In.) | Hole<br>Size(In.) | Order No. |
|---------------|-----------------|-------------------|-----------|
| 2"            | 3/16"           | 1/2"              | 321-2127  |
| 2             | 3/16            | 5/8               | 321-2135  |
| 2             | 1/4             | 1/2               | 321-2168  |
| 2             | 1/4             | 5/8               | 321-2176  |
| 2             | 5/16            | 1/2               | 321-2200  |
| 2             | 5/16            | 5/8               | 321-2218  |
| 2             | 3/8             | 1/2               | 321-2242  |
| 2             | 3/8             | 5/8               | 321-2259  |
| 2-1/2         | 3/16            | 7/8               | 321-2506  |
| 2-1/2         | 1/4             | 7/8               | 321-2515  |
| 2-1/2         | 5/16            | 7/8               | 321-2523  |
| 2-1/2         | 3/8             | 7/8               | 321-2531  |
| 2-1/2         | 1/2             | 7/8               | 321-2556  |
| 2-1/2         | 3/16            | 1                 | 321-2614  |
| 2-1/2         | 1/4             | 1                 | 321-2622  |
| 2-1/2         | 5/16            | 1                 | 321-2630  |
| 2-1/2         | 3/8             | 1                 | 321-2648  |
| 2-1/2         | 7/16            | 1                 | 321-2655  |
| 2-1/2         | 1/2             | 1                 | 321-2663  |
| 2-1/2         | 5/8             | 1                 | 321-2671  |
| 3             | 3/16            | 1                 | 321-3125  |
| 3             | 7/32            | 1                 | 321-3141  |
| 3             | 1/4             | 1                 | 321-3166  |
| 3             | 1/4             | 1-1/4             | 321-3174  |
| 3             | 9/32            | 1                 | 321-3182  |
| 3             | 5/16            | 1                 | 321-3208  |
| 3             | 5/16            | 1-1/4             | 321-3216  |
| 3             | 11/32           | 1                 | 321-3224  |
| 3             | 3/8             | 1                 | 321-3240  |
| 3             | 3/8             | 1-1/4             | 321-3257  |
| 3             | 13/32           | 1                 | 321-3265  |
| 3             | 7/16            | 1                 | 321-3281  |
| 3             | 1/2             | 1                 | 321-3323  |
| 3             | 1/2             | 1-1/4             | 321-3331  |
| 3             | 5/8             | 1                 | 321-3406  |
| 3             | 3/4             | 1                 | 321-3489  |
| 3             | 13/16           | 1                 | 321-3497  |
| 3             | 7/8             | 1                 | 321-3498  |
| 3             | 15/16           | 1                 | 321-3352  |
| 3             | 1               | 1                 | 321-3354  |
| 3-1/2         | 1/4             | 1                 | 321-3513  |
| 3-1/2         | 5/16            | 1                 | 321-3521  |
| 3-1/2         | 3/8             | 1                 | 321-3539  |
| 3-1/2         | 7/16            | 1                 | 321-3547  |
| 3-1/2         | 1/2             | 1                 | 321-3554  |
| 3-1/2         | 5/8             | 1                 | 321-3570  |
| 4             | 3/16            | 1                 | 321-4123  |
| 4             | 3/16            | 1-1/4             | 321-4131  |
| 4             | 7/32            | 1                 | 321-4149  |
| 4             | 1/4             | 1                 | 321-4164  |
| 4             | 1/4             | 1-1/4             | 321-4172  |
| 4             | 9/32            | 1                 | 321-4180  |
| 4             | 9/32            | 1-1/4             | 321-4198  |
| 4             | 5/16            | 1                 | 321-4206  |
| 4             | 5/16            | 1-1/4             | 321-4214  |
| 4             | 11/32           | 1                 | 321-4222  |
| 4             | 3/8             | 1                 | 321-4248  |

| Dia.<br>(In.) | Face<br>W.(In.) | Hole<br>Size(In.) | Order No. |
|---------------|-----------------|-------------------|-----------|
| 4             | 3/8             | 1-1/4             | 321-4255  |
| 4             | 13/32           | 1                 | 321-4263  |
| 4             | 7/16            | 1                 | 321-4289  |
| 4             | 1/2             | 1                 | 321-4321  |
| 4             | 1/2             | 1-1/4             | 321-4339  |
| 4             | 9/16            | 1                 | 321-4362  |
| 4             | 5/8             | 1                 | 321-4404  |
| 4             | 5/8             | 1-1/4             | 321-4412  |
| 4             | 11/16           | 1                 | 321-4446  |
| 4             | 3/4             | 1                 | 321-4487  |
| 4             | 3/4             | 1-1/4             | 321-4495  |
| 4             | 13/16           | 1                 | 321-4529  |
| 4             | 7/8             | 1                 | 321-4560  |
| 4             | 7/8             | 1-1/4             | 321-4578  |
| 4             | 15/16           | 1                 | 321-4602  |
| 4             | 1               | 1                 | 321-4644  |
| 4             | 1-1/8           | 1-1/4             | 321-4701  |
| 4             | 1-1/4           | 1-1/4             | 321-4743  |
| 4-1/2         | 3/8             | 1-1/4             | 321-4842  |
| 4-1/2         | 1/2             | 1-1/4             | 321-4867  |
| 5             | 1/4             | 1                 | 321-5161  |
| 5             | 1/4             | 1-1/4             | 321-5179  |
| 5             | 9/32            | 1                 | 321-5187  |
| 5             | 9/32            | 1-1/4             | 321-5195  |
| 5             | 5/16            | 1                 | 321-5203  |
| 5             | 5/16            | 1-1/4             | 321-5211  |
| 5             | 11/32           | 1                 | 321-5229  |
| 5             | 3/8             | 1                 | 321-5245  |
| 5             | 3/8             | 1-1/4             | 321-5252  |
| 5             | 13/32           | 1                 | 321-5260  |
| 5             | 7/16            | 1                 | 321-5286  |
| 5             | 1/2             | 1                 | 321-5328  |
| 5             | 1/2             | 1-1/4             | 321-5336  |
| 5             | 9/16            | 1                 | 321-5369  |
| 5             | 5/8             | 1                 | 321-5401  |
| 5             | 5/8             | 1-1/4             | 321-5419  |
| 5             | 11/16           | 1                 | 321-5443  |
| 5             | 3/4             | 1                 | 321-5484  |
| 5             | 3/4             | 1-1/4             | 321-5492  |
| 5             | 13/16           | 1                 | 321-5526  |
| 5             | 7/8             | 1                 | 321-5567  |
| 5             | 15/16           | 1                 | 321-5609  |
| 5             | 1               | 1-1/4             | 321-5641  |
| 6             | 1/4             | 1                 | 321-6169  |
| 6             | 1/4             | 1-1/4             | 321-6177  |
| 6             | 9/32            | 1-1/4             | 321-6193  |
| 6             | 5/16            | 1                 | 321-6201  |
| 6             | 5/16            | 1-1/4             | 321-6219  |
| 6             | 3/8             | 1                 | 321-6243  |
| 6             | 3/8             | 1-1/4             | 321-6250  |
| 6             | 7/16            | 1-1/4             | 321-6284  |
| 6             | 1/2             | 1                 | 321-6326  |
| 6             | 1/2             | 1-1/4             | 321-6328  |
| 6             | 9/16            | 1-1/4             | 321-6334  |
| 6             | 5/8             | 1-1/4             | 321-6409  |
| 6             | 11/16           | 1-1/4             | 321-6441  |
| 6             | 3/4             | 1                 | 321-6482  |

| Dia.<br>(In.) | Face<br>W.(In.) | Hole<br>Size(In.) | Order No. |
|---------------|-----------------|-------------------|-----------|
| 6             | 3/4             | 1-1/4             | 321-6490  |
| 6             | 13/16           | 1-1/4             | 321-6524  |
| 6             | 7/8             | 1-1/4             | 321-6565  |
| 6             | 15/16           | 1-1/4             | 321-6607  |
| 6             | 1               | 1-1/4             | 321-6649  |
| 7             | 1/4             | 1-1/4             | 321-7167  |
| 7             | 5/16            | 1-1/4             | 321-7209  |
| 7             | 3/8             | 1-1/4             | 321-7241  |
| 7             | 7/16            | 1-1/4             | 321-7282  |
| 7             | 1/2             | 1-1/4             | 321-7324  |
| 7             | 5/8             | 1-1/4             | 321-7407  |
| 7             | 3/4             | 1-1/4             | 321-7480  |
| 7             | 1               | 1-1/4             | 321-7647  |
| 8             | 1/4             | 1                 | 321-8165  |
| 8             | 1/4             | 1-1/4             | 321-8173  |
| 8             | 5/16            | 1                 | 321-8207  |
| 8             | 5/16            | 1-1/4             | 321-8215  |
| 8             | 3/8             | 1                 | 321-8249  |
| 8             | 3/8             | 1-1/4             | 321-8256  |
| 8             | 7/16            | 1                 | 321-8280  |
| 8             | 1/2             | 1                 | 321-8322  |
| 8             | 1/2             | 1-1/4             | 321-8330  |
| 8             | 9/16            | 1-1/4             | 321-8363  |
| 8             | 5/8             | 1-1/4             | 321-8405  |
| 8             | 11/16           | 1-1/4             | 321-8447  |
| 8             | 3/4             | 1-1/4             | 321-8488  |
| 8             | 13/16           | 1-1/4             | 321-8520  |
| 8             | 7/8             | 1-1/4             | 321-8561  |
| 8             | 15/16           | 1-1/4             | 321-8603  |
| 8             | 1               | 1-1/4             | 321-8645  |
| 10            | 1/4             | 1-1/2             | 321-9163  |
| 10            | 5/16            | 1-1/2             | 321-9205  |
| 10            | 3/8             | 1-1/2             | 321-9247  |
| 10            | 1/2             | 1-1/2             | 321-9320  |
| 10            | 5/8             | 1-1/2             | 321-9403  |
| 10            | 3/4             | 1-1/2             | 321-9486  |
| 10            | 7/8             | 1-1/2             | 321-9569  |
| 10            | 1               | 1-1/2             | 321-9643  |
|               |                 |                   |           |
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## Staggered Tooth Side Milling Cutters

### Cobalt, M35

- Used in deep slotting, and heavy-duty side milling



| Dia.<br>(In.) | Face<br>W.(In.) | Hole<br>Size(In.) | Order No. |
|---------------|-----------------|-------------------|-----------|
| 2"            | 3/16"           | 1/2"              | 326-2125  |
| 2             | 3/16            | 5/8               | 326-2133  |
| 2             | 1/4             | 1/2               | 326-2166  |
| 2             | 1/4             | 5/8               | 326-2174  |
| 2             | 5/16            | 1/2               | 326-2198  |
| 2             | 5/16            | 5/8               | 326-2216  |
| 2             | 3/8             | 1/2               | 326-2240  |
| 2             | 3/8             | 5/8               | 326-2257  |
| 2-1/8         | 3/16            | 3/4               | 326-2290  |
| 2-1/8         | 3/8             | 3/4               | 326-2294  |
| 2-1/2         | 3/16            | 7/8               | 326-2504  |
| 2-1/2         | 1/4             | 7/8               | 326-2513  |
| 2-1/2         | 5/16            | 7/8               | 326-2521  |
| 2-1/2         | 3/8             | 7/8               | 326-2539  |
| 2-1/2         | 1/2             | 7/8               | 326-2554  |
| 2-1/2         | 3/16            | 1                 | 326-2612  |
| 2-1/2         | 1/4             | 1                 | 326-2620  |
| 2-1/2         | 5/16            | 1                 | 326-2628  |
| 2-1/2         | 3/8             | 1                 | 326-2646  |
| 2-1/2         | 7/16            | 1                 | 326-2653  |
| 2-1/2         | 1/2             | 1                 | 326-2661  |
| 2-1/2         | 5/8             | 1                 | 326-2669  |
| 2-3/4         | 1/4             | 1                 | 326-2711  |
| 2-3/4         | 5/16            | 1                 | 326-2729  |
| 2-3/4         | 3/8             | 1                 | 326-2737  |
| 2-3/4         | 7/16            | 1                 | 326-2745  |
| 2-3/4         | 1/2             | 1                 | 326-2752  |
| 3             | 1/8             | 1                 | 326-2900  |
| 3             | 5/32            | 1                 | 326-3107  |
| 3             | 3/16            | 1                 | 326-3123  |
| 3             | 7/32            | 1                 | 326-3149  |
| 3             | 1/4             | 1                 | 326-3164  |
| 3             | 1/4             | 1-1/4             | 326-3172  |
| 3             | 9/32            | 1                 | 326-3180  |
| 3             | 5/16            | 1                 | 326-3208  |
| 3             | 5/16            | 1-1/4             | 326-3214  |
| 3             | 11/32           | 1                 | 326-3222  |
| 3             | 3/8             | 1                 | 326-3248  |
| 3             | 3/8             | 1-1/4             | 326-3255  |
| 3             | 13/32           | 1                 | 326-3263  |
| 3             | 7/16            | 1                 | 326-3289  |
| 3             | 1/2             | 1                 | 326-3313  |
| 3             | 1/2             | 1-1/4             | 326-3321  |
| 3             | 9/16            | 1                 | 326-3336  |
| 3             | 5/8             | 1                 | 326-3393  |
| 3             | 5/8             | 1-1/4             | 326-3404  |
| 3             | 3/4             | 1                 | 326-3485  |
| 3             | 3/4             | 1-1/4             | 326-3487  |
| 3             | 13/16           | 1                 | 326-3495  |
| 3             | 7/8             | 1                 | 326-3496  |
| 3             | 15/16           | 1                 | 326-3350  |
| 3             | 1               | 1                 | 326-3352  |
| 3-1/2         | 1/4             | 1                 | 326-3511  |
| 3-1/2         | 5/16            | 1                 | 326-3519  |
| 3-1/2         | 3/8             | 1                 | 326-3537  |
| 3-1/2         | 7/16            | 1                 | 326-3545  |
| 3-1/2         | 1/2             | 1                 | 326-3552  |
| 3-1/2         | 5/8             | 1                 | 326-3568  |
| 4             | 1/8             | 1                 | 326-4100  |

| Dia.<br>(In.) | Face<br>W.(In.) | Hole<br>Size(In.) | Order No. |
|---------------|-----------------|-------------------|-----------|
| 4             | 5/32            | 1                 | 326-4102  |
| 4             | 3/16            | 1                 | 326-4121  |
| 4             | 3/16            | 1-1/4             | 326-4139  |
| 4             | 7/32            | 1                 | 326-4147  |
| 4             | 1/4             | 1                 | 326-4154  |
| 4             | 1/4             | 1-1/4             | 326-4162  |
| 4             | 9/32            | 1                 | 326-4178  |
| 4             | 9/32            | 1-1/4             | 326-4188  |
| 4             | 5/16            | 1                 | 326-4196  |
| 4             | 5/16            | 1-1/4             | 326-4204  |
| 4             | 11/32           | 1                 | 326-4220  |
| 4             | 3/8             | 1                 | 326-4238  |
| 4             | 3/8             | 1-1/4             | 326-4246  |
| 4             | 13/32           | 1                 | 326-4261  |
| 4             | 7/16            | 1                 | 326-4295  |
| 4             | 1/2             | 1                 | 326-4311  |
| 4             | 1/2             | 1-1/4             | 326-4329  |
| 4             | 9/16            | 1                 | 326-4352  |
| 4             | 9/16            | 1-1/4             | 326-4360  |
| 4             | 5/8             | 1                 | 326-4378  |
| 4             | 5/8             | 1-1/4             | 326-4402  |
| 4             | 11/16           | 1                 | 326-4444  |
| 4             | 3/4             | 1                 | 326-4477  |
| 4             | 3/4             | 1-1/4             | 326-4485  |
| 4             | 13/16           | 1                 | 326-4527  |
| 4             | 7/8             | 1                 | 326-4558  |
| 4             | 7/8             | 1-1/4             | 326-4576  |
| 4             | 15/16           | 1                 | 326-4600  |
| 4             | 1               | 1                 | 326-4640  |
| 4             | 1               | 1                 | 326-4642  |
| 4             | 1-1/8           | 1-1/4             | 326-4699  |
| 4             | 1-1/4           | 1-1/4             | 326-4741  |
| 4-1/2         | 3/8             | 1-1/4             | 326-4840  |
| 4-1/2         | 1/2             | 1-1/4             | 326-4865  |
| 5             | 1/8             | 1-1/4             | 326-5036  |
| 5             | 5/32            | 1-1/4             | 326-5089  |
| 5             | 3/16            | 1-1/4             | 326-5118  |
| 5             | 7/32            | 1-1/4             | 326-5134  |
| 5             | 1/4             | 1                 | 326-5159  |
| 5             | 1/4             | 1-1/4             | 326-5169  |
| 5             | 9/32            | 1                 | 326-5174  |
| 5             | 9/32            | 1-1/4             | 326-5176  |
| 5             | 5/16            | 1                 | 326-5193  |
| 5             | 5/16            | 1-1/4             | 326-5201  |
| 5             | 11/32           | 1                 | 326-5227  |
| 5             | 3/8             | 1                 | 326-5243  |
| 5             | 3/8             | 1-1/4             | 326-5243  |
| 5             | 13/32           | 1                 | 326-5258  |
| 5             | 7/16            | 1                 | 326-5284  |
| 5             | 1/2             | 1                 | 326-5318  |
| 5             | 1/2             | 1-1/4             | 326-5326  |
| 5             | 9/16            | 1                 | 326-5367  |
| 5             | 5/8             | 1                 | 326-5391  |
| 5             | 5/8             | 1-1/4             | 326-5409  |
| 5             | 11/16           | 1                 | 326-5442  |
| 5             | 3/4             | 1                 | 326-5474  |
| 5             | 3/4             | 1-1/4             | 326-5482  |
| 5             | 13/16           | 1                 | 326-5516  |
| 5             | 7/8             | 1                 | 326-5557  |

| Dia.<br>(In.) | Face<br>W.(In.) | Hole<br>Size(In.) | Order No. |
|---------------|-----------------|-------------------|-----------|
| 5             | 15/16           | 1                 | 326-5599  |
| 5             | 1               | 1-1/4             | 326-5631  |
| 5             | 1               | 1-1/4             | 326-5649  |
| 6             | 1/8             | 1-1/4             | 326-6016  |
| 6             | 5/32            | 1-1/4             | 326-6087  |
| 6             | 3/16            | 1-1/4             | 326-6136  |
| 6             | 1/4             | 1                 | 326-6159  |
| 6             | 1/4             | 1-1/4             | 326-6167  |
| 6             | 9/32            | 1-1/4             | 326-6191  |
| 6             | 5/16            | 1                 | 326-6199  |
| 6             | 5/16            | 1-1/4             | 326-6209  |
| 6             | 3/8             | 1                 | 326-6233  |
| 6             | 3/8             | 1-1/4             | 326-6241  |
| 6             | 7/16            | 1-1/4             | 326-6282  |
| 6             | 1/2             | 1                 | 326-6316  |
| 6             | 1/2             | 1-1/4             | 326-6324  |
| 6             | 9/16            | 1-1/4             | 321-6332  |
| 6             | 5/8             | 1-1/4             | 326-6407  |
| 6             | 11/16           | 1-1/4             | 326-6431  |
| 6             | 3/4             | 1                 | 326-6472  |
| 6             | 3/4             | 1-1/4             | 326-6480  |
| 6             | 13/16           | 1-1/4             | 321-6522  |
| 6             | 7/8             | 1-1/4             | 326-6563  |
| 6             | 15/16           | 1-1/4             | 326-6605  |
| 6             | 1               | 1-1/4             | 326-6647  |
| 7             | 1/4             | 1-1/4             | 326-7165  |
| 7             | 5/16            | 1-1/4             | 326-7207  |
| 7             | 3/8             | 1-1/4             | 326-7231  |
| 7             | 7/16            | 1-1/4             | 326-7280  |
| 7             | 1/2             | 1-1/4             | 326-7322  |
| 7             | 5/8             | 1-1/4             | 326-7405  |
| 7             | 3/4             | 1-1/4             | 326-7478  |
| 7             | 1               | 1-1/4             | 326-7645  |
| 8             | 1/4             | 1                 | 326-8155  |
| 8             | 1/4             | 1-1/4             | 326-8163  |
| 8             | 5/16            | 1                 | 326-8197  |
| 8             | 5/16            | 1-1/4             | 326-8205  |
| 8             | 3/8             | 1                 | 326-8237  |
| 8             | 3/8             | 1-1/4             | 326-8254  |
| 8             | 7/16            | 1                 | 326-8278  |
| 8             | 1/2             | 1                 | 326-8312  |
| 8             | 1/2             | 1-1/4             | 326-8318  |
| 8             | 9/16            | 1-1/4             | 326-8361  |
| 8             | 5/8             | 1-1/4             | 326-8395  |
| 8             | 11/16           | 1-1/4             | 326-8445  |
| 8             | 3/4             | 1-1/4             | 326-8478  |
| 8             | 13/16           | 1-1/4             | 326-8518  |
| 8             | 7/8             | 1-1/4             | 326-8559  |
| 8             | 15/16           | 1-1/4             | 326-8601  |
| 8             | 1               | 1-1/4             | 326-8643  |
| 10            | 1/4             | 1-1/2             | 326-9161  |
| 10            | 5/16            | 1-1/2             | 326-9203  |
| 10            | 3/8             | 1-1/2             | 326-9245  |
| 10            | 1/2             | 1-1/2             | 326-9318  |
| 10            | 5/8             | 1-1/2             | 326-9401  |
| 10            | 3/4             | 1-1/2             | 326-9484  |
| 10            | 7/8             | 1-1/2             | 326-9567  |
| 10            | 1               | 1-1/2             | 326-9641  |

## Staggered Tooth Side Milling Cutters

### High Speed Steel



- For milling deep slots, grooves and the other operations where either or both the peripheral or side cutting edges are used for machining.
- Arbor mounted with mounting holes having standardized size and made to suit a variety of machine arbors.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- Ground from solid.
- Bright and black finish.

| Dia.   | Width of Face | Hole Size | Order No. |
|--------|---------------|-----------|-----------|
| 2-1/8" | 3/16"         | 3/4"      | 306-1127  |
| 2-1/8  | 1/4           | 3/4       | 306-1168  |
| 2-1/8  | 5/16          | 3/4       | 306-1200  |
| 2-1/8  | 3/8           | 3/4       | 306-1242  |
| 2-1/2  | 3/16          | 7/8       | 306-2505  |
| 2-1/2  | 1/4           | 7/8       | 306-2513  |
| 2-1/2  | 5/16          | 7/8       | 306-2521  |
| 2-1/2  | 3/8           | 7/8       | 306-2539  |
| 2-1/2  | 1/2           | 7/8       | 306-2554  |
| 2-3/4  | 1/4           | 1         | 306-2711  |
| 2-3/4  | 5/16          | 1         | 306-2729  |
| 2-3/4  | 3/8           | 1         | 306-2737  |
| 2-3/4  | 7/16          | 1         | 306-2745  |
| 2-3/4  | 1/2           | 1         | 306-2752  |
| 3      | 1/8           | 1         | 306-2900  |
| 3      | 5/32          | 1         | 306-3107  |
| 3      | 3/16          | 1         | 306-3123  |
| 3      | 3/16          | 1-1/4     | 306-3131  |
| 3      | 7/32          | 1         | 306-3149  |
| 3      | 1/4           | 1         | 306-3164  |
| 3      | 1/4           | 1-1/4     | 306-3172  |
| 3      | 9/32          | 1         | 306-3180  |
| 3      | 5/16          | 1         | 306-3206  |
| 3      | 5/16          | 1-1/4     | 306-3214  |
| 3      | 11/32         | 1         | 306-3222  |
| 3      | 3/8           | 1         | 306-3248  |
| 3      | 3/8           | 1-1/4     | 306-3255  |
| 3      | 13/32         | 1         | 306-3263  |
| 3      | 7/16          | 1         | 306-3289  |
| 3      | 1/2           | 1         | 306-3313  |
| 3      | 1/2           | 1-1/4     | 306-3321  |
| 3      | 9/16          | 1         | 306-3336  |
| 3      | 9/16          | 1-1/4     | 306-3362  |
| 3      | 5/8           | 1         | 306-3378  |
| 3      | 5/8           | 1-1/4     | 306-3404  |
| 3      | 3/4           | 1-1/4     | 306-3487  |
| 3      | 7/8           | 1-1/4     | 306-3560  |
| 3      | 1             | 1-1/4     | 306-3644  |
| 3-1/2  | 7/32          | 1         | 306-3670  |
| 3-1/2  | 1/4           | 1         | 306-3685  |
| 3-1/2  | 9/32          | 1         | 306-3701  |
| 3-1/2  | 5/16          | 1         | 306-3727  |
| 3-1/2  | 3/8           | 1         | 306-3735  |
| 3-1/2  | 7/16          | 1         | 306-3743  |
| 3-1/2  | 1/2           | 1         | 306-3750  |
| 3-1/2  | 9/16          | 1         | 306-3768  |
| 3-1/2  | 5/8           | 1         | 306-3776  |
| 3-1/2  | 11/16         | 1         | 306-3784  |
| 3-1/2  | 3/4           | 1         | 306-3792  |
| 4      | 1/8           | 1         | 306-3856  |
| 4      | 3/16          | 1         | 306-4121  |
| 4      | 3/16          | 1-1/4     | 306-4139  |
| 4      | 7/32          | 1-1/4     | 306-4147  |

| Dia. | Width of Face | Hole Size | Order No. |
|------|---------------|-----------|-----------|
| 4"   | 1/4"          | 1"        | 306-4145  |
| 4    | 1/4           | 1-1/4     | 306-4162  |
| 4    | 9/32          | 1-1/4     | 306-4188  |
| 4    | 5/16          | 1         | 306-4196  |
| 4    | 5/16          | 1-1/4     | 306-4204  |
| 4    | 11/32         | 1-1/4     | 306-4220  |
| 4    | 3/8           | 1         | 306-4238  |
| 4    | 3/8           | 1-1/4     | 306-4246  |
| 4    | 13/32         | 1-1/4     | 306-4261  |
| 4    | 7/16          | 1-1/4     | 306-4287  |
| 4    | 7/16          | 1         | 306-4295  |
| 4    | 1/2           | 1         | 306-4311  |
| 4    | 1/2           | 1-1/4     | 306-4329  |
| 4    | 9/16          | 1-1/4     | 306-4360  |
| 4    | 5/8           | 1         | 306-4378  |
| 4    | 5/8           | 1-1/4     | 306-4402  |
| 4    | 3/4           | 1         | 306-4477  |
| 4    | 3/4           | 1-1/4     | 306-4485  |
| 4    | 7/8           | 1-1/4     | 306-4568  |
| 4    | 1/8           | 1         | 306-4579  |
| 4    | 5/32          | 1         | 306-4586  |
| 4    | 1             | 1-1/4     | 306-4642  |
| 4    | 1-1/8         | 1-1/4     | 306-4709  |
| 4    | 1-1/4         | 1-1/4     | 306-4741  |
| 5    | 1-1/2         | 1-1/4     | 306-4824  |
| 5    | 1/8           | 1-1/4     | 306-5036  |
| 5    | 5/32          | 1-1/4     | 306-5089  |
| 5    | 3/16          | 1-1/4     | 306-5118  |
| 5    | 7/32          | 1-1/4     | 306-5134  |
| 5    | 1/4           | 1         | 306-5151  |
| 5    | 1/4           | 1-1/4     | 306-5169  |
| 5    | 9/32          | 1-1/4     | 306-5176  |
| 5    | 5/16          | 1         | 306-5193  |
| 5    | 5/16          | 1-1/4     | 306-5201  |
| 5    | 3/8           | 1-1/4     | 306-5243  |
| 5    | 3/8           | 1         | 306-5250  |
| 5    | 7/16          | 1-1/4     | 306-5284  |
| 5    | 1/2           | 1         | 306-5318  |
| 5    | 1/2           | 1-1/4     | 306-5326  |
| 5    | 5/8           | 1-1/4     | 306-5409  |
| 5    | 3/4           | 1-1/4     | 306-5482  |
| 5    | 1"            | 1-1/4     | 306-5649  |
| 6    | 1/8           | 1-1/4     | 306-6016  |
| 6    | 5/32          | 1-1/4     | 306-6087  |
| 6    | 3/16          | 1-1/4     | 306-6136  |
| 6    | 7/32          | 1-1/4     | 306-6151  |
| 6    | 1/4           | 1         | 306-6159  |
| 6    | 1/4           | 1-1/4     | 306-6167  |
| 6    | 9/32          | 1-1/4     | 306-6183  |
| 6    | 5/16          | 1         | 306-6191  |
| 6    | 5/16          | 1-1/4     | 306-6209  |
| 6    | 3/8           | 1         | 306-6233  |
| 6    | 3/8           | 1-1/4     | 306-6241  |

| Dia. | Width of Face | Hole Size | Order No. |
|------|---------------|-----------|-----------|
| 6"   | 7/16"         | 1-1/4"    | 306-6282  |
| 6    | 1/2           | 1         | 306-6316  |
| 6    | 1/2           | 1-1/4     | 306-6324  |
| 6    | 9/16          | 1-1/4     | 306-6365  |
| 6    | 5/8           | 1-1/4     | 306-6407  |
| 6    | 11/16         | 1-1/4     | 306-6449  |
| 6    | 3/4           | 1-1/4     | 306-6480  |
| 6    | 13/16         | 1-1/4     | 306-6522  |
| 6    | 7/8           | 1-1/4     | 306-6563  |
| 6    | 15/16         | 1-1/4     | 306-6605  |
| 6    | 1             | 1-1/4     | 306-6647  |
| 6    | 1-1/8         | 1-1/4     | 306-6704  |
| 6    | 1-1/4         | 1-1/4     | 306-6746  |
| 6    | 1-1/2         | 1-1/4     | 306-6829  |
| 7    | 1/4           | 1-1/4     | 306-7165  |
| 7    | 5/16          | 1-1/4     | 306-7207  |
| 7    | 3/8           | 1-1/4     | 306-7249  |
| 7    | 7/16          | 1-1/4     | 306-7280  |
| 7    | 1/2           | 1-1/4     | 306-7322  |
| 7    | 9/16          | 1-1/4     | 306-7363  |
| 7    | 5/8           | 1-1/4     | 306-7405  |
| 7    | 11/16         | 1-1/4     | 306-7447  |
| 7    | 3/4           | 1-1/4     | 306-7488  |
| 7    | 7/8           | 1-1/4     | 306-7561  |
| 7    | 1             | 1-1/4     | 306-7645  |
| 8    | 1/4           | 1-1/4     | 306-8163  |
| 8    | 5/16          | 1-1/4     | 306-8205  |
| 8    | 3/8           | 1-1/2     | 306-8247  |
| 8    | 7/16          | 1-1/2     | 306-8288  |
| 8    | 1/2           | 1-1/2     | 306-8320  |
| 8    | 9/16          | 1-1/2     | 306-8361  |
| 8    | 5/8           | 1-1/2     | 306-8403  |
| 8    | 11/16         | 1-1/2     | 306-8445  |
| 8    | 3/4           | 1-1/2     | 306-8486  |
| 8    | 13/16         | 1-1/2     | 306-8528  |
| 8    | 7/8           | 1-1/2     | 306-8569  |
| 8    | 1             | 1-1/2     | 306-8643  |
| 8    | 1-1/8         | 1-1/2     | 306-8700  |
| 8    | 1-1/4         | 1-1/2     | 306-8742  |
| 8    | 1-1/2         | 1-1/2     | 306-8825  |
| 10   | 1/4           | 1-1/2     | 306-9161  |
| 10   | 5/16          | 1-1/2     | 306-9203  |
| 10   | 3/8           | 1-1/2     | 306-9245  |
| 10   | 7/16          | 1-1/2     | 306-9286  |
| 10   | 1/2           | 1-1/2     | 306-9328  |
| 10   | 9/16          | 1-1/2     | 306-9369  |
| 10   | 5/8           | 1-1/2     | 306-9401  |
| 10   | 3/4           | 1-1/2     | 306-9484  |
| 10   | 7/8           | 1-1/2     | 306-9567  |
| 10   | 1             | 1-1/2     | 306-9641  |
| 10   | 1-1/8         | 1-1/2     | 306-9708  |
| 10   | 1-1/4         | 1-1/2     | 306-9740  |
| 10   | 1-1/2         | 1-1/2     | 306-9823  |

## Metric Side Milling Cutters

### DIN 885

### High Speed Steel

- For milling deep slots, grooves and the other operations where either or both the peripheral or side cutting edges are used for machining.
- Arbor mounted with mounting holes having standardized size and made to suit a variety of machine arbors.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- Ground from solid.
- Bright and black finish.

### Straight Tooth

- Used in slotting, light-duty side milling and straddle milling for where deep cutting is required.



| Cutter Dia. | Hole Size | Face Width | Straight Tooth Order No. | Staggered Tooth Order No. |
|-------------|-----------|------------|--------------------------|---------------------------|
| 50mm        | 16        | 4          | 364-0504                 | 364-3504                  |
| 50 mm       | 16        | 5          | 364-0505                 | 364-3505                  |
| 50 mm       | 16        | 6          | 364-0506                 | 364-3506                  |
| 50 mm       | 16        | 8          | 364-0508                 | 364-3508                  |
| 50 mm       | 16        | 10         | 364-0510                 | 364-3510                  |
| 63 mm       | 22        | 4          | 364-0604                 | 364-3604                  |
| 63 mm       | 22        | 5          | 364-0605                 | 364-3605                  |
| 63 mm       | 22        | 6          | 364-0606                 | 364-3606                  |
| 63 mm       | 22        | 8          | 364-0608                 | 364-3608                  |
| 63 mm       | 22        | 10         | 364-0610                 | 364-3610                  |
| 63 mm       | 22        | 12         | 364-0612                 | 364-3612                  |
| 63 mm       | 22        | 14         | 364-0614                 | 364-3614                  |
| 63 mm       | 22        | 16         | 364-0616                 | 364-3616                  |
| 80 mm       | 27        | 5          | 364-0805                 | 364-3805                  |
| 80 mm       | 27        | 6          | 364-0806                 | 364-3806                  |
| 80 mm       | 27        | 8          | 364-0808                 | 364-3808                  |
| 80 mm       | 27        | 10         | 364-0810                 | 364-3810                  |
| 80 mm       | 27        | 12         | 364-0812                 | 364-3812                  |
| 80 mm       | 27        | 14         | 364-0814                 | 364-3814                  |
| 80 mm       | 27        | 16         | 364-0816                 | 364-3816                  |
| 80 mm       | 27        | 18         | 364-0818                 | 364-3818                  |
| 80 mm       | 27        | 20         | 364-0820                 | 364-3820                  |
| 100 mm      | 32        | 5          | 364-1005                 | 364-4005                  |
| 100 mm      | 32        | 6          | 364-1006                 | 364-4006                  |
| 100 mm      | 32        | 8          | 364-1008                 | 364-4008                  |
| 100 mm      | 32        | 10         | 364-1010                 | 364-4010                  |
| 100 mm      | 32        | 12         | 364-1012                 | 364-4012                  |
| 100 mm      | 32        | 14         | 364-1014                 | 364-4014                  |
| 100 mm      | 32        | 16         | 364-1016                 | 364-4016                  |
| 100 mm      | 32        | 18         | 364-1018                 | 364-4018                  |
| 100mm       | 32        | 20         | 364-1020                 | 364-4020                  |
| 100 mm      | 32        | 22         | 364-1022                 | 364-4022                  |
| 100 mm      | 32        | 25         | 364-1025                 | 364-4025                  |
| 125 mm      | 32        | 8          | 364-1208                 | 364-4208                  |
| 125 mm      | 32        | 10         | 364-1210                 | 364-4210                  |
| 125 mm      | 32        | 12         | 364-1212                 | 364-4212                  |
| 125 mm      | 32        | 14         | 364-1214                 | 364-4214                  |
| 125 mm      | 32        | 16         | 364-1216                 | 364-4216                  |

### Staggered Tooth

- Used for heavy duty side cutting and straddle milling operations.



| Cutter Dia. | Hole Size | Face Width | Straight Tooth Order No. | Staggered Tooth Order No. |
|-------------|-----------|------------|--------------------------|---------------------------|
| 125 mm      | 32        | 18         | 364-1218                 | 364-4218                  |
| 125 mm      | 32        | 20         | 364-1220                 | 364-4220                  |
| 125 mm      | 32        | 22         | 364-1222                 | 364-4222                  |
| 125 mm      | 32        | 25         | 364-1225                 | 364-4225                  |
| 125 mm      | 32        | 28         | 364-1228                 | 364-4228                  |
| 160 mm      | 40        | 8          | 364-1608                 | 364-4608                  |
| 160 mm      | 40        | 10         | 364-1610                 | 364-4610                  |
| 160 mm      | 40        | 12         | 364-1612                 | 364-4612                  |
| 160 mm      | 40        | 14         | 364-1614                 | 364-4614                  |
| 160 mm      | 40        | 16         | 364-1616                 | 364-4616                  |
| 160 mm      | 40        | 18         | 364-1618                 | 364-4618                  |
| 160 mm      | 40        | 20         | 364-1620                 | 364-4620                  |
| 160 mm      | 40        | 22         | 364-1622                 | 364-4622                  |
| 160 mm      | 40        | 25         | 364-1625                 | 364-4625                  |
| 160 mm      | 40        | 28         | 364-1628                 | 364-4628                  |
| 160 mm      | 40        | 32         | 364-1632                 | 364-4632                  |
| 200 mm      | 40        | 8          | 364-2008                 | 364-5008                  |
| 200 mm      | 40        | 10         | 364-2010                 | 364-5010                  |
| 200 mm      | 40        | 12         | 364-2012                 | 364-5012                  |
| 200 mm      | 40        | 14         | 364-2014                 | 364-5014                  |
| 200 mm      | 40        | 16         | 364-2016                 | 364-5016                  |
| 200 mm      | 40        | 18         | 364-2018                 | 364-5018                  |
| 200 mm      | 40        | 20         | 364-2020                 | 364-5020                  |
| 200 mm      | 40        | 22         | 364-2022                 | 364-5022                  |
| 200 mm      | 40        | 25         | 364-2025                 | 364-5025                  |
| 200 mm      | 40        | 28         | 364-2028                 | 364-5028                  |
| 200 mm      | 40        | 32         | 364-2032                 | 364-5032                  |
| 250 mm      | 40        | 10         | 364-2510                 | 364-5510                  |
| 250 mm      | 40        | 12         | 364-2512                 | 364-5512                  |
| 250 mm      | 40        | 14         | 364-2514                 | 364-5514                  |
| 250 mm      | 40        | 16         | 364-2516                 | 364-5516                  |
| 250 mm      | 40        | 18         | 364-2518                 | 364-5518                  |
| 250 mm      | 40        | 20         | 364-2520                 | 364-5520                  |
| 250 mm      | 40        | 22         | 364-2522                 | 364-5522                  |
| 250 mm      | 40        | 25         | 364-2525                 | 364-5525                  |
| 250 mm      | 40        | 28         | 364-2528                 | 364-5528                  |
| 250 mm      | 40        | 32         | 364-2532                 | 364-5532                  |

## Carbide Tipped Side Milling Cutters

## Straight Tooth

For  
SteelFor  
Non-Ferrous  
MaterialsFor  
Cast Iron

| Cutter Dia. | Face Width | Arbor Hole | For Steel    |           | For Non-Ferrous |           |
|-------------|------------|------------|--------------|-----------|-----------------|-----------|
|             |            |            | No. of Teeth | Order No. | No. of Teeth    | Order No. |
| 3"          | 1/4"       | 1"a        | 6            | 245-7001  | 4               | 245-6801  |
| 3           | 5/16       | 1          | 6            | 245-7002  | 4               | 245-6802  |
| 3           | 3/8        | 1          | 6            | 245-7003  | 4               | 245-6803  |
| 3           | 7/16       | 1          | 6            | 245-7004  | 4               | 245-6804  |
| 3           | 1/2        | 1          | 6            | 245-7005  | 4               | 245-6805  |
| 4           | 1/4        | 1          | 8            | 245-7006  | 4               | 245-6806  |
| 4           | 5/16       | 1          | 8            | 245-7007  | 4               | 245-6807  |
| 4           | 3/8        | 1          | 8            | 245-7008  | 4               | 245-6808  |
| 4           | 3/8        | 1-1/4      | 8            | 245-7009  | 4               | 245-6809  |
| 4           | 1/2        | 1          | 8            | 245-7011  | 4               | 245-6811  |
| 4           | 1/2        | 1-1/4      | 8            | 245-7012  | 4               | 245-6812  |
| 4           | 5/8        | 1          | 8            | 245-7014  | 4               | 245-6814  |
| 4           | 5/8        | 1-1/4      |              |           | 4               | 245-6815  |
| 4           | 3/4        | 1          |              |           | 4               | 245-6816  |
| 4           | 3/4        | 1-1/4      |              |           | 4               | 245-6817  |
| 5           | 1/2        | 1          | 10           | 245-7017  | 6               | 245-6819  |
| 5           | 1/2        | 1-1/4      | 10           | 245-7018  | 6               | 245-6820  |
| 5           | 5/8        | 1-1/4      | 10           | 245-7020  | 6               | 245-6822  |
| 5           | 3/4        | 1          |              |           | 6               | 245-6823  |
| 5           | 3/4        | 1-1/4      |              |           | 6               | 245-6824  |
| 6           | 1/2        | 1          |              |           | 6               | 245-6825  |
| 6           | 1/2        | 1-1/4      |              |           | 6               | 245-6826  |
| 6           | 5/8        | 1-1/4      |              |           | 6               | 245-6827  |
| 6           | 3/4        | 1          |              |           | 6               | 245-6828  |
| 6           | 3/4        | 1-1/4      |              |           | 6               | 245-6829  |
| 7           | 3/4        | 1-1/4      |              |           | 8               | 245-6830  |
| 8           | 3/4        | 1-1/4      |              |           | 8               | 245-6831  |
| 8           | 3/4        | 1-1/2      |              |           | 8               | 245-6832  |

## Staggered Tooth for Steel

| Cutter Dia. | Face Width | Arbor Hole | No. Of Teeth | Order No. |
|-------------|------------|------------|--------------|-----------|
| 4"          | 3/4"       | 1"         | 8            | 245-7044  |
| 4           | 3/4        | 1-1/4      | 8            | 245-7045  |
| 5           | 3/4        | 1          | 10           | 245-7046  |
| 6           | 3/4        | 1          | 12           | 245-7049  |
| 6           | 1          | 1-1/4      | 12           | 245-7051  |

| Cutter Dia. | Face Width | Arbor Hole | For Cast Iron |           | For Stainless Steel |           |
|-------------|------------|------------|---------------|-----------|---------------------|-----------|
|             |            |            | No. of Teeth  | Order No. | No. of Teeth        | Order No. |
| 3"          | 1/4"       | 1"a        | 6             | 245-6901  | 8                   | 245-6601  |
| 3           | 5/16       | 1          | 6             | 245-6902  | 8                   | 245-6602  |
| 3           | 3/8        | 1          | 6             | 245-6903  | 8                   | 245-6603  |
| 3           | 7/16       | 1          | 6             | 245-6904  |                     |           |
| 3           | 1/2        | 1          | 6             | 245-6905  | 8                   | 245-6604  |
| 4           | 1/4        | 1          | 8             | 245-6906  | 10                  | 245-6605  |
| 4           | 5/16       | 1          | 8             | 245-6907  | 10                  | 245-6606  |
| 4           | 3/8        | 1          | 8             | 245-6908  | 10                  | 245-6607  |
| 4           | 3/8        | 1-1/4      | 8             | 245-6909  | 10                  | 245-6608  |
| 4           | 1/2        | 1          | 8             | 245-6911  | 10                  | 245-6609  |
| 4           | 1/2        | 1-1/4      | 8             | 245-6912  | 10                  | 245-6610  |
| 4           | 5/8        | 1          | 8             | 245-6914  | 10                  | 245-6611  |
| 4           | 5/8        | 1-1/4      | 8             | 245-6915  | 10                  | 245-6612  |
| 4           | 3/4        | 1          | 8             | 245-6916  | 10                  | 245-6613  |
| 4           | 3/4        | 1-1/4      | 8             | 245-6917  | 10                  | 245-6614  |
| 5           | 1/2        | 1          | 10            | 245-6919  | 12                  | 245-6615  |
| 5           | 1/2        | 1-1/4      | 10            | 245-6920  | 12                  | 245-6616  |
| 5           | 5/8        | 1-1/4      | 10            | 245-6922  | 12                  | 245-6617  |
| 5           | 3/4        | 1          | 10            | 245-6923  | 12                  | 245-6618  |
| 5           | 3/4        | 1-1/4      | 10            | 245-6924  | 12                  | 245-6619  |
| 6           | 1/2        | 1          | 12            | 245-6925  | 14                  | 245-6620  |
| 6           | 1/2        | 1-1/4      | 12            | 245-6926  | 14                  | 245-6621  |
| 6           | 5/8        | 1-1/4      | 12            | 245-6927  | 14                  | 245-6622  |
| 6           | 3/4        | 1          | 12            | 245-6928  | 14                  | 245-6623  |
| 6           | 3/4        | 1-1/4      | 12            | 245-6929  | 14                  | 245-6624  |
| 7           | 3/4        | 1-1/4      | 12            | 245-6930  |                     |           |
| 8           | 3/4        | 1-1/4      | 12            | 245-6931  |                     |           |
| 8           | 3/4        | 1-1/2      | 12            | 245-6932  |                     |           |

## Staggered Tooth for Non-Ferrous and Cast Iron

| Cutter Dia. | Face Width | Arbor Hole | For Non-Ferrous |           | For Cast Iron |           |
|-------------|------------|------------|-----------------|-----------|---------------|-----------|
|             |            |            | No. of Teeth    | Order No. | No. of Teeth  | Order No. |
| 5"          | 1"         | 1-1/4"     | 8               | 245-6855  | 10            | 245-6955  |
| 6           | 1          | 1-1/4      | 8               | 245-6856  | 12            | 245-6956  |

## 45° Dovetail Cutters

High Speed Steel &amp; Cobalt



| Cut Dia.(In.)                                  | Cut W.(In.) | Shank Dia.(In.) | Shank L(In.) | OAL (In.) | HSS Order No. | Cobalt Order No. |
|------------------------------------------------|-------------|-----------------|--------------|-----------|---------------|------------------|
| 3/8                                            | 1/8         | 3/8             | 1-15/16      | 2-1/8     | 243-4005      | 243-7005         |
| 1/2                                            | 5/32        | 3/8             | 1-7/8        | 2-1/8     | 243-4010      | 243-7010         |
| 3/4                                            | 1/4         | 3/8             | 1-13/16      | 2-1/8     | 243-4015      | 243-7015         |
| 1                                              | 1/4         | 1/2             |              | 2-1/2     | 243-4020      | 243-4020         |
| 1-3/8                                          | 7/16        | 5/8             | 2-5/16       | 2-7/8     | 243-4025      | 243-7025         |
| 1-7/8                                          | 9/16        | 7/8             | 2-7/16       | 3-1/4     | 243-4030      | 243-7030         |
| 2-1/4                                          | 5/8         | 1               | 2-11/16      | 3-1/4     | 243-4035      | 243-7035         |
| 2-1/2                                          | 3/4         | 1               |              | 3-3/4     | 243-4040      | 243-7040         |
| 3/8,1/2,3/4,1-3/8, 4pcs/set HSS 45deg w/stand. |             |                 |              |           | 243-4001      | 243-7001         |

## 60°Dovetail Cutters

High Speed Steel &amp; Cobalt



| Cut Dia.(In.)                                  | Cut W.(In.) | Shank Dia.(In.) | OAL (In.) | HSS Order No. | Cobalt Order No. |
|------------------------------------------------|-------------|-----------------|-----------|---------------|------------------|
| 3/8                                            | 3/16        | 3/8             | 2-1/8     | 243-6005      | 243-8005         |
| 1/2                                            | 1/4         | 3/8             | 2-1/8     | 243-6010      | 243-8010         |
| 3/4                                            | 5/16        | 3/8             | 2-1/8     | 243-6015      | 243-8015         |
| 1                                              | 7/16        | 1/2             | 2-1/2     | 243-6020      | 243-8020         |
| 1-3/8                                          | 9/16        | 5/8             | 2-7/8     | 243-6025      | 243-8025         |
| 1-7/8                                          | 13/16       | 7/8             | 3-1/4     | 243-6030      | 243-8030         |
| 2-1/4                                          | 1-1/16      | 1               | 3-1/4     | 243-6035      | 243-8035         |
| 2-1/2                                          | 1-1/8       | 1               | 3-3/4     | 243-6040      | 243-8040         |
| 3/8,1/2,3/4,1-3/8, 4pcs/set HSS 60deg w/stand. |             |                 |           | 243-6001      | 243-8001         |

### Carbide Tipped Dovetail Cutters

#### Straight Shank

- Used for all dovetail work.
- Convenient for production and tool room work.



| Cutter Dia. | Shank Dia. | Overall Length | No. of Teeth | Cutter Width | 45° Order No. | 60° Order No. |
|-------------|------------|----------------|--------------|--------------|---------------|---------------|
| 3/4"        | 3/8"       | 2-1/4"         | 3            | 1/4          | 243-5048      | 243-5248      |
| 1           | 1/2        | 2-1/2          | 4            | 5/16         | 243-5064      | 243-5264      |
| 1-1/4       | 5/8        | 2-3/4          | 4            | 3/8          | 243-5080      | 243-5280      |
| 1-1/2       | 3/4        | 3-1/4          | 4            | 1/2          | 243-5096      | 243-5296      |
| 2           | 1          | 4-1/4          | 6            | 5/8          | 243-5128      | 243-5328      |
| 2-1/2       | 1-1/4      | 4-3/8          | 6            | 3/4          | 243-5160      | 243-5360      |
| 3           | 1-1/4      | 4-1/2          | 6            | 1            | 243-5192      | 243-5392      |

### Carbide Tipped Shell End Mills

- Used for end milling applications requiring larger diameter cutters.
- Suit for non-ferrous materials, cast iron and steel.
- Must be used with shell mill holder.
- Bright and black finish.



| Mill Dia | Hole Dia | Overall Length | No. of Teeth | Straight Flute Cast Iron Order No. | Right hand Helix Non-Ferrous Order No. | Left Hand Helix Steel Order No. |
|----------|----------|----------------|--------------|------------------------------------|----------------------------------------|---------------------------------|
| 1-1/4"   | 1"       | 1/2"           | 4            | 244-8701                           | 244-8601                               | 244-8801                        |
| 1-1/2    | 1-1/8    | 1/2            | 4            | 244-8702                           | 244-8602                               | 244-8802                        |
| 1-3/4    | 1-1/4    | 3/4            | 4            | 244-8703                           | 244-8603                               | 244-8803                        |
| 2        | 1-3/8    | 3/4            | 4            | 244-8704                           | 244-8604                               | 244-8804                        |
| 2-1/4    | 1-1/2    | 1              | 6            | 244-8705                           | 244-8605                               | 244-8805                        |
| 2-1/2    | 1-5/8    | 1              | 6            | 244-8706                           | 244-8606                               | 244-8806                        |
| 2-3/4    | 1-5/8    | 1              | 6            | 244-8707                           | 244-8607                               | 244-8807                        |
| 3        | 1-3/4    | 1-1/4          | 6            | 244-8708                           | 244-8608                               | 244-8808                        |
| 3-1/2    | 1-7/8    | 1-1/4          | 6            | 244-8709                           | 244-8609                               | 244-8809                        |
| 4        | 2-1/4    | 1-1/2          | 6            | 244-8710                           | 244-8610                               | 244-8810                        |

### HSS Shell End Mills

#### Right Hand & Left Hand

For use with standard shell end mill arbors



| Mill Dia. | Hole Dia. | LOC (In.) | Right Hand Order No. | Left Hand Order No. | Mill Dia. | Hole Dia. | LOC (In.) | Right Hand Order No. | Left Hand Order No. |
|-----------|-----------|-----------|----------------------|---------------------|-----------|-----------|-----------|----------------------|---------------------|
| 1-1/4"    | 1"        | 1"        | 306-0005             | 306-0205            | 3         | 1-1/4     | 1-3/4     | 306-0040             | 306-0240            |
| 1-1/2     | 1/2       | 1-1/8     | 306-0010             | 306-0210            | 3-1/2     | 1-1/4     | 1-7/8     | 306-0045             | 306-0245            |
| 1-3/4     | 3/4       | 1-1/4     | 306-0015             | 306-0215            | 4         | 1-1/2     | 2-1/4     | 306-0050             | 306-0250            |
| 2         | 3/4       | 1-3/8     | 306-0020             | 306-0220            | 4-1/2     | 1-1/2     | 2-1/4     | 306-0055             | 306-0255            |
| 2-1/4     | 1         | 1-1/2     | 306-0025             | 306-0225            | 5         | 1-1/2     | 2-1/4     | 306-0060             | 306-0260            |
| 2-1/2     | 1         | 1-5/8     | 306-0030             | 306-0230            | 5-1/2     | 2         | 2-1/4     | 306-0065             | 306-0265            |
| 2-3/4     | 1         | 1-5/8     | 306-0035             | 306-0235            | 6         | 2         | 2-1/4     | 306-0070             | 306-0270            |

### HSS Shell End Mill for Aluminum

#### 25 Deg Helix

For use with standard shell end mill arbors



| Mill Dia.(In.) | Hole Dia.(In.) | LOC (In.) | Order No. | Mill Dia.(In.) | Hole Dia.(In.) | LOC (In.) | Order No. |
|----------------|----------------|-----------|-----------|----------------|----------------|-----------|-----------|
| 1-1/4          | 1/2            | 1         | 306-0105  | 3              | 1-1/4          | 1-3/4     | 306-0140  |
| 1-1/2          | 1/2            | 1-1/8     | 306-0110  | 3-1/2          | 1-1/4          | 1-7/8     | 306-0145  |
| 1-3/4          | 3/4            | 1-1/4     | 306-0115  | 4              | 1-1/2          | 2-1/4     | 306-0150  |
| 2              | 3/4            | 1-3/8     | 306-0120  | 4-1/2          | 1-1/2          | 2-1/4     | 306-0155  |
| 2-1/4          | 1              | 1-1/2     | 306-0125  | 5              | 1-1/2          | 2-1/4     | 306-0160  |
| 2-1/2          | 1              | 1-5/8     | 306-0130  | 5-1/2          | 2              | 2-1/4     | 306-0165  |
| 2-3/4          | 1              | 1-5/8     | 306-0135  | 6              | 2              | 2-1/4     | 306-0170  |

### M42 Cobalt Heavy-Duty Shell End Mills

#### Right Hand

For use with standard shell end mill arbors



| Mill Dia.(In.) | Hole Dia.(In.) | LOC (In.) | Order No. | Mill Dia.(In.) | Hole Dia.(In.) | LOC (In.) | Order No. |
|----------------|----------------|-----------|-----------|----------------|----------------|-----------|-----------|
| 1-1/4          | 1/2            | 1         | 326-0001  | 3              | 1-1/4          | 1-3/4     | 326-0013  |
| 1-1/2          | 1/2            | 1-1/8     | 326-0002  | 3-1/2          | 1-1/4          | 1-7/8     | 326-0015  |
| 1-3/4          | 3/4            | 1-1/4     | 326-0003  | 4              | 1-1/2          | 2-1/4     | 326-0016  |
| 2              | 3/4            | 1-3/8     | 326-0005  | 4-1/2          | 1-1/2          | 2-1/4     | 326-0017  |
| 2-1/4          | 1              | 1-1/2     | 326-0007  | 5              | 1-1/2          | 2-1/4     | 326-0018  |
| 2-1/2          | 1              | 1-5/8     | 326-0009  | 6              | 2              | 2-1/4     | 326-0019  |
| 2-3/4          | 1              | 1-5/8     | 326-0011  |                |                |           |           |

### M42 Mutiple Flute Rough Shell End Mills



| Mill Dia.(In.) | Hole Dia.(In.) | OAL (In.) | No. of Flutes | Order No. |
|----------------|----------------|-----------|---------------|-----------|
| 2              | 3/4            | 2         | 8             | 326-0020  |
| 2-1/4          | 1              | 2         | 8             | 326-0022  |
| 2-1/2          | 1              | 1-5/8     | 8             | 326-0024  |
| 2-3/4          | 1              | 2         | 10            | 326-0026  |
| 3              | 1-1/4          | 2         | 10            | 326-0028  |
| 3-1/2          | 1-1/4          | 2         | 10            | 326-0030  |
| 4              | 1-1/2          | 2-1/4     | 10            | 326-0032  |
| 4-1/2          | 1-1/2          | 2-1/4     | 12            | 326-0034  |
| 5              | 1-1/2          | 2-1/4     | 12            | 326-0036  |
| 5-1/2          | 2              | 2-1/4     | 14            | 326-0038  |
| 6              | 2              | 2-1/4     | 14            | 326-0040  |

### Heavy Duty Plain Milling Cutters

#### High Speed Steel

- Cutters have 45° left hand spiral and right hand cut.
- All cutters feature 10° radial rake.



| Width<br>Size | Hole<br>of Face | Hole<br>Size | Order No. | Width<br>Size | Hole<br>of Face | Hole<br>Size | Order No. |
|---------------|-----------------|--------------|-----------|---------------|-----------------|--------------|-----------|
| 2-1/2"        | 2"              | 1"           | 304-2967  | 3             | 2-1/2           | 1-1/4        | 304-3957  |
| 2-1/2         | 3               | 1            | 304-2978  | 3             | 3               | 1-1/4        | 304-3973  |
| 2-1/2         | 4               | 1            | 304-2983  | 3             | 4               | 1-1/4        | 304-3981  |
| 3             | 1/2             | 1            | 304-3325  | 3             | 6               | 1-1/4        | 304-3999  |
| 3             | 3/4             | 1            | 304-3475  | 4             | 2               | 1-1/2        | 304-4963  |
| 3             | 1               | 1            | 304-3645  | 4             | 3               | 1-1/2        | 304-4971  |
| 3             | 1-1/4           | 1-1/4        | 304-3805  | 4             | 4               | 1-1/2        | 304-4989  |
| 3             | 1-1/2           | 1-1/4        | 304-3815  | 4             | 6               | 1-1/2        | 304-4997  |
| 3             | 2               | 1-1/4        | 304-3940  | 4-1/2         | 6               | 2            | 304-5994  |

### High Helical Plain Milling Cutters

#### High Speed Steel

- Cutters have high left hand spiral and right hand cut.
- All cutters feature 10° radial rake.



|      | Width   | Hole   |           |       | Width   | Hole  |           |
|------|---------|--------|-----------|-------|---------|-------|-----------|
| Size | of Face | Size   | Order No. | Size  | of Face | Size  | Order No. |
| 3"   | 4"      | 1-1/4" | 304-7347  | 4     | 6       | 1-1/2 | 304-7467  |
| 3    | 6       | 1-1/4  | 304-7362  | 4     | 8       | 1-1/2 | 304-7487  |
| 4    | 3       | 1-1/2  | 304-7437  | 4-1/2 | 6       | 2     | 304-7560  |
| 4    | 4       | 1-1/2  | 304-7447  |       |         |       |           |

## Concave Milling Cutters-Shank Type

### High Speed Steel

Use for milling male half circle

- Teeth are from relieved and straight gashed.
- Cutting surfaces may be resharpened on face without changing contour or from for increased tool life.



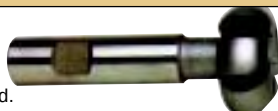
| Radius | Cutter Diameter | Shank Diameter | Overall Length | Order No. |
|--------|-----------------|----------------|----------------|-----------|
| 1/32"  | 3/4"            | 1/2"           | 3"             | 316-3028  |
| 1/16   | 3/4             | 1/2            | 3              | 316-3044  |
| 3/32   | 3/4             | 1/2            | 3              | 316-3069  |
| 1/8    | 1               | 3/4            | 3-1/2          | 316-3085  |
| 5/32   | 1               | 3/4            | 3-1/2          | 316-3101  |
| 3/16   | 1               | 3/4            | 3-1/2          | 316-3127  |
| 1/4    | 1-1/4           | 3/4            | 4              | 316-3168  |
| 5/16   | 1-1/4           | 3/4            | 4              | 316-3200  |
| 3/8    | 1-1/2           | 3/4            | 4-3/16         | 316-3242  |

## Convex Milling Cutters-Shank Type

### High Speed Steel

Use for milling female half circle

- Teeth are from relieved and straight gashed.
- Cutting surfaces may be resharpened on face without changing contour or from for increased tool life.



| Cutter Shank |        |      |       |           | Cutter Shank |       |      |       |           |
|--------------|--------|------|-------|-----------|--------------|-------|------|-------|-----------|
| Radius       | Dia.   | Dia. | OAL   | Order No. | Radius       | Dia.  | Dia. | OAL   | Order No. |
| 1/32"        | 3/4"   | 1/2" | 3"    | 317-4026  | 3/16         | 1-3/8 | 3/4  | 3-1/2 | 317-4125  |
| 1/16         | 3/4    | 1/2  | 3     | 317-4042  | 1/4          | 1-1/2 | 3/4  | 4     | 317-4166  |
| 3/32         | 7/8    | 1/2  | 3     | 317-4067  | 5/16         | 1-5/8 | 3/4  | 4     | 317-4208  |
| 1/8          | 1-1/4  | 3/4  | 3-1/2 | 317-4083  | 3/8          | 1-3/4 | 3/4  | 4     | 317-4240  |
| 5/32         | 1-5/16 | 3/4  | 3-1/2 | 317-4109  |              |       |      |       |           |

## Concave Milling Cutters

### High Speed Steel

Use for milling male half circle

- Teeth are from relieved and straight gashed.
- Cutting surfaces may be resharpened on face without changing contour or from for increased tool life.



| Diameter of Circle | Diameter of Cutter | Hole Size | Order No. | Diameter of Circle | Diameter of Cutter | Hole Size | Order No. |
|--------------------|--------------------|-----------|-----------|--------------------|--------------------|-----------|-----------|
| 1/16"              | 2-1/4"             | 1"        | 316-0041  | 9/16               | 2-3/4              | 1         | 316-0358  |
| 3/32               | 2-1/4              | 1         | 316-0066  | 9/16               | 3                  | 1         | 316-0363  |
| 1/8                | 2                  | 7/8       | 316-0090  | 5/8                | 2-3/4              | 1         | 316-0378  |
| 1/8                | 2-1/4              | 1         | 316-0098  | 5/8                | 3-1/2              | 1-1/4     | 316-0413  |
| 5/32               | 2-1/4              | 1         | 316-0108  | 11/16              | 3                  | 1         | 316-0447  |
| 3/16               | 2                  | 7/8       | 316-0116  | 3/4                | 3                  | 1         | 316-0488  |
| 3/16               | 2-1/4              | 1         | 316-0132  | 3/4                | 3-3/4              | 1-1/4     | 316-0496  |
| 7/32               | 2-1/4              | 1         | 316-0140  | 13/16              | 3-1/4              | 1-1/4     | 316-0539  |
| 1/4                | 2                  | 7/8       | 316-0165  | 7/8                | 3-1/4              | 1         | 316-0561  |
| 1/4                | 2-1/2              | 1         | 316-0173  | 7/8                | 4                  | 1-1/4     | 316-0579  |
| 9/32               | 2-1/2              | 1         | 316-0181  | 15/16              | 3-1/2              | 1         | 316-0603  |
| 5/16               | 2-1/2              | 7/8       | 316-0195  | 1                  | 3-1/4              | 1         | 316-0645  |
| 5/16               | 2-3/4              | 1         | 316-0215  | 1                  | 4-1/4              | 1-1/4     | 316-0652  |
| 11/32              | 2-3/4              | 1         | 316-0223  | 1-1/8              | 4                  | 1-1/4     | 316-1080  |
| 3/8                | 2-1/4              | 7/8       | 316-0249  | 1-1/4              | 4                  | 1-1/4     | 316-1163  |
| 3/8                | 2-3/4              | 1         | 316-0256  | 1-3/8              | 4-1/4              | 1-1/4     | 316-1247  |
| 13/32              | 2-3/4              | 1         | 316-0264  | 1-1/2              | 4-1/4              | 1-1/4     | 316-1320  |
| 7/16               | 2-1/4              | 7/8       | 316-0280  | 1-5/8              | 5-1/2              | 1-1/4     | 316-1403  |
| 7/16               | 3                  | 1         | 316-0298  | 1-3/4              | 5-1/2              | 1-1/4     | 316-1486  |
| 1/2                | 2-1/4              | 7/8       | 316-0322  | 1-7/8              | 6                  | 1-1/2     | 316-1569  |
| 1/2                | 3                  | 1         | 316-0330  | 2                  | 6                  | 1-1/2     | 316-2005  |

## Single Angle Milling Cutters

### High Speed Steel, 45° or 60° Angle

Use for dovetails cutting



| Width of Face |     |       | 45° Right Hand Order No. | 45° Left hand Order No. | 60° Right Hand Order No. | 60° Left Hand Order No. |
|---------------|-----|-------|--------------------------|-------------------------|--------------------------|-------------------------|
| 2-1/2         | 1/2 | 7/8   | 328-0110                 | 328-1110                | 328-2110                 | 328-3110                |
| 2-3/4         | 1/2 | 1     | 328-0219                 | 328-1219                | 328-2219                 | 328-3219                |
| 3             | 1/2 | 1     | 328-0316                 | 328-1316                | 328-2316                 | 328-3316                |
| 3             | 1/2 | 1-1/4 | 328-0318                 | 328-1318                | 328-2318                 | 328-3318                |
| 3             | 5/8 | 1     | 328-0326                 | 328-1326                | 328-2326                 | 328-3326                |
| 3             | 3/4 | 1     | 328-0334                 | 328-1334                | 328-2334                 | 328-3334                |
| 4             | 1/2 | 1     | 328-0417                 | 328-1417                | 328-2417                 | 328-3417                |
| 4             | 1/2 | 1-1/4 | 328-0419                 | 328-1419                | 328-2419                 | 328-3419                |
| 4             | 3/4 | 1     | 328-0433                 | 328-1433                | 328-2433                 | 328-3433                |
| 4             | 3/4 | 1-1/4 | 328-0436                 | 328-1436                | 328-2436                 | 328-3436                |
| 4             | 1   | 1-1/4 | 328-0441                 | 328-1441                | 328-2441                 | 328-3441                |
| 5             | 3/4 | 1-1/4 | 328-0532                 | 328-1532                | 328-2532                 | 328-3532                |
| 5             | 1   | 1-1/4 | 328-0540                 | 328-1540                | 328-2540                 | 328-3540                |
| 6             | 3/4 | 1-1/4 | 328-0631                 | 328-1631                | 328-2631                 | 328-3631                |
| 6             | 1   | 1-1/4 | 328-0649                 | 328-1649                | 328-2649                 | 328-3649                |

## Convex Milling Cutters

### High Speed Steel

Use for milling female half circle

- Teeth are from relieved and straight gashed.
- Cutting surfaces may be resharpened on face without changing contour or from for increased tool life.

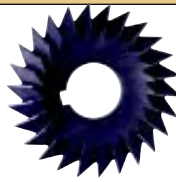


| Diameter of Circle | Diameter of Cutter | Hole Size | Order No. | Diameter of Circle | Diameter of Cutter | Hole Size | Order No. |
|--------------------|--------------------|-----------|-----------|--------------------|--------------------|-----------|-----------|
| 1/16"              | 2-1/4"             | 1"        | 317-0041  | 9/16               | 2-3/4              | 1         | 317-0362  |
| 3/32               | 2-1/4              | 1         | 317-0065  | 9/16               | 3                  | 1         | 317-0389  |
| 1/8                | 2                  | 7/8       | 317-0081  | 5/8                | 2-3/4              | 1         | 317-0404  |
| 1/8                | 2-1/4              | 1         | 317-0099  | 5/8                | 3-1/2              | 1-1/4     | 317-0412  |
| 5/32               | 2-1/4              | 1         | 317-0107  | 11/16              | 3                  | 1         | 317-0446  |
| 3/16               | 2                  | 7/8       | 317-0123  | 3/4                | 3                  | 1         | 317-0487  |
| 3/16               | 2-1/4              | 1         | 317-0131  | 3/4                | 3-3/4              | 1-1/4     | 317-0495  |
| 7/32               | 2-1/4              | 1         | 317-0149  | 13/16              | 3-1/4              | 1         | 317-0529  |
| 1/4                | 2                  | 7/8       | 317-0164  | 13/16              | 3-1/4              | 1-1/4     | 317-0536  |
| 1/4                | 2-1/2              | 1         | 317-0172  | 7/8                | 3-1/4              | 1         | 317-0569  |
| 9/32               | 2-1/2              | 1         | 317-0180  | 7/8                | 4                  | 1-1/4     | 317-0578  |
| 5/16               | 2-1/4              | 7/8       | 317-0206  | 15/16              | 3-1/2              | 1         | 317-0602  |
| 5/16               | 2-3/4              | 1         | 317-0214  | 1                  | 3-1/4              | 1         | 317-0644  |
| 11/32              | 2-3/4              | 1         | 317-0222  | 1                  | 4-1/4              | 1-1/4     | 317-0651  |
| 3/8                | 2-1/4              | 7/8       | 317-0248  | 1-1/8              | 4                  | 1-1/4     | 317-1089  |
| 3/8                | 2-3/4              | 1         | 317-0255  | 1-1/4              | 4                  | 1-1/4     | 317-1162  |
| 13/32              | 2-3/4              | 1         | 317-0263  | 1-3/8              | 4-1/4              | 1-1/4     | 317-1246  |
| 7/16               | 2-1/4              | 7/8       | 317-0278  | 1-1/2              | 4-1/4              | 1-1/4     | 317-1329  |
| 7/16               | 3                  | 1         | 317-0297  | 1-5/8              | 5-1/2              | 1-1/4     | 317-1402  |
| 1/2                | 2-1/4              | 7/8       | 317-0321  | 1-3/4              | 5-1/2              | 1-1/4     | 317-1485  |
| 1/2                | 3                  | 1         | 317-0339  | 1-7/8              | 6                  | 1-1/2     | 317-1568  |
| 9/16               | 2-3/4              | 1         | 317-0362  | 2                  | 6                  | 1-1/2     | 317-2004  |

### Double Angle Milling Cutters

High Speed Steel, 45°, 60° or 90° Angle

Use for milling threads, notches, V-grooves, angles, serrations and chamfers



| Size   | Width of Face | Hole Dia. | 45° Angle Order No. | 60° Angle Order No. | 90° Angle Order No. |
|--------|---------------|-----------|---------------------|---------------------|---------------------|
| 2-3/4" | 1/2"          | 1"        | 328-4211            | 328-5211            | 328-6211            |
| 3      | 5/8           | 1         | 328-4328            | 328-5328            | 328-6328            |
| 3      | 3/4           | 1         | 328-4366            | 328-5366            | 328-6366            |
| 4      | 1/2           | 1-1/4     | 328-4427            | 328-5427            | 328-6427            |
| 4      | 3/4           | 1         | 328-4435            | 328-5435            | 328-6435            |
| 4      | 3/4           | 1-1/4     | 328-4446            | 328-5446            | 328-6446            |
| 4      | 1             | 1-1/4     | 328-4468            | 328-5468            | 328-6468            |
| 5      | 3/4           | 1-1/4     | 328-4534            | 328-5534            | 328-6534            |
| 5      | 1             | 1-1/4     | 328-4542            | 328-5542            | 328-6542            |
| 6      | 3/4           | 1-1/4     | 328-4633            | 328-5633            | 328-6633            |
| 6      | 1             | 1-1/4     | 328-4641            | 328-5641            | 328-6641            |
| 6      | 1-1/4         | 1-1/4     | 328-4649            | 328-5649            | 328-6649            |
| 6      | 1-1/2         | 1-1/4     | 328-4658            | 328-5658            | 328-6658            |

### Face Angle Milling Cutters-Shank Type

High Speed Steel or M35 Cobalt, Right Hand

Use for angular machine operations



60° Angle

| Large Cutting Diameter | Small Cutting Diameter | Face Width | Shank Diameter | Overall Length | No. of Teeth | HSS Order No. |
|------------------------|------------------------|------------|----------------|----------------|--------------|---------------|
| 3/4"                   | 5/16"                  | 17/32"     | 3/8"           | 2-3/32"        | 8            | 316-8048      |
| 1                      | 3/8                    | 11/16      | 1/2            | 2-13/32        | 8            | 316-8064      |
| 1-1/4                  | 1/2                    | 25/32      | 5/8            | 2-21/32        | 10           | 316-8080      |
| 1-5/8                  | 5/8                    | 1-1/16     | 3/4            | 3-1/16         | 10           | 316-8104      |

| Large Cutting Diameter | Small Cutting Diameter | Face Width | Shank Diameter | Overall Length | No. of Teeth | M35 Order No. |
|------------------------|------------------------|------------|----------------|----------------|--------------|---------------|
| 3/4"                   | 5/16"                  | 17/32"     | 3/8"           | 2-3/32"        | 8            | 327-4048      |
| 1                      | 3/8                    | 11/16      | 1/2            | 2-13/32        | 8            | 327-4064      |
| 1-1/4                  | 1/2                    | 25/32      | 5/8            | 2-21/32        | 10           | 327-4080      |
| 1-5/8                  | 5/8                    | 1-1/16     | 3/4            | 3-1/16         | 10           | 327-4104      |

90° Angle

| Large Cutting Diameter | Small Cutting Diameter | Face Width | Shank Diameter | Overall Length | No. of Teeth | HSS Order No. |
|------------------------|------------------------|------------|----------------|----------------|--------------|---------------|
| 3/4"                   | 5/16"                  | 17/32"     | 3/8"           | 1-15/16"       | 8            | 317-8048      |
| 1                      | 3/8                    | 11/16      | 1/2            | 2-3/16         | 8            | 317-8064      |
| 1-1/4                  | 1/2                    | 25/32      | 5/8            | 2-13/32        | 10           | 317-8080      |
| 1-5/8                  | 5/8                    | 1-1/16     | 3/4            | 2-11/16        | 10           | 317-8104      |

| Large Cutting Diameter | Small Cutting Diameter | Face Width | Shank Diameter | Overall Length | No. of Teeth | M35 Order No. |
|------------------------|------------------------|------------|----------------|----------------|--------------|---------------|
| 3/4"                   | 5/16"                  | 17/32"     | 3/8"           | 1-15/16"       | 8            | 327-6048      |
| 1                      | 3/8                    | 11/16      | 1/2            | 2-3/16         | 8            | 327-6064      |
| 1-1/4                  | 1/2                    | 25/32      | 5/8            | 2-13/32        | 10           | 327-6080      |
| 1-5/8                  | 5/8                    | 1-1/16     | 3/4            | 2-11/16        | 10           | 327-6104      |

### Single Angle Chamfering Cutters

High Speed Steel, Right Hand

Use for chamfering and angle milling operations.



45° Chamfer Angle

| Cutter Dia. | Face Width | Shank Dia. | OAL    | Order No. |
|-------------|------------|------------|--------|-----------|
| 1/2"        | 1/8"       | 3/8"       | 2-1/8" | 328-7321  |
| 3/4         | 3/16       | 3/8        | 2-1/8  | 328-7487  |
| 1           | 5/16       | 1/2        | 2-1/2  | 328-7644  |
| 1-1/2       | 1/2        | 3/4        | 2-3/4  | 328-7826  |

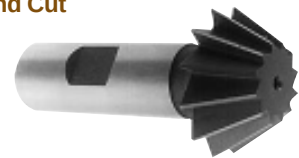
45° Chamfer Angle

| Cutter Dia. | Face Width | Shank Dia. | OAL    | Order No. |
|-------------|------------|------------|--------|-----------|
| 1/2"        | 7/32"      | 3/8"       | 2-1/8" | 328-8329  |
| 3/4         | 5/16       | 3/8        | 2-1/8  | 328-8485  |
| 1           | 7/16       | 1/2        | 2-1/2  | 328-8642  |
| 1-1/2       | 5/8        | 3/4        | 2-3/4  | 328-8824  |

### Single Angle Chamfering Cutters

M42, High Speed Steel, Right Hand Cut

- General purpose use
- Extends tools life
- Used for aggressive machining of steels



45° Chamfer Angle

| Cut. Dia. | Cut. Width | Shank Dia. | Overall Length | Order No. |
|-----------|------------|------------|----------------|-----------|
| 1/2"      | 1/8"       | 3/8"       | 2-1/8"         | 327-1321  |
| 3/4       | 3/16       | 3/8        | 2-1/8          | 327-1487  |
| 1         | 5/16       | 1/2        | 2-1/2          | 327-1644  |
| 1-1/2     | 1/2        | 3/4        | 2-3/4          | 327-1826  |

60° Chamfer Angle

| Cut. Dia. | Cut. Width | Shank Dia. | Overall Length | Order No. |
|-----------|------------|------------|----------------|-----------|
| 1/2"      | 7/32"      | 3/8"       | 2-1/8"         | 327-2329  |
| 3/4       | 5/16       | 3/8        | 2-1/8          | 327-2485  |
| 1         | 7/16       | 1/2        | 2-1/2          | 327-2642  |
| 1-1/2     | 5/8        | 3/4        | 2-3/4          | 327-2824  |

### Double Angle Shank Type Cutters

High Speed Steel & Cobalt

- General purpose use
- Extends tools life
- Used for aggressive machining of steels



60° Double

| Cut. Dia. | Cut. Thick. | Shank Dia. | Overall Length | HSS Order No. | M42 HSS Order No. | M35 HCC Order No. |
|-----------|-------------|------------|----------------|---------------|-------------------|-------------------|
| 3/4"      | 3/16"       | 3/8"       | 2-3/8"         | 328-8052      | 327-7052          | 327-8052          |
| 1         | 5/16        | 1/2        | 2-27/32        | 328-8102      | 327-7102          | 327-8102          |
| 1-3/8     | 7/16        | 5/8        | 3-7/32         | 328-8151      | 327-7151          | 327-8151          |
| 1-1/2     | 1/2         | 5/8        | 3-3/8          | 328-8201      | 327-7201          | 327-8201          |
| 1-7/8     | 5/8         | 3/4        | 3-25/32        | 328-8250      | 327-7250          | 327-8250          |
| 2-1/4     | 3/4         | 7/8        | 4-5/32         | 328-8300      | 327-7300          | 327-8300          |

90° Double

| Cut. Dia. | Cut. Thick. | Shank Dia. | Overall Length | HSS Order No. | M42 HSS Order No. | M35 HSS Order No. |
|-----------|-------------|------------|----------------|---------------|-------------------|-------------------|
| 3/4"      | 1/4"        | 3/8        | 2-7/16         | 328-9050      | 327-0050          | 327-9050          |
| 1         | 3/8         | 1/2        | 2-29/32        | 328-9100      | 327-0100          | 327-9100          |
| 1-3/8     | 1/2         | 5/8        | 3-9/32         | 328-9159      | 327-0159          | 327-9159          |
| 1-1/2     | 9/16        | 5/8        | 3-7/16         | 328-9209      | 327-0209          | 327-9209          |
| 1-7/8     | 5/8         | 3/4        | 3-25/32        | 328-9258      | 327-0258          | 327-9258          |
| 2-1/4     | 3/4         | 7/8        | 4-5/32         | 328-9308      | 327-0308          | 327-9308          |

## Module Involute Gear Cutters

### High Speed Steel

Applications:

- Specialty cutting tools designed for milling gears.
- For cutting the teeth to suit a special gear shape called an involute form
- Designed as arbor mounted cutters for machine tools.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- For optimal performance and the best tools life the correct cutting speeds and feeds must be used and suitable lubricating/cutting oils or appropriate coolant fluids are recommended.

Features:

- For finishing with a 14-1/2° or 20° pressure angle
- 8 Cutters are made for each module.
- Form relieved to allow resharpening many times without changing the form.

Technical Data:

- Manufactured from high speed steel.
- Ground from solid
- Straight teeth on periphery of cutters.
- Made to suit pitch diameters of 2" to 48" for either 14-1/2° or 20° pressure angle gears.
- Cutter sets can accommodate gears from 12 teeth to a rack gear.
- Bright finish.



| Cutter Number | Range of Teeth Cut |
|---------------|--------------------|
| # 1           | 135 to rack        |
| # 2           | 55-134             |
| # 3           | 35-54              |
| # 4           | 26-34              |
| # 5           | 21-25              |
| # 6           | 17-20              |
| # 7           | 14-16              |
| # 8           | 12-13              |

### 14-1/2° Pressure Angle Module Involute Gear Cutters

| Module | Cutter Diameter | Arbor Hole | #1 Order No. | #2 Order No. | #3 Order No. | #4 Order No. | #5 Order No. | #6 Order No. | #7 Order No. | #8 Order No. |
|--------|-----------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1"     | 2"              | 1"         | 318-1701     | 318-1702     | 318-1703     | 318-1704     | 318-1705     | 318-1706     | 318-1707     | 318-1708     |
| 1-1/4  | 2               | 1          | 318-1711     | 318-1712     | 318-1713     | 318-1714     | 318-1715     | 318-1716     | 318-1717     | 318-1718     |
| 1-1/2  | 2               | 1          | 318-1721     | 318-1722     | 318-1723     | 318-1724     | 318-1725     | 318-1726     | 318-1727     | 318-1728     |
| 1-3/4  | 2-1/4           | 1          | 318-1731     | 318-1732     | 318-1733     | 318-1734     | 318-1735     | 318-1736     | 318-1737     | 318-1738     |
| 2      | 2-1/2           | 1          | 318-1741     | 318-1742     | 318-1743     | 318-1744     | 318-1745     | 318-1746     | 318-1747     | 318-1748     |
| 2-1/4  | 2-1/2           | 1          | 318-1751     | 318-1752     | 318-1753     | 318-1754     | 318-1755     | 318-1756     | 318-1757     | 318-1758     |
| 2-1/2  | 2-1/2           | 1          | 318-1761     | 318-1762     | 318-1763     | 318-1764     | 318-1765     | 318-1766     | 318-1767     | 318-1768     |
| 2-3/4  | 2-1/2           | 1          | 318-1771     | 318-1772     | 318-1773     | 318-1774     | 318-1775     | 318-1776     | 318-1777     | 318-1778     |
| 3      | 2-1/2           | 1          | 318-1781     | 318-1782     | 318-1783     | 318-1784     | 318-1785     | 318-1786     | 318-1787     | 318-1788     |
| 3-1/4  | 2-1/2           | 1-1/4      | 318-1791     | 318-1792     | 318-1793     | 318-1794     | 318-1795     | 318-1796     | 318-1797     | 318-1798     |
| 3-1/2  | 2-1/2           | 1-1/4      | 318-1801     | 318-1802     | 318-1803     | 318-1804     | 318-1805     | 318-1806     | 318-1807     | 318-1808     |
| 4      | 3               | 1          | 318-1891     | 318-1892     | 318-1893     | 318-1894     | 318-1895     | 318-1896     | 318-1897     | 318-1898     |

### 20° Pressure Angle Module Involute Gear Cutters

| Module | Cutter Diameter | Arbor Hole | #1 Order No. | #2 Order No. | #3 Order No. | #4 Order No. | #5 Order No. | #6 Order No. | #7 Order No. | #8 Order No. |
|--------|-----------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1"     | 2"              | 1"         | 318-1291     | 318-1292     | 318-1293     | 318-1294     | 318-1295     | 318-1296     | 318-1297     | 318-1298     |
| 1-1/4  | 2               | 1          | 318-1301     | 318-1302     | 318-1303     | 318-1304     | 318-1305     | 318-1306     | 318-1307     | 318-1308     |
| 1-1/2  | 2-1/4           | 1          | 318-1311     | 318-1312     | 318-1313     | 318-1314     | 318-1315     | 318-1316     | 318-1317     | 318-1318     |
| 1-3/4  | 2-1/4           | 1          | 318-1321     | 318-1322     | 318-1323     | 318-1324     | 318-1325     | 318-1326     | 318-1327     | 318-1328     |
| 2      | 2-1/2           | 1          | 318-1331     | 318-1332     | 318-1333     | 318-1334     | 318-1335     | 318-1336     | 318-1337     | 318-1338     |
| 2-1/4  | 2-5/8           | 1          | 318-1341     | 318-1342     | 318-1343     | 318-1344     | 318-1345     | 318-1346     | 318-1347     | 318-1348     |
| 2-1/2  | 2-3/4           | 1          | 318-1351     | 318-1352     | 318-1353     | 318-1354     | 318-1355     | 318-1356     | 318-1357     | 318-1358     |
| 2-3/4  | 2-7/8           | 1          | 318-1361     | 318-1362     | 318-1363     | 318-1364     | 318-1365     | 318-1366     | 318-1367     | 318-1368     |
| 3      | 2-7/8           | 1          | 318-1371     | 318-1372     | 318-1373     | 318-1374     | 318-1375     | 318-1376     | 318-1377     | 318-1378     |
| 3-1/4  | 3               | 1          | 318-1381     | 318-1382     | 318-1383     | 318-1384     | 318-1385     | 318-1386     | 318-1387     | 318-1388     |
| 3-1/2  | 3               | 1          | 318-1391     | 318-1392     | 318-1393     | 318-1394     | 318-1395     | 318-1396     | 318-1397     | 318-1398     |
| 3-3/4  | 3-1/4           | 1          | 318-1401     | 318-1402     | 318-1403     | 318-1404     | 318-1405     | 318-1406     | 318-1407     | 318-1408     |
| 4      | 3-1/4           | 1          | 318-1501     | 318-1502     | 318-1503     | 318-1504     | 318-1505     | 318-1506     | 318-1507     | 318-1508     |
| 4-1/4  | 4               | 1          | 318-1511     | 318-1512     | 318-1513     | 318-1514     | 318-1515     | 318-1516     | 318-1517     | 318-1518     |
| 4-1/2  | 4               | 1          | 318-1521     | 318-1522     | 318-1523     | 318-1524     | 318-1525     | 318-1526     | 318-1527     | 318-1528     |
| 5      | 4               | 1          | 318-1531     | 318-1532     | 318-1533     | 318-1534     | 318-1535     | 318-1536     | 318-1537     | 318-1538     |
| 5-1/2  | 4               | 1          | 318-1541     | 318-1542     | 318-1543     | 318-1544     | 318-1545     | 318-1546     | 318-1547     | 318-1548     |
| 6      | 4               | 1          | 318-1551     | 318-1552     | 318-1553     | 318-1554     | 318-1555     | 318-1556     | 318-1557     | 318-1558     |
| 7      | 4-3/4           | 1-1/4      | 318-1561     | 318-1562     | 318-1563     | 318-1564     | 318-1565     | 318-1566     | 318-1567     | 318-1568     |
| 8      | 4-3/4           | 1-1/4      | 318-1571     | 318-1572     | 318-1573     | 318-1574     | 318-1575     | 318-1576     | 318-1577     | 318-1578     |
| 8-1/2  | 5-1/4           | 1-1/2      | 318-1581     | 318-1582     | 318-1583     | 318-1584     | 318-1585     | 318-1586     | 318-1587     | 318-1588     |
| 9      | 5-1/4           | 1-1/2      | 318-1591     | 318-1592     | 318-1593     | 318-1594     | 318-1595     | 318-1596     | 318-1597     | 318-1598     |
| 9-1/2  | 5-1/2           | 1-1/2      | 318-1601     | 318-1602     | 318-1603     | 318-1604     | 318-1605     | 318-1606     | 318-1607     | 318-1608     |
| 10     | 5-1/2           | 1-1/2      | 318-1691     | 318-1692     | 318-1693     | 318-1694     | 318-1695     | 318-1696     | 318-1697     | 318-1698     |

### Metric Module Involute Gear Cutters

#### High Speed Steel, 20° Pressure Angle

##### Applications:

- Specialty cutting tools designed for milling gears.
- For cutting the teeth to suit a special gear shape called an involute form
- Designed as arbor mounted cutters for machine tools.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- For optimal performance and the best tools life the correct cutting speeds and feeds must be used and suitable lubricating/cutting oils or appropriate coolant fluids are recommended.



##### Features:

- For finishing with a 20° pressure angle
- 8 Cutters are made for each module.
- Form relieved to allow resharpener many times without changing the form.

##### Technical Data:

- Manufactured from high speed steel.
- Ground from solid
- Straight teeth on periphery of cutters.
- Made to suit pitch diameters of 2" to 48" for either 14-1/2° or 20° pressure angle gears.
- Cutter sets can accommodate gears from 12 teeth to a rack gear.
- Bright finish.

| Cutter Number | Range of Teeth Cut |
|---------------|--------------------|
| # 1           | 12-13              |
| # 2           | 14-16              |
| # 3           | 17-20              |
| # 4           | 21-25              |
| # 5           | 26-34              |
| # 6           | 35-54              |
| # 7           | 55-134             |
| # 8           | 135 to rack        |

| Module | Cutter Diameter | Arbor Hole | #1 Order No. | #2 Order No. | #3 Order No. | #4 Order No. | #5 Order No. | #6 Order No. | #7 Order No. | #8 Order No. |
|--------|-----------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 0.3    | 40              | 16         | 317-1601     | 317-1602     | 317-1603     | 317-1604     | 317-1605     | 317-1606     | 317-1607     | 317-1608     |
| 0.35   | 40              | 16         | 317-1611     | 317-1612     | 317-1613     | 317-1614     | 317-1615     | 317-1616     | 317-1617     | 317-1618     |
| 0.4    | 40              | 16         | 317-1621     | 317-1622     | 317-1623     | 317-1624     | 317-1625     | 317-1626     | 317-1627     | 317-1628     |
| 0.5    | 40              | 16         | 317-1631     | 317-1632     | 317-1633     | 317-1634     | 317-1635     | 317-1636     | 317-1637     | 317-1638     |
| 0.6    | 40              | 16         | 317-1641     | 317-1642     | 317-1643     | 317-1644     | 317-1645     | 317-1646     | 317-1647     | 317-1648     |
| 0.7    | 40              | 16         | 317-1651     | 317-1652     | 317-1653     | 317-1654     | 317-1655     | 317-1656     | 317-1657     | 317-1658     |
| 0.8    | 40              | 16         | 317-1661     | 317-1662     | 317-1663     | 317-1664     | 317-1665     | 317-1666     | 317-1667     | 317-1668     |
| 0.9    | 40              | 16         | 317-1671     | 317-1672     | 317-1673     | 317-1674     | 317-1675     | 317-1676     | 317-1677     | 317-1678     |
| 1      | 50              | 22         | 317-1681     | 317-1682     | 317-1683     | 317-1684     | 317-1685     | 317-1686     | 317-1687     | 317-1688     |
| 1.25   | 50              | 22         | 317-1691     | 317-1692     | 317-1693     | 317-1694     | 317-1695     | 317-1696     | 317-1697     | 317-1698     |
| 1.5    | 55              | 22         | 317-1701     | 317-1702     | 317-1703     | 317-1704     | 317-1705     | 317-1706     | 317-1707     | 317-1708     |
| 1.75   | 60              | 22         | 317-1711     | 317-1712     | 317-1713     | 317-1714     | 317-1715     | 317-1716     | 317-1717     | 317-1718     |
| 2      | 60              | 22         | 317-1721     | 317-1722     | 317-1723     | 317-1724     | 317-1725     | 317-1726     | 317-1727     | 317-1728     |
| 2.25   | 60              | 22         | 317-1731     | 317-1732     | 317-1733     | 317-1734     | 317-1735     | 317-1736     | 317-1737     | 317-1738     |
| 2.5    | 65              | 22         | 317-1741     | 317-1742     | 317-1743     | 317-1744     | 317-1745     | 317-1746     | 317-1747     | 317-1748     |
| 2.75   | 70              | 27         | 317-1751     | 317-1752     | 317-1753     | 317-1754     | 317-1755     | 317-1756     | 317-1757     | 317-1758     |
| 3      | 70              | 27         | 317-1761     | 317-1762     | 317-1763     | 317-1764     | 317-1765     | 317-1766     | 317-1767     | 317-1768     |
| 3.25   | 75              | 27         | 317-1771     | 317-1772     | 317-1773     | 317-1774     | 317-1775     | 317-1776     | 317-1777     | 317-1778     |
| 3.5    | 75              | 27         | 317-1781     | 317-1782     | 317-1783     | 317-1784     | 317-1785     | 317-1786     | 317-1787     | 317-1788     |
| 3.75   | 75              | 27         | 317-1791     | 317-1792     | 317-1793     | 317-1794     | 317-1795     | 317-1796     | 317-1797     | 317-1798     |
| 4      | 80              | 27         | 317-1801     | 317-1802     | 317-1803     | 317-1804     | 317-1805     | 317-1806     | 317-1807     | 317-1808     |
| 4.5    | 80              | 27         | 317-1811     | 317-1812     | 317-1813     | 317-1814     | 317-1815     | 317-1816     | 317-1817     | 317-1818     |
| 5      | 90              | 32         | 317-1821     | 317-1822     | 317-1823     | 317-1824     | 317-1825     | 317-1826     | 317-1827     | 317-1828     |
| 5.5    | 95              | 32         | 317-1831     | 317-1832     | 317-1833     | 317-1834     | 317-1835     | 317-1836     | 317-1837     | 317-1838     |
| 6      | 100             | 32         | 317-1841     | 317-1842     | 317-1843     | 317-1844     | 317-1845     | 317-1846     | 317-1847     | 317-1848     |
| 6.5    | 105             | 32         | 317-1851     | 317-1852     | 317-1853     | 317-1854     | 317-1855     | 317-1856     | 317-1857     | 317-1858     |
| 7      | 105             | 32         | 317-1861     | 317-1862     | 317-1863     | 317-1864     | 317-1865     | 317-1866     | 317-1867     | 317-1868     |
| 8      | 110             | 32         | 317-1871     | 317-1872     | 317-1873     | 317-1874     | 317-1875     | 317-1876     | 317-1877     | 317-1878     |
| 9      | 115             | 32         | 317-1881     | 317-1882     | 317-1883     | 317-1884     | 317-1885     | 317-1886     | 317-1887     | 317-1888     |
| 10     | 120             | 32         | 317-1891     | 317-1892     | 317-1893     | 317-1894     | 317-1895     | 317-1896     | 317-1897     | 317-1898     |
| 11     | 135             | 40         | 317-1901     | 317-1902     | 317-1903     | 317-1904     | 317-1905     | 317-1906     | 317-1907     | 317-1908     |
| 12     | 145             | 40         | 317-1911     | 317-1912     | 317-1913     | 317-1914     | 317-1915     | 317-1916     | 317-1917     | 317-1918     |
| 14     | 160             | 40         | 317-1921     | 317-1922     | 317-1923     | 317-1924     | 317-1925     | 317-1926     | 317-1927     | 317-1928     |
| 16     | 170             | 40         | 317-1931     | 317-1932     | 317-1933     | 317-1934     | 317-1935     | 317-1936     | 317-1937     | 317-1938     |

## 14-1/2° Pressure Angle Involute Gear Cutters

### High Speed Steel

- For spur gears with 14-1/2°.
- 8 Cutters are made for each pitch.
- Form relieved to allow resharpening many times without changing the form.



| Pitch | Cutter Diameter | Arbor Hole | #1 Order No. | #2 Order No. | #3 Order No. | #4 Order No. | #5 Order No. | #6 Order No. | #7 Order No. | #8 Order No. |
|-------|-----------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 2     | 5-3/4"          | 1-1/2"     | 319-0014     | 319-0022     | 319-0030     | 319-0048     | 319-0055     | 319-0063     | 319-0071     | 319-0089     |
| 2-1/2 | 5-3/4           | 1-1/2      | 319-0113     | 319-0121     | 319-0139     | 319-0147     | 319-0154     | 319-0162     | 319-0170     | 319-0188     |
| 2-1/2 | 5-3/4           | 1          | 319-0115     | 319-0125     | 319-0135     | 319-0145     | 319-0155     | 319-0165     | 319-0175     | 319-0185     |
| 3     | 5-3/4           | 1-1/2      | 319-0310     | 319-0320     | 319-0330     | 319-0340     | 319-0350     | 319-0363     | 319-0370     | 319-0380     |
| 3     | 5-1/4           | 1-1/2      | 319-0314     | 319-0324     | 319-0334     | 319-0344     | 319-0354     | 319-0364     | 319-0374     | 319-0384     |
| 3     | 5-1/4           | 1-1/4      | 319-0311     | 319-0329     | 319-0337     | 319-0345     | 319-0352     | 319-0360     | 319-0378     | 319-0386     |
| 3     | 4-3/4           | 1-1/4      | 319-0319     | 319-0328     | 319-0339     | 319-0349     | 319-0359     | 319-0369     | 319-0379     | 319-0389     |
| 4     | 4-1/2           | 1-1/2      | 319-0413     | 319-0423     | 319-0433     | 319-0443     | 319-0453     | 319-0463     | 319-0473     | 319-0483     |
| 4     | 4-1/4           | 1-1/4      | 319-0410     | 319-0428     | 319-0436     | 319-0444     | 319-0451     | 319-0469     | 319-0477     | 319-0485     |
| 4     | 3-5/8           | 1          | 319-0412     | 319-0422     | 319-0432     | 319-0442     | 319-0452     | 319-0462     | 319-0472     | 319-0482     |
| 4     | 3-3/8           | 1          | 319-0414     | 319-0394     | 319-0402     | 319-0445     | 319-0454     | 319-0464     | 319-0474     | 319-0484     |
| 5     | 3-3/4           | 1-1/4      | 319-0511     | 319-0521     | 319-0531     | 319-0541     | 319-0551     | 319-0561     | 319-0571     | 319-0581     |
| 5     | 3-5/8           | 1          | 319-0519     | 319-0527     | 319-0535     | 319-0543     | 319-0550     | 319-0568     | 319-0576     | 319-0584     |
| 5     | 3-5/8           | 1-1/4      | 319-0512     | 319-0522     | 319-0532     | 319-0542     | 319-0552     | 319-0562     | 319-0572     | 319-0582     |
| 5     | 3-3/8           | 1          | 319-0516     | 319-0526     | 319-0536     | 319-0546     | 319-0556     | 319-0566     | 319-0577     | 319-0586     |
| 6     | 3-1/2           | 1-1/4      | 319-0610     | 319-0620     | 319-0630     | 319-0640     | 319-0650     | 319-0660     | 319-0670     | 319-0680     |
| 6     | 3-1/8           | 1-1/4      | 319-0611     | 319-0621     | 319-0631     | 319-0641     | 319-0651     | 319-0661     | 319-0671     | 319-0681     |
| 6     | 3-1/8           | 1          | 319-0618     | 319-0626     | 319-0634     | 319-0642     | 319-0659     | 319-0667     | 319-0675     | 319-0683     |
| 7     | 3-3/8           | 1-1/4      | 319-0719     | 319-0729     | 319-0739     | 319-0749     | 319-0759     | 319-0769     | 319-0779     | 319-0789     |
| 7     | 2-7/8           | 1          | 319-0717     | 319-0725     | 319-0733     | 319-0741     | 319-0758     | 319-0766     | 319-0774     | 319-0782     |
| 8     | 3-1/4           | 1-1/4      | 319-0818     | 319-0828     | 319-0838     | 319-0848     | 319-0858     | 319-0868     | 319-0878     | 319-0888     |
| 8     | 2-7/8           | 1          | 319-0816     | 319-0824     | 319-0832     | 319-0840     | 319-0857     | 319-0865     | 319-0873     | 319-0881     |
| 9     | 3-1/8           | 1-1/4      | 319-0917     | 319-0927     | 319-0937     | 319-0947     | 319-0957     | 319-0967     | 319-0977     | 319-0987     |
| 9     | 2-3/4           | 1          | 319-0915     | 319-0923     | 319-0931     | 319-0949     | 319-0956     | 319-0964     | 319-0972     | 319-0980     |
| 10    | 2-3/4           | 1          | 319-1012     | 319-1020     | 319-1038     | 319-1046     | 319-1053     | 319-1061     | 319-1079     | 319-1087     |
| 10    | 2-3/8           | 7/8        | 319-1014     | 319-1024     | 319-1034     | 319-1044     | 319-1054     | 319-1064     | 319-1074     | 319-1084     |
| 11    | 2-5/8           | 1          | 319-1114     | 319-1124     | 319-1134     | 319-1144     | 319-1154     | 319-1164     | 319-1174     | 319-1184     |
| 11    | 2-3/8           | 7/8        | 319-1111     | 319-1129     | 319-1137     | 319-1145     | 319-1152     | 319-1160     | 319-1178     | 319-1186     |
| 12    | 2-5/8           | 1          | 319-1210     | 319-1228     | 319-1236     | 319-1244     | 319-1251     | 319-1269     | 319-1277     | 319-1285     |
| 12    | 2-1/4           | 7/8        | 319-1213     | 319-1223     | 319-1233     | 319-1243     | 319-1253     | 319-1263     | 319-1273     | 319-1283     |
| 13    | 2-5/8           | 1          | 319-1310     | 319-1320     | 319-1330     | 319-1340     | 319-1350     | 319-1360     | 319-1370     | 319-1380     |
| 13    | 2-1/4           | 7/8        | 319-1317     | 319-1327     | 319-1337     | 319-1347     | 319-1357     | 319-1367     | 319-1377     | 319-1387     |
| 14    | 2-1/2           | 1          | 319-1418     | 319-1426     | 319-1434     | 319-1442     | 319-1459     | 319-1467     | 319-1475     | 319-1483     |
| 14    | 2-1/8           | 7/8        | 319-1411     | 319-1421     | 319-1431     | 319-1441     | 319-1451     | 319-1461     | 319-1471     | 319-1481     |
| 16    | 2-1/2           | 1          | 319-1618     | 319-1628     | 319-1638     | 319-1648     | 319-1658     | 319-1668     | 319-1678     | 319-1688     |
| 16    | 2-1/8           | 1          | 319-1615     | 319-1626     | 319-1636     | 319-1646     | 319-1656     | 319-1666     | 319-1676     | 319-1686     |
| 16    | 2-1/8           | 7/8        | 319-1619     | 319-1629     | 319-1639     | 319-1649     | 319-1659     | 319-1669     | 319-1679     | 319-1689     |
| 16    | 2-3/8           | 1          | 319-1616     | 319-1624     | 319-1632     | 319-1640     | 319-1657     | 319-1665     | 319-1673     | 319-1681     |
| 18    | 2-3/8           | 1          | 319-1814     | 319-1822     | 319-1830     | 319-1848     | 319-1855     | 319-1863     | 319-1871     | 319-1889     |
| 18    | 2               | 7/8        | 319-1816     | 319-1826     | 319-1836     | 319-1846     | 319-1856     | 319-1866     | 319-1876     | 319-1886     |
| 20    | 2-3/8           | 1          | 319-2010     | 319-2028     | 319-2036     | 319-2044     | 319-2051     | 319-2069     | 319-2077     | 319-2085     |
| 20    | 2               | 7/8        | 319-2012     | 319-2022     | 319-2032     | 319-2042     | 319-2052     | 319-2062     | 319-2072     | 319-2082     |
| 22    | 2-1/4           | 1          | 319-2211     | 319-2221     | 319-2231     | 319-2241     | 319-2251     | 319-2261     | 319-2271     | 319-2281     |
| 22    | 2               | 7/8        | 319-2218     | 319-2226     | 319-2234     | 319-2242     | 319-2259     | 319-2267     | 319-2275     | 319-2283     |
| 24    | 2-1/4           | 1          | 319-2418     | 319-2428     | 319-2438     | 319-2448     | 319-2458     | 319-2468     | 319-2478     | 319-2488     |
| 24    | 1-3/4           | 7/8        | 319-2416     | 319-2424     | 319-2432     | 319-2440     | 319-2457     | 319-2465     | 319-2473     | 319-2481     |
| 26    | 2-1/2           | 1          | 319-2616     | 319-2626     | 319-2636     | 319-2646     | 319-2656     | 319-2666     | 319-2676     | 319-2686     |
| 26    | 2-1/4           | 1          | 319-2613     | 319-2623     | 319-2633     | 319-2643     | 319-2653     | 319-2663     | 319-2673     | 319-2683     |
| 26    | 1-3/4           | 7/8        | 319-2614     | 319-2622     | 319-2630     | 319-2648     | 319-2655     | 319-2661     | 319-2671     | 319-2689     |
| 28    | 2-1/4           | 1          | 319-2815     | 319-2825     | 319-2835     | 319-2845     | 319-2855     | 319-2865     | 319-2875     | 319-2885     |
| 28    | 1-3/4           | 7/8        | 319-2812     | 319-2820     | 319-2836     | 319-2846     | 319-2853     | 319-2861     | 319-2879     | 319-2887     |
| 30    | 2-1/4           | 1          | 319-3011     | 319-3021     | 319-3031     | 319-3041     | 319-3051     | 319-3061     | 319-3071     | 319-3081     |
| 30    | 1-3/4           | 7/8        | 319-3018     | 319-3026     | 319-3034     | 319-3042     | 319-3059     | 319-3067     | 319-3075     | 319-3083     |
| 32    | 2-1/4           | 1          | 319-3218     | 319-3228     | 319-3238     | 319-3248     | 319-3258     | 319-3268     | 319-3278     | 319-3288     |
| 32    | 2-1/4           | 7/8        | 319-3219     | 319-3229     | 319-3239     | 319-3249     | 319-3259     | 319-3269     | 319-3279     | 319-3289     |
| 32    | 1-3/4           | 7/8        | 319-3216     | 319-3224     | 319-3232     | 319-3240     | 319-3257     | 319-3265     | 319-3273     | 319-3281     |
| 34    | 2-1/4           | 1          | 319-3411     | 319-3421     | 319-3431     | 319-3441     | 319-3451     | 319-3461     | 319-3471     | 319-3481     |
| 34    | 1-3/4           | 7/8        | 319-3415     | 319-3425     | 319-3435     | 319-3445     | 319-3455     | 319-3465     | 319-3475     | 319-3485     |
| 36    | 2-1/4           | 1          | 319-3615     | 319-3625     | 319-3635     | 319-3645     | 319-3655     | 319-3665     | 319-3675     | 319-3685     |
| 36    | 1-3/4           | 7/8        | 319-3612     | 319-3620     | 319-3638     | 319-3646     | 319-3653     | 319-3661     | 319-3679     | 319-3687     |
| 40    | 2-1/4           | 1          | 319-4018     | 319-4028     | 319-4038     | 319-4048     | 319-4058     | 319-4068     | 319-4078     | 319-4088     |
| 40    | 1-3/4           | 7/8        | 319-4016     | 319-4024     | 319-4032     | 319-4040     | 319-4057     | 319-4065     | 319-4073     | 319-4081     |
| 48    | 2-1/4           | 1          | 319-4810     | 319-4820     | 319-4830     | 319-4840     | 319-4850     | 319-4860     | 319-4870     | 319-4880     |
| 48    | 1-3/4           | 7/8        | 319-4818     | 319-4826     | 319-4834     | 319-4842     | 319-4859     | 319-4867     | 319-4875     | 319-4883     |

## 20° Pressure Angle Involute Gear Cutters

### High Speed Steel

#### Applications:

- Specialty cutting tools designed for milling gears.
- For cutting the teeth to suit a special gear shape called an involute form
- Designed as arbor mounted cutters for machine tools.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- For optimal performance and the best tools life the correct cutting speeds and feeds must be used and suitable lubricating/cutting oils or appropriate coolant fluids are recommended.
- For spur gears with 20°.
- 8 Cutters are made for each pitch.
- Form relieved to allow resharping many times without changing the form.

| Cutter Number | Range of Teeth Cut |
|---------------|--------------------|
| # 1           | 135 to rack        |
| # 2           | 55-134             |
| # 3           | 35-54              |
| # 4           | 26-34              |
| # 5           | 21-25              |
| # 6           | 17-20              |
| # 7           | 14-16              |
| # 8           | 12-13              |



#### Technical Data:

- Manufactured from high speed steel.
- Ground from solid
- Straight teeth on periphery of cutters.
- Made to suit pitch diameters of 2" to 48" for either 14-1/2° or 20° pressure angle gears.
- Cutter sets can accommodate gears from 12 teeth to a rack gear.
- Bright finish.

| Pitch | Cutter Diameter | Arbor Hole | #1 Order No. | #2 Order No. | #3 Order No. | #4 Order No. | #5 Order No. | #6 Order No. | #7 Order No. | #8 Order No. |
|-------|-----------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 4"    | 4-1/4"          | 1-1/4"     | 318-0414     | 318-0424     | 318-0434     | 318-0444     | 318-0454     | 318-0464     | 318-0474     | 318-0484     |
| 4     | 3-5/8           | 1          | 318-0415     | 318-0425     | 318-0435     | 318-0449     | 318-0455     | 318-0465     | 318-0475     | 318-0485     |
| 4     | 3-1/2           | 1-1/4"     | 318-0413     | 318-0423     | 318-0433     | 318-0443     | 318-0453     | 318-0463     | 318-0473     | 318-0483     |
| 4     | 3-1/2           | 1          | 318-0411     | 318-0429     | 318-0437     | 318-0445     | 318-0452     | 318-0460     | 318-0478     | 318-0486     |
| 5     | 3-3/4           | 1-1/4      | 318-0513     | 318-0523     | 318-0533     | 318-0543     | 318-0553     | 318-0563     | 318-0573     | 318-0583     |
| 5     | 3-3/8           | 1          | 318-0510     | 318-0528     | 318-0536     | 318-0544     | 318-0551     | 318-0569     | 318-0577     | 318-0585     |
| 6     | 3-1/2           | 1-1/4      | 318-0612     | 318-0622     | 318-0632     | 318-0642     | 318-0652     | 318-0662     | 318-0672     | 318-0682     |
| 6     | 3-1/8           | 1          | 318-0619     | 318-0627     | 318-0635     | 318-0643     | 318-0650     | 318-0668     | 318-0676     | 318-0684     |
| 7     | 2-7/8           | 1          | 318-0718     | 318-0726     | 318-0734     | 318-0742     | 318-0759     | 318-0767     | 318-0775     | 318-0783     |
| 8     | 3-1/4           | 1-1/4      | 318-0819     | 318-0829     | 318-0839     | 318-0849     | 318-0859     | 318-0869     | 318-0879     | 318-0889     |
| 8     | 2-7/8           | 1          | 318-0817     | 318-0825     | 318-0833     | 318-0841     | 318-0858     | 318-0866     | 318-0874     | 318-0882     |
| 9     | 2-3/4           | 1          | 318-0916     | 318-0924     | 318-0932     | 318-0940     | 318-0957     | 318-0965     | 318-0973     | 318-0981     |
| 10    | 2-3/4           | 1          | 318-1013     | 318-1021     | 318-1039     | 318-1047     | 318-1054     | 318-1062     | 318-1070     | 318-1088     |
| 10    | 2-3/8           | 7/8        | 318-1015     | 318-1025     | 318-1035     | 318-1045     | 318-1055     | 318-1065     | 318-1075     | 318-1085     |
| 11    | 2-5/8           | 1          | 318-1111     | 318-1121     | 318-1131     | 318-1141     | 318-1151     | 318-1161     | 318-1171     | 318-1181     |
| 12    | 2-5/8           | 1          | 318-1211     | 318-1229     | 318-1237     | 318-1245     | 318-1252     | 318-1260     | 318-1278     | 318-1286     |
| 12    | 2-1/4           | 7/8        | 318-1213     | 318-1223     | 318-1233     | 318-1243     | 318-1253     | 318-1263     | 318-1273     | 318-1283     |
| 14    | 2-1/2           | 1          | 318-1419     | 318-1427     | 318-1435     | 318-1443     | 318-1450     | 318-1468     | 318-1476     | 318-1484     |
| 14    | 2-1/8           | 7/8        | 318-1412     | 318-1422     | 318-1432     | 318-1442     | 318-1452     | 318-1462     | 318-1472     | 318-1482     |
| 16    | 2-1/2           | 1          | 318-1617     | 318-1625     | 318-1633     | 318-1641     | 318-1658     | 318-1666     | 318-1674     | 318-1682     |
| 16    | 2-1/8           | 7/8        | 318-1619     | 318-1629     | 318-1639     | 318-1649     | 318-1659     | 318-1669     | 318-1679     | 318-1689     |
| 18    | 2-3/8           | 1          | 318-1815     | 318-1823     | 318-1831     | 318-1849     | 318-1856     | 318-1864     | 318-1872     | 318-1880     |
| 18    | 2               | 7/8        | 318-1817     | 318-1827     | 318-1837     | 318-1847     | 318-1857     | 318-1867     | 318-1877     | 318-1887     |
| 20    | 2-3/8           | 1          | 318-2111     | 318-2129     | 318-2137     | 318-2145     | 318-2152     | 318-2160     | 318-2178     | 318-2186     |
| 20    | 2               | 7/8        | 318-2113     | 318-2123     | 318-2133     | 318-2143     | 318-2153     | 318-2163     | 318-2173     | 318-2183     |
| 22    | 2-1/4           | 1          | 318-2212     | 318-2222     | 318-2232     | 318-2242     | 318-2252     | 318-2262     | 318-2272     | 318-2282     |
| 22    | 2               | 1          | 318-2213     | 318-2223     | 318-2233     | 318-2243     | 318-2253     | 318-2263     | 318-2273     | 318-2283     |
| 22    | 2               | 7/8        | 318-2214     | 318-2224     | 318-2234     | 318-2244     | 318-2254     | 318-2264     | 318-2274     | 318-2284     |
| 24    | 2-1/4           | 1          | 318-2417     | 318-2425     | 318-2433     | 318-2441     | 318-2458     | 318-2466     | 318-2474     | 318-2482     |
| 24    | 1-3/4           | 7/8        | 318-2419     | 318-2429     | 318-2439     | 318-2449     | 318-2459     | 318-2469     | 318-2479     | 318-2489     |
| 26    | 2-1/4           | 1          | 318-2611     | 318-2621     | 318-2631     | 318-2641     | 318-2651     | 318-2661     | 318-2671     | 318-2681     |
| 26    | 1-3/4           | 7/8        | 318-2617     | 318-2627     | 318-2637     | 318-2647     | 318-2657     | 318-2667     | 318-2677     | 318-2687     |
| 28    | 2-1/4           | 1          | 318-2812     | 318-2822     | 318-2832     | 318-2842     | 318-2852     | 318-2862     | 318-2872     | 318-2882     |
| 28    | 1-3/4           | 7/8        | 318-2817     | 318-2827     | 318-2837     | 318-2847     | 318-2857     | 318-2867     | 318-2877     | 318-2887     |
| 30    | 2-1/4           | 1          | 318-3112     | 318-3122     | 318-3132     | 318-3142     | 318-3152     | 318-3162     | 318-3172     | 318-3182     |
| 30    | 1-3/4           | 7/8        | 318-3117     | 318-3127     | 318-3137     | 318-3147     | 318-3157     | 318-3167     | 318-3177     | 318-3187     |
| 32    | 2-1/4           | 1          | 318-3118     | 318-3128     | 318-3138     | 318-3148     | 318-3158     | 318-3168     | 318-3178     | 318-3188     |
| 32    | 1-3/4           | 7/8        | 318-3217     | 318-3225     | 318-3233     | 318-3241     | 318-3258     | 318-3266     | 318-3274     | 318-3282     |
| 36    | 2-1/4           | 1          | 318-3611     | 318-3621     | 318-3631     | 318-3641     | 318-3651     | 318-3661     | 318-3671     | 318-3681     |
| 36    | 1-3/4           | 7/8        | 318-3617     | 318-3627     | 318-3637     | 318-3647     | 318-3657     | 318-3667     | 318-3677     | 318-3687     |
| 40    | 2-1/4           | 1          | 318-4019     | 318-4029     | 318-4039     | 318-4049     | 318-4059     | 318-4069     | 318-4079     | 318-4089     |
| 40    | 1-3/4           | 7/8        | 318-4017     | 318-4025     | 318-4033     | 318-4041     | 318-4058     | 318-4066     | 318-4074     | 318-4082     |
| 44    | 1-3/4           | 7/8        | 318-4417     | 318-4427     | 318-4437     | 318-4447     | 318-4457     | 318-4467     | 318-4477     | 318-4487     |
| 48    | 2-1/4           | 1          | 318-4811     | 318-4821     | 318-4831     | 318-4841     | 318-4851     | 318-4861     | 318-4871     | 318-4881     |
| 48    | 1-3/4           | 7/8        | 318-4819     | 318-4827     | 318-4835     | 318-4843     | 318-4850     | 318-4868     | 318-4876     | 318-4884     |

# Slitting Saws

## Plain Metal Slitting Saws

### High Speed Steel

- Used in slitting and slotting.
- Sides are concave for clearance.
- Supplied with Keyway.



| Cutting Face |       |      |       |           | Hole No. of |       |       |       |           | Cutting Face |       |      |       |           | Hole No. of |       |      |       |           |
|--------------|-------|------|-------|-----------|-------------|-------|-------|-------|-----------|--------------|-------|------|-------|-----------|-------------|-------|------|-------|-----------|
| Dia.         | Width | Size | Teeth | Order No. | Dia.        | Width | Size  | Teeth | Order No. | Dia.         | Width | Size | Teeth | Order No. | Dia.        | Width | Size | Teeth | Order No. |
| 2"           | 1/16" | 1/2" | 28    | 370-4004  | 4-1/2"      | 3/32" | 1"    | 36    | 370-4506  |              |       |      |       |           |             |       |      |       |           |
| 2            | 1/8   | 1/2  | 28    | 370-4008  | 4-1/2       | 1/8   | 1     | 36    | 370-4508  |              |       |      |       |           |             |       |      |       |           |
| 2-1/2        | 3/64  | 3/8  | 28    | 370-4013  | 5           | 3/64  | 1     | 40    | 370-4603  |              |       |      |       |           |             |       |      |       |           |
| 2-1/2        | 1/32  | 7/8  | 28    | 370-4102  | 5           | 1/16  | 1     | 40    | 370-4604  |              |       |      |       |           |             |       |      |       |           |
| 2-1/2        | 3/64  | 7/8  | 28    | 370-4103  | 5           | 5/64  | 1     | 40    | 370-4605  |              |       |      |       |           |             |       |      |       |           |
| 2-1/2        | 1/16  | 7/8  | 28    | 370-4104  | 5           | 3/32  | 1     | 40    | 370-4606  |              |       |      |       |           |             |       |      |       |           |
| 2-1/2        | 3/32  | 7/8  | 28    | 370-4106  | 5           | 7/64  | 1     | 40    | 370-4607  |              |       |      |       |           |             |       |      |       |           |
| 2-1/2        | 1/8   | 7/8  | 28    | 370-4108  | 5           | 1/8   | 1     | 40    | 370-4608  |              |       |      |       |           |             |       |      |       |           |
| 3            | 1/64  | 1    | 30    | 370-4201  | 5           | 9/64  | 1     | 40    | 370-4609  |              |       |      |       |           |             |       |      |       |           |
| 3            | 1/32  | 1    | 30    | 370-4202  | 5           | 5/32  | 1     | 40    | 370-4610  |              |       |      |       |           |             |       |      |       |           |
| 3            | 3/64  | 1    | 30    | 370-4203  | 5           | 3/16  | 1     | 40    | 370-4612  |              |       |      |       |           |             |       |      |       |           |
| 3            | 1/16  | 1    | 30    | 370-4204  | 5           | 1/16  | 1-1/4 | 40    | 370-4704  |              |       |      |       |           |             |       |      |       |           |
| 3            | 5/64  | 1    | 30    | 370-4205  | 5           | 3/32  | 1-1/4 | 40    | 370-4706  |              |       |      |       |           |             |       |      |       |           |
| 3            | 3/32  | 1    | 30    | 370-4206  | 5           | 1/8   | 1-1/4 | 40    | 370-4708  |              |       |      |       |           |             |       |      |       |           |
| 3            | 7/64  | 1    | 30    | 370-4207  | 5           | 5/32  | 1-1/4 | 40    | 370-4710  |              |       |      |       |           |             |       |      |       |           |
| 3            | 1/8   | 1    | 30    | 370-4208  | 5           | 3/16  | 1-1/4 | 40    | 370-4712  |              |       |      |       |           |             |       |      |       |           |
| 3            | 9/64  | 1    | 30    | 370-4209  | 6           | 3/64  | 1     | 42    | 370-4803  |              |       |      |       |           |             |       |      |       |           |
| 3            | 5/32  | 1    | 30    | 370-4210  | 6           | 1/16  | 1     | 42    | 370-4804  |              |       |      |       |           |             |       |      |       |           |
| 3-1/2        | 1/32  | 1    | 30    | 370-4302  | 6           | 5/64  | 1     | 42    | 370-4805  |              |       |      |       |           |             |       |      |       |           |
| 3-1/2        | 3/64  | 1    | 30    | 370-4303  | 6           | 3/32  | 1     | 42    | 370-4806  |              |       |      |       |           |             |       |      |       |           |
| 3-1/2        | 1/16  | 1    | 30    | 370-4304  | 6           | 7/64  | 1     | 42    | 370-4807  |              |       |      |       |           |             |       |      |       |           |
| 3-1/2        | 5/64  | 1    | 30    | 370-4305  | 6           | 1/8   | 1     | 42    | 370-4808  |              |       |      |       |           |             |       |      |       |           |
| 3-1/2        | 3/32  | 1    | 30    | 370-4306  | 6           | 9/64  | 1     | 42    | 370-4809  |              |       |      |       |           |             |       |      |       |           |
| 3-1/2        | 1/8   | 1    | 30    | 370-4308  | 6           | 5/32  | 1     | 42    | 370-4810  |              |       |      |       |           |             |       |      |       |           |
| 4            | 1/64  | 1    | 36    | 370-4401  | 6           | 3/16  | 1     | 42    | 370-4812  |              |       |      |       |           |             |       |      |       |           |
| 4            | 1/32  | 1    | 36    | 370-4402  | 6           | 1/16  | 1-1/4 | 42    | 370-4904  |              |       |      |       |           |             |       |      |       |           |
| 4            | 3/64  | 1    | 36    | 370-4403  | 6           | 3/32  | 1-1/4 | 42    | 370-4906  |              |       |      |       |           |             |       |      |       |           |
| 4            | 1/16  | 1    | 36    | 370-4404  | 6           | 1/8   | 1-1/4 | 42    | 370-4908  |              |       |      |       |           |             |       |      |       |           |
| 4            | 5/64  | 1    | 36    | 370-4405  | 6           | 5/32  | 1-1/4 | 42    | 370-4910  |              |       |      |       |           |             |       |      |       |           |
| 4            | 3/32  | 1    | 36    | 370-4406  | 6           | 3/16  | 1-1/4 | 42    | 370-4912  |              |       |      |       |           |             |       |      |       |           |
| 4            | 7/64  | 1    | 36    | 370-4407  | 8           | 1/8   | 1     | 48    | 370-5008  |              |       |      |       |           |             |       |      |       |           |
| 4            | 1/8   | 1    | 36    | 370-4408  | 8           | 3/16  | 1     | 48    | 370-5012  |              |       |      |       |           |             |       |      |       |           |
| 4            | 9/64  | 1    | 36    | 370-4409  | 8           | 3/32  | 1-1/4 | 48    | 370-5106  |              |       |      |       |           |             |       |      |       |           |
| 4            | 5/32  | 1    | 36    | 370-4410  | 8           | 1/8   | 1-1/4 | 48    | 370-5108  |              |       |      |       |           |             |       |      |       |           |
| 4            | 3/16  | 1    | 36    | 370-4412  | 8           | 3/16  | 1-1/4 | 48    | 370-5112  |              |       |      |       |           |             |       |      |       |           |
| 4-1/2        | 1/32  | 1    | 36    | 370-4502  | 10          | 1/8   | 1-1/4 | 56    | 370-5208  |              |       |      |       |           |             |       |      |       |           |
| 4-1/2        | 3/64  | 1    | 36    | 370-4503  | 10          | 3/16  | 1-1/4 | 56    | 370-5212  |              |       |      |       |           |             |       |      |       |           |
| 4-1/2        | 1/16  | 1    | 36    | 370-4504  |             |       |       |       |           |              |       |      |       |           |             |       |      |       |           |

## Slitting & Slotting Saw Arbors

- Spring loaded mechanism readily accepts saw blades with hole diameters from 1/2" to 1"
- Black oxide finish.
- A hex head screw makes saws firmly in position.



| Shank Dia. | Overall Length | Inside Hole Dia.       | Order No. |
|------------|----------------|------------------------|-----------|
| 1/2"       | 2-9/16"        | 1/2, 5/8, 3/4, 7/8, 1" | 712-0005  |
| 1/2        | 4-3/4          | 3/8"                   | 712-1010  |
| R8         | 5-3/32         | 1/2, 5/8, 3/4, 7/8, 1" | 712-0010  |

## Screw Slotting Saws

### High Speed Steel

- Used in slotting sheets and tubing.
- Good for shallow cuts and screw heads.
- Supplied with key-way.



| Cutting Thick- Hole No. of |       |      |       |           | Cutting Thick- Hole No. of |       |      |       |           |
|----------------------------|-------|------|-------|-----------|----------------------------|-------|------|-------|-----------|
| Dia.                       | ness  | Size | Teeth | Order No. | Dia.                       | ness  | Size | Teeth | Order No. |
| 1-3/4"                     | .006" | 5/8" | 90    | 370-7006  | 2-3/4                      | .032  | 3/4  | 72    | 370-8032  |
| 1-3/4                      | .008  | 5/8  | 90    | 370-7008  | 2-3/4                      | .036  | 3/4  | 72    | 370-8036  |
| 1-3/4                      | .010  | 5/8  | 90    | 370-7010  | 2-3/4                      | .040  | 3/4  | 72    | 370-8040  |
| 1-3/4                      | .012  | 5/8  | 90    | 370-7012  | 2-3/4                      | .045  | 3/4  | 72    | 370-8045  |
| 1-3/4                      | .014  | 5/8  | 90    | 370-7014  | 2-3/4                      | .051  | 3/4  | 72    | 370-8051  |
| 1-3/4                      | .016  | 5/8  | 90    | 370-7016  | 2-3/4                      | .057  | 3/4  | 72    | 370-8057  |
| 1-3/4                      | .018  | 5/8  | 90    | 370-7018  | 2-3/4                      | .064  | 3/4  | 72    | 370-8064  |
| 1-3/4                      | .020  | 5/8  | 90    | 370-7020  | 2-3/4                      | .072  | 3/4  | 72    | 370-8072  |
| 1-3/4                      | .023  | 5/8  | 90    | 370-7023  | 2-3/4                      | .081  | 3/4  | 72    | 370-8081  |
| 1-3/4                      | .025  | 5/8  | 90    | 370-7025  | 2-3/4                      | .091  | 3/4  | 72    | 370-8091  |
| 1-3/4                      | .028  | 5/8  | 90    | 370-7028  | 2-3/4                      | .102  | 3/4  | 72    | 370-8102  |
| 1-3/4                      | .032  | 5/8  | 90    | 370-7032  | 2-3/4                      | .114  | 3/4  | 72    | 370-8114  |
| 1-3/4                      | .036  | 5/8  | 90    | 370-7036  | 2-3/4                      | .128  | 3/4  | 72    | 370-8128  |
| 1-3/4                      | .040  | 5/8  | 90    | 370-7040  | 2-3/4                      | .010  | 1    | 72    | 370-8210  |
| 1-3/4                      | .045  | 5/8  | 90    | 370-7045  | 2-3/4                      | .012  | 1    | 72    | 370-8212  |
| 1-3/4                      | .051  | 5/8  | 90    | 370-7051  | 2-3/4                      | .014  | 1    | 72    | 370-8214  |
| 1-3/4                      | .057  | 5/8  | 90    | 370-7057  | 2-3/4                      | .016  | 1    | 72    | 370-8216  |
| 1-3/4                      | .064  | 5/8  | 90    | 370-7064  | 2-3/4                      | .018  | 1    | 72    | 370-8218  |
| 2-1/4                      | .010  | 5/8  | 60    | 370-7110  | 2-3/4                      | .020  | 1    | 72    | 370-8220  |
| 2-1/4                      | .012  | 5/8  | 60    | 370-7112  | 2-3/4                      | .023  | 1    | 72    | 370-8223  |
| 2-1/4                      | .014  | 5/8  | 60    | 370-7114  | 2-3/4                      | .025  | 1    | 72    | 370-8225  |
| 2-1/4                      | .016  | 5/8  | 60    | 370-7116  | 2-3/4                      | .028  | 1    | 72    | 370-8228  |
| 2-1/4                      | .018  | 5/8  | 60    | 370-7118  | 2-3/4                      | .032  | 1    | 72    | 370-8232  |
| 2-1/4                      | .020  | 5/8  | 60    | 370-7120  | 2-3/4                      | .036  | 1    | 72    | 370-8236  |
| 2-1/4                      | .023  | 5/8  | 60    | 370-7123  | 2-3/4                      | .040  | 1    | 72    | 370-8240  |
| 2-1/4                      | .025  | 5/8  | 60    | 370-7125  | 2-3/4                      | .045  | 1    | 72    | 370-8245  |
| 2-1/4                      | .028  | 5/8  | 60    | 370-7128  | 2-3/4                      | .051  | 1    | 72    | 370-8251  |
| 2-1/4                      | .032  | 5/8  | 60    | 370-7132  | 2-3/4                      | .057  | 1    | 72    | 370-8257  |
| 2-1/4                      | .036  | 5/8  | 60    | 370-7136  | 2-3/4                      | .064  | 1    | 72    | 370-8264  |
| 2-1/4                      | .040  | 5/8  | 60    | 370-7140  | 2-3/4                      | .072  | 1    | 72    | 370-8272  |
| 2-1/4                      | .045  | 5/8  | 60    | 370-7145  | 2-3/4                      | .081  | 1    | 72    | 370-8281  |
| 2-1/4                      | .051  | 5/8  | 60    | 370-7151  | 2-3/4                      | .091  | 1    | 72    | 370-8291  |
| 2-1/4                      | .057  | 5/8  | 60    | 370-7157  | 2-3/4                      | .102  | 1    | 72    | 370-8302  |
| 2-1/4                      | .064  | 5/8  | 60    | 370-7164  | 2-3/4                      | .114  | 1    | 72    | 370-8314  |
| 2-1/4                      | .072  | 5/8  | 60    | 370-7172  | 2-3/4                      | .128  | 1    | 72    | 370-8328  |
| 2-1/4                      | .081  | 5/8  | 60    | 370-7181  | 2-3/4                      | .144  | 1    | 72    | 370-8344  |
| 2-1/4                      | .091  | 5/8  | 60    | 370-7191  | 2-3/4                      | .162  | 1    | 72    | 370-8362  |
| 2-1/4                      | .102  | 5/8  | 60    | 370-7202  | 2-3/4                      | .182  | 1    | 72    | 370-8382  |
| 2-3/4                      | .010  | 3/4  | 72    | 370-8010  | 2-3/4                      | .0250 | 1    | 56    | 370-8525  |
| 2-3/4                      | .012  | 3/4  | 72    | 370-8012  | 2-3/4                      | .0280 | 1    | 56    | 370-8528  |
| 2-3/4                      | .014  | 3/4  | 72    | 370-8014  | 2-3/4                      | .0320 | 1    | 56    | 370-8532  |
| 2-3/4                      | .016  | 3/4  | 72    | 370-8016  | 2-3/4                      | .0360 | 1    | 56    | 370-8536  |
| 2-3/4                      | .018  | 3/4  | 72    | 370-8018  | 2-3/4                      | .0400 | 1    | 56    | 370-8540  |
| 2-3/4                      | .020  | 3/4  | 72    | 370-8020  | 2-3/4                      | .0450 | 1    | 56    | 370-8545  |
| 2-3/4                      | .023  | 3/4  | 72    | 370-8023  | 2-3/4                      | .0510 | 1    | 56    | 370-8551  |
| 2-3/4                      | .025  | 3/4  | 72    | 370-8025  | 2-3/4                      | .0570 | 1    | 56    | 370-8557  |
| 2-3/4                      | .028  | 3/4  | 72    | 370-8028  | 2-3/4                      | .0640 | 1    | 56    | 370-8564  |

## Circular Saw Arbors

Use with saw blades .001" to 3/16" thick. black oxide finish

### Individuals

| Flange Size | Shank | Inside Hole Dia. | Order No. |
|-------------|-------|------------------|-----------|
| 1/2"        | 1/2"  | 1/4"             | 712-0205  |
| 5/8         | 1/2   | 3/8              | 712-0210  |
| 3/4         | 1/2   | 1/2              | 712-0215  |
| 1           | 5/8   | 5/8              | 712-0220  |



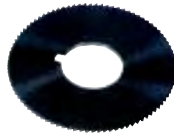
### 3Pcs/set

Set includes:  
1/2", 5/8", 3/4" in wooden stand  
**Order No. 712-0300**

## Jewelers Saws

### High Speed Steel

For using in slotting, sheeting and tubing operations.



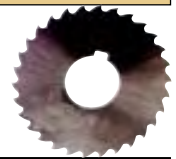
| Thick-<br>Dia. | ness  | Hole | No. of<br>Teeth | Order No. | Thick-<br>Dia. | ness  | Hole | No. of<br>Teeth | Order No. |
|----------------|-------|------|-----------------|-----------|----------------|-------|------|-----------------|-----------|
| 1"             | .010" | 1/4" | 98              | 370-0110  | 2"             | .016" | 3/8" | 152             | 370-1116  |
| 1              | .012  | 1/4  | 98              | 370-0112  | 2              | .018  | 3/8  | 152             | 370-1118  |
| 1              | .014  | 1/4  | 76              | 370-0114  | 2              | .020  | 3/8  | 152             | 370-1120  |
| 1              | .016  | 1/4  | 76              | 370-0116  | 2              | .023  | 3/8  | 152             | 370-1123  |
| 1              | .018  | 1/4  | 76              | 370-0118  | 2              | .025  | 3/8  | 152             | 370-1125  |
| 1              | .020  | 1/4  | 76              | 370-0120  | 2              | .028  | 3/8  | 152             | 370-1128  |
| 1              | .023  | 1/4  | 76              | 370-0123  | 2              | .032  | 3/8  | 110             | 370-1132  |
| 1              | .025  | 1/4  | 76              | 370-0125  | 2              | .035  | 3/8  | 110             | 370-1135  |
| 1              | .028  | 1/4  | 76              | 370-0128  | 2              | .040  | 3/8  | 110             | 370-1140  |
| 1              | .032  | 1/4  | 76              | 370-0132  | 2              | .045  | 3/8  | 110             | 370-1145  |
| 1              | .008  | 3/8  | 98              | 370-0208  | 2              | .051  | 3/8  | 110             | 370-1151  |
| 1              | .010  | 3/8  | 98              | 370-0210  | 2              | .057  | 3/8  | 110             | 370-1157  |
| 1              | .012  | 3/8  | 98              | 370-0212  | 2              | .010  | 1/2  | 190             | 370-1210  |
| 1              | .014  | 3/8  | 76              | 370-0214  | 2              | .012  | 1/2  | 190             | 370-1212  |
| 1              | .016  | 3/8  | 76              | 370-0216  | 2              | .014  | 1/2  | 152             | 370-1214  |
| 1              | .018  | 3/8  | 76              | 370-0218  | 2              | .016  | 1/2  | 152             | 370-1216  |
| 1              | .020  | 3/8  | 76              | 370-0220  | 2              | .018  | 1/2  | 152             | 370-1218  |
| 1              | .023  | 3/8  | 76              | 370-0223  | 2              | .020  | 1/2  | 152             | 370-1220  |
| 1              | .025  | 3/8  | 76              | 370-0225  | 2              | .023  | 1/2  | 152             | 370-1223  |
| 1              | .028  | 3/8  | 76              | 370-0228  | 2              | .025  | 1/2  | 152             | 370-1225  |
| 1              | .032  | 3/8  | 76              | 370-0232  | 2              | .028  | 1/2  | 152             | 370-1228  |
| 1-1/4          | .008  | 3/8  | 114             | 370-0408  | 2              | .032  | 1/2  | 110             | 370-1232  |
| 1-1/4          | .010  | 3/8  | 114             | 370-0410  | 2              | .035  | 1/2  | 110             | 370-1235  |
| 1-1/4          | .012  | 3/8  | 114             | 370-0412  | 2              | .040  | 1/2  | 110             | 370-1240  |
| 1-1/4          | .014  | 3/8  | 98              | 370-0414  | 2              | .045  | 1/2  | 110             | 370-1245  |
| 1-1/4          | .016  | 3/8  | 98              | 370-0416  | 2              | .051  | 1/2  | 110             | 370-1251  |
| 1-1/4          | .018  | 3/8  | 98              | 370-0418  | 2              | .057  | 1/2  | 110             | 370-1257  |
| 1-1/4          | .020  | 3/8  | 98              | 370-0420  | 2-1/4          | .010  | 1/2  | 210             | 370-1310  |
| 1-1/4          | .023  | 3/8  | 98              | 370-0423  | 2-1/4          | .012  | 1/2  | 210             | 370-1312  |
| 1-1/4          | .025  | 3/8  | 98              | 370-0425  | 2-1/2          | .010  | 1/2  | 240             | 370-1410  |
| 1-1/4          | .028  | 3/8  | 98              | 370-0428  | 2-1/2          | .012  | 1/2  | 240             | 370-1412  |
| 1-1/4          | .032  | 3/8  | 98              | 370-0432  | 2-1/2          | .014  | 1/2  | 190             | 370-1414  |
| 1-1/2          | .008  | 3/8  | 140             | 370-0608  | 2-1/2          | .016  | 1/2  | 190             | 370-1416  |
| 1-1/2          | .010  | 3/8  | 140             | 370-0610  | 2-1/2          | .018  | 1/2  | 190             | 370-1418  |
| 1-1/2          | .012  | 3/8  | 140             | 370-0612  | 2-1/2          | .020  | 1/2  | 190             | 370-1420  |
| 1-1/2          | .014  | 3/8  | 110             | 370-0614  | 2-1/2          | .023  | 1/2  | 190             | 370-1423  |
| 1-1/2          | .016  | 3/8  | 110             | 370-0616  | 2-1/2          | .025  | 1/2  | 190             | 370-1425  |
| 1-1/2          | .018  | 3/8  | 110             | 370-0618  | 2-1/2          | .028  | 1/2  | 190             | 370-1428  |
| 1-1/2          | .020  | 3/8  | 110             | 370-0620  | 2-1/2          | .032  | 1/2  | 140             | 370-1432  |
| 1-1/2          | .023  | 3/8  | 110             | 370-0623  | 2-1/2          | .035  | 1/2  | 140             | 370-1435  |
| 1-1/2          | .025  | 3/8  | 110             | 370-0625  | 2-1/2          | .040  | 1/2  | 140             | 370-1440  |
| 1-1/2          | .028  | 3/8  | 110             | 370-0628  | 2-1/2          | .045  | 1/2  | 140             | 370-1445  |
| 1-1/2          | .032  | 3/8  | 110             | 370-0632  | 2-1/2          | .051  | 1/2  | 140             | 370-1451  |
| 1-1/2          | .008  | 1/2  | 140             | 370-0708  | 2-1/2          | .057  | 1/2  | 140             | 370-1457  |
| 1-1/2          | .010  | 1/2  | 140             | 370-0710  | 3              | .010  | 1/2  | 280             | 370-1610  |
| 1-1/2          | .012  | 1/2  | 140             | 370-0712  | 3              | .012  | 1/2  | 280             | 370-1612  |
| 1-1/2          | .014  | 1/2  | 110             | 370-0714  | 3              | .014  | 1/2  | 230             | 370-1614  |
| 1-1/2          | .016  | 1/2  | 110             | 370-0716  | 3              | .016  | 1/2  | 230             | 370-1616  |
| 1-1/2          | .018  | 1/2  | 110             | 370-0718  | 3              | .018  | 1/2  | 230             | 370-1618  |
| 1-1/2          | .020  | 1/2  | 110             | 370-0720  | 3              | .020  | 1/2  | 230             | 370-1620  |
| 1-1/2          | .023  | 1/2  | 110             | 370-0723  | 3              | .023  | 1/2  | 230             | 370-1623  |
| 1-1/2          | .025  | 1/2  | 110             | 370-0725  | 3              | .025  | 1/2  | 230             | 370-1625  |
| 1-1/2          | .028  | 1/2  | 110             | 370-0728  | 3              | .028  | 1/2  | 230             | 370-1628  |
| 1-1/2          | .032  | 1/2  | 110             | 370-0732  | 3              | .032  | 1/2  | 168             | 370-1632  |
| 1-3/4          | .008  | 1/2  | 160             | 370-0908  | 3              | .035  | 1/2  | 168             | 370-1635  |
| 1-3/4          | .010  | 1/2  | 160             | 370-0910  | 3              | .040  | 1/2  | 168             | 370-1640  |
| 1-3/4          | .012  | 1/2  | 160             | 370-0912  | 3              | .045  | 1/2  | 168             | 370-1645  |
| 1-3/4          | .014  | 1/2  | 132             | 370-0914  | 3              | .051  | 1/2  | 168             | 370-1651  |
| 1-3/4          | .016  | 1/2  | 132             | 370-0916  | 3              | .057  | 1/2  | 168             | 370-1657  |
| 1-3/4          | .018  | 1/2  | 132             | 370-0918  | 3              | .010  | 1    | 280             | 370-1710  |
| 1-3/4          | .020  | 1/2  | 132             | 370-0920  | 3              | .012  | 1    | 280             | 370-1712  |
| 1-3/4          | .023  | 1/2  | 132             | 370-0923  | 3              | .014  | 1    | 230             | 370-1714  |
| 1-3/4          | .025  | 1/2  | 132             | 370-0925  | 3              | .016  | 1    | 230             | 370-1716  |
| 1-3/4          | .028  | 1/2  | 132             | 370-0928  | 3              | .018  | 1    | 230             | 370-1718  |
| 1-3/4          | .032  | 1/2  | 132             | 370-0932  | 3              | .020  | 1    | 230             | 370-1720  |
| 2              | .008  | 3/8  | 190             | 370-1108  | 3              | .023  | 1    | 230             | 370-1723  |
| 2              | .010  | 3/8  | 190             | 370-1110  | 3              | .025  | 1    | 230             | 370-1725  |
| 2              | .012  | 3/8  | 190             | 370-1112  | 3              | .028  | 1    | 230             | 370-1728  |
| 2              | .014  | 3/8  | 152             | 370-1114  | 3              | .032  | 1    | 168             | 370-1732  |

| Thick-<br>Dia. | ness  | Hole | No. of<br>Teeth | Order No. | Thick-<br>Dia. | ness | Hole | No. of<br>Teeth | Order No. |
|----------------|-------|------|-----------------|-----------|----------------|------|------|-----------------|-----------|
| 3"             | .035" | 1"   | 168             | 370-1735  | 5              | .032 | 1/2  | 280             | 370-2132  |
| 3              | .040  | 1    | 168             | 370-1740  | 5              | .035 | 1/2  | 280             | 370-2135  |
| 3              | .045  | 1    | 168             | 370-1745  | 5              | .040 | 1/2  | 280             | 370-2140  |
| 3              | .051  | 1    | 168             | 370-1751  | 5              | .045 | 1/2  | 280             | 370-2145  |
| 4              | .057  | 1    | 168             | 370-1757  | 5              | .051 | 1/2  | 280             | 370-2151  |
| 4              | .016  | 1/2  | 310             | 370-1816  | 5              | .057 | 1/2  | 280             | 370-2157  |
| 4              | .018  | 1/2  | 310             | 370-1818  | 5              | .064 | 1/2  | 280             | 370-2164  |
| 4              | .020  | 1/2  | 310             | 370-1820  | 5              | .025 | 1    | 380             | 370-2225  |
| 4              | .023  | 1/2  | 310             | 370-1823  | 5              | .028 | 1    | 280             | 370-2228  |
| 4              | .025  | 1/2  | 310             | 370-1825  | 5              | .032 | 1    | 280             | 370-2232  |
| 4              | .028  | 1/2  | 310             | 370-1828  | 5              | .035 | 1    | 280             | 370-2235  |
| 4              | .032  | 1/2  | 220             | 370-1832  | 5              | .040 | 1    | 280             | 370-2240  |
| 4              | .035  | 1/2  | 220             | 370-1835  | 5              | .045 | 1    | 280             | 370-2245  |
| 4              | .040  | 1/2  | 220             | 370-1840  | 5              | .051 | 1    | 280             | 370-2251  |
| 4              | .045  | 1/2  | 220             | 370-1845  | 5              | .057 | 1    | 280             | 370-2257  |
| 4              | .051  | 1/2  | 220             | 370-1851  | 5              | .064 | 1    | 280             | 370-2264  |
| 4              | .057  | 1/2  | 220             | 370-1857  | 6              | .035 | 1/2  | 340             | 370-2435  |
| 4              | .064  | 1/2  | 220             | 370-1864  | 6              | .040 | 1/2  | 340             | 370-2440  |
| 4              | .016  | 1    | 310             | 370-1916  | 6              | .045 | 1/2  | 340             | 370-2445  |
| 4              | .018  | 1    | 310             | 370-1918  | 6              | .051 | 1/2  | 232             | 370-2451  |
| 4              | .020  | 1    | 310             | 370-1920  | 6              | .057 | 1/2  | 232             | 370-2457  |
| 4              | .023  | 1    | 310             | 370-1923  | 6              | .064 | 1/2  | 232             | 370-2464  |
| 4              | .025  | 1    | 310             | 370-1925  | 6              | .035 | 1    | 340             | 370-2535  |
| 4              | .028  | 1    | 310             | 370-1928  | 6              | .040 | 1    | 340             | 370-2540  |
| 4              | .032  | 1    | 220             | 370-1932  | 6              | .045 | 1    | 340             | 370-2545  |
| 4              | .035  | 1    | 220             | 370-1935  | 6              | .051 | 1    | 232             | 370-2551  |
| 4              | .040  | 1    | 220             | 370-1940  | 6              | .057 | 1    | 232             | 370-2557  |
| 4              | .045  | 1    | 220             | 370-1945  | 6              | .064 | 1    | 232             | 370-2564  |
| 4              | .051  | 1    | 220             | 370-1951  | 6              | .072 | 1    | 232             | 370-2572  |
| 4              | .057  | 1    | 220             | 370-1957  | 6              | .081 | 1    | 232             | 370-2581  |
| 4              | .064  | 1    | 220             | 370-1964  | 6              | .091 | 1    | 232             | 370-2591  |
| 5              | .018  | 1/2  | 380             | 370-2118  | 6              | .102 | 1    | 232             | 370-2602  |
| 5              | .025  | 1/2  | 380             | 370-2125  | 6              | .114 | 1    | 232             | 370-2614  |
| 5              | .028  | 1/2  | 280             | 370-2128  | 6              | .128 | 1    | 232             | 370-2628  |

## Metric Plain Metal Slotting Saws

### DIN 1837 A, High Speed Steel

- For general purpose slotting and cut-off operations.
- The number of teeth given is the standard number which is supplied for general purpose work.



| Cutter Dia. | Arbor Dia. | Width of Face | No. of Teeth | Order No. | Cutter Dia. | Arbor Dia. | Width of Face | No. of Teeth | Order No |
|-------------|------------|---------------|--------------|-----------|-------------|------------|---------------|--------------|----------|
| 20mm        | 5          | 0.2           | 80           | 373-1201  | 32mm        | 8          | 0.25          | 100          | 373-1402 |
| 20mm        | 5          | 0.25          | 64           | 373-1202  | 32mm        | 8          | 0.3           | 80           | 373-1403 |
| 20mm        | 5          | 0.3           | 64           | 373-1203  | 32mm        | 8          | 0.4           | 80           | 373-1404 |
| 20mm        | 5          | 0.4           | 64           | 373-1204  | 32mm        | 8          | 0.5           | 80           | 373-1405 |
| 20mm        | 5          | 0.5           | 48           | 373-1205  | 32mm        | 8          | 0.6           | 64           | 373-1406 |
| 20mm        | 5          | 0.6           | 48           | 373-1206  | 32mm        | 8          | 0.8           | 64           | 373-1408 |
| 20mm        | 5          | 0.8           | 48           | 373-1208  | 32mm        | 8          | 1.0           | 64           | 373-1410 |
| 20mm        | 5          | 1.0           | 40           | 373-1210  | 32mm        | 8          | 1.2           | 48           | 373-1412 |
| 20mm        | 5          | 1.2           | 40           | 373-1212  | 32mm        | 8          | 1.6           | 48           | 373-1416 |
| 20mm        | 5          | 1.6           | 40           | 373-1216  | 32mm        | 8          | 2.0           | 48           | 373-1420 |
| 20mm        | 5          | 2.0           | 32           | 373-1220  | 32mm        | 8          | 2.5           | 40           | 373-1425 |
| 20mm        | 5          | 2.5           | 32           | 373-1225  | 32mm        | 8          | 3.0           | 40           | 373-1430 |
| 20mm        | 5          | 3.0           | 32           | 373-1230  | 32mm        | 8          | 4.0           | 40           | 373-1440 |
| 20mm        | 5          | 4.0           | 24           | 373-1240  | 32mm        | 8          | 5.0           | 32           | 373-1450 |
| 20mm        | 5          | 5.0           | 24           | 373-1250  | 32mm        | 8          | 6.0           | 32           | 373-1460 |
| 20mm        | 5          | 6.0           | 24           | 373-1260  | 40mm        | 10         | 0.2           | 128          | 373-1501 |
| 25mm        | 8          | 0.2           | 80           | 373-1301  | 40mm        | 10         | 0.25          | 100          | 373-1502 |
| 25mm        | 8          | 0.25          | 80           | 373-1302  | 40mm        | 10         | 0.3           | 100          | 373-1503 |
| 25mm        | 8          | 0.3           | 80           | 373-1303  | 40mm        | 10         | 0.4           | 100          | 373-1504 |
| 25mm        | 8          | 0.4           | 64           | 373-1304  | 40mm        | 10         | 0.5           | 80           | 373-1505 |
| 25mm        | 8          | 0.5           | 64           | 373-1305  | 40mm        | 10         | 0.6           | 80           | 373-1506 |
| 25mm        | 8          | 0.6           | 64           | 373-1306  | 40mm        | 10         | 0.8           | 80           | 373-1508 |
| 25mm        | 8          | 0.8           | 48           | 373-1308  | 40mm        | 10         | 1.0           | 64           | 373-1510 |
| 25mm        | 8          | 1.0           | 48           | 373-1310  | 40mm        | 10         | 1.2           | 64           | 373-1512 |
| 25mm        | 8          | 1.2           | 48           | 373-1312  | 40mm        | 10         | 1.6           | 64           | 373-1516 |
| 25mm        | 8          | 1.6           | 40           | 373-1316  | 40mm        | 10         | 2.0           | 48           | 373-1520 |
| 25mm        | 8          | 2.0           | 40           | 373-1320  | 40mm        | 10         | 2.5           | 48           | 373-1525 |
| 25mm        | 8          | 2.5           | 40           | 373-1325  | 40mm        | 10         | 3.0           | 48           | 373-1530 |
| 25mm        | 8          | 3.0           | 32           | 373-1330  | 40mm        | 10         | 4.0           | 40           | 373-1540 |
| 25mm        | 8          | 4.0           | 32           | 373-1340  | 40mm        | 10         | 5.0           | 40           | 373-1550 |
| 25mm        | 8          | 5.0           | 32           | 373-1350  | 40mm        | 10         | 6.0           | 40           | 373-1560 |
| 25mm        | 8          | 6.0           | 24           | 373-1360  | 50mm        | 13         | 0.2           | 128          | 373-1601 |
| 32mm        | 8          | 0.2           | 100          | 373-1401  |             |            |               |              |          |

# Metric Slotting Saws



## Metric Plain Metal Slotting Saws Continued

### DIN 1837 A

#### High Speed Steel

- For general purpose slotting and cut-off operations.
- The number of teeth given is the standard number which is supplied for general purpose work.



| Cutter Dia | Arbor Dia | Width Of Face | No. of Teeth | Order No. | Cutter Dia | Arbor Dia | Width Of Face | No. of Teeth | Order No. |
|------------|-----------|---------------|--------------|-----------|------------|-----------|---------------|--------------|-----------|
| 50mm       | 13        | 0.25          | 128          | 373-1602  | 100mm      | 22        | 4.0           | 80           | 373-2040  |
| 50mm       | 13        | 0.3           | 128          | 373-1603  | 100mm      | 22        | 5.0           | 80           | 373-2050  |
| 50mm       | 13        | 0.4           | 100          | 373-1604  | 100mm      | 22        | 6.0           | 64           | 373-2060  |
| 50mm       | 13        | 0.5           | 100          | 373-1605  | 100mm      | 27        | 0.5           | 160          | 373-2105  |
| 50mm       | 13        | 0.6           | 100          | 373-1606  | 100mm      | 27        | 0.6           | 160          | 373-2106  |
| 50mm       | 13        | 0.8           | 80           | 373-1608  | 100mm      | 27        | 0.8           | 128          | 373-2108  |
| 50mm       | 13        | 1.0           | 80           | 373-1610  | 100mm      | 27        | 1.0           | 128          | 373-2110  |
| 50mm       | 13        | 1.2           | 80           | 373-1612  | 100mm      | 27        | 1.2           | 128          | 373-2112  |
| 50mm       | 13        | 1.6           | 64           | 373-1616  | 100mm      | 27        | 1.6           | 100          | 373-2116  |
| 50mm       | 13        | 2.0           | 64           | 373-1620  | 100mm      | 27        | 2.0           | 100          | 373-2120  |
| 50mm       | 13        | 2.5           | 64           | 373-1625  | 100mm      | 27        | 2.5           | 100          | 373-2125  |
| 50mm       | 13        | 3.0           | 48           | 373-1630  | 100mm      | 27        | 3.0           | 80           | 373-2130  |
| 50mm       | 13        | 4.0           | 48           | 373-1640  | 100mm      | 27        | 4.0           | 80           | 373-2140  |
| 50mm       | 13        | 5.0           | 48           | 373-1650  | 100mm      | 27        | 5.0           | 80           | 373-2150  |
| 50mm       | 13        | 6.0           | 40           | 373-1660  | 125mm      | 22        | 0.6           | 160          | 373-2206  |
| 63mm       | 16        | 0.25          | 160          | 373-1702  | 125mm      | 22        | 0.8           | 160          | 373-2208  |
| 63mm       | 16        | 0.3           | 128          | 373-1703  | 125mm      | 22        | 1.0           | 160          | 373-2210  |
| 63mm       | 16        | 0.4           | 128          | 373-1704  | 125mm      | 22        | 1.2           | 128          | 373-2212  |
| 63mm       | 16        | 0.5           | 128          | 373-1705  | 125mm      | 22        | 1.6           | 128          | 373-2216  |
| 63mm       | 16        | 0.6           | 100          | 373-1706  | 125mm      | 22        | 2.0           | 128          | 373-2220  |
| 63mm       | 16        | 0.8           | 100          | 373-1708  | 125mm      | 22        | 2.5           | 100          | 373-2225  |
| 63mm       | 16        | 1.0           | 100          | 373-1710  | 125mm      | 22        | 3.0           | 100          | 373-2230  |
| 63mm       | 16        | 1.2           | 80           | 373-1712  | 125mm      | 22        | 4.0           | 100          | 373-2240  |
| 63mm       | 16        | 1.6           | 80           | 373-1716  | 125mm      | 22        | 5.0           | 80           | 373-2250  |
| 63mm       | 16        | 1.7           | 80           | 373-1717  | 125mm      | 22        | 6.0           | 80           | 373-2260  |
| 63mm       | 16        | 2.0           | 80           | 373-1720  | 125mm      | 27        | 0.8           | 80           | 373-2308  |
| 63mm       | 16        | 2.5           | 64           | 373-1725  | 125mm      | 27        | 1.0           | 80           | 373-2310  |
| 63mm       | 16        | 3.0           | 64           | 373-1730  | 125mm      | 27        | 1.2           | 64           | 373-2312  |
| 63mm       | 16        | 4.0           | 64           | 373-1740  | 125mm      | 27        | 1.6           | 64           | 373-2316  |
| 63mm       | 16        | 5.0           | 48           | 373-1750  | 125mm      | 27        | 2.0           | 64           | 373-2320  |
| 63mm       | 16        | 6.0           | 48           | 373-1760  | 125mm      | 27        | 2.5           | 48           | 373-2325  |
| 80mm       | 22        | 0.3           | 160          | 373-1803  | 125mm      | 27        | 3.0           | 48           | 373-2330  |
| 80mm       | 22        | 0.4           | 160          | 373-1804  | 125mm      | 27        | 4.0           | 48           | 373-2340  |
| 80mm       | 22        | 0.5           | 128          | 373-1805  | 125mm      | 27        | 5.0           | 40           | 373-2350  |
| 80mm       | 22        | 0.6           | 128          | 373-1806  | 160mm      | 32        | 1.0           | 160          | 373-2410  |
| 80mm       | 22        | 0.8           | 128          | 373-1808  | 160mm      | 32        | 1.2           | 160          | 373-2412  |
| 80mm       | 22        | 1.0           | 100          | 373-1810  | 160mm      | 32        | 1.6           | 160          | 373-2416  |
| 80mm       | 22        | 1.2           | 100          | 373-1812  | 160mm      | 32        | 2.0           | 128          | 373-2420  |
| 80mm       | 22        | 1.6           | 100          | 373-1816  | 160mm      | 32        | 2.5           | 128          | 373-2425  |
| 80mm       | 22        | 2.0           | 80           | 373-1820  | 160mm      | 32        | 3.0           | 128          | 373-2430  |
| 80mm       | 22        | 2.5           | 80           | 373-1825  | 160mm      | 32        | 4.0           | 100          | 373-2440  |
| 80mm       | 22        | 3.0           | 80           | 373-1830  | 160mm      | 32        | 5.0           | 100          | 373-2450  |
| 80mm       | 22        | 4.0           | 64           | 373-1840  | 160mm      | 32        | 6.0           | 100          | 373-2460  |
| 80mm       | 22        | 5.0           | 64           | 373-1850  | 200mm      | 32        | 1.0           | 200          | 373-2510  |
| 80mm       | 22        | 6.0           | 64           | 373-1860  | 200mm      | 32        | 1.2           | 200          | 373-2512  |
| 80mm       | 27        | 0.5           | 128          | 373-1905  | 200mm      | 32        | 1.6           | 160          | 373-2516  |
| 80mm       | 27        | 0.6           | 128          | 373-1906  | 200mm      | 32        | 2.0           | 160          | 373-2520  |
| 80mm       | 27        | 0.8           | 128          | 373-1908  | 200mm      | 32        | 2.5           | 160          | 373-2525  |
| 80mm       | 27        | 1.0           | 100          | 373-1910  | 200mm      | 32        | 3.0           | 128          | 373-2530  |
| 80mm       | 27        | 1.2           | 100          | 373-1912  | 200mm      | 32        | 4.0           | 128          | 373-2540  |
| 80mm       | 27        | 1.6           | 100          | 373-1916  | 200mm      | 32        | 5.0           | 128          | 373-2550  |
| 80mm       | 27        | 2.0           | 80           | 373-1920  | 200mm      | 32        | 6.0           | 100          | 373-2560  |
| 80mm       | 27        | 2.5           | 80           | 373-1925  | 250mm      | 32        | 1.6           | 200          | 373-2616  |
| 80mm       | 27        | 3.0           | 80           | 373-1930  | 250mm      | 32        | 2.0           | 200          | 373-2620  |
| 80mm       | 27        | 4.0           | 64           | 373-1940  | 250mm      | 32        | 2.5           | 160          | 373-2625  |
| 100mm      | 22        | 0.5           | 160          | 373-2005  | 250mm      | 32        | 3.0           | 160          | 373-2630  |
| 100mm      | 22        | 0.6           | 160          | 373-2006  | 250mm      | 32        | 4.0           | 160          | 373-2640  |
| 100mm      | 22        | 0.8           | 128          | 373-2008  | 250mm      | 32        | 5.0           | 128          | 373-2650  |
| 100mm      | 22        | 1.0           | 128          | 373-2010  | 250mm      | 32        | 6.0           | 128          | 373-2660  |
| 100mm      | 22        | 1.2           | 128          | 373-2012  | 315mm      | 40        | 2.0           | 200          | 373-2720  |
| 100mm      | 22        | 1.6           | 100          | 373-2016  | 315mm      | 40        | 3.0           | 200          | 373-2730  |
| 100mm      | 22        | 2.0           | 100          | 373-2020  | 315mm      | 40        | 4.0           | 160          | 373-2740  |
| 100mm      | 22        | 2.5           | 100          | 373-2025  | 315mm      | 40        | 5.0           | 160          | 373-2750  |
| 100mm      | 22        | 3.0           | 80           | 373-2030  | 315mm      | 40        | 6.0           | 160          | 373-2760  |

## Metric Plain Metal Slotting Saws

### DIN 1838B

#### High Speed Steel

- For general purpose slotting and cut-off operations.
- The number of teeth given is the standard number which is supplied for general purpose work.



| Cutter Dia | Arbor Dia | Width Of Face | No. of Teeth | Order No. | Cutter Dia | Arbor Dia | Width Of Face | No. of Teeth | Order No. |
|------------|-----------|---------------|--------------|-----------|------------|-----------|---------------|--------------|-----------|
| 50mm       | 13        | 0.3           | 48           | 373-0003  | 100mm      | 22        | 6.0           | 32           | 373-0460  |
| 50mm       | 13        | 0.4           | 48           | 373-0004  | 100mm      | 27        | 0.8           | 64           | 373-0508  |
| 50mm       | 13        | 0.5           | 48           | 373-0005  | 100mm      | 27        | 1.0           | 64           | 373-0510  |
| 50mm       | 13        | 0.6           | 48           | 373-0006  | 100mm      | 27        | 1.2           | 64           | 373-0512  |
| 50mm       | 13        | 0.8           | 40           | 373-0008  | 100mm      | 27        | 1.6           | 48           | 373-0516  |
| 50mm       | 13        | 1.0           | 40           | 373-0010  | 100mm      | 27        | 2.0           | 48           | 373-0520  |
| 50mm       | 13        | 1.2           | 40           | 373-0012  | 100mm      | 27        | 2.5           | 48           | 373-0525  |
| 50mm       | 13        | 1.6           | 32           | 373-0016  | 100mm      | 27        | 3.0           | 40           | 373-0530  |
| 50mm       | 13        | 2.0           | 32           | 373-0020  | 100mm      | 27        | 4.0           | 40           | 373-0540  |
| 50mm       | 13        | 2.5           | 32           | 373-0025  | 100mm      | 27        | 5.0           | 40           | 373-0550  |
| 50mm       | 13        | 3.0           | 24           | 373-0030  | 125mm      | 22        | 0.8           | 80           | 373-0608  |
| 50mm       | 13        | 4.0           | 24           | 373-0040  | 125mm      | 22        | 1.0           | 80           | 373-0610  |
| 50mm       | 13        | 5.0           | 24           | 373-0050  | 125mm      | 22        | 1.2           | 64           | 373-0612  |
| 50mm       | 13        | 6.0           | 20           | 373-0060  | 125mm      | 22        | 1.6           | 64           | 373-0616  |
| 63mm       | 16        | 0.5           | 64           | 373-0105  | 125mm      | 22        | 2.0           | 64           | 373-0620  |
| 63mm       | 16        | 0.6           | 48           | 373-0106  | 125mm      | 22        | 2.5           | 48           | 373-0625  |
| 63mm       | 16        | 0.8           | 48           | 373-0108  | 125mm      | 22        | 3.0           | 48           | 373-0630  |
| 63mm       | 16        | 1.0           | 48           | 373-0110  | 125mm      | 22        | 4.0           | 48           | 373-0640  |
| 63mm       | 16        | 1.2           | 40           | 373-0112  | 125mm      | 22        | 5.0           | 40           | 373-0650  |
| 63mm       | 16        | 1.6           | 40           | 373-0116  | 125mm      | 22        | 6.0           | 40           | 373-0660  |
| 63mm       | 16        | 1.7           | 40           | 373-0117  | 125mm      | 27        | 0.8           | 80           | 373-0708  |
| 63mm       | 16        | 2.0           | 40           | 373-0120  | 125mm      | 27        | 1.0           | 80           | 373-0710  |
| 63mm       | 16        | 2.5           | 32           | 373-0125  | 125mm      | 27        | 1.2           | 64           | 373-0712  |
| 63mm       | 16        | 3.0           | 32           | 373-0130  | 125mm      | 27        | 1.6           | 64           | 373-0716  |
| 63mm       | 16        | 4.0           | 32           | 373-0140  | 125mm      | 27        | 2.0           | 64           | 373-0720  |
| 63mm       | 16        | 5.0           | 24           | 373-0150  | 125mm      | 27        | 2.5           | 48           | 373-0725  |
| 63mm       | 16        | 6.0           | 24           | 373-0160  | 125mm      | 27        | 3.0           | 48           | 373-0730  |
| 80mm       | 22        | 0.5           | 64           | 373-0205  | 125mm      | 27        | 4.0           | 48           | 373-0740  |
| 80mm       | 22        | 0.6           | 64           | 373-0206  | 125mm      | 27        | 5.0           | 40           | 373-0750  |
| 80mm       | 22        | 0.8           | 64           | 373-0208  | 160mm      | 32        | 1.0           | 80           | 373-0810  |
| 80mm       | 22        | 1.0           | 48           | 373-0210  | 160mm      | 32        | 1.2           | 80           | 373-0812  |
| 80mm       | 22        | 1.2           | 48           | 373-0212  | 160mm      | 32        | 1.6           | 80           | 373-0816  |
| 80mm       | 22        | 1.6           | 48           | 373-0216  | 160mm      | 32        | 2.0           | 64           | 373-0820  |
| 80mm       | 22        | 2.0           | 40           | 373-0220  | 160mm      | 32        | 2.5           | 64           | 373-0825  |
| 80mm       | 22        | 2.5           | 40           | 373-0225  | 160mm      | 32        | 3.0           | 64           | 373-0830  |
| 80mm       | 22        | 3.0           | 40           | 373-0230  | 160mm      | 32        | 4.0           | 48           | 373-0840  |
| 80mm       | 22        | 4.0           | 32           | 373-0240  | 160mm      | 32        | 5.0           | 48           | 373-0850  |
| 80mm       | 22        | 5.0           | 32           | 373-0250  | 160mm      | 32        | 6.0           | 48           | 373-0860  |
| 80mm       | 22        | 6.0           | 32           | 373-0260  | 200mm      | 32        | 1.2           | 100          | 373-0912  |
| 80mm       | 27        | 0.6           | 64           | 373-0306  | 200mm      | 32        | 1.6           | 80           | 373-0916  |
| 80mm       | 27        | 0.8           | 64           | 373-0308  | 200mm      | 32        | 2.0           | 80           | 373-0920  |
| 80mm       | 27        | 1.0           | 48           | 373-0310  | 200mm      | 32        | 2.5           | 80           | 373-0925  |
| 80mm       | 27        | 1.2           | 48           | 373-0312  | 200mm      | 32        | 3.0           | 64           | 373-0930  |
| 80mm       | 27        | 1.6           | 48           | 373-0316  | 200mm      | 32        | 4.0           | 64           | 373-0940  |
| 80mm       | 27        | 2.0           | 40           | 373-0320  | 200mm      | 32        | 5.0           | 64           | 373-0950  |
| 80mm       | 27        | 2.5           | 40           | 373-0325  | 200mm      | 32        | 6.0           | 48           | 373-0960  |
| 80mm       | 27        | 3.0           | 40           | 373-0330  | 250mm      | 32        | 1.6           | 100          | 373-1016  |
| 80mm       | 27        | 4.0           | 32           | 373-0340  | 250mm      | 32        | 2.0           | 100          | 373-1020  |
| 100mm      | 22        | 0.6           | 80           | 373-0406  | 250mm      | 32        | 2.5           | 80           | 373-1025  |
| 100mm      | 22        | 0.8           | 64           | 373-0408  | 250mm      | 32        | 3.0           | 80           | 373-1030  |
| 100mm      | 22        | 1.0           | 64           | 373-0410  | 250mm      | 32        | 4.0           | 80           | 373-1040  |
| 100mm      | 22        | 1.2           | 64           | 373-0412  | 250mm      | 32        | 5.0           | 64           | 373-1050  |
| 100mm      | 22        | 1.6           | 48           | 373-0416  | 250mm      | 32        | 6.0           | 64           | 373-1060  |
| 100mm      | 22        | 2.0           | 48           | 373-0420  | 315mm      | 40        | 2.5           | 100          | 373-1125  |
| 100mm      | 22        | 2.5           | 48           | 373-0425  | 315mm      | 40        | 3.0           | 100          | 373-1130  |
| 100mm      | 22        | 3.0           | 40           | 373-0430  | 315mm      | 40        | 4.0           | 80           | 373-1140  |
| 100mm      | 22        | 4.0           | 40           | 373-0440  | 315mm      | 40        | 5.0           | 80           | 373-1150  |
| 100mm      | 22        | 5.0           | 40           | 373-0450  | 315mm      | 40        | 6.0           | 80           | 373-1160  |

### Plain Milling Cutters-Light Duty

#### High Speed Steel

- Cutters less than 3/4" width have straight teeth, 3/4" or wider have an 18° left hand helix and right hand cut.
- All cutters feature 10° radial rake.



| Size   | Width of Face | Hole Size | Order No. | Size | Width of Face | Hole Size | Order No. |
|--------|---------------|-----------|-----------|------|---------------|-----------|-----------|
| 2-1/4" | 1/4"          | 7/8"      | 304-1223  | 3"   | 3/4"          | 1-1/4"    | 304-3485  |
| 2-1/4" | 1/2"          | 7/8"      | 304-1323  | 3"   | 7/8"          | 1-1/4"    | 304-3568  |
| 2-1/4" | 1"            | 7/8"      | 304-1646  | 3"   | 1"            | 1"        | 304-3588  |
| 2-1/2" | 3/16"         | 1"        | 304-2123  | 3"   | 1"            | 1-1/4"    | 304-3642  |
| 2-1/2" | 1/4"          | 1"        | 304-2164  | 3"   | 1-1/4"        | 1-1/4"    | 304-3741  |
| 2-1/2" | 5/16"         | 1"        | 304-2206  | 3"   | 1-1/2"        | 1-1/4"    | 304-3824  |
| 2-1/2" | 3/8"          | 1"        | 304-2248  | 3"   | 2"            | 1-1/4"    | 304-3964  |
| 2-1/2" | 7/16"         | 1"        | 304-2289  | 3"   | 2-1/2"        | 1-1/4"    | 304-3968  |
| 2-1/2" | 1/2"          | 1"        | 304-2321  | 3"   | 3"            | 1-1/4"    | 304-3972  |
| 2-1/2" | 5/8"          | 1"        | 304-2404  | 4"   | 1/4"          | 1"        | 304-4160  |
| 2-1/2" | 3/4"          | 1"        | 304-2487  | 4"   | 1/4"          | 1-1/4"    | 304-4178  |
| 2-1/2" | 1"            | 1"        | 304-2644  | 4"   | 5/16"         | 1"        | 304-4202  |
| 2-1/2" | 1-1/2"        | 1"        | 304-2826  | 4"   | 3/8"          | 1"        | 304-4244  |
| 2-1/2" | 2"            | 1"        | 304-2909  | 4"   | 1"            | 1"        | 304-4247  |
| 2-1/2" | 2-1/2"        | 1"        | 304-2958  | 4"   | 3/8"          | 1-1/4"    | 304-4251  |
| 2-1/2" | 3"            | 1"        | 304-2974  | 4"   | 1/2"          | 1-1/4"    | 304-4327  |
| 3"     | 3/16"         | 1"        | 304-3121  | 4"   | 5/8"          | 1-1/4"    | 304-4400  |
| 3"     | 1/4"          | 1"        | 304-3162  | 4"   | 3/4"          | 1-1/4"    | 304-4483  |
| 3"     | 5/16"         | 1"        | 304-3204  | 4"   | 1"            | 1-1/4"    | 304-4640  |
| 3"     | 3/8"          | 1"        | 304-3246  | 4"   | 1-1/2"        | 1-1/4"    | 304-4822  |
| 3"     | 3/8"          | 1-1/4"    | 304-3253  | 4"   | 2"            | 1-1/4"    | 304-4962  |
| 3"     | 7/16"         | 1-1/4"    | 304-3287  | 4"   | 3"            | 1-1/4"    | 304-4970  |
| 3"     | 1/2"          | 1-1/4"    | 304-3329  | 4"   | 4"            | 1-1/4"    | 304-4988  |
| 3"     | 5/8"          | 1-1/4"    | 304-3402  |      |               |           |           |

### Bi-metal Hole Saws

Patented tooth design. Results in sharp teeth, fast cutting and long blade life in a wide variety of applications, ranging from wood to stainless steel.



| Saw Dia. (In/mm) | Order No. | Saw Dia. (In/mm) | Order No. |
|------------------|-----------|------------------|-----------|
| 9/16(14)         | 402-0302  | 2-1/4(57)        | 402-0352  |
| 5/8(16)          | 402-0304  | 2-5/16(59)       | 402-0354  |
| 11/16(17)        | 402-0306  | 2-3/8(60)        | 402-0356  |
| 3/4(19)          | 402-0308  | 2-1/2(64)        | 402-0358  |
| 25/32(20)        | 402-0309  | 2-9/16(65)       | 402-0360  |
| 13/16(21)        | 402-0310  | 2-5/8(67)        | 402-0362  |
| 7/8(22)          | 402-0312  | 2-11/16(68)      | 402-0364  |
| 15/16(24)        | 402-0314  | 2-3/4(70)        | 402-0366  |
| 1(25)            | 402-0316  | 2-7/8(73)        | 402-0368  |
| 1-1/16(27)       | 402-0318  | 3(76)            | 402-0370  |
| 1-1/8(28)        | 402-0320  | 3-1/8(79)        | 402-0372  |
| 1-9/64(29)       | 402-0321  | 3-1/4(83)        | 402-0374  |
| 1-3/16(30)       | 402-0322  | 3-3/8(86)        | 402-0376  |
| 1-1/4(32)        | 402-0324  | 3-1/2(89)        | 402-0378  |
| 1-5/16(33)       | 402-0326  | 3-5/8(92)        | 402-0380  |
| 1-3/8(35)        | 402-0328  | 3-3/4(95)        | 402-0382  |
| 1-7/16(37)       | 402-0330  | 3-7/8(98)        | 402-0384  |
| 1-1/2(38)        | 402-0332  | 4(102)           | 402-0386  |
| 1-9/16(40)       | 402-0334  | 4-1/8(105)       | 402-0388  |
| 1-5/8(41)        | 402-0336  | 4-1/4(108)       | 402-0390  |
| 1-11/16(43)      | 402-0338  | 4-3/8(111)       | 402-0391  |
| 1-3/4(44)        | 402-0340  | 4-1/2(114)       | 402-0392  |
| 1-13/16(46)      | 402-0342  | 4-3/4(121)       | 402-0394  |
| 1-7/8(48)        | 402-0344  | 5(127)           | 402-0395  |
| 2(51)            | 402-0346  | 5-1/2(140)       | 402-0396  |
| 2-1/16(52)       | 402-0348  | 6(152)           | 402-0398  |
| 2-1/8(54)        | 402-0350  |                  |           |

### Carbide Tipped Metal Slitting Saws



|             |               | For Steel          |             | For Non-Ferrous |           | For Stainless Steel |           |
|-------------|---------------|--------------------|-------------|-----------------|-----------|---------------------|-----------|
| Cutter Dia. | Width of Face | Arbor No. of Teeth | Order No.   | No. of Teeth    | Order No. | No. of Teeth        | Order No. |
| 3"          | 3/32"         | 1"                 |             |                 |           | 8                   | 245-6671  |
| 3"          | 1/8"          | 1"                 |             |                 |           | 8                   | 245-6672  |
| 3"          | 3/16"         | 1"                 |             |                 |           | 8                   | 245-6673  |
| 4"          | 3/32"         | 1"                 |             | 6               | 245-6501  | 10                  | 245-6674  |
| 4"          | 1/8"          | 1"                 | 8 245-6546  | 6               | 245-6502  | 10                  | 245-6675  |
| 4"          | 3/16"         | 1"                 | 8 245-6547  | 6               | 245-6503  | 10                  | 245-6676  |
| 5"          | 3/32"         | 1"                 |             |                 |           | 12                  | 245-6677  |
| 5"          | 3/16"         | 1"                 |             |                 |           | 12                  | 245-6678  |
| 5"          | 3/16"         | 1"                 |             |                 |           | 12                  | 245-6679  |
| 6"          | 1/8"          | 1-1/4"             | 12 245-6548 | 8               | 245-6504  | 14                  | 245-6680  |
| 6"          | 3/16"         | 1-1/4"             | 12 245-6549 |                 |           | 14                  | 245-6681  |
| 6"          | 1/4"          | 1-1/4"             | 12 245-6550 |                 |           | 14                  | 245-6682  |
| 8"          | 1/8"          | 1-1/4"             |             | 10              | 245-6505  |                     |           |

### Bi-metal Hole Saw Kits

Designed for professional trades



| Pieces | Specification                                                                        | Order No. |
|--------|--------------------------------------------------------------------------------------|-----------|
| 7pcs   | 3/4, 7/8, 1, 1-3/8, 1-1/2", drill 1/4", Arbor                                        | 402-0295  |
| 12pcs  | 3/4, 7/8, 1-1/8, 1-3/8, 1-1/2, 1-3/4, 2, 2-1/4, 2-1/2", drill 1/4", 2pcs Arbor       | 402-0296  |
| 15pcs  | 3/4, 7/8, 1, 1-1/8, 1-3/8, 1-1/2, 1-3/4, 2, 2-1/4, 2-1/2, 3", drill 1/4", 2pcs Arbor | 402-0297  |

## Carbide Tipped Saw Blades



for Standard wood series

| Dia. | Width | Thick | Hole | Teeth | Order No. | Dia. | Width | Thick | Hole | Teeth | Order No. |
|------|-------|-------|------|-------|-----------|------|-------|-------|------|-------|-----------|
| 110  | 2     | 1.2   | 20   | 24    | 373-4001  | 305  | 2.8   | 2     | 25.4 | 60    | 373-4025  |
| 110  | 2     | 1.2   | 20   | 30    | 373-4002  | 305  | 2.8   | 2     | 25.4 | 80    | 373-4026  |
| 110  | 2     | 1.2   | 20   | 40    | 373-4003  | 305  | 2.8   | 2     | 25.4 | 100   | 373-4027  |
| 125  | 2     | 1.2   | 20   | 24    | 373-4004  | 305  | 2.8   | 2     | 25.4 | 120   | 373-4028  |
| 125  | 2     | 1.2   | 20   | 30    | 373-4005  | 315  | 3     | 2.2   | 25.4 | 60    | 373-4029  |
| 125  | 2     | 1.2   | 20   | 40    | 373-4006  | 315  | 3     | 2.2   | 25.4 | 80    | 373-4030  |
| 150  | 2     | 1.2   | 20   | 30    | 373-4007  | 315  | 3     | 2.2   | 25.4 | 100   | 373-4031  |
| 150  | 2     | 1.2   | 20   | 40    | 373-4008  | 315  | 3     | 2.2   | 25.4 | 120   | 373-4032  |
| 180  | 2.4   | 1.5   | 25.4 | 24    | 373-4009  | 355  | 3.2   | 2.5   | 25.4 | 60    | 373-4033  |
| 180  | 2.4   | 1.5   | 25.4 | 36    | 373-4010  | 355  | 3.2   | 2.5   | 25.4 | 80    | 373-4034  |
| 180  | 2.4   | 1.5   | 25.4 | 40    | 373-4011  | 355  | 3.2   | 2.5   | 25.4 | 100   | 373-4035  |
| 180  | 2.4   | 1.5   | 25.4 | 60    | 373-4012  | 355  | 3.2   | 2.5   | 25.4 | 120   | 373-4036  |
| 200  | 2.4   | 1.5   | 25.4 | 24    | 373-4013  | 406  | 3.2   | 2.5   | 25.4 | 60    | 373-4037  |
| 200  | 2.4   | 1.5   | 25.4 | 40    | 373-4014  | 406  | 3.2   | 2.5   | 25.4 | 80    | 373-4038  |
| 200  | 2.4   | 1.5   | 25.4 | 60    | 373-4015  | 406  | 3.2   | 2.5   | 25.4 | 100   | 373-4039  |
| 230  | 2.6   | 1.8   | 25.4 | 36    | 373-4016  | 406  | 3.2   | 2.5   | 25.4 | 120   | 373-4040  |
| 230  | 2.6   | 1.8   | 25.4 | 40    | 373-4017  | 460  | 3.2   | 2.5   | 25.4 | 60    | 373-4041  |
| 230  | 2.6   | 1.8   | 25.4 | 60    | 373-4018  | 460  | 3.2   | 2.5   | 25.4 | 80    | 373-4042  |
| 250  | 2.8   | 2     | 25.4 | 36    | 373-4019  | 460  | 3.2   | 2.5   | 25.4 | 100   | 373-4043  |
| 250  | 2.8   | 2     | 25.4 | 40    | 373-4020  | 460  | 3.2   | 2.5   | 25.4 | 120   | 373-4044  |
| 250  | 2.8   | 2     | 25.4 | 60    | 373-4021  | 500  | 3.2   | 2.5   | 25.4 | 60    | 373-4045  |
| 250  | 2.8   | 2     | 25.4 | 80    | 373-4022  | 500  | 3.2   | 2.5   | 25.4 | 80    | 373-4046  |
| 250  | 2.8   | 2     | 25.4 | 100   | 373-4023  | 500  | 3.2   | 2.5   | 25.4 | 100   | 373-4047  |
| 305  | 2.8   | 2     | 25.4 | 40    | 373-4024  | 500  | 3.2   | 2.5   | 25.4 | 120   | 373-4048  |



for Aluminum series

| Dia. | Width | Thick | Hole   | Teeth | Order No. |
|------|-------|-------|--------|-------|-----------|
| 205  | 2.6   | 1.8   | 25.4mm | 100   | 373-4051  |
| 235  | 2.6   | 1.8   | 25.4mm | 100   | 373-4052  |
| 254  | 2.8   | 2.0   | 25.4mm | 80    | 373-4053  |
| 254  | 2.8   | 2.0   | 25.4mm | 100   | 373-4054  |
| 305  | 3.2   | 2.2   | 25.4mm | 80    | 373-4055  |
| 305  | 3.2   | 2.2   | 25.4mm | 100   | 373-4056  |
| 305  | 3.2   | 2.2   | 25.4mm | 120   | 373-4057  |
| 355  | 3.2   | 2.2   | 25.4mm | 100   | 373-4058  |
| 355  | 3.2   | 2.2   | 25.4mm | 120   | 373-4059  |
| 405  | 3.4   | 2.5   | 25.4mm | 100   | 373-4060  |
| 405  | 3.4   | 2.5   | 25.4mm | 120   | 373-4061  |
| 460  | 3.4   | 2.5   | 25.4mm | 100   | 373-4062  |
| 460  | 3.4   | 2.5   | 25.4mm | 120   | 373-4063  |
| 500  | 3.4   | 2.5   | 25.4mm | 100   | 373-4064  |
| 500  | 3.4   | 2.5   | 25.4mm | 120   | 373-4065  |



for Mild steel series

| Dia. | Width | Thick | Hole     | Teeth | Order No. |
|------|-------|-------|----------|-------|-----------|
| 140  | 2.0   | 1.5   | 15.875mm | 20    | 373-4071  |
| 185  | 2.0   | 1.5   | 15.875mm | 20    | 373-4072  |

## Diamond Saw Blades



for Wet Cutting Type

| Out Dia. | Internal Dia. | Teeth Thick | Teeth Height | Blade Thick | Order No. |
|----------|---------------|-------------|--------------|-------------|-----------|
| 80mm     | 20mm          | 0.8mm       | 5mm          | 1.4mm       | 373-4081  |
| 100      | 20            | 2.0         | 5            | 1.4         | 373-4082  |
| 110      | 20            | 2.0         | 5            | 1.4         | 373-4083  |
| 125      | 20            | 2.0         | 5            | 1.4         | 373-4084  |
| 150      | 22.23         | 2.0         | 5            | 1.4         | 373-4085  |
| 150      | 22.23         | 2.5         | 5            | 1.8         | 373-4086  |
| 230      | 22.23         | 2.5         | 5            | 1.8         | 373-4087  |

## Diamond Saw Blades



for Dry Cutting

| Out Dia. | Internal Dia. | Teeth Thick | Teeth Height | Blade Thick | Order No. |
|----------|---------------|-------------|--------------|-------------|-----------|
| 105      | 22.23         | 2.0         | 7mm          | 1.4mm       | 373-4091  |
| 110      | 22.23         | 2.0         | 7            | 1.4         | 373-4092  |
| 115      | 22.23         | 2.0         | 7            | 1.4         | 373-4093  |
| 125      | 22.23         | 2.0         | 7            | 1.4         | 373-4094  |
| 180      | 22.23         | 2.5         | 7            | 1.4         | 373-4095  |
| 230      | 22.23         | 2.5         | 7            | 1.4         | 373-4096  |

## Diamond Saw Blades



Turbo Type for Wet and Dry Cutting

| Out Dia. | In Dia. | Teeth Thick | Teeth Height | Blade Thick | Order No. |
|----------|---------|-------------|--------------|-------------|-----------|
| 105      | 22.23   | 1.8         | 7mm          | 1.2mm       | 373-4101  |
| 105      | 20      | 2.5         | 7            | 1.6mm       | 373-4102  |
| 110      | 22.23   | 1.8         | 7            | 1.2mm       | 373-4103  |
| 115      | 22.23   | 2           | 7            | 1.4mm       | 373-4104  |
| 115      | 22.23   | 2.5         | 7            | 1.6mm       | 373-4105  |
| 125      | 22.23   | 2           | 7            | 1.4mm       | 373-4106  |
| 125      | 22.23   | 2.5         | 7            | 1.6mm       | 373-4107  |
| 150      | 22.23   | 2           | 7            | 1.4mm       | 373-4108  |
| 150      | 22.23   | 2.7         | 7            | 2.0mm       | 373-4109  |
| 180      | 22.23   | 2.2         | 7            | 1.6mm       | 373-4110  |
| 180      | 22.23   | 2.7         | 7            | 2.0mm       | 373-4111  |
| 200      | 22.23   | 2.6         | 7            | 2.0mm       | 373-4112  |
| 230      | 22.23   | 2.8         | 7            | 2.0mm       | 373-4113  |
| 230      | 22.23   | 3           | 7            | 2.5mm       | 373-4114  |
| 300      | 22.23   | 3           | 7            | 2.2mm       | 373-4115  |

## Annular Cutters

### High Speed Steel

- Cut clean, burr free periphery holes
- Pilot pin eject the center as a plug of steel
- Suitable for drilling in hard-cutting materials
- Shank Diameter: Metric 19.05mm/Inch 3/4".



### Inch

Shank Diameter 3/4"

| Size    | M2                              |                                 |                                 | M35                             |                                 |                                 |
|---------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|         | 1" Depth<br>of Cut<br>Order No. | 2" Depth<br>of Cut<br>Order No. | 3" Depth<br>of Cut<br>Order No. | 1" Depth<br>of Cut<br>Order No. | 2" Depth<br>of Cut<br>Order No. | 3" Depth<br>of Cut<br>Order No. |
| 7/16"   | 402-2028                        | 402-2328                        | 402-2628                        | 402-1028                        | 402-1328                        | 402-1628                        |
| 1/2     | 402-2032                        | 402-2332                        | 402-2632                        | 402-1032                        | 402-1332                        | 402-1632                        |
| 9/16    | 402-2036                        | 402-2336                        | 402-2636                        | 402-1036                        | 402-1336                        | 402-1636                        |
| 19/32   | 402-2038                        | 402-2338                        | 402-2638                        | 402-1038                        | 402-1338                        | 402-1638                        |
| 5/8"    | 402-2040                        | 402-2340                        | 402-2640                        | 402-1040                        | 402-1340                        | 402-1640                        |
| 11/16   | 402-2044                        | 402-2344                        | 402-2644                        | 402-1044                        | 402-1344                        | 402-1644                        |
| 23/32   | 402-2046                        | 402-2346                        | 402-2646                        | 402-1046                        | 402-1346                        | 402-1646                        |
| 3/4     | 402-2048                        | 402-2348                        | 402-2648                        | 402-1048                        | 402-1348                        | 402-1648                        |
| 25/32   | 402-2050                        | 402-2350                        | 402-2650                        | 402-1050                        | 402-1350                        | 402-1650                        |
| 13/16   | 402-2052                        | 402-2352                        | 402-2652                        | 402-1052                        | 402-1352                        | 402-1652                        |
| 7/8     | 402-2056                        | 402-2356                        | 402-2656                        | 402-1056                        | 402-1356                        | 402-1656                        |
| 29/32   | 402-2058                        | 402-2358                        | 402-2658                        | 402-1058                        | 402-1358                        | 402-1658                        |
| 15/16   | 402-2060                        | 402-2360                        | 402-2660                        | 402-1060                        | 402-1360                        | 402-1660                        |
| 1       | 402-2064                        | 402-2364                        | 402-2664                        | 402-1064                        | 402-1364                        | 402-1664                        |
| 1-1/32  | 402-2102                        | 402-2402                        | 402-2702                        | 402-1102                        | 402-1402                        | 402-1702                        |
| 1-1/16  | 402-2104                        | 402-2404                        | 402-2704                        | 402-1104                        | 402-1404                        | 402-1704                        |
| 1-3/32  | 402-2106                        | 402-2406                        | 402-2706                        | 402-1106                        | 402-1406                        | 402-1706                        |
| 1-1/8"  | 402-2108                        | 402-2408                        | 402-2708                        | 402-1108                        | 402-1408                        | 402-1708                        |
| 1-3/16  | 402-2112                        | 402-2412                        | 402-2712                        | 402-1112                        | 402-1412                        | 402-1712                        |
| 1-7/32  | 402-2114                        | 402-2414                        | 402-2714                        | 402-1114                        | 402-1414                        | 402-1714                        |
| 1-1/4   | 402-2116                        | 402-2416                        | 402-2716                        | 402-1116                        | 402-1416                        | 402-1716                        |
| 1-9/32  | 402-2118                        | 402-2418                        | 402-2718                        | 402-1118                        | 402-1418                        | 402-1718                        |
| 1-5/16  | 402-2120                        | 402-2420                        | 402-2720                        | 402-1120                        | 402-1420                        | 402-1720                        |
| 1-3/8   | 402-2124                        | 402-2424                        | 402-2724                        | 402-1124                        | 402-1424                        | 402-1724                        |
| 1-13/32 | 402-2126                        | 402-2426                        | 402-2726                        | 402-1126                        | 402-1426                        | 402-1726                        |
| 1-7/16  | 402-2128                        | 402-2428                        | 402-2728                        | 402-1128                        | 402-1428                        | 402-1728                        |
| 1-1/2"  | 402-2132                        | 402-2432                        | 402-2732                        | 402-1132                        | 402-1432                        | 402-1732                        |
| 1-17/32 | 402-2134                        | 402-2434                        | 402-2734                        | 402-1134                        | 402-1434                        | 402-1734                        |
| 1-9/16  | 402-2136                        | 402-2436                        | 402-2736                        | 402-1136                        | 402-1436                        | 402-1736                        |
| 1-5/8   | 402-2140                        | 402-2440                        | 402-2740                        | 402-1140                        | 402-1440                        | 402-1740                        |
| 1-21/32 | 402-2142                        | 402-2442                        | 402-2742                        | 402-1142                        | 402-1442                        | 402-1742                        |
| 1-11/16 | 402-2144                        | 402-2444                        | 402-2744                        | 402-1144                        | 402-1444                        | 402-1744                        |
| 1-23/32 | 402-2146                        | 402-2446                        | 402-2746                        | 402-1146                        | 402-1446                        | 402-1746                        |
| 1-3/4   | 402-2148                        | 402-2448                        | 402-2748                        | 402-1148                        | 402-1448                        | 402-1748                        |
| 1-13/16 | 402-2152                        | 402-2452                        | 402-2752                        | 402-1152                        | 402-1452                        | 402-1752                        |
| 1-27/32 | 402-2154                        | 402-2454                        | 402-2754                        | 402-1154                        | 402-1454                        | 402-1754                        |
| 1-7/8   | 402-2156                        | 402-2456                        | 402-2756                        | 402-1156                        | 402-1456                        | 402-1756                        |
| 1-15/16 | 402-2160                        | 402-2460                        | 402-2760                        | 402-1160                        | 402-1460                        | 402-1760                        |
| 1-31/32 | 402-2162                        | 402-2462                        | 402-2762                        | 402-1162                        | 402-1462                        | 402-1762                        |
| 2       | 402-2164                        | 402-2464                        | 402-2764                        | 402-1164                        | 402-1464                        | 402-1764                        |
| 2-1/32  | 402-2202                        | 402-2502                        | 402-2802                        | 402-1202                        | 402-1502                        | 402-1802                        |
| 2-1/16  | 402-2204                        | 402-2504                        | 402-2804                        | 402-1204                        | 402-1504                        | 402-1804                        |
| 2-1/8   | 402-2208                        | 402-2508                        | 402-2808                        | 402-1208                        | 402-1508                        | 402-1808                        |
| 2-5/32  | 402-2210                        | 402-2510                        | 402-2810                        | 402-1210                        | 402-1510                        | 402-1810                        |
| 2-3/16  | 402-2212                        | 402-2512                        | 402-2812                        | 402-1212                        | 402-1512                        | 402-1812                        |
| 2-7/32  | 402-2214                        | 402-2514                        | 402-2814                        | 402-1214                        | 402-1514                        | 402-1814                        |
| 2-1/4   | 402-2216                        | 402-2516                        | 402-2816                        | 402-1216                        | 402-1516                        | 402-1816                        |
| 2-5/16  | 402-2220                        | 402-2520                        | 402-2820                        | 402-1220                        | 402-1520                        | 402-1820                        |
| 2-11/32 | 402-2222                        | 402-2522                        | 402-2822                        | 402-1222                        | 402-1522                        | 402-1822                        |

### Metric

Shank Diameter 19.05mm

| Size | M2                              |                                 |                                 | M35                             |                                 |                                 |
|------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|      | 1" Depth<br>of Cut<br>Order No. | 2" Depth<br>of Cut<br>Order No. | 3" Depth<br>of Cut<br>Order No. | 1" Depth<br>of Cut<br>Order No. | 2" Depth<br>of Cut<br>Order No. | 3" Depth<br>of Cut<br>Order No. |
| 12mm | 402-6028                        | 402-6328                        | 402-6628                        | 402-3028                        | 402-3328                        | 402-3628                        |
| 13   | 402-6032                        | 402-6332                        | 402-6632                        | 402-3032                        | 402-3332                        | 402-3632                        |
| 14   | 402-6036                        | 402-6336                        | 402-6636                        | 402-3036                        | 402-3336                        | 402-3636                        |
| 15   | 402-6038                        | 402-6338                        | 402-6638                        | 402-3038                        | 402-3338                        | 402-3638                        |
| 16   | 402-6040                        | 402-6340                        | 402-6640                        | 402-3040                        | 402-3340                        | 402-3640                        |
| 17   | 402-6044                        | 402-6344                        | 402-6644                        | 402-3044                        | 402-3344                        | 402-3644                        |
| 18   | 402-6046                        | 402-6346                        | 402-6646                        | 402-3046                        | 402-3346                        | 402-3646                        |
| 19   | 402-6048                        | 402-6348                        | 402-6648                        | 402-3048                        | 402-3348                        | 402-3648                        |
| 20   | 402-6050                        | 402-6350                        | 402-6650                        | 402-3050                        | 402-3350                        | 402-3650                        |
| 21   | 402-6052                        | 402-6352                        | 402-6652                        | 402-3052                        | 402-3352                        | 402-3652                        |
| 22   | 402-6056                        | 402-6356                        | 402-6656                        | 402-3056                        | 402-3356                        | 402-3656                        |
| 23   | 402-6058                        | 402-6358                        | 402-6658                        | 402-3058                        | 402-3358                        | 402-3658                        |
| 24   | 402-6060                        | 402-6360                        | 402-6660                        | 402-3060                        | 402-3360                        | 402-3660                        |
| 25   | 402-6064                        | 402-6364                        | 402-6664                        | 402-3064                        | 402-3364                        | 402-3664                        |
| 26   | 402-6102                        | 402-6402                        | 402-6702                        | 402-3102                        | 402-3402                        | 402-3702                        |
| 27   | 402-6104                        | 402-6404                        | 402-6704                        | 402-3104                        | 402-3404                        | 402-3704                        |
| 28   | 402-6106                        | 402-6406                        | 402-6706                        | 402-3106                        | 402-3406                        | 402-3706                        |
| 29   | 402-6108                        | 402-6408                        | 402-6708                        | 402-3108                        | 402-3408                        | 402-3708                        |
| 30   | 402-6112                        | 402-6412                        | 402-6712                        | 402-3112                        | 402-3412                        | 402-3712                        |
| 31   | 402-6114                        | 402-6414                        | 402-6714                        | 402-3114                        | 402-3414                        | 402-3714                        |
| 32   | 402-6116                        | 402-6416                        | 402-6716                        | 402-3116                        | 402-3416                        | 402-3716                        |
| 33   | 402-6118                        | 402-6418                        | 402-6718                        | 402-3118                        | 402-3418                        | 402-3718                        |
| 34   | 402-6120                        | 402-6420                        | 402-6720                        | 402-3120                        | 402-3420                        | 402-3720                        |
| 35   | 402-6124                        | 402-6424                        | 402-6724                        | 402-3124                        | 402-3424                        | 402-3724                        |
| 36   | 402-6126                        | 402-6426                        | 402-6726                        | 402-3126                        | 402-3426                        | 402-3726                        |
| 37   | 402-6128                        | 402-6428                        | 402-6728                        | 402-3128                        | 402-3428                        | 402-3728                        |
| 38   | 402-6132                        | 402-6432                        | 402-6732                        | 402-3132                        | 402-3432                        | 402-3732                        |
| 39   | 402-6134                        | 402-6434                        | 402-6734                        | 402-3134                        | 402-3434                        | 402-3734                        |
| 40   | 402-6136                        | 402-6436                        | 402-6736                        | 402-3136                        | 402-3436                        | 402-3736                        |
| 41   | 402-6140                        | 402-6440                        | 402-6740                        | 402-3140                        | 402-3440                        | 402-3740                        |
| 42   | 402-6142                        | 402-6442                        | 402-6742                        | 402-3142                        | 402-3442                        | 402-3742                        |
| 43   | 402-6144                        | 402-6444                        | 402-6744                        | 402-3144                        | 402-3444                        | 402-3744                        |
| 44   | 402-6146                        | 402-6446                        | 402-6746                        | 402-3146                        | 402-3446                        | 402-3746                        |
| 45   | 402-6148                        | 402-6448                        | 402-6748                        | 402-3148                        | 402-3448                        | 402-3748                        |
| 46   | 402-6152                        | 402-6452                        | 402-6752                        | 402-3152                        | 402-3452                        | 402-3752                        |
| 47   | 402-6154                        | 402-6454                        | 402-6754                        | 402-3154                        | 402-3454                        | 402-3754                        |
| 48   | 402-6156                        | 402-6456                        | 402-6756                        | 402-3156                        | 402-3456                        | 402-3756                        |
| 49   | 402-6160                        | 402-6460                        | 402-6760                        | 402-3160                        | 402-3460                        | 402-3760                        |
| 50   | 402-6162                        | 402-6462                        | 402-6762                        | 402-3162                        | 402-3462                        | 402-3762                        |
| 51   | 402-6164                        | 402-6464                        | 402-6764                        | 402-3164                        | 402-3464                        | 402-3764                        |
| 52   | 402-6202                        | 402-6502                        | 402-6802                        | 402-3202                        | 402-3502                        | 402-3802                        |
| 53   | 402-6204                        | 402-6504                        | 402-6804                        | 402-3204                        | 402-3504                        | 402-3804                        |
| 54   | 402-6208                        | 402-6508                        | 402-6808                        | 402-3208                        | 402-3508                        | 402-3808                        |
| 55   | 402-6210                        | 402-6510                        | 402-6810                        | 402-3210                        | 402-3510                        | 402-3810                        |
| 56   | 402-6212                        | 402-6512                        | 402-6812                        | 402-3212                        | 402-3512                        | 402-3812                        |
| 57   | 402-6214                        | 402-6514                        | 402-6814                        | 402-3214                        | 402-3514                        | 402-3814                        |
| 58   | 402-6216                        | 402-6516                        | 402-6816                        | 402-3216                        | 402-3516                        | 402-3816                        |
| 59   | 402-6220                        | 402-6520                        | 402-6820                        | 402-3220                        | 402-3520                        | 402-3820                        |
| 60   | 402-6222                        | 402-6522                        | 402-6822                        | 402-3222                        | 402-3522                        | 402-3822                        |

## Carbide Tip Annular Cutters

- Cut clean, burr free Periphery holes
- Pilot pin eject the center as a plug of steel
- Suitable for drilling in hard-cutting materials
- Shank Diameter: Metric 19.05mm/Inch 3/4".



### Inch

Shank Diameter 3/4"

| Inch 3/4" Shank Dia. |                              |                              |                              |
|----------------------|------------------------------|------------------------------|------------------------------|
| Size                 | 1" Depth of Cut<br>Order No. | 2" Depth of Cut<br>Order No. | 3" Depth of Cut<br>Order No. |
| 7/16"                | 402-9028                     | 402-9328                     | 402-9628                     |
| 1/2"                 | 402-9032                     | 402-9332                     | 402-9632                     |
| 9/16"                | 402-9036                     | 402-9336                     | 402-9636                     |
| 19/32"               | 402-9038                     | 402-9338                     | 402-9638                     |
| 5/8"                 | 402-9040                     | 402-9340                     | 402-9640                     |
| 11/16"               | 402-9044                     | 402-9344                     | 402-9644                     |
| 23/32"               | 402-9046                     | 402-9346                     | 402-9646                     |
| 3/4"                 | 402-9048                     | 402-9348                     | 402-9648                     |
| 25/32"               | 402-9050                     | 402-9350                     | 402-9650                     |
| 13/16"               | 402-9052                     | 402-9352                     | 402-9652                     |
| 7/8"                 | 402-9056                     | 402-9356                     | 402-9656                     |
| 29/32"               | 402-9058                     | 402-9358                     | 402-9658                     |
| 15/16"               | 402-9060                     | 402-9360                     | 402-9660                     |
| 1"                   | 402-9064                     | 402-9364                     | 402-9664                     |
| 1-1/32"              | 402-9102                     | 402-9402                     | 402-9702                     |
| 1-1/16"              | 402-9104                     | 402-9404                     | 402-9704                     |
| 1-3/32"              | 402-9106                     | 402-9406                     | 402-9706                     |
| 1-1/8"               | 402-9108                     | 402-9408                     | 402-9708                     |
| 1-3/16"              | 402-9112                     | 402-9412                     | 402-9712                     |
| 1-7/32"              | 402-9114                     | 402-9414                     | 402-9714                     |
| 1-1/4"               | 402-9116                     | 402-9416                     | 402-9716                     |
| 1-9/32"              | 402-9118                     | 402-9418                     | 402-9718                     |
| 1-5/16"              | 402-9120                     | 402-9420                     | 402-9720                     |
| 1-3/8"               | 402-9124                     | 402-9424                     | 402-9724                     |
| 1-13/32"             | 402-9126                     | 402-9426                     | 402-9726                     |
| 1-7/16"              | 402-9128                     | 402-9428                     | 402-9728                     |
| 1-1/2"               | 402-9132                     | 402-9432                     | 402-9732                     |
| 1-17/32"             | 402-9134                     | 402-9434                     | 402-9734                     |
| 1-9/16"              | 402-9136                     | 402-9436                     | 402-9736                     |
| 1-5/8"               | 402-9140                     | 402-9440                     | 402-9740                     |
| 1-21/32"             | 402-9142                     | 402-9442                     | 402-9742                     |
| 1-11/16"             | 402-9144                     | 402-9444                     | 402-9744                     |
| 1-23/32"             | 402-9146                     | 402-9446                     | 402-9746                     |
| 1-3/4"               | 402-9148                     | 402-9448                     | 402-9748                     |
| 1-13/16"             | 402-9152                     | 402-9452                     | 402-9752                     |
| 1-27/32"             | 402-9154                     | 402-9454                     | 402-9754                     |
| 1-7/8"               | 402-9156                     | 402-9456                     | 402-9756                     |
| 1-15/16"             | 402-9160                     | 402-9460                     | 402-9760                     |
| 1-31/32"             | 402-9162                     | 402-9462                     | 402-9762                     |
| 2"                   | 402-9164                     | 402-9464                     | 402-9764                     |
| 2-1/32"              | 402-9202                     | 402-9502                     | 402-9802                     |
| 2-1/16"              | 402-9204                     | 402-9504                     | 402-9804                     |
| 2-1/8"               | 402-9208                     | 402-9508                     | 402-9808                     |
| 2-5/32"              | 402-9210                     | 402-9510                     | 402-9810                     |
| 2-3/16"              | 402-9212                     | 402-9512                     | 402-9812                     |
| 2-7/32"              | 402-9214                     | 402-9514                     | 402-9814                     |
| 2-1/4"               | 402-9216                     | 402-9516                     | 402-9816                     |
| 2-5/16"              | 402-9220                     | 402-9520                     | 402-9820                     |
| 2-11/32"             | 402-9222                     | 402-9522                     | 402-9822                     |

### Metric

Shank Diameter 19.05mm

| Metric 19.05mm Shank Dia. |                              |                              |                              |
|---------------------------|------------------------------|------------------------------|------------------------------|
| Size                      | 1" Depth of Cut<br>Order No. | 2" Depth of Cut<br>Order No. | 3" Depth of Cut<br>Order No. |
| 12mm                      | 402-5028                     | 402-5328                     | 402-5628                     |
| 13                        | 402-5032                     | 402-5332                     | 402-5632                     |
| 14                        | 402-5036                     | 402-5336                     | 402-5636                     |
| 15                        | 402-5038                     | 402-5338                     | 402-5638                     |
| 16                        | 402-5040                     | 402-5340                     | 402-5640                     |
| 17                        | 402-5044                     | 402-5344                     | 402-5644                     |
| 18                        | 402-5046                     | 402-5346                     | 402-5646                     |
| 19                        | 402-5048                     | 402-5348                     | 402-5648                     |
| 20                        | 402-5050                     | 402-5350                     | 402-5650                     |
| 21                        | 402-5052                     | 402-5352                     | 402-5652                     |
| 22                        | 402-5056                     | 402-5356                     | 402-5656                     |
| 23                        | 402-5058                     | 402-5358                     | 402-5658                     |
| 24                        | 402-5060                     | 402-5360                     | 402-5660                     |
| 25                        | 402-5064                     | 402-5364                     | 402-5664                     |
| 26                        | 402-5102                     | 402-5402                     | 402-5702                     |
| 27                        | 402-5104                     | 402-5404                     | 402-5704                     |
| 28                        | 402-5106                     | 402-5406                     | 402-5706                     |
| 29                        | 402-5108                     | 402-5408                     | 402-5708                     |
| 30                        | 402-5112                     | 402-5412                     | 402-5712                     |
| 31                        | 402-5114                     | 402-5414                     | 402-5714                     |
| 32                        | 402-5116                     | 402-5416                     | 402-5716                     |
| 33                        | 402-5118                     | 402-5418                     | 402-5718                     |
| 34                        | 402-5120                     | 402-5420                     | 402-5720                     |
| 35                        | 402-5124                     | 402-5424                     | 402-5724                     |
| 36                        | 402-5126                     | 402-5426                     | 402-5726                     |
| 37                        | 402-5128                     | 402-5428                     | 402-5728                     |
| 38                        | 402-5132                     | 402-5432                     | 402-5732                     |
| 39                        | 402-5134                     | 402-5434                     | 402-5734                     |
| 40                        | 402-5136                     | 402-5436                     | 402-5736                     |
| 41                        | 402-5140                     | 402-5440                     | 402-5740                     |
| 42                        | 402-5142                     | 402-5442                     | 402-5742                     |
| 43                        | 402-5144                     | 402-5444                     | 402-5744                     |
| 44                        | 402-5146                     | 402-5446                     | 402-5746                     |
| 45                        | 402-5148                     | 402-5448                     | 402-5748                     |
| 46                        | 402-5152                     | 402-5452                     | 402-5752                     |
| 47                        | 402-5154                     | 402-5454                     | 402-5754                     |
| 48                        | 402-5156                     | 402-5456                     | 402-5756                     |
| 49                        | 402-5160                     | 402-5460                     | 402-5760                     |
| 50                        | 402-5162                     | 402-5462                     | 402-5762                     |
| 51                        | 402-5164                     | 402-5464                     | 402-5764                     |
| 52                        | 402-5202                     | 402-5502                     | 402-5802                     |
| 53                        | 402-5204                     | 402-5504                     | 402-5804                     |
| 54                        | 402-5208                     | 402-5508                     | 402-5808                     |
| 55                        | 402-5210                     | 402-5510                     | 402-5810                     |
| 56                        | 402-5212                     | 402-5512                     | 402-5812                     |
| 57                        | 402-5214                     | 402-5514                     | 402-5814                     |
| 58                        | 402-5216                     | 402-5516                     | 402-5816                     |
| 59                        | 402-5220                     | 402-5520                     | 402-5820                     |
| 60                        | 402-9522                     | 402-5522                     | 402-5822                     |

### Corner Rounding End Mill Sets

- Used to mill rounded corners.
- From relieved for longer tool life.
- May be resharpened repeatedly without changing form.
- Ideal for your Bridgeport type machines.

#### 4Pcs/set, Wooden Stand

| Pieces | Size                                | Materials  | Order No. |
|--------|-------------------------------------|------------|-----------|
| 4      | 1/2, 9/16, 5/8, 3/4 have 3/4" shank | M2         | 182-6908  |
| 4      | 1/2, 9/16, 5/8, 3/4 have 3/4" shank | M2AL       | 181-6908  |
| 4      | 1/2, 9/16, 5/8, 3/4 have 3/4" shank | Tin-Coated | 183-6908  |



#### 8Pcs/set, Wooden Stand

| Pieces | Size                                      | Shank Dia. | M2 Order No. | M2 TiN Order No. | M2 Al Order No. |
|--------|-------------------------------------------|------------|--------------|------------------|-----------------|
| 8      | 1/16, 3/32"                               | 3/8        | 182-6006     |                  |                 |
|        | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8           | 1/2        |              |                  |                 |
| 8      | 1/16, 3/32, 1/8"                          | 3/8        | 182-6007     | 183-6007         | 181-6007        |
|        | 5/32, 3/16, 1/4, 5/16, 3/8                | 1/2        |              |                  |                 |
| 8      | 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 | 3/4        | 182-6008     | 183-6008         | 181-6008        |



#### M42 8% Cobalt

#### Corner Rounding End Mill Sets

| Pieces | Size                                      | Shank Dia. | Order No. |
|--------|-------------------------------------------|------------|-----------|
| 4      | 1/2, 9/16, 5/8, 3/4"                      | 3/4        | 723-6684  |
| 8      | 1/16, 3/32"                               | 3/8        | 723-6686  |
|        | 1/8, 5/32, 3/16, 1/4, 5/16, 3/8           | 1/2        |           |
| 8      | 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 | 3/4        | 723-6688  |



### Woodruff Keyseat Cutter Sets

#### 1/2" Shank, High Speed Steel or M42 Cobalt

| Pieces | American Standard                                | High Speed Steel         |                           | M42 Cobalt               |                           |
|--------|--------------------------------------------------|--------------------------|---------------------------|--------------------------|---------------------------|
|        |                                                  | Straight Tooth Order No. | Staggered Tooth Order No. | Straight Tooth Order No. | Staggered Tooth Order No. |
| 10     | 403, 204, 404, 305, 505, 406, 606, 806, 608, 808 | 296-9810                 | 296-9910                  | 296-9811                 | 296-9911                  |
| 41     | 202 thru 1212                                    | 296-9841                 | 297-9941                  | 296-9842                 | 297-9942                  |
| 8      | 1, 2, 4, 6, 1, 7, 9, 91, 13                      |                          | 297-9908                  |                          |                           |



### Circular Saw Arbors & Sets

Use with saw blades .001" to 3/16" thick. black oxide finish

#### Individuals

| Flange Size | Shank Dia. | Inside Hole Dia. | Order No. |
|-------------|------------|------------------|-----------|
| 1/2"        | 1/2"       | 1/4"             | 712-0205  |
| 5/8         | 1/2        | 3/8              | 712-0210  |
| 3/4         | 1/2        | 1/2              | 712-0215  |
| 1           | 5/8        | 5/8              | 712-0220  |

#### Circular Saw Arbor Set

3pcs /set:  
1/2", 5/8", 3/4"  
in wooden stand  
Order No. 712-0300



### Slitting & Slotting Saw Arbors

| Shank Dia. | Overall Length | Inside Hole Dia.       | Order No. |
|------------|----------------|------------------------|-----------|
| 1/2"       | 2-9/16"        | 1/2, 5/8, 3/4, 7/8, 1" | 712-0005  |
| 1/2        | 4-3/4          | 3/8"                   | 712-1010  |
| R8         | 5-3/32         | 1/2, 5/8, 3/4, 7/8, 1" | 712-0010  |

- Spring loaded mechanism readily accepts saw blades with hole diameters from 1/2" to 1".
- Black oxide finish.
- A hex head screw makes saws firmly in position.



## Keyway Broaches with Shims

### High Speed Steel

- Specialty tools designed for cutting keyways in machined holes.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- Hardened and ground bars with cutting teeth on one side.
- Size and proportioned to afford a good cutting range and ample rigidity.
- Replacement shims are also available.
- Broach is tapered, allowing teeth to cut keyway to proper depth.
- Made to cut either inch or millimeter size keyways.
- Bright finish.



### Inch Size

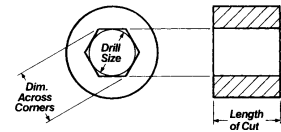
| Broach Size | Type | Broach Dimensions | Shims Required | Length of Cut Min. | Length of Cut Max. | Tolerances    | Order No. | TIN-Coated Order No. |
|-------------|------|-------------------|----------------|--------------------|--------------------|---------------|-----------|----------------------|
| 1/16"       | A    | 1/8x5"            | 0              | 13/64"             | 1-1/8"             | .0625-.0635   | 395-1004  | 396-1004             |
| 3/32        | A    | 1/8x5             | 0              | 13/64              | 1-1/8              | .0938-.0948   | 395-1006  | 396-1006             |
| 1/8         | A    | 1/8x5             | 1              | 13/64              | 1-1/8              | .1252-.1262   | 395-1008  | 396-1008             |
| 3/32        | B    | 3/16x6-3/4        | 0              | 19/64              | 1-11/16            | .0937-.0947   | 395-1106  | 396-1106             |
| 1/8         | B    | 3/16x6-3/4        | 1              | 19/64              | 1-11/16            | .1252-.1262   | 395-1108  | 396-1108             |
| 5/32        | B    | 3/16x6-3/4        | 1              | 19/64              | 1-11/16            | .1564-.1574   | 395-1110  | 396-1110             |
| 3/16        | B    | 3/16x6-3/4        | 1              | 19/64              | 1-11/16            | .1877-.1887   | 395-1112  | 396-1112             |
| 3/16        | C    | 3/8x11-3/4        | 1              | 25/64              | 2-1/2              | .1877-.1887   | 395-1212  | 396-1212             |
| 1/4         | C    | 3/8x11-3/4        | 1              | 25/64              | 2-1/2              | .2502-.2512   | 395-1216  | 396-1216             |
| 5/16        | C    | 3/8x11-3/4        | 2              | 25/64              | 2-1/2              | .3127-.3137   | 395-1220  | 396-1220             |
| 3/8         | C    | 3/8x11-3/4        | 2              | 25/64              | 2-1/2              | .3755-.3765   | 395-1224  | 396-1224             |
| 5/16        | D    | 9/16x13-7/8       | 2              | 1                  | 6                  | .3127-.3137   | 395-1324  | 396-1324             |
| 3/8         | D    | 9/16x13-7/8       | 2              | 1                  | 6                  | .3755-.3765   | 395-1328  | 396-1328             |
| 7/16        | D    | 9/16x13-7/8       | 3              | 1                  | 6                  | .4380-.4390   | 395-1332  | 396-1332             |
| 1/2         | D    | 9/16x13-7/8       | 3              | 1                  | 6                  | .5006-.5016   | 395-1336  | 396-1336             |
| 5/8         | E    | 3/4x15-1/2        | 4              | 1                  | 6                  | .6260-.6270   | 395-1440  | 396-1440             |
| 3/4         | E    | 3/4x15-1/2        | 5              | 1                  | 6                  | .7515-.7525   | 395-1448  | 396-1448             |
| 7/8         | F    | 1x20-1/4          | 6              | 1                  | 6                  | .8765-.8775   | 395-1556  | 396-1556             |
| 1           | F    | 1x20-1/4          | 7              | 1                  | 6                  | 1.0015-1.0025 | 395-1564  | 396-1564             |
| 1-1/8       |      | 1-1/8x20-1/4      | 8              | 1                  | 6                  | 1.1265-1.1275 | 395-1570  | 396-1570             |
| 1-1/4       |      | 1-1/4x20-1/4      | 9              | 1-1/2              | 8                  | 1.2520-1.2530 | 395-1572  | 396-1572             |
| 1-3/8       |      | 1-3/8x20-1/4      | 10             | 1-1/2              | 8                  | 1.3770-1.3780 | 395-1574  | 396-1574             |
| 1-1/2       |      | 1-1/2x20-1/4      | 11             | 1-1/2              | 8                  | 1.5020-1.5030 | 395-1576  | 396-1576             |

### Metric Size

| Size     | S.Keys | Piece of Shim | Dimension   | Tooth Pitch | Teeth | Length of Cut Min. | Length of cut Max. | Tolerance   | Order No. | TIN-Coated Order No. |
|----------|--------|---------------|-------------|-------------|-------|--------------------|--------------------|-------------|-----------|----------------------|
| 2mm-A    | 2x2    |               | 1/8x5"      | 3/16"       | 18    | 13/64"             | 1-1/8"             | .0782-.0791 | 395-2006  | 396-2006             |
| 3mm-A    | 3x3    | 1             | 1/8x5       | 3/16        | 18    | 13/64              | 1-1/8              | .1176-.1185 | 395-2008  | 396-2008             |
| 4mm-B-1  | 4x4    | 1             | 1/4x6-3/4   | 9/32        | 16    | 19/64              | 1-11/16            | .1569-.1579 | 395-2110  | 396-2110             |
| 5mm-B-1  | 5x5    | 1             | 1/4x6-3/4   | 9/32        | 16    | 19/64              | 1-11/16            | .1963-.1972 | 395-2112  | 396-2112             |
| 5mm-C    | 5x5    | 1             | 3/8x11-3/4  | 3/8         | 22    | 25/64              | 2-1/2              | .1963-.1972 | 395-2212  | 396-2212             |
| 6mm-C-1  | 6x6    | 1             | 3/8x11-3/4  | 3/8         | 22    | 25/64              | 2-1/2              | .2356-.2366 | 395-2216  | 396-2216             |
| 8mm-C-1  | 8x7    | 2             | 3/8x11-3/4  | 3/8         | 22    | 25/64              | 2-1/2              | .3143-.3155 | 395-2220  | 396-2220             |
| 10mm-D-1 | 10x8   | 2             | 9/16x13-7/8 | 5/8         | 17    | 1                  | 6                  | .3930-.3942 | 395-2224  | 396-2224             |
| 12mm-D-1 | 12x8   | 2             | 9/16x13-7/8 | 5/8         | 17    | 1                  | 6                  | .4716-.4730 | 395-2324  | 396-2324             |
| 14mm-D-1 | 14x9   | 2             | 9/16x13-7/8 | 5/8         | 17    | 1                  | 6                  | .5503-.5517 | 395-2328  | 396-2328             |
| 16mm-E-1 | 16x10  | 3             | 3/4x15-1/2  | 5/8         | 20    | 1                  | 6                  | .6290-.6304 | 395-2332  | 396-2332             |
| 18mm-E-1 | 18x11  | 3             | 3/4x15-1/2  | 5/8         | 20    | 1                  | 6                  | .7078-.7092 | 395-2336  | 396-2336             |
| 20mm-F-1 | 20x12  | 3             | 1x20-1/4    | 5/8         | 26    | 1                  | 6                  | .7864-.7880 | 395-2440  | 396-2440             |
| 22mm-F-1 | 22x14  | 4             | 1x20-1/4    | 5/8         | 26    | 1                  | 6                  | .8651-.8667 | 395-2448  | 396-2448             |
| 24mm-F   | 24x14  | 5             | 1x20-1/4    | 5/8         | 26    | 1                  | 6                  | .9439-.9455 | 395-2556  | 396-2556             |
| 25mm-F-1 | 25x14  | 4             | 1x20-1/4    | 5/8         | 26    | 1                  | 6                  | .9832-.9848 | 395-2564  | 396-2564             |

## Hexagon Push Broaches

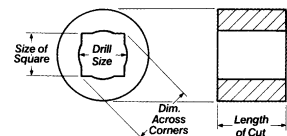
- For cutting hexagonal shaped hole in round machined holes.
- Used to re-cut a round hole into a hole having a hexagonal shape in a single pass through the workpiece.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- Broach is tapered, allowing teeth to cut hole to proper depth and width.
- Bright finish.



| Broach Size | Broach Length | Pilot Dia. | Drill Size | Length of Cut Min. | Length of Cut Max. | Tolerance   | Order No. |
|-------------|---------------|------------|------------|--------------------|--------------------|-------------|-----------|
| 1/8"        | 4-1/8"        | 1/8"       | 1/8"       | 3/16"              | 3/8"               | .1255-.1260 | 395-5996  |
| 5/32        | 4-15/16       | 5/32       | 5/32       | 1/4                | 1/2                | .1565-.1570 | 395-5998  |
| 3/16        | 5-1/16        | 3/16       | 3/16       | 1/4                | 5/8                | .1880-.1890 | 395-6002  |
| 7/32        | 5-3/8         | 7/32       | 7/32       | 1/4                | 3/4                | .2190-.2200 | 395-6004  |
| 1/4         | 6             | 1/4        | 1/4        | 1/4                | 3/4                | .2505-.2515 | 395-6006  |
| 9/32        | 7-1/4         | 9/32       | 9/32       | 5/16               | 1                  | .2815-.2825 | 395-6008  |
| 5/16        | 7-3/4         | 5/16       | 5/16       | 3/8                | 1                  | .3130-.3140 | 395-6010  |
| 11/32       | 7-3/4         | 11/32      | 11/32      | 3/8                | 1-1/4              | .3440-.3450 | 395-6012  |
| 3/8         | 8-1/2         | 3/8        | 3/8        | 3/8                | 1-1/4              | .3755-.3765 | 395-6014  |
| 13/32       | 9-5/8         | 13/32      | 13/32      | 1/2                | 1-3/8              | .4065-.4075 | 395-6016  |
| 7/16        | 10-5/8        | 7/16       | 7/16       | 1/2                | 1-3/8              | .4385-.4395 | 395-6018  |
| 15/32       | 11-7/8        | 15/32      | 15/32      | 1/2                | 1-3/8              | .4690-.4700 | 395-6020  |
| 1/2         | 11-7/8        | 1/2        | 1/2        | 1/2                | 1-3/8              | .5005-.5015 | 395-6022  |
| 9/16        | 13-3/4        | 9/16       | 9/16       | 1/2                | 1-5/8              | .5630-.5640 | 395-6024  |
| 5/8         | 16-1/4        | 5/8        | 5/8        | 5/8                | 2                  | .6260-.6270 | 395-6026  |
| 11/16       | 16-3/4        | 11/16      | 11/16      | 5/8                | 2                  | .6880-.6890 | 395-6030  |
| 3/4         | 17-1/4        | 3/4        | 3/4        | 5/8                | 2                  | .7510-.7520 | 395-6032  |
| 7/8         | 18-1/2        | 7/8        | 7/8        | 5/8                | 2                  | .8765-.8775 | 395-6034  |
| 1           | 19-3/4        | 1          | 1          | 5/8                | 2                  | 1.002-1.003 | 395-6038  |

## Square Push Broaches

- For cutting hexagonal shaped hole in round pilot holes.
- Used to re-cut a round hole into a hole having a square shape in a single pass through the workpiece.
- Well suited for use in a variety of ferrous and non-ferrous materials.
- Broach is tapered, allowing teeth to cut hole to proper depth and width.
- Bright finish.



| Broach Size | Broach Length | Pilot Dia. | Drill Size | Length of Cut Min. | Length of Cut Max. | Tolerance     | Order No. |
|-------------|---------------|------------|------------|--------------------|--------------------|---------------|-----------|
| 1/8"        | 4-1/8 "       | .1285"     | #30        | 3/16"              | 1/2"               | .1250-.1260   | 395-4002  |
| 5/32        | 5-1/8         | .1590      | #21        | 1/4                | 1/2                | .1565-.1575   | 395-4004  |
| 3/16        | 5-9/16        | .1935      | #10        | 1/4                | 5/8                | .1880-.1890   | 395-4006  |
| 7/32        | 6-3/8         | .2280      | #1         | 1/4                | 3/4                | .2190-.2200   | 395-4010  |
| 1/4         | 6-1/2         | 17/64      | 17/64      | 1/4                | 3/4                | .2505-.2515   | 395-4014  |
| 9/32        | 7-3/4         | 19/64      | 19/64      | 5/16               | 1                  | .2815-.2825   | 395-4016  |
| 5/16        | 7-7/8         | 21/64      | 21/64      | 5/16               | 1                  | .3130-.3140   | 395-4018  |
| 11/32       | 9-3/8         | 23/64      | 23/64      | 3/8                | 1-1/4              | .3440-.3450   | 395-4020  |
| 3/8         | 9-3/8         | 25/64      | 25/64      | 3/8                | 1-1/4              | .3755-.3765   | 395-4022  |
| 13/32       | 10-5/8        | 27/64      | 27/64      | 1/2                | 1-3/8              | .4065-.4075   | 395-4023  |
| 7/16        | 10-7/8        | 29/64      | 29/64      | 1/2                | 1-3/8              | .4385-.4395   | 395-4024  |
| 15/32       | 12            | 1/2        | 1/2        | 1/2                | 1-3/8              | .4690-.4700   | 395-4025  |
| 1/2         | 12            | 17/32      | 17/32      | 1/2                | 1-3/8              | .5005-.5015   | 395-4026  |
| 9/16        | 14-3/4        | 19/32      | 19/32      | 1/2                | 1-1/2              | .5630-.5640   | 395-4028  |
| 5/8         | 16-5/16       | 21/32      | 21/32      | 5/8                | 1-5/8              | .6260-.6270   | 395-4030  |
| 11/16       | 17-3/4        | 3/4        | 3/4        | 5/8                | 1-5/8              | .6885-.6895   | 395-4034  |
| 3/4         | 17-3/4        | 13/16      | 13/16      | 5/8                | 1-5/8              | .7510-.7520   | 395-4038  |
| 7/8         | 22-3/4        | 15/16      | 15/16      | 1/2                | 2                  | .8765-.8775   | 395-4056  |
| 1           | 24-1/8        | 1-3/32     | 1-3/32     | 1/2                | 2                  | 1.0020-1.0030 | 395-4064  |

## Standard Keyway Bushings

Different size bushings enable the individual keyway broaches to be used in a variety of bore sizes.

Broaches and bushings with the same letter signify same size of broache width and bushing opening, please use bushings with the same letter designated broaches,



### Inch Bushings

| Bushing Type | Diameter | Order No. | Bushing Type | Diameter | Order No. |
|--------------|----------|-----------|--------------|----------|-----------|
| A            | 1/4"     | 395-3102  | D            | 1-13/16" | 395-3212  |
| A            | 5/16     | 395-3104  | D            | 1-7/8    | 395-3214  |
| A            | 3/8      | 395-3106  | D            | 1-15/16  | 395-3216  |
| A            | 7/16     | 395-3108  | D            | 2        | 395-3218  |
| A            | 1/2      | 395-3110  | D            | 2-1/16   | 395-3220  |
| B            | 1/2      | 395-3120  | D            | 2-1/8    | 395-3222  |
| B            | 9/16     | 395-3122  | D            | 2-3/16   | 395-3224  |
| B            | 5/8      | 395-3124  | D            | 2-1/4    | 395-3226  |
| B            | 11/16    | 395-3126  | D            | 2-5/16   | 395-3228  |
| B            | 3/4      | 395-3128  | D            | 2-3/8    | 395-3230  |
| B            | 13/16    | 395-3130  | D            | 2-7/16   | 395-3232  |
| B            | 7/8      | 395-3132  | D            | 2-1/2    | 395-3234  |
| C            | 3/4      | 395-3140  | D            | 2-9/16   | 395-3236  |
| C            | 13/16    | 395-3142  | D            | 2-5/8    | 395-3238  |
| C            | 7/8      | 395-3144  | D            | 2-11/16  | 395-3240  |
| C            | 15/16    | 395-3146  | D            | 2-3/4    | 395-3242  |
| C            | 1        | 395-3148  | D            | 2-13/16  | 395-3244  |
| C            | 1-1/16   | 395-3150  | D            | 2-7/8    | 395-3246  |
| C            | 1-1/8    | 395-3152  | D            | 2-15/16  | 395-3248  |
| C            | 1-3/16   | 395-3154  | E            | 2-5/16   | 395-3270  |
| C            | 1-1/4    | 395-3156  | E            | 2-3/8    | 395-3272  |
| C            | 1-5/16   | 395-3158  | E            | 2-7/16   | 395-3274  |
| C            | 1-3/8    | 395-3160  | E            | 2-1/2    | 395-3276  |
| C            | 1-7/16   | 395-3162  | E            | 2-9/16   | 395-3278  |
| C            | 1-1/2    | 395-3164  | E            | 2-5/8    | 395-3280  |
| C            | 1-9/16   | 395-3166  | E            | 2-11/16  | 395-3282  |
| D            | 1-7/16   | 395-3200  | E            | 2-3/4    | 395-3284  |
| D            | 1-1/2    | 395-3202  | E            | 2-13/16  | 395-3286  |
| D            | 1-9/16   | 395-3204  | E            | 2-7/8    | 395-3288  |
| D            | 1-5/8    | 395-3206  | E            | 2-15/16  | 395-3290  |
| D            | 1-11/16  | 395-3208  | E            | 3        | 395-3292  |
| D            | 1-3/4    | 395-3210  |              |          |           |

D,E Style: Plain  
A,B,C Style: Collared

### Metric Bushings

| Bushing Type | Diameter | Order No. | Bushing Type | Diameter | OrderNo. |
|--------------|----------|-----------|--------------|----------|----------|
| A            | 6mm      | 395-3300  | D            | 35mm     | 395-3404 |
| A            | 8mm      | 395-3302  | D            | 36mm     | 395-3406 |
| A            | 10mm     | 395-3304  | D            | 38mm     | 395-3408 |
| A            | 12mm     | 395-3306  | D            | 40mm     | 395-3410 |
| A            | 15mm     | 395-3308  | D            | 42mm     | 395-3412 |
| B-1          | 12mm     | 395-3320  | D            | 44mm     | 395-3414 |
| B-1          | 14mm     | 395-3322  | D            | 45mm     | 395-3416 |
| B-1          | 15mm     | 395-3324  | D            | 46mm     | 395-3418 |
| B-1          | 16mm     | 395-3326  | D            | 48mm     | 395-3420 |
| B-1          | 17mm     | 395-3328  | D            | 50mm     | 395-3422 |
| B-1          | 18mm     | 395-3330  | D            | 52mm     | 395-3424 |
| B-1          | 19mm     | 395-3332  | D            | 54mm     | 395-3426 |
| C            | 18mm     | 395-3340  | D            | 56mm     | 395-3428 |
| C            | 19mm     | 395-3342  | E            | 52mm     | 395-3470 |
| C            | 20mm     | 395-3344  | E            | 54mm     | 395-3472 |
| C            | 22mm     | 395-3346  | E            | 55mm     | 395-3474 |
| C            | 24mm     | 395-3348  | E            | 56mm     | 395-3476 |
| C            | 25mm     | 395-3350  | E            | 58mm     | 395-3478 |
| C            | 26mm     | 395-3352  | E            | 60mm     | 395-3480 |
| C            | 28mm     | 395-3354  | E            | 62mm     | 395-3482 |
| C            | 30mm     | 395-3356  | E            | 63mm     | 395-3484 |
| C            | 32mm     | 395-3358  | E            | 64mm     | 395-3486 |
| C            | 34mm     | 395-3360  | E            | 65mm     | 395-3488 |
| C            | 35mm     | 395-3362  | E            | 66mm     | 395-3490 |
| C            | 36mm     | 395-3364  | E            | 68mm     | 395-3492 |
| D            | 32mm     | 395-3400  | E            | 70mm     | 395-3494 |
| D            | 34mm     | 395-3402  | E            | 72mm     | 395-3496 |

## Broach Shims



### For Keyway Broaches

#### Inch & Metric

| Size           | Order No. |
|----------------|-----------|
| A 1/8" & A 3mm | 395-4208  |
| B 1/8"         | 395-4212  |
| B 5/32"        | 395-4216  |
| B-1 4mm        | 395-4220  |
| B 3/16"        | 395-4224  |
| B-1 5mm        | 395-4228  |
| C 3/16"        | 395-4232  |
| C 5mm          | 395-4236  |

#### Inch & Metric

| Size                    | Order No. |
|-------------------------|-----------|
| C 1/4 & 3/8", C-1 6mm   | 395-4240  |
| C 5/16 & C-1 8mm        | 395-4244  |
| D 5/16"                 | 395-4248  |
| D 3/8 & 1/2", D-1 14mm  | 395-4252  |
| D-1 10 & 12mm           | 395-4256  |
| D 7/16"                 | 395-4260  |
| E 5/8, 3/4" E-1 16&18mm | 395-4264  |
| F 7/8&1" F-1 20-25mm    | 395-4268  |

## Keyway Broach Sets

### No.00 Precision Set

| Keyway<br>Pieces | Broach<br>SIZES    | Collared<br>Style | No. of<br>Bushing Dia.        | Shim | Keyway<br>Comb. | Order No. |
|------------------|--------------------|-------------------|-------------------------------|------|-----------------|-----------|
| 9                | 1/16, 3/32,<br>1/8 | A                 | 1/4, 5/16, 3/8,<br>7/16, 1/2" | 1    | 15              | 395-0109  |

### No.10 Standard Set

| Keyway<br>Pieces | Broach<br>SIZES       | Collared<br>Style | No. of<br>Bushing Dia.                                   | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------------|-------------------|----------------------------------------------------------|------|-----------------|-----------|
| 18               | 1/8, 3/16<br>1/4, 3/8 | B<br>C            | 1/2, 5/8, 3/4, 7/8"<br>1, 1-1/8, 1-1/4,<br>1-3/8, 1-1/2" | 5    | 18              | 395-0718  |

### No.10A Standard Set

| Keyway<br>Pieces | Broach<br>SIZES       | Collared<br>Style | No. of<br>Bushing Dia.                                                   | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------------|-------------------|--------------------------------------------------------------------------|------|-----------------|-----------|
| 18               | 1/8, 3/16<br>1/4, 3/8 | B<br>C            | 9/16, 11/16, 13/16"<br>15/16, 1-1/16, 1-3/16,<br>1-5/16, 1-7/16, 1-9/16" | 5    | 18              | 395-0719  |

### No.10-10A Standard Set

| Keyway<br>Pieces | Broach<br>SIZES           | Collared<br>Style | No. of<br>Bushing Dia.                                                                                                         | Shim | Keyway<br>Comb. | Order No. |
|------------------|---------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------|
| 27               | 1/8<br>3/16<br>1/4<br>3/8 | B<br>B<br>C<br>C  | 1/2, 9/16, 5/8, 11/16"<br>3/4, 13/16, 7/8"<br>15/16, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4"<br>1-5/16, 1-3/8, 1-7/16, 1-1/2, 1-9/16" | 5    | 36              | 395-0727  |

### No.20 Combination Set

| Keyway<br>Pieces | Broach<br>SIZES                   | Collared<br>Style     | No. of<br>Bushing Dia.                                                                                                            | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------|
| 30               | 1/8<br>3/16<br>1/4<br>5/16<br>3/8 | B<br>B<br>C<br>C<br>C | 1/2, 9/16, 5/8, 11/16"<br>3/4, 13/16, 7/8"<br>15/16, 1, 1-1/16, 1-1/8"<br>1-3/16, 1-1/4, 1-5/16, 1-3/8"<br>1-7/16, 1-1/2, 1-9/16" | 7    | 47              | 395-0730  |

### No.30 Standard Set

| Keyway<br>Pieces | Broach<br>SIZES   | Collared<br>Style | No. of<br>Bushing Dia.                                | Shim | Keyway<br>Comb. | Order No. |
|------------------|-------------------|-------------------|-------------------------------------------------------|------|-----------------|-----------|
| 15               | 1/8<br>3/16, 1/4" | B<br>C            | 1/2, 5/8, 3/4"<br>7/8, 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2" | 3    | 15              | 395-0717  |

### No.40 Set

| Keyway<br>Pieces | Broach<br>SIZES        | Plain<br>Style | No. of<br>Bushing Dia.                                                    | Shim | Keyway<br>Comb. | Order           |
|------------------|------------------------|----------------|---------------------------------------------------------------------------|------|-----------------|-----------------|
| 22               | 5/16, 3/8<br>7/16, 1/2 | D<br>D         | 1-7/16, 1-9/16,<br>1-11/16, 1-13/16"<br>1-15/16, 2-3/16, 2-7/16, 2-15/16" | 10   | 32              | No.<br>395-0322 |

### No.40A Set

| Keyway<br>Pieces | Broach<br>SIZES        | Plain<br>Style | No. of<br>Bushing Dia.                                 | Shim | Keyway<br>Comb. | Order No. |
|------------------|------------------------|----------------|--------------------------------------------------------|------|-----------------|-----------|
| 22               | 5/16, 3/8<br>7/16, 1/2 | D<br>D         | 1-1/2, 1-5/8, 1-3/4, 1-7/8"<br>2, 2-1/8, 2-1/4, 2-1/2" | 10   | 32              | 395-0323  |

### No.40-1/2 Heavy Duty Set

| Keyway<br>Pieces | Broach<br>SIZES | Plain<br>Style | No. of<br>Bushing Dia.                                | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------|----------------|-------------------------------------------------------|------|-----------------|-----------|
| 17               | 5/8<br>3/4      | E<br>E         | 2-5/16, 2-7/16, 2-9/16"<br>2-11/16, 2-13/16, 2-15/16" | 9    | 12              | 395-0217  |

### No.40-1/2A Heavy Duty Set

| Keyway<br>Pieces | Broach<br>SIZES | Plain<br>Style | No. of<br>Bushing Dia.                   | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------|----------------|------------------------------------------|------|-----------------|-----------|
| 17               | 5/8<br>3/4      | E<br>E         | 2-3/8, 2-1/2, 2-5/8"<br>2-3/4, 2-7/8, 3" | 9    | 12              | 395-0218  |



### No.50 Heavy Duty Set

| Keyway<br>Pieces | Broach<br>SIZES   | Plain<br>Style | No. of<br>Bushing Dia.                                                                                                             | Shim | Keyway<br>Comb. | Order No. |
|------------------|-------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------|
| 32               | 1/2<br>5/8<br>3/4 | D<br>E<br>E    | 2, 2-1/16, 2-1/8,<br>2-3/16, 2-1/4"<br>2-5/16, 2-3/8, 2-7/16, 2-1/2, 2-9/16, 2-5/8"<br>2-11/16, 2-3/4, 2-13/16, 2-7/8, 2-15/16, 3" | 12   | 29              | 395-0432  |

### No.60 Metric Set

| Keyway<br>Pieces | Broach<br>SIZES | Collared<br>Style | No. of<br>Bushing Dia. | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------|-------------------|------------------------|------|-----------------|-----------|
| 6                | 2mm,<br>3mm     | A                 | 6, 8, 10mm             | 1    | 6               | 395-0806  |

### No.70 Metric Set

| Keyway<br>Pieces | Broach<br>SIZES      | Collared<br>Style | No. of<br>Bushing Dia.                                       | Shim | Keyway<br>Comb. | Order No. |
|------------------|----------------------|-------------------|--------------------------------------------------------------|------|-----------------|-----------|
| 22               | 4, 5mm<br>6mm<br>8mm | B1<br>C1<br>C1    | 12, 14, 15, 16mm<br>18, 19, 20, 22mm<br>24, 25, 26, 28, 30mm | 5    | 26              | 395-0822  |

### No.80 Metric Set

| Keyway<br>Pieces | Broach<br>SIZES      | Plain<br>Style | No. of<br>Bushing Dia.                                   | Shim | Keyway<br>Comb. | Order No. |
|------------------|----------------------|----------------|----------------------------------------------------------|------|-----------------|-----------|
| 21               | 10mm<br>12mm<br>14mm | D1<br>D1<br>D1 | 32, 34, 35, 36mm<br>38, 40, 42, 44mm<br>45, 46, 48, 50mm | 6    | 36              | 395-0821  |

### No.90 Metric Set

| Keyway<br>Pieces | Broach<br>SIZES | Plain<br>Style | No. of<br>Bushing Dia.               | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------|----------------|--------------------------------------|------|-----------------|-----------|
| 16               | 16mm<br>18mm    | E1<br>E1       | 52, 54, 55, 56mm<br>58, 60, 62, 65mm | 6    | 16              | 395-0816  |

### Metric Set

| Keyway<br>Pieces | Broach<br>SIZES      | Collared<br>Style | No. of<br>Bushing Dia.                   | Shim | Keyway<br>Comb. | Order No. |
|------------------|----------------------|-------------------|------------------------------------------|------|-----------------|-----------|
| 18               | 4mm, 5mm<br>6mm, 8mm | B1<br>C1          | 12, 14, 16mm<br>18, 20, 22, 24, 26, 28mm | 5    | 18              | 395-0818  |

### No.100 Heavy Duty Combination Set

| Keyway<br>Pieces | Broach<br>SIZES                                                 | B-C Collared/D-E<br>Style                 | No. of<br>Bushing Dia.                                                                                                                                                                                                                                                                                                                         | Shim | Keyway<br>Comb. | Order No. |
|------------------|-----------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------|
| 75               | 1/8"<br>3/16<br>1/4<br>5/16<br>3/8<br>7/16<br>1/2<br>5/8<br>3/4 | B<br>B<br>C<br>C<br>D<br>D<br>D<br>E<br>E | 1/2, 9/16, 5/8, 11/16"<br>3/4, 13/16, 7/8"<br>15/16, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4"<br>1-5/16, 1-3/8, 1-7/16, 1-1/2, 1-9/16"<br>1-7/16, 1-1/2, 1-9/16, 1-5/8, 1-11/16"<br>1-3/4, 1-13/16, 1-7/8, 1-15/16, 2"<br>2-1/16, 2-1/8, 2-3/16, 2-1/4"<br>2-5/16, 2-3/8, 2-7/16, 2-1/2, 2-9/16, 2-5/8"<br>2-11/16, 2-3/4, 2-13/16, 2-7/8, 2-15/16, 3" | 22   | 102             | 395-0575  |

## Tool Bits

High Speed Steel, Precision Ground



### Rectangular

| Size            | Inch Rectangular Order No. | Size        | Metric Rectangular Order No. |
|-----------------|----------------------------|-------------|------------------------------|
| 1/8x1/2x4"      | 361-0000                   | 3x13x100mm  | 361-1000                     |
| 1/4x3/8x3       | 361-0003                   | 6x10x100mm  | 361-1005                     |
| 1/4x3/8x4       | 361-0005                   | 6x10x160mm  | 361-1010                     |
| 1/4x3/8x6       | 361-0010                   | 6x13x75mm   | 361-1015                     |
| 1/4x1/2x3       | 361-0015                   | 6x13x100mm  | 361-1020                     |
| 1/4x1/2x4       | 361-0020                   | 6x13x150mm  | 361-1025                     |
| 1/4x1/2x6       | 361-0025                   | 6x20x100mm  | 361-1030                     |
| 1/4x3/4x4       | 361-0030                   | 6x20x125mm  | 361-1035                     |
| 1/4x3/4x5       | 361-0035                   | 6x20x150mm  | 361-1040                     |
| 1/4x3/4x6       | 361-0040                   | 6x25x150mm  | 361-1045                     |
| 1/4x1x6         | 361-0045                   | 8x10x100mm  | 361-1050                     |
| 5/16x3/8x4      | 361-0050                   | 8x11x75mm   | 361-1055                     |
| 5/16x7/16x3     | 361-0055                   | 8x13x100mm  | 361-1060                     |
| 5/16x1/2x4      | 361-0060                   | 8x20x100mm  | 361-1065                     |
| 5/16x3/4x4      | 361-0065                   | 8x25x150mm  | 361-1070                     |
| 5/16x1x6        | 361-0070                   | 10x13x75mm  | 361-1075                     |
| 3/8x1/2x3       | 361-0075                   | 10x13x100mm | 361-1080                     |
| 3/8x1/2x4       | 361-0080                   | 10x16x100mm | 361-1085                     |
| 3/8x5/8x4       | 361-0085                   | 10x16x125mm | 361-1090                     |
| 3/8x5/8x5       | 361-0090                   | 10x16x150mm | 361-1095                     |
| 3/8x5/8x6       | 361-0095                   | 10x20x100mm | 361-1100                     |
| 3/8x3/4x4       | 361-0100                   | 10x20x150mm | 361-1105                     |
| 3/8x3/4x5       | 361-0103                   | 10x25x150mm | 361-1110                     |
| 3/8x3/4x6       | 361-0105                   | 13x20x100mm | 361-1115                     |
| 3/8x1x6         | 361-0110                   | 13x20x150mm | 361-1120                     |
| 3/8x1-1/4x6-1/2 | 361-0112                   | 13x25x175mm | 361-1125                     |
| 1/2x3/4x4       | 361-0115                   | 13x32x175mm | 361-1130                     |
| 1/2x3/4x5       | 361-0117                   | 13x38x175mm | 361-1135                     |
| 1/2x3/4x6       | 361-0120                   | 16x20x125mm | 361-1140                     |
| 1/2x1x7         | 361-0125                   | 16x22x150mm | 361-1145                     |
| 1/2x1-1/4x7     | 361-0130                   | 16x25x150mm | 361-1150                     |
| 1/2x1-1/2x7     | 361-0135                   | 16x25x175mm | 361-1155                     |
| 5/8x3/4x5       | 361-0140                   | 16x32x150mm | 361-1160                     |
| 5/8x7/8x6       | 361-0145                   | 16x32x175mm | 361-1165                     |
| 5/8x1x6         | 361-0150                   | 16x38x175mm | 361-1170                     |
| 5/8x1x7         | 361-0155                   | 22x25x150mm | 361-1175                     |
| 5/8x1-1/4x6     | 361-0160                   | 22x25x175mm | 361-1180                     |
| 5/8x1-1/4x7     | 361-0165                   | 22x32x150mm | 361-1185                     |
| 5/8x1-1/2x7     | 361-0170                   | 22x32x175mm | 361-1190                     |
| 3/4x1x6         | 361-0175                   | 22x38x175mm | 361-1195                     |
| 3/4x1x7         | 361-0180                   | 25x32x150mm | 361-1200                     |
| 3/4x1-1/4x6     | 361-0185                   | 25x32x175mm | 361-1205                     |
| 3/4x1-1/4x7     | 361-0190                   | 25x38x175mm | 361-1210                     |
| 3/4x1-1/2x7     | 361-0195                   |             |                              |
| 1x1-1/4x6       | 361-0200                   |             |                              |
| 1x1-1/4x7       | 361-0205                   |             |                              |
| 1x1-1/2x7       | 361-0210                   |             |                              |

### Square

| Size       | Inch Square Order No. | Size     | Metric Square Order No. |
|------------|-----------------------|----------|-------------------------|
| 1/8x2-1/2" | 360-0010              | 3x100mm  | 360-1014                |
| 1/8x4      | 360-0014              | 3x150mm  | 360-1016                |
| 1/8x6      | 360-0016              | 3x200mm  | 360-1018                |
| 1/8x8      | 360-0018              | 4x60mm   | 360-1020                |
| 3/16x2     | 360-0020              | 4x80mm   | 360-1022                |
| 3/16x2-1/2 | 360-0021              | 5x100mm  | 360-1025                |
| 3/16x3     | 360-0022              | 5x150mm  | 360-1026                |
| 3/16x4     | 360-0023              | 5x200mm  | 360-1028                |
| 3/16x5     | 360-0024              | 6x60mm   | 360-1029                |
| 3/16x6     | 360-0026              | 6x100mm  | 360-1031                |
| 3/16x8     | 360-0028              | 6x150mm  | 360-1032                |
| 1/4x2-1/2  | 360-0033              | 6x200mm  | 360-1033                |
| 1/4x3      | 360-0034              | 7x150mm  | 360-1038                |
| 1/4x4      | 360-0035              | 7x120mm  | 360-1039                |
| 1/4x6      | 360-0037              | 8x60mm   | 360-1041                |
| 1/4x8      | 360-0039              | 8x100mm  | 360-1042                |
| 5/16x2-1/2 | 360-0049              | 8x125mm  | 360-1043                |
| 5/16x3     | 360-0050              | 8x150mm  | 360-1044                |
| 5/16x3-1/2 | 360-0051              | 8x200mm  | 360-1045                |
| 5/16x4     | 360-0052              | 10x100mm | 360-1048                |
| 5/16x6     | 360-0054              | 10x125mm | 360-1049                |
| 5/16x8     | 360-0057              | 10x150mm | 360-1050                |
| 3/8x3      | 360-0067              | 10x200mm | 360-1051                |
| 3/8x4      | 360-0069              | 12x100mm | 360-1055                |
| 3/8x6      | 360-0071              | 12x125mm | 360-1056                |
| 3/8x8      | 360-0073              | 12x150mm | 360-1057                |
| 7/16x3-1/2 | 360-0090              | 12x200mm | 360-1058                |
| 7/16x4     | 360-0091              | 14x150mm | 360-1061                |
| 7/16x6     | 360-0095              | 14x200mm | 360-1063                |
| 7/16x8     | 360-0097              | 15x200mm | 360-1068                |
| 1/2x3      | 360-0109              | 16x100mm | 360-1070                |
| 1/2x4      | 360-0111              | 16x150mm | 360-1072                |
| 1/2x6      | 360-0113              | 16x200mm | 360-1073                |
| 1/2x8      | 360-0115              | 18x150mm | 360-1075                |
| 5/8x4      | 360-0127              | 18x200mm | 360-1076                |
| 5/8x4-1/2  | 360-0128              | 20x100mm | 360-1078                |
| 5/8x6      | 360-0131              | 20x150mm | 360-1079                |
| 5/8x8      | 360-0135              | 20x200mm | 360-1080                |
| 3/4x4      | 360-0147              | 25x100mm | 360-1090                |
| 3/4x5      | 360-0148              | 25x150mm | 360-1092                |
| 3/4x6      | 360-0149              | 25x200mm | 360-1095                |
| 3/4x8      | 360-0163              | 25x250mm | 360-1098                |
| 7/8x6      | 360-0165              | 32x200mm | 360-1110                |
| 1x4        | 360-0175              | 38x200mm | 360-1120                |
| 1x6        | 360-0177              | 50x200mm | 360-1130                |
| 1x7        | 360-0179              |          |                         |
| 1x8        | 360-0180              |          |                         |
| 1-1/8x8    | 360-0185              |          |                         |
| 1-1/4x6    | 360-0200              |          |                         |
| 1-1/4x8    | 360-0202              |          |                         |
| 1-1/2x8    | 360-0204              |          |                         |
| 1-1/2x10   | 360-0208              |          |                         |
| 2x8        | 360-0210              |          |                         |

### Round

| Size       | Inch Round Order No. | Size      | Metric Round Order No. |
|------------|----------------------|-----------|------------------------|
| 1/8x2-1/2" | 362-0030             | 2x50mm    | 362-1030               |
| 1/8x2-3/4  | 362-0031             | 2.5x50mm  | 362-1040               |
| 1/8x4      | 362-0034             | 3x60mm    | 362-1050               |
| 1/8x6      | 362-0036             | 3x100mm   | 362-1051               |
| 1/8x8      | 362-0038             | 3x150mm   | 362-1052               |
| 5/32x2-1/2 | 362-0040             | 3x200mm   | 362-1053               |
| 3/16x2     | 362-0050             | 3.5x60mm  | 362-1055               |
| 3/16x2-1/2 | 362-0051             | 4x80mm    | 362-1060               |
| 3/16x3     | 362-0052             | 4x100mm   | 362-1065               |
| 3/16x3-1/2 | 362-0053             | 4.5x80mm  | 362-1070               |
| 3/16x4     | 362-0054             | 5x80mm    | 362-1080               |
| 3/16x6     | 362-0056             | 5x100mm   | 362-1085               |
| 3/16x8     | 362-0058             | 5x150mm   | 362-1086               |
| 7/32x3-1/2 | 362-0064             | 5x200mm   | 362-1087               |
| 1/4x2-1/2  | 362-0074             | 5.5x90mm  | 362-1095               |
| 1/4x3      | 362-0075             | 6x80mm    | 362-1105               |
| 1/4x4      | 362-0077             | 6x100mm   | 362-1107               |
| 1/4x6      | 362-0078             | 6x150mm   | 362-1109               |
| 1/4x8      | 362-0079             | 6x200mm   | 362-1111               |
| 9/32x4     | 362-0090             | 6.5x100mm | 362-1115               |
| 5/16x2-1/2 | 362-0100             | 7x100mm   | 362-1120               |
| 5/16x3     | 362-0101             | 7.5x100mm | 362-1130               |
| 5/16x4     | 362-0102             | 8x60mm    | 362-1140               |
| 5/16x4-1/2 | 362-0103             | 8x100mm   | 362-1142               |
| 5/16x6     | 362-0104             | 8x150mm   | 362-1144               |
| 5/16x8     | 362-0107             | 8x200mm   | 362-1146               |
| 3/8x3      | 362-0117             | 9x125mm   | 362-1152               |
| 3/8x4      | 362-0119             | 10x100mm  | 362-1160               |
| 3/8x5      | 362-0121             | 10x150mm  | 362-1162               |
| 3/8x6      | 362-0123             | 10x200mm  | 362-1164               |
| 3/8x8      | 362-0124             | 12x100mm  | 362-1170               |
| 7/16x4     | 362-0133             | 12x150mm  | 362-1172               |
| 7/16x5-1/2 | 362-0135             | 12x200mm  | 362-1174               |
| 1/2x3      | 362-0143             | 14x150mm  | 362-1180               |
| 1/2x4      | 362-0145             | 14x200mm  | 362-1182               |
| 1/2x6      | 362-0147             | 16x100mm  | 362-1189               |
| 1/2x8      | 362-0149             | 16x150mm  | 362-1190               |
| 9/16x6     | 362-0153             | 16x200mm  | 362-1192               |
| 5/8x4      | 362-0160             | 18x200mm  | 362-1202               |
| 5/8x6      | 362-0163             | 20x100mm  | 362-1209               |
| 5/8x8      | 362-0168             | 20x150mm  | 362-1210               |
| 3/4x4      | 362-0173             | 20x200mm  | 362-1212               |
| 3/4x6      | 362-0175             | 18x150mm  | 362-1219               |
| 3/4x8      | 362-0178             | 25x100mm  | 362-1220               |
| 1x4        | 362-0191             | 25x150mm  | 362-1221               |
| 1x6        | 362-0193             | 25x200mm  | 362-1222               |
| 1x8        | 362-0198             |           |                        |

## Cobalt Tool Bits

- Can be used on forgings, castings and heavy materials cuts.
- Suitable in applications of heat environment.



### M35 5% Cobalt Rectangular Tool Bits

| Size          | 5% Cobalt Order No. | Size       | 5% Cobalt Order No. | Size        | 5% Cobalt Order No. |
|---------------|---------------------|------------|---------------------|-------------|---------------------|
| 3/16x5/16x4"  | 461-0000            | 5/16x1/2x6 | 461-0060            | 1/2x1x8     | 461-0127            |
| 1/8x1/2x4     | 461-0001            | 5/16x3/4x4 | 461-0063            | 1/2x1-1/4x7 | 461-0130            |
| 1/4x3/8x2-1/2 | 461-0002            | 5/16x3/4x5 | 461-0065            | 1/2x1-1/2x7 | 461-0135            |
| 1/4x3/8x4     | 461-0005            | 5/16x1x6   | 461-0070            | 5/8x3/4x5   | 461-0140            |
| 1/4x3/8x6     | 461-0007            | 3/8x1/2x4  | 461-0080            | 5/8x7/8x6   | 461-0145            |
| 1/4x1/2x3     | 461-0015            | 3/8x5/8x4  | 461-0088            | 5/8x1x6     | 461-0148            |
| 1/4x1/2x4     | 461-0020            | 3/8x5/8x5  | 461-0090            | 5/8x1x7     | 461-0150            |
| 1/4x1/2x6     | 461-0021            | 3/8x5/8x6  | 461-0092            | 5/8x1-1/4x6 | 461-0151            |
| 1/4x3/4x4     | 461-0033            | 3/8x3/4x4  | 461-0100            | 5/8x1-1/4x7 | 461-0152            |
| 1/4x3/4x5     | 461-0035            | 3/8x3/4x5  | 461-0103            | 5/8x1-1/2x7 | 461-0153            |
| 1/4x3/4x6     | 461-0037            | 3/8x3/4x6  | 461-0105            | 3/4x1x7     | 461-0155            |
| 1/4x1x6       | 461-0040            | 3/8x1x6    | 461-0110            | 3/4x1-1/4x7 | 461-0157            |
| 5/16x3/8x4    | 461-0045            | 1/2x3/4x4  | 461-0115            | 3/4x1-1/2x7 | 461-0159            |
| 5/16x7/16x3   | 461-0048            | 1/2x3/4x5  | 461-0117            | 1x1-1/4x7   | 461-0162            |
| 5/16x7/16x4   | 461-0050            | 1/2x3/4x6  | 461-0120            | 1x1-1/2x7   | 461-0166            |
| 5/16x1/2x4    | 461-0055            | 1/2x1x7    | 461-0125            |             |                     |



### M35 5% Cobalt Extra Length Square Tool Bits

| Size (Square x L) | 5% Cobalt Order No. | Size (Square x L) | 5% Cobalt Order No. | Size (Square x L) | 5% Cobalt Order No. |
|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|
| 1/4x4"            | 460-2158            | 3/8x4             | 460-2298            | 5/8x6             | 460-2600            |
| 1/4x6             | 460-2160            | 3/8x6             | 460-2300            | 5/8x8             | 460-2602            |
| 1/4x8             | 460-2200            | 3/8x8             | 460-2330            | 3/4x6             | 460-2606            |
| 5/16x4            | 460-2228            | 7/16x6            | 460-2335            | 3/4x8             | 460-2608            |
| 5/16x6            | 460-2230            | 1/2x6             | 460-2400            |                   |                     |
| 5/16x8            | 460-2260            | 1/2x8             | 460-2500            |                   |                     |

### M35 5% & 10% Cobalt Square Tool Bits

| Size (Square x L) | 5% Cobalt Order No. | 10% Cobalt Order No. | Size (Square x L) | 5% Cobalt Order No. | 10% Cobalt Order No. |
|-------------------|---------------------|----------------------|-------------------|---------------------|----------------------|
| 1/8x2-1/2"        | 460-0010            | 460-1010             | 3/4x5             | 460-0148            | 460-1148             |
| 3/16x2-1/2        | 460-0021            | 460-1021             | 7/8x6             | 460-0165            | 460-1152             |
| 1/4x2-1/2         | 460-0033            | 460-1033             | 1x7               | 460-0179            | 460-1155             |
| 5/16x2-1/2        | 460-0049            | 460-1049             | 1-1/8x8           | 460-0185            | 460-1160             |
| 3/8x3             | 460-0067            | 460-1067             | 1-1/4x7           | 460-0201            |                      |
| 7/16x3-1/2        | 460-0090            | 460-1090             | 1-1/4x9           | 460-0205            | 460-1165             |
| 1/2x4             | 460-0111            | 460-1111             | 1-1/2x10          | 460-0220            |                      |
| 5/8x4-1/2         | 460-0128            | 460-1128             |                   |                     |                      |

### M35 5% Cobalt Round Tool Bits



| Size       | Order No. | Size       | Order No. | Size   | Order No. |
|------------|-----------|------------|-----------|--------|-----------|
| 1/8x2-3/4" | 461-1031  | 3/8x3      | 461-1117  | 9/16x6 | 461-1153  |
| 3/16x3-1/2 | 461-1053  | 3/8x4      | 461-1119  | 5/8x3  | 461-1156  |
| 1/4x2-1/2  | 461-1074  | 3/8x5      | 461-1121  | 5/8x6  | 461-1163  |
| 1/4x2      | 461-1077  | 7/16x3-1/2 | 461-1132  | 3/4x6  | 461-1175  |
| 5/16x2-1/2 | 461-1100  | 7/16x4     | 461-1133  | 7/8x6  | 461-1181  |
| 5/16x3     | 461-1101  | 7/16x5-1/2 | 461-1135  | 1x6    | 461-1193  |
| 5/16x4     | 461-1102  | 1/2x4      | 461-1145  |        |           |
| 5/16x4-1/2 | 461-1103  | 1/2x6      | 461-1147  |        |           |

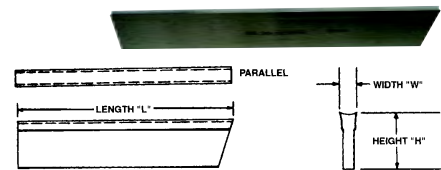
## 10° Double Beveled Cut Off Blades



|       |        | M2    |           | M35       |      |       |     | M2        |           | M35    |     |
|-------|--------|-------|-----------|-----------|------|-------|-----|-----------|-----------|--------|-----|
|       |        | H.S.S |           | Cobalt    |      |       |     | H.S.S     |           | Cobalt |     |
| Wide  | Ht.    | L     | Order No. | Order No. | Wide | Ht.   | L   | Order No. | Order No. | Wide   | Ht. |
| 1/16" | 11/16" | 5"    | 363-0000  | 461-2000  | 1/8  | 7/8   | 7   | 363-0012  | 461-2012  |        |     |
| 3/32  | 11/16  | 5     | 363-0001  | 461-2001  | 3/16 | 3/4   | 6   | 363-0016  | 461-0016  |        |     |
| 3/32  | 1/2    | 4.5   | 363-0002  | 461-2002  | 3/16 | 1     | 6.5 | 363-0006  | 461-2006  |        |     |
| 3/32  | 5/8    | 5     | 363-0003  | 461-2003  | 3/16 | 1     | 8   | 363-0013  | 461-2013  |        |     |
| 1/8   | 1/2    | 4.5   | 363-0014  | 461-2014  | 3/16 | 1-1/8 | 7   | 363-0007  | 461-2007  |        |     |
| 1/8   | 3/4    | 5     | 363-0004  | 461-2004  | 1/4  | 1-1/8 | 7   | 363-0008  | 461-2008  |        |     |
| 1/8   | 3/4    | 6     | 363-0011  | 461-2011  | 1/4  | 1-1/4 | 7   | 363-0009  | 461-2009  |        |     |
| 1/8   | 7/8    | 6     | 363-0005  | 461-2005  | 1/4  | 1-3/8 | 7   | 363-0010  | 461-0010  |        |     |

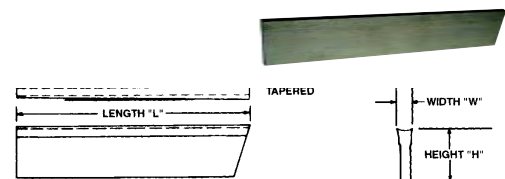
## T-Type Cut Off Blades

### Parallel Type



| Tool No. | W     | H     | L      | HSS Order No. | Cobalt Order No. |
|----------|-------|-------|--------|---------------|------------------|
| P1N      | .040" | 1/2"  | 3-1/2" | 363-6005      | 363-7005         |
| P1       | 1/16  | 1/2   | 4-1/2  | 363-6010      | 363-7010         |
| P2N      | 5/64  | 1/2   | 4-1/2  | 363-6015      | 363-7015         |
| P2       | 3/32  | 1/2   | 4-1/2  | 363-6020      | 363-7020         |
| P3S      | 1/8   | 1/2   | 4-1/2  | 363-6025      | 363-7025         |
| P3N      | 3/32  | 11/16 | 5      | 363-6030      | 363-7030         |
| P3       | 1/8   | 11/16 | 5      | 363-6035      | 363-7035         |
| P4       | 5/32  | 11/16 | 5      | 363-6040      | 363-7040         |
| P5S      | 3/16  | 11/16 | 5      | 363-6045      | 363-7045         |
| P3W      | 1/8   | 3/4   | 5      | 363-6050      | 363-7050         |
| P4W      | 5/32  | 3/4   | 5      | 363-6055      | 363-7055         |
| P5W      | 3/16  | 3/4   | 5      | 363-6060      | 363-7060         |
| P5X      | 1/8   | 7/8   | 6      | 363-6065      | 363-7065         |
| P5N      | 5/32  | 7/8   | 6      | 363-6070      | 363-7070         |
| P5       | 3/16  | 7/8   | 6      | 363-6075      | 363-7075         |
| P6       | 1/4   | 7/8   | 6      | 363-6080      | 363-7080         |
| P8       | 1/8   | 1-1/8 | 6-1/2  | 363-6085      | 363-7085         |
| P8X      | 5/32  | 1-1/8 | 6-1/2  | 363-6090      | 363-7090         |
| P8N      | 3/16  | 1-1/8 | 6-1/2  | 363-6095      | 363-7095         |
| P9       | 1/4   | 1-1/8 | 6-1/2  | 363-6100      | 363-7100         |
| P10      | 5/16  | 1-1/8 | 6-1/2  | 363-6105      |                  |

### Tapered Type



| Tool No. | W     | H     | L      | HSS Order No. | Cobalt Order No. |
|----------|-------|-------|--------|---------------|------------------|
| T1-N     | .040" | 1/2"  | 3-1/2" | 363-5005      | 363-5205         |
| T-1      | 1/16  | 1/2   | 4-1/4  | 363-5010      | 363-5210         |
| T-2-N    | 5/64  | 1/2   | 4-1/4  | 363-5015      | 363-5215         |
| T-2      | 3/32  | 1/2   | 4-1/4  | 363-5020      | 363-5220         |
| T3-S     | 1/8   | 1/2   | 4-1/4  | 363-5025      | 363-5225         |
| T3-N     | 3/32  | 11/16 | 4-1/4  | 363-5030      | 363-5230         |
| T3       | 1/8   | 11/16 | 4-1/4  | 363-5035      | 363-5235         |
| T4       | 5/32  | 11/16 | 4-1/4  | 363-5040      | 363-5240         |
| T5-S     | 3/16  | 11/16 | 5      | 363-5045      | 363-5245         |
| T3-W     | 1/8   | 3/4   | 5      | 363-5050      | 363-5250         |
| T4-W     | 5/32  | 3/4   | 5      | 363-5055      | 363-5255         |
| T5-W     | 3/16  | 3/4   | 5      | 363-5060      | 363-5260         |
| T5-X     | 1/8   | 7/8   | 5      | 363-5065      | 363-5265         |
| T5-N     | 5/32  | 7/8   | 5      | 363-5070      | 363-5270         |
| T5       | 3/16  | 7/8   | 5      | 363-5075      | 363-5275         |
| T6       | 1/4   | 7/8   | 5      | 363-5080      | 363-5280         |
| T8-X     | 1/8   | 1-1/8 | 5-1/2  | 363-5085      | 363-5285         |
| T8-N     | 5/32  | 1-1/8 | 5-1/2  | 363-5090      | 363-5290         |
| T8       | 3/16  | 1-1/8 | 5-1/2  | 363-5095      | 363-5295         |
| T9       | 1/4   | 1-1/8 | 5-1/2  | 363-5100      | 363-5300         |
| T10      | 5/16  | 1-1/8 | 5-1/2  | 363-5105      | 363-5305         |

## M42 Cobalt Square Tool Bits

### Inch

| Size       | Order No. | Size      | Order No. | Size     | Order No. |
|------------|-----------|-----------|-----------|----------|-----------|
| 1/8x2-1/2" | 460-6010  | 1/2x4     | 460-6111  | 1x8      | 460-6180  |
| 3/16x2-1/2 | 460-6021  | 5/8x4-1/2 | 460-6128  | 1-1/8x8  | 460-6185  |
| 1/4x2-1/2  | 460-6033  | 3/4x5"    | 460-6148  | 1-1/4x7  | 460-6201  |
| 5/16x2-1/2 | 460-6049  | 7/8x6     | 460-6165  | 1-1/4x9  | 460-6205  |
| 3/8x3      | 460-6067  | 1x7       | 460-6179  | 1-1/2x10 | 460-6220  |
| 7/16x3-1/2 | 460-6090  |           |           |          |           |

### Long Length

| Size    | Order No. | Size   | Order No. | Size  | Order No. |
|---------|-----------|--------|-----------|-------|-----------|
| 3/16x8" | 460-6123  | 5/16x8 | 460-6260  | 1/2x8 | 460-6500  |
| 1/4x4   | 460-6158  | 3/8x4  | 460-6298  | 5/8x6 | 460-6600  |
| 1/4x6   | 460-6160  | 3/8x6  | 460-6300  | 5/8x8 | 460-6602  |
| 1/4x8   | 460-6200  | 3/8x8" | 460-6330  | 3/4x6 | 460-6606  |
| 5/16x4  | 460-6228  | 7/16x6 | 460-6335  | 3/4x8 | 460-6608  |
| 5/16x6  | 460-6230  | 1/2x6  | 460-6400  |       |           |

### Metric

| Size  | Order No. | Size  | Order No. | Size   | Order No. | Size   | Order No. |
|-------|-----------|-------|-----------|--------|-----------|--------|-----------|
| 6x63  | 460-6715  | 8x100 | 460-6725  | 10x100 | 460-6735  | 12x100 | 460-6745  |
| 6x100 | 460-6720  | 8x150 | 460-6730  | 10x200 | 460-6740  | 20x200 | 460-6755  |

## Single End Boring Bars

### 45 & 90°



### Sets

| No. of Pieces | Angle | Sizes               | Order No. |
|---------------|-------|---------------------|-----------|
| 4             | 45°   | 1/4, 3/8, 1/2, 5/8" | 378-4140  |
| 4             | 90°   | 1/4, 3/8, 1/2, 5/8" | 378-4240  |

### Individual

| Diameter of Bar | Overall Length | Bit Size              | 45 Degree Order No. | 90 Degree Order No. |
|-----------------|----------------|-----------------------|---------------------|---------------------|
| 1/4"            | 2-1/2"         | 5/32" round tool bits | 378-4102            | 378-4202            |
| 5/16            | 2-1/2          | 3/16 round tool bits  | 378-4104            | 378-4204            |
| 3/8             | 3              | 3/16 round tool bits  | 378-4106            | 378-4206            |
| 1/2             | 3              | 3/16 square tool bits | 378-4108            | 378-4208            |
| 9/16            | 4-1/2          | 3/16 square tool bits | 378-4110            | 378-4210            |
| 5/8             | 5              | 1/4 square tool bits  | 378-4112            | 378-4212            |
| 3/4             | 6              | 1/4 square tool bits  | 378-4114            | 378-4214            |
| 1               | 6              | 5/16 square tool bits | 378-4116            | 378-4216            |
| 1               | 6              | 3/8 square tool bits  | 378-4118            | 378-4218            |
| 1-1/8           | 7              | 7/16 square tool bits | 378-4120            | 378-4220            |
| 1-1/4           | 8              | 1/2 square tool bits  | 378-4122            | 378-4222            |
| 1-1/2           | 9              | 1/2 square tool bits  | 378-4124            | 378-4224            |

## Double End Calibrated Boring Bars



### Individual

| Diameter Of Bar | Overall Length | Tool Bit Size          | Order No. |
|-----------------|----------------|------------------------|-----------|
| 3/8"            | 6"             | 3/16" round tool bits  | 378-4302  |
| 1/2             | 6              | 3/16" square tool bits | 378-4304  |
| 1/2             | 9              | 3/16" square tool bits | 378-4306  |
| 5/8             | 10             | 3/16" square tool bits | 378-4308  |
| 3/4             | 12             | 1/4" square tool bits  | 378-4310  |
| 1               | 12             | 1/4" square tool bits  | 378-4312  |
| 1-1/4           | 16             | 3/8" square tool bits  | 378-4314  |
| 1-1/2           | 18             | 3/8" square tool bits  | 378-4316  |

## Double End Boring Bars



### Individual

| Size       | Tool Bit Size        | Order No. |
|------------|----------------------|-----------|
| 1/4x5"     | 5/32" round tollbits | 378-4002  |
| 5/16x5     | 3/16 round toolbits  | 378-4004  |
| 3/8x6      | 3/16 round toolbits  | 378-4006  |
| 1/2x6      | 3/16 square toolbits | 378-4008  |
| 1/2x6      | 1/4 square toolbits  | 378-4009  |
| 1/2x9      | 1/4 square toolbits  | 378-4010  |
| 5/8x10     | 1/4 square toolbits  | 378-4012  |
| 3/4x12     | 1/4 square toolbits  | 378-4014  |
| 1x12       | 1/4 square toolbits  | 378-4015  |
| 1x12       | 5/16 square toolbits | 378-4016  |
| 1-1/4x16   | 1/2 square toolbits  | 378-4018  |
| 1-1/2x18   | 1/2 square toolbits  | 378-4020  |
| 9/16x6-1/2 | 1/4 square toolbits  | 378-4021  |

### Sets

| No. of Pieces | Sizes                    | Order No. |
|---------------|--------------------------|-----------|
| 4             | 1/2, 9/16, 5/8, 3/4"     | 378-4030  |
| 4             | 1/4, 5/16, 3/8, 1/2"     | 378-4031  |
| 5             | 1/4, 3/8, 1/2, 5/8, 3/4" | 378-4000  |
| 5             | 3/8, 1/2, 5/8, 3/4, 1"   | 378-4001  |

## Fly-Tool Cutter Holders & Sets

### Straight Shank

Counter balanced tap get smoother finished. Hardened steel, machines up to 6" wide surface with stand tool bit. Tool bit replaces end mill and resharpener. Sets come complete with wooden stand.

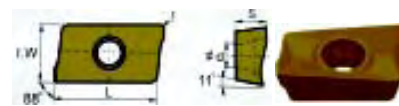


| No. of Piece | Head Diameter | Shank Size | Tool Bit Size | Individuals Order No. | Sets Order No. |
|--------------|---------------|------------|---------------|-----------------------|----------------|
| 3            | 3/4"          | 1/2"       | 3/16"         | 225-3031              |                |
|              | 1-1/8         | 1/2        | 1/4           | 225-3032              | 225-3030       |
|              | 1-1/2         | 1/2        | 5/16          | 225-3033              |                |
| 3            | 1-1/2         | 3/4        | 5/16          | 225-3041              |                |
|              | 2             | 3/4        | 5/16          | 225-3042              | 225-3040       |
|              | 2-1/2         | 3/4        | 5/16          | 225-3043              |                |
| 5            | 7/8           | 1/2        | 3/16          | 225-3044              |                |
|              | 1-1/4         | 1/2        | 1/4           | 225-3045              |                |
|              | 1-5/8         | 1/2        | 5/16          | 225-3046              | 225-3038       |
|              | 2             | 1/2        | 3/8           | 225-3035              |                |
|              | 2-1/2         | 5/8        | 1/2           | 225-3036              |                |
| 5            | 3/4           | 1/2        | 3/16          | 225-3031              |                |
|              | 1-1/8         | 1/2        | 1/4           | 225-3032              |                |
|              | 1-3/8         | 1/2        | 5/16          | 225-3034              | 225-3039       |
|              | 2             | 1/2        | 3/8           | 225-3035              |                |
|              | 2-1/2         | 5/8        | 1/2           | 225-3036              |                |

## Carbide Inserts

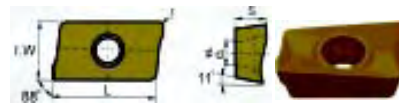
### APKT/PF

| ISO Insert No. | I.W. | L      | S    | d   | r   | Grade  | Order No. |
|----------------|------|--------|------|-----|-----|--------|-----------|
| APKT-11T304-PF | 6.5  | 12.24  | 3.6  | 2.8 | 0.4 | GC4030 | 431-1001  |
| APKT-160408-PF | 9.33 | 17.877 | 5.76 | 4.4 | 0.8 | GC4030 | 431-1002  |



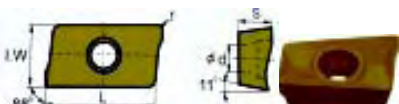
### APKT/PM

| ISO Insert No. | I.W. | L      | S    | d   | r   | Grade  | Order No. |
|----------------|------|--------|------|-----|-----|--------|-----------|
| APKT-11T304-PM | 6.5  | 12.24  | 3.6  | 2.8 | 0.4 | GC4030 | 431-1003  |
| APKT-160408-PM | 9.33 | 17.877 | 5.76 | 4.4 | 0.8 | GC4030 | 431-1004  |



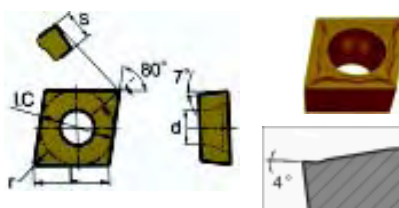
### APKT/PR

| ISO Insert No. | I.W. | L      | S    | d   | r   | Grade  | Order No. |
|----------------|------|--------|------|-----|-----|--------|-----------|
| APKT-11T304-PR | 6.5  | 12.24  | 3.6  | 2.8 | 0.4 | GC4040 | 431-1005  |
| APKT-160408-PR | 9.33 | 17.877 | 5.76 | 4.4 | 0.8 | GC4040 | 431-1006  |



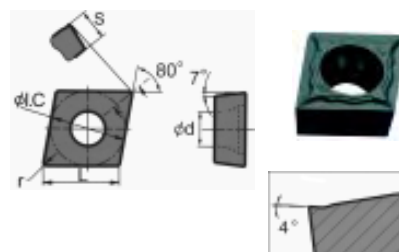
### CCMT/HF

| ISO Insert No. | ANSI Insert No. | I.C. | L     | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|------|-------|------|-----|-----|--------|-----------|
| CCMT-060202-HF | CCMT-21.50-HF   | 6.4  | 6.35  | 2.38 | 2.8 | 0.2 | GC4015 | 431-1011  |
| CCMT-060204-HF | CCMT-21.51-HF   | 6.4  | 6.35  | 2.38 | 2.8 | 0.4 | GC4015 | 431-1012  |
| CCMT-060208-HF | CCMT-21.52-HF   | 6.4  | 6.35  | 2.38 | 2.8 | 0.8 | GC4015 | 431-1013  |
| CCMT-09T308-HF | CCMT-32.52-HF   | 9.7  | 9.525 | 3.97 | 4.4 | 0.8 | GC4015 | 431-1014  |
| CCMT-120404-HF | CCMT-431-HF     | 12.9 | 12.7  | 4.76 | 5.5 | 0.4 | GC4015 | 431-1015  |



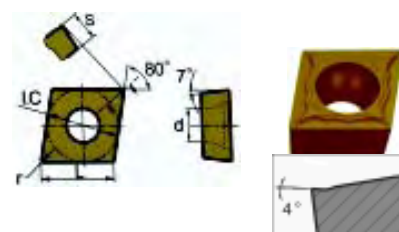
### CCMT/HF

| ISO Insert No. | ANSI Insert No. | I.C. | L     | S    | d   | r   | Grade | Order No. |
|----------------|-----------------|------|-------|------|-----|-----|-------|-----------|
| CCMT-060202-HF | CCMT-21.50-HF   | 6.4  | 6.35  | 2.38 | 2.8 | 0.2 | CT525 | 431-1021  |
| CCMT-060204-HF | CCMT-21.51-HF   | 6.4  | 6.35  | 2.38 | 2.8 | 0.4 | CT525 | 431-1022  |
| CCMT-060208-HF | CCMT-21.52-HF   | 6.4  | 6.35  | 2.38 | 2.8 | 0.8 | CT525 | 431-1023  |
| CCMT-09T302-HF | CCMT-32.50-HF   | 9.7  | 9.525 | 3.97 | 4.4 | 0.2 | CT525 | 431-1024  |
| CCMT-09T304-HF | CCMT-32.51-HF   | 9.7  | 9.525 | 3.97 | 4.4 | 0.4 | CT525 | 431-1025  |
| CCMT-09T308-HF | CCMT-32.52-HF   | 9.7  | 9.525 | 3.97 | 4.4 | 0.8 | CT525 | 431-1026  |
| CCMT-120404-HF | CCMT-431-HF     | 12.9 | 12.7  | 4.76 | 5.5 | 0.4 | CT525 | 431-1027  |



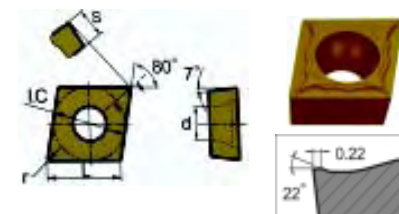
### CCMT/HM

| ISO Insert No. | ANSI Insert No. | I.C. | L     | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|------|-------|------|-----|-----|--------|-----------|
| CCMT-060204-HM | CCMT-21.51-HM   | 6.4  | 6.35  | 2.38 | 2.8 | 0.4 | GC4025 | 431-1031  |
| CCMT-060208-HM | CCMT-21.52-HM   | 6.4  | 6.35  | 2.38 | 2.8 | 0.8 | GC4025 | 431-1032  |
| CCMT-09T304-HM | CCMT-32.51-HM   | 9.7  | 9.525 | 3.97 | 4.4 | 0.4 | GC4025 | 431-1033  |
| CCMT-09T308-HM | CCMT-32.52-HM   | 9.7  | 9.525 | 3.97 | 4.4 | 0.8 | GC4025 | 431-1034  |
| CCMT-120404-HM | CCMT-431-HM     | 12.9 | 12.7  | 4.76 | 5.6 | 0.4 | GC4025 | 431-1035  |
| CCMT-120408-HM | CCMT-432-HM     | 12.9 | 12.7  | 4.76 | 5.6 | 0.8 | GC4025 | 431-1036  |
| CCMT-120412-HM | CCMT-433-HM     | 12.9 | 12.7  | 4.76 | 5.6 | 1.2 | GC4025 | 431-1037  |



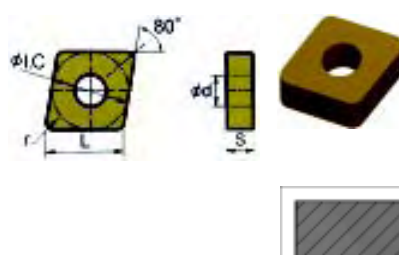
### CCMT/HR

| ISO Insert No. | ANSI Insert No. | I.C. | L     | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|------|-------|------|-----|-----|--------|-----------|
| CCMT-060204-HR | CCMT-21.51-HR   | 6.4  | 6.35  | 2.38 | 2.8 | 0.4 | GC4025 | 431-1041  |
| CCMT-060208-HR | CCMT-21.52-HR   | 6.4  | 6.35  | 2.38 | 2.8 | 0.8 | GC4025 | 431-1042  |
| CCMT-09T304-HR | CCMT-32.51-HR   | 9.7  | 9.525 | 3.97 | 4.4 | 0.4 | GC4025 | 431-1043  |
| CCMT-09T308-HR | CCMT-32.52-HR   | 9.7  | 9.525 | 3.97 | 4.4 | 0.8 | GC4025 | 431-1044  |
| CCMT-120408-HR | CCMT-432-HR     | 12.9 | 12.7  | 4.76 | 5.6 | 0.8 | GC4025 | 431-1045  |
| CCMT-120412-HR | CCMT-433-HR     | 12.9 | 12.7  | 4.76 | 5.6 | 1.2 | GC4025 | 431-1046  |



### CNMA

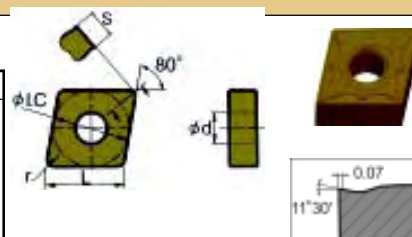
| ISO Insert No. | ANSI Insert No. | I.C.   | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|--------|------|------|------|-----|--------|-----------|
| CNMA-120404    | CNMA-431        | 12.7   | 12.9 | 4.76 | 5.16 | 0.4 | GC3015 | 431-1051  |
| CNMA-120408    | CNMA-432        | 12.7   | 12.9 | 4.76 | 5.16 | 0.8 | GC3015 | 431-1052  |
| CNMA-120412    | CNMA-433        | 12.7   | 12.9 | 4.76 | 5.16 | 1.2 | GC3015 | 431-1053  |
| CNMA-120416    | CNMA-434        | 12.7   | 12.9 | 4.76 | 5.16 | 1.6 | GC3015 | 431-1054  |
| CNMA-160612    | CNMA-543        | 15.875 | 16.1 | 6.35 | 6.35 | 1.2 | GC3015 | 431-1055  |
| CNMA-160620    | CNMA-545        | 15.875 | 16.1 | 6.35 | 6.35 | 2.0 | GC3015 | 431-1056  |
| CNMA-190612    | CNMA-643        | 19.05  | 19.3 | 6.35 | 7.94 | 1.2 | GC3015 | 431-1057  |
| CNMA-190616    | CNMA-644        | 19.05  | 19.3 | 6.35 | 7.94 | 1.6 | GC3015 | 431-1058  |



## Carbide Inserts

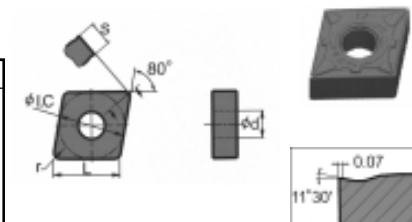
### CNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No.       |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------------|
| CNMG-090304-DF | CNMG-321-DF     | 9.525 | 9.7  | 3.18 | 3.81 | 0.4 | GC4015 | <b>431-1060</b> |
| CNMG-090308-DF | CNMG-322-DF     | 9.525 | 9.7  | 3.18 | 3.81 | 0.8 | GC4015 | <b>431-1061</b> |
| CNMG-120404-DF | CNMG-432-DF     | 12.7  | 12.9 | 4.76 | 5.16 | 0.4 | GC4015 | <b>431-1062</b> |
| CNMG-120408-DF | CNMG-432-DF     | 12.7  | 12.9 | 4.76 | 5.16 | 0.8 | GC4015 | <b>431-1063</b> |
| CNMG-120412-DF | CNMG-433-DF     | 12.7  | 12.9 | 4.76 | 5.16 | 1.2 | GC4015 | <b>431-1064</b> |



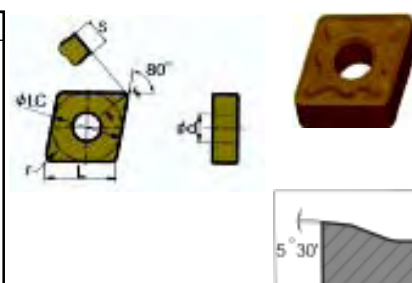
### CNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade | Order No.       |
|----------------|-----------------|-------|------|------|------|-----|-------|-----------------|
| CNMG-090304-DF | CNMG-321-DF     | 9.525 | 9.7  | 3.18 | 3.81 | 0.4 | CT525 | <b>431-1065</b> |
| CNMG-090308-DF | CNMG-322-DF     | 9.525 | 9.7  | 3.18 | 3.81 | 0.8 | CT525 | <b>431-1066</b> |
| CNMG-120404-DF | CNMG-432-DF     | 12.7  | 12.9 | 4.76 | 5.16 | 0.4 | CT525 | <b>431-1067</b> |
| CNMG-120408-DF | CNMG-432-DF     | 12.7  | 12.9 | 4.76 | 5.16 | 0.8 | CT525 | <b>431-1068</b> |
| CNMG-120412-DF | CNMG-433-DF     | 12.7  | 12.9 | 4.76 | 5.16 | 1.2 | CT525 | <b>431-1069</b> |



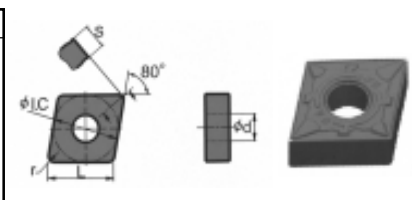
### CNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.   | L    | S    | d    | r   | Grade  | Order No.       |
|----------------|-----------------|--------|------|------|------|-----|--------|-----------------|
| CNMG-090304-DM | CNMG-321-DM     | 9.525  | 9.7  | 3.18 | 3.81 | 0.4 | GC4025 | <b>431-1070</b> |
| CNMG-090308-DM | CNMG-322-DM     | 9.525  | 9.7  | 3.18 | 3.81 | 0.8 | GC4025 | <b>431-1071</b> |
| CNMG-090312-DM | CNMG-323-DM     | 9.525  | 9.7  | 3.18 | 3.81 | 1.2 | GC4025 | <b>431-1072</b> |
| CNMG-120404-DM | CNMG-431-DM     | 12.7   | 12.9 | 4.76 | 5.16 | 0.4 | GC4025 | <b>431-1073</b> |
| CNMG-120408-DM | CNMG-432-DM     | 12.7   | 12.9 | 4.76 | 5.16 | 0.8 | GC4025 | <b>431-1074</b> |
| CNMG-120412-DM | CNMG-433-DM     | 12.7   | 12.9 | 4.76 | 5.16 | 1.2 | GC4025 | <b>431-1075</b> |
| CNMG-120416-DM | CNMG-434-DM     | 12.7   | 12.9 | 4.76 | 5.16 | 1.6 | GC4025 | <b>431-1076</b> |
| CNMG-160608-DM | CNMG-541-DM     | 15.875 | 16.1 | 6.35 | 6.35 | 0.8 | GC4025 | <b>431-1077</b> |
| CNMG-160612-DM | CNMG-542-DM     | 15.875 | 16.1 | 6.35 | 6.35 | 1.2 | GC4025 | <b>431-1078</b> |
| CNMG-160616-DM | CNMG-543-DM     | 15.875 | 16.1 | 6.35 | 6.35 | 1.6 | GC4025 | <b>431-1079</b> |



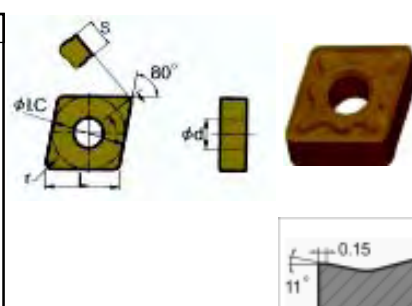
### CNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade | Order No.       |
|----------------|-----------------|-------|------|------|------|-----|-------|-----------------|
| CNMG-090304-DM | CNMG-321-DM     | 9.525 | 9.7  | 3.18 | 3.81 | 0.4 | CT525 | <b>431-1080</b> |
| CNMG-090308-DM | CNMG-322-DM     | 9.525 | 9.7  | 3.18 | 3.81 | 0.8 | CT525 | <b>431-1081</b> |
| CNMG-120404-DM | CNMG-431-DM     | 12.7  | 12.9 | 4.76 | 5.16 | 0.4 | CT525 | <b>431-1082</b> |
| CNMG-120408-DM | CNMG-432-DM     | 12.7  | 12.9 | 4.76 | 5.16 | 0.8 | CT525 | <b>431-1083</b> |
| CNMG-120412-DM | CNMG-433-DM     | 12.7  | 12.9 | 4.76 | 5.16 | 1.2 | CT525 | <b>431-1084</b> |
| CNMG-120416-DM | CNMG-434-DM     | 12.7  | 12.9 | 4.76 | 5.16 | 1.6 | CT525 | <b>431-1085</b> |



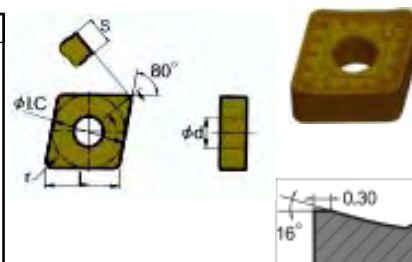
### CNMG/PM

| ISO Insert No. | ANSI Insert No. | I.C.   | L    | S    | d    | r   | Grade  | Order No.       |
|----------------|-----------------|--------|------|------|------|-----|--------|-----------------|
| CNMG-090304-PM | CNMG-321-PM     | 9.525  | 9.7  | 3.18 | 3.81 | 0.4 | GC4025 | <b>431-1090</b> |
| CNMG-090308-PM | CNMG-322-PM     | 9.525  | 9.7  | 3.18 | 3.81 | 0.8 | GC4025 | <b>431-1091</b> |
| CNMG-090312-PM | CNMG-323-PM     | 9.525  | 9.7  | 3.18 | 3.81 | 1.2 | GC4025 | <b>431-1092</b> |
| CNMG-120404-PM | CNMG-431-PM     | 12.7   | 12.9 | 4.76 | 5.16 | 0.4 | GC4025 | <b>431-1093</b> |
| CNMG-120408-PM | CNMG-432-PM     | 12.7   | 12.9 | 4.76 | 5.16 | 0.8 | GC4025 | <b>431-1094</b> |
| CNMG-120412-PM | CNMG-433-PM     | 12.7   | 12.9 | 4.76 | 5.16 | 1.2 | GC4025 | <b>431-1095</b> |
| CNMG-120416-PM | CNMG-434-PM     | 12.7   | 12.9 | 4.76 | 5.16 | 1.6 | GC4025 | <b>431-1096</b> |
| CNMG-160608-PM | CNMG-542-PM     | 15.875 | 16.1 | 6.35 | 6.35 | 0.8 | GC4025 | <b>431-1097</b> |
| CNMG-160616-PM | CNMG-544-PM     | 15.875 | 16.1 | 6.35 | 6.35 | 1.6 | GC4025 | <b>431-1098</b> |
| CNMG-190608-PM | CNMG-642-PM     | 19.05  | 19.3 | 6.35 | 7.94 | 0.8 | GC4025 | <b>431-1099</b> |
| CNMG-190612-PM | CNMG-643-PM     | 19.05  | 19.3 | 6.35 | 7.94 | 1.2 | GC4025 | <b>431-1100</b> |



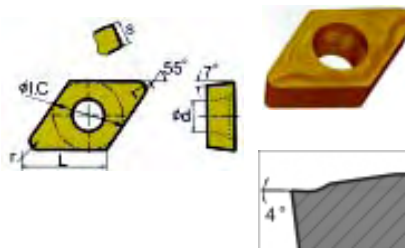
### CNMM/DR

| ISO Insert No. | ANSI Insert No. | I.C.   | L    | S    | d    | r   | Grade  | Order No.       |
|----------------|-----------------|--------|------|------|------|-----|--------|-----------------|
| CNMM-120408-DR | CNMM-432-DR     | 12.7   | 12.9 | 4.76 | 5.16 | 0.8 | GC4025 | <b>431-1101</b> |
| CNMM-120412-DR | CNMM-433-DR     | 12.7   | 12.9 | 4.76 | 5.16 | 1.2 | GC4025 | <b>431-1102</b> |
| CNMM-120416-DR | CNMM-434-DR     | 12.7   | 12.9 | 4.76 | 5.16 | 1.6 | GC4025 | <b>431-1103</b> |
| CNMM-160608-DR | CNMM-542-DR     | 15.875 | 16.1 | 6.35 | 6.35 | 0.8 | GC4025 | <b>431-1104</b> |
| CNMM-160612-DR | CNMM-543-DR     | 15.875 | 16.1 | 6.35 | 6.35 | 1.2 | GC4025 | <b>431-1105</b> |
| CNMM-160616-DR | CNMM-544-DR     | 15.875 | 19.1 | 6.35 | 6.35 | 1.6 | GC4025 | <b>431-1106</b> |
| CNMM-190612-DR | CNMM-643-DR     | 19.05  | 19.3 | 6.35 | 7.94 | 1.2 | GC4025 | <b>431-1107</b> |
| CNMM-190616-DR | CNMM-644-DR     | 19.05  | 19.3 | 6.35 | 7.94 | 1.6 | GC4025 | <b>431-1108</b> |

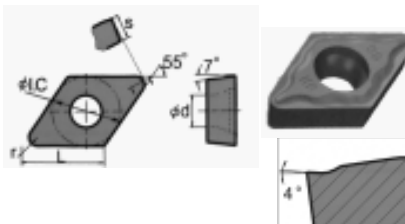


**Carbide Inserts**
**DCMT/HF**

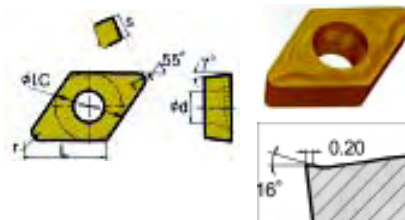
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| DCMT-070202-HF | DCMT-21.50-HF   | 6.35  | 7.8  | 2.38 | 2.8 | 0.2 | GC4015 | 431-1111  |
| DCMT-070204-HF | DCMT-21.51-HF   | 6.35  | 7.8  | 2.38 | 2.8 | 0.4 | GC4015 | 431-1112  |
| DCMT-070208-HF | DCMT-21.52-HF   | 6.35  | 7.8  | 2.38 | 2.8 | 0.8 | GC4015 | 431-1113  |
| DCMT-11T302-HF | DCMT-32.50-HF   | 9.525 | 11.6 | 3.97 | 4.4 | 0.2 | GC4015 | 431-1114  |
| DCMT-11T304-HF | DCMT-32.51-HF   | 9.525 | 11.6 | 3.97 | 4.4 | 0.4 | GC4015 | 431-1115  |
| DCMT-11T308-HF | DCMT-32.52-HF   | 9.525 | 11.6 | 3.97 | 4.4 | 0.8 | GC4015 | 431-1116  |


**DCMT/HF**

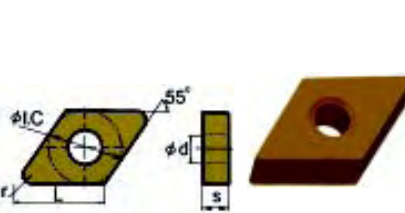
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|-------|-----------|
| DCMT-070202-HF | DCMT-21.50-HF   | 6.35  | 7.8  | 2.38 | 2.8 | 0.2 | CT525 | 431-1121  |
| DCMT-070204-HF | DCMT-21.51-HF   | 6.35  | 7.8  | 2.38 | 2.8 | 0.4 | CT525 | 431-1122  |
| DCMT-070208-HF | DCMT-21.52-HF   | 6.35  | 7.8  | 2.38 | 2.8 | 0.8 | CT525 | 431-1123  |
| DCMT-11T302-HF | DCMT-32.50-HF   | 9.525 | 11.6 | 3.97 | 4.4 | 0.2 | CT525 | 431-1124  |
| DCMT-11T304-HF | DCMT-32.51-HF   | 9.525 | 11.6 | 3.97 | 4.4 | 0.4 | CT525 | 431-1125  |
| DCMT-11T308-HF | DCMT-32.52-HF   | 9.525 | 11.6 | 3.97 | 4.4 | 0.8 | CT525 | 431-1126  |


**DCMT/HM**

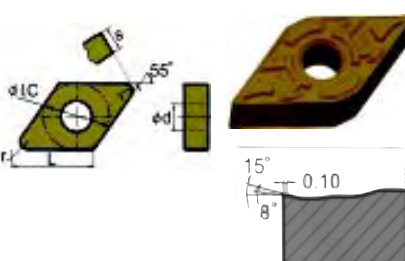
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| DCMT-070204-HM | DCMT-21.51-HM   | 6.35  | 7.8  | 2.38 | 2.8 | 0.4 | GC4025 | 431-1131  |
| DCMT-070208-HM | DCMT-21.52-HM   | 6.35  | 7.8  | 2.38 | 2.8 | 0.8 | GC4025 | 431-1132  |
| DCMT-11T304-HM | DCMT-32.51-HM   | 9.525 | 11.6 | 3.97 | 4.4 | 0.4 | GC4025 | 431-1133  |
| DCMT-11T308-HM | DCMT-32.52-HM   | 9.525 | 11.6 | 3.97 | 4.4 | 0.8 | GC4025 | 431-1134  |
| DCMT-11T312-HM | DCMT-32.53-HM   | 9.525 | 11.6 | 3.97 | 4.4 | 1.2 | GC4025 | 431-1135  |


**DNMA**

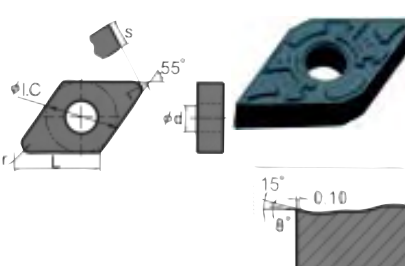
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| DNMA-110416    | DNMA-334        | 9.525 | 11.6 | 4.76 | 3.81 | 1.6 | GC3015 | 431-1141  |
| DNMA-110424    | DNMA-336        | 9.525 | 11.6 | 4.76 | 3.81 | 2.4 | GC3015 | 431-1142  |
| DNMA-150404    | DNMA-431        | 12.7  | 15.5 | 4.76 | 5.16 | 0.4 | GC3015 | 431-1143  |
| DNMA-150604    | DNMA-441        | 12.7  | 15.5 | 6.35 | 5.16 | 0.4 | GC3015 | 431-1144  |
| DNMA-150608    | DNMA-442        | 12.7  | 15.5 | 6.35 | 5.16 | 0.8 | GC3015 | 431-1145  |
| DNMA-150612    | DNMA-443        | 12.7  | 15.5 | 6.35 | 5.16 | 1.2 | GC3015 | 431-1146  |
| DNMA-150616    | DNMA-444        | 12.7  | 15.5 | 6.35 | 5.16 | 1.6 | GC3015 | 431-1147  |


**DNMG/DF**

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| DNMG-110404-DF | DNMG-331-DF     | 9.525 | 11.6 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1151  |
| DNMG-110408-DF | DNMG-332-DF     | 9.525 | 11.6 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1152  |
| DNMG-110412-DF | DNMG-333-DF     | 9.525 | 11.6 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1153  |
| DNMG-150404-DF | DNMG-431-DF     | 12.7  | 15.5 | 4.76 | 5.16 | 0.4 | GC4025 | 431-1154  |
| DNMG-150408-DF | DNMG-432-DF     | 12.7  | 15.5 | 4.76 | 5.16 | 0.8 | GC4025 | 431-1155  |
| DNMG-150604-DF | DNMG-441-DF     | 12.7  | 15.5 | 6.35 | 5.16 | 0.4 | GC4025 | 431-1156  |
| DNMG-150608-DF | DNMG-442-DF     | 12.7  | 15.5 | 6.35 | 5.16 | 0.8 | GC4025 | 431-1157  |
| DNMG-150612-DF | DNMG-443-DF     | 12.7  | 15.5 | 6.35 | 5.16 | 1.2 | GC4025 | 431-1158  |


**DNMG/DF TiCN/AlCoATED**

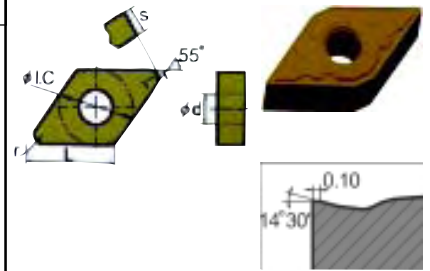
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| DNMG-110404-DF | DNMG-331-DF     | 9.525 | 11.6 | 4.76 | 3.81 | 0.4 | YBC152 | 431-1161  |
| DNMG-110408-DF | DNMG-332-DF     | 9.525 | 11.6 | 4.76 | 3.81 | 0.8 | YBC152 | 431-1162  |
| DNMG-110412-DF | DNMG-333-DF     | 9.525 | 11.6 | 4.76 | 3.81 | 1.2 | YBC152 | 431-1163  |
| DNMG-150404-DF | DNMG-431-DF     | 12.7  | 15.5 | 4.76 | 5.16 | 0.4 | YBC152 | 431-1164  |
| DNMG-150408-DF | DNMG-432-DF     | 12.7  | 15.5 | 4.76 | 5.16 | 0.8 | YBC152 | 431-1165  |
| DNMG-150604-DF | DNMG-441-DF     | 12.7  | 15.5 | 6.35 | 5.16 | 0.4 | YBC152 | 431-1166  |
| DNMG-150608-DF | DNMG-442-DF     | 12.7  | 15.5 | 6.35 | 5.16 | 0.8 | YBC152 | 431-1167  |
| DNMG-150612-DF | DNMG-443-DF     | 12.7  | 15.5 | 6.35 | 5.16 | 1.2 | YBC152 | 431-1168  |



## Carbide Inserts

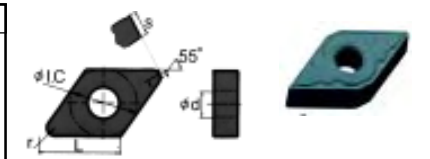
### DNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| DNMG-110404-DM | DNMG-331-DM     | 9.525 | 11.6 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1171  |
| DNMG-110408-DM | DNMG-332-DM     | 9.525 | 11.6 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1172  |
| DNMG-110412-DM | DNMG-333-DM     | 9.525 | 11.6 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1173  |
| DNMG-150404-DM | DNMG-431-DM     | 12.7  | 15.5 | 4.76 | 5.16 | 0.4 | GC4025 | 431-1174  |
| DNMG-150408-DM | DNMG-432-DM     | 12.7  | 15.5 | 4.76 | 5.16 | 0.8 | GC4025 | 431-1175  |
| DNMG-150412-DM | DNMG-433-DM     | 12.7  | 15.5 | 4.76 | 5.16 | 1.2 | GC4025 | 431-1176  |
| DNMG-150604-DM | DNMG-441-DM     | 12.7  | 15.5 | 6.35 | 5.16 | 0.4 | GC4025 | 431-1177  |
| DNMG-150608-DM | DNMG-442-DM     | 12.7  | 15.5 | 6.35 | 5.16 | 0.8 | GC4025 | 431-1178  |
| DNMG-150612-DM | DNMG-443-DM     | 12.7  | 15.5 | 6.35 | 5.16 | 1.2 | GC4025 | 431-1179  |



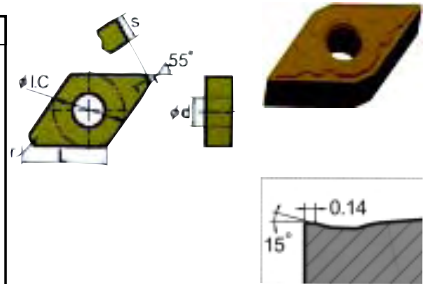
### DNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade | Order No. |
|----------------|-----------------|-------|------|------|------|-----|-------|-----------|
| DNMG-110404-DM | DNMG-331-DM     | 9.525 | 11.6 | 4.76 | 3.81 | 0.4 | CT525 | 431-1181  |
| DNMG-150404-DM | DNMG-431-DM     | 12.7  | 15.5 | 4.76 | 5.16 | 0.4 | CT525 | 431-1182  |
| DNMG-150408-DM | DNMG-432-DM     | 12.7  | 15.5 | 4.76 | 5.16 | 0.8 | CT525 | 431-1183  |
| DNMG-150604-DM | DNMG-441-DM     | 12.7  | 15.5 | 6.35 | 5.16 | 0.4 | CT525 | 431-1184  |
| DNMG-150608-DM | DNMG-442-DM     | 12.7  | 15.5 | 6.35 | 5.1  | 0.8 | CT525 | 431-1185  |



### DNMG/PM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| DNMG-110404-PM | DNMG-331-PM     | 9.525 | 11.6 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1191  |
| DNMG-110408-PM | DNMG-332-PM     | 9.525 | 11.6 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1192  |
| DNMG-110412-PM | DNMG-333-PM     | 9.525 | 11.6 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1193  |
| DNMG-150404-PM | DNMG-431-PM     | 12.7  | 15.5 | 4.76 | 5.16 | 0.4 | GC4025 | 431-1194  |
| DNMG-150408-PM | DNMG-432-PM     | 12.7  | 15.5 | 4.76 | 5.16 | 0.8 | GC4025 | 431-1195  |
| DNMG-150412-PM | DNMG-433-PM     | 12.7  | 15.5 | 4.76 | 5.16 | 1.2 | GC4025 | 431-1196  |
| DNMG-150604-PM | DNMG-441-PM     | 12.7  | 15.5 | 6.35 | 5.16 | 0.4 | GC4025 | 431-1197  |
| DNMG-150608-PM | DNMG-442-PM     | 12.7  | 15.5 | 6.35 | 5.16 | 0.8 | GC4025 | 431-1198  |
| DNMG-150612-PM | DNMG-443-PM     | 12.7  | 15.5 | 6.35 | 5.16 | 1.2 | GC4025 | 431-1199  |



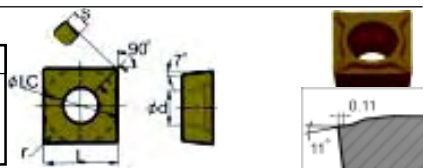
### GTN

| ISO Insert No. | Lead Angle | Width | C2 Order No. | C6 Order No. | TiN Coated Order No. |
|----------------|------------|-------|--------------|--------------|----------------------|
| GTN-3          | 0          | 3.1   | 431-1201     | 431-1205     | 431-1301             |
| GTN-4          | 0          | 4.1   | 431-1202     | 431-1206     | 431-1302             |
| GTN-5          | 0          | 5.1   | 431-1203     | 431-1207     | 431-1303             |
| GTN-6          | 0          | 6.1   | 431-1204     | 431-1208     | 431-1304             |



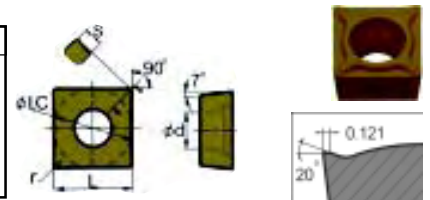
### SCMT/HF

| ISO Insert No. | ANSI Insert No. | I.C.  | L     | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|-------|------|-----|-----|--------|-----------|
| SCMT-09T302-HF | SCMT-32.50-HF   | 9.525 | 9.525 | 3.97 | 4.4 | 0.2 | GC4015 | 431-1311  |
| SCMT-09T304-HF | SCMT-32.51-HF   | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | GC4015 | 431-1312  |
| SCMT-09T308-HF | SCMT-32.52-HF   | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | GC4015 | 431-1313  |



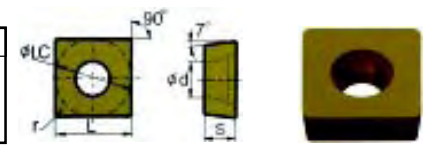
### SCMT/HM

| ISO Insert No. | ANSI Insert No. | I.C.  | L     | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|-------|------|------|-----|--------|-----------|
| SCMT-09T304-HM | SCMT-32.51-HM   | 9.525 | 9.525 | 3.97 | 4.4  | 0.4 | GC4025 | 431-1315  |
| SCMT-09T308-HM | SCMT-32.52-HM   | 9.525 | 9.525 | 3.97 | 4.4  | 0.8 | GC4025 | 431-1316  |
| SCMT-120404-HM | SCMT-431-HM     | 12.7  | 12.7  | 4.76 | 5.56 | 0.4 | GC4025 | 431-1317  |
| SCMT-120408-HM | SCMT-432-HM     | 12.7  | 12.7  | 4.76 | 5.56 | 0.8 | GC4025 | 431-1318  |
| SCMT-120412-HM | SCMT-433-HM     | 12.7  | 12.7  | 4.76 | 5.56 | 1.2 | GC4025 | 431-1319  |



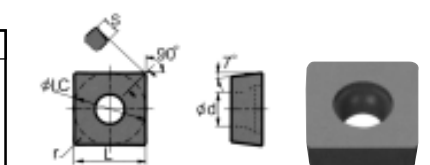
### SCMW

| ISO Insert No. | ANSI Insert No. | I.C.  | L     | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|-------|------|-----|-----|--------|-----------|
| SCMW-060204    | SCMW-21.51      | 6.35  | 6.35  | 2.38 | 2.8 | 0.4 | GC3015 | 431-1321  |
| SCMW-09T304    | SCMW-32.51      | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | GC3015 | 431-1322  |
| SCMW-09T308    | SCMW-32.52      | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | GC3015 | 431-1323  |



### SCMW

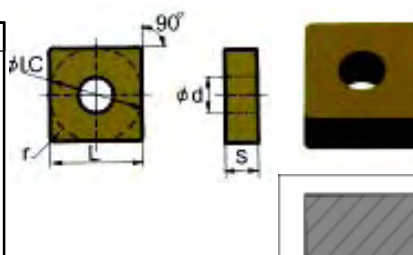
| ISO Insert No. | ANSI Insert No. | I.C.  | L     | S    | d   | r   | Grade | Order No. |
|----------------|-----------------|-------|-------|------|-----|-----|-------|-----------|
| SCMW-060204    | SCMW-21.51      | 6.35  | 6.35  | 2.38 | 2.8 | 0.4 | CT525 | 431-1325  |
| SCMW-09T304    | SCMW-32.51      | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | CT525 | 431-1326  |
| SCMW-09T308    | SCMW-32.52      | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | CT525 | 431-1327  |
| SCMW-120408    | SCMW-432        | 12.7  | 12.7  | 4.76 | 5.5 | 0.8 | CT525 | 431-1328  |



## Carbide Inserts

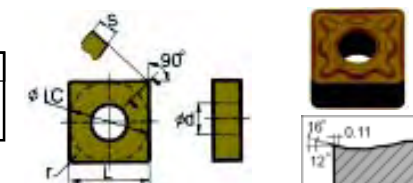
### SNMA

| ISO Insert No. | ANSI Insert No. | I.C.   | L      | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|--------|--------|------|------|-----|--------|-----------|
| SNMA-090304    | SNMA-321        | 9.525  | 9.525  | 3.18 | 3.81 | 0.4 | GC3015 | 431-1331  |
| SNMA-080308    | SNMA-322        | 9.525  | 9.525  | 3.18 | 3.81 | 0.8 | GC3015 | 431-1332  |
| SNMA-120404    | SNMA-431        | 12.7   | 12.7   | 4.76 | 5.16 | 0.4 | GC3015 | 431-1333  |
| SNMA-120408    | SNMA-432        | 12.7   | 12.7   | 4.76 | 5.16 | 0.8 | GC3015 | 431-1334  |
| SNMA-120416    | SNMA-433        | 12.7   | 12.7   | 4.76 | 5.16 | 1.6 | GC3015 | 431-1335  |
| SNMA-150608    | SNMA-542        | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | GC3015 | 431-1336  |
| SNMA-190612    | SNMA-643        | 19.05  | 19.05  | 6.35 | 7.94 | 1.2 | GC3015 | 431-1337  |
| SNMA-190616    | SNMA-644        | 19.05  | 19.05  | 6.35 | 7.94 | 1.6 | GC3015 | 431-1338  |



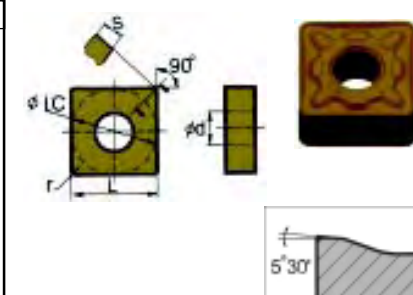
### SNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C. | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|------|------|------|------|-----|--------|-----------|
| SNMA-120408-DF | SNMA-432-DF     | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | GC4025 | 431-1341  |
| SNMA-120416-DF | SNMA-433-DF     | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | GC4025 | 431-1342  |



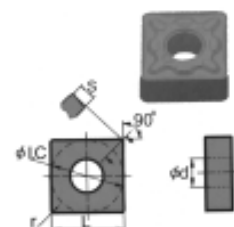
### SNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.   | L      | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|--------|--------|------|------|-----|--------|-----------|
| SNMG-090304-DM | SNMG-321-DM     | 9.525  | 9.525  | 3.18 | 3.81 | 0.4 | GC4025 | 431-1351  |
| SNMG-080308-DM | SNMG-322-DM     | 9.525  | 9.525  | 3.18 | 3.81 | 0.8 | GC4025 | 431-1352  |
| SNMG-080312-DM | SNMG-323-DM     | 9.525  | 9.525  | 3.18 | 3.81 | 1.2 | GC4025 | 431-1353  |
| SNMG-120404-DM | SNMG-431-DM     | 12.7   | 12.7   | 4.76 | 5.16 | 0.4 | GC4025 | 431-1354  |
| SNMG-120408-DM | SNMG-432-DM     | 12.7   | 12.7   | 4.76 | 5.16 | 0.8 | GC4025 | 431-1355  |
| SNMG-120412-DM | SNMG-433-DM     | 12.7   | 12.7   | 4.76 | 5.16 | 1.2 | GC4025 | 431-1356  |
| SNMG-120416-DM | SNMG-434-DM     | 12.7   | 12.7   | 4.76 | 5.16 | 1.6 | GC4025 | 431-1357  |
| SNMG-150608-DM | SNMG-542-DM     | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | GC4025 | 431-1358  |
| SNMG-150612-DM | SNMG-543-DM     | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | GC4025 | 431-1359  |
| SNMG-150616-DM | SNMG-544-DM     | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | GC4025 | 431-1360  |
| SNMG-190612-DM | SNMG-643-DM     | 19.05  | 19.05  | 6.35 | 7.94 | 1.2 | GC4025 | 431-1361  |
| SNMG-190616-DM | SNMG-644-DM     | 19.05  | 19.05  | 6.35 | 7.94 | 1.6 | GC4025 | 431-1362  |



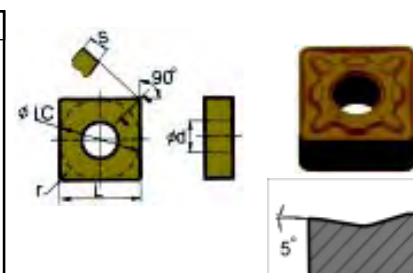
### SNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.   | L      | S    | d    | r   | Grade | Order No. |
|----------------|-----------------|--------|--------|------|------|-----|-------|-----------|
| SNMG-090304-DM | SNMG-321-DM     | 9.525  | 9.525  | 3.18 | 3.81 | 0.4 | CT525 | 431-1365  |
| SNMG-080308-DM | SNMG-322-DM     | 9.525  | 9.525  | 3.18 | 3.81 | 0.8 | CT525 | 431-1366  |
| SNMG-120404-DM | SNMG-431-DM     | 12.7   | 12.7   | 4.76 | 5.16 | 0.4 | CT525 | 431-1367  |
| SNMG-120412-DM | SNMG-433-DM     | 12.7   | 12.7   | 4.76 | 5.16 | 1.2 | CT525 | 431-1368  |
| SNMG-150608-DM | SNMG-542-DM     | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | CT525 | 431-1369  |



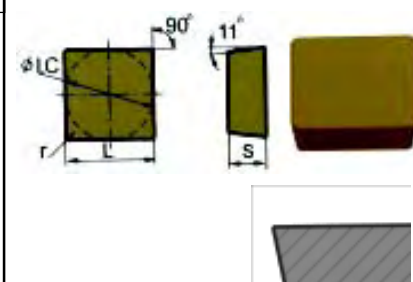
### SNMG/PM

| ISO Insert No. | ANSI Insert No. | I.C.   | L      | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|--------|--------|------|------|-----|--------|-----------|
| SNMG-090304-PM | SNMG-321-PM     | 9.525  | 9.525  | 3.18 | 3.81 | 0.4 | GC4025 | 431-1371  |
| SNMG-080308-PM | SNMG-322-PM     | 9.525  | 9.525  | 3.18 | 3.81 | 0.8 | GC4025 | 431-1372  |
| SNMG-080312-PM | SNMG-323-PM     | 9.525  | 9.525  | 3.18 | 3.81 | 1.2 | GC4025 | 431-1373  |
| SNMG-120404-PM | SNMG-431-PM     | 12.7   | 12.7   | 4.76 | 5.16 | 0.4 | GC4025 | 431-1374  |
| SNMG-120408-PM | SNMG-432-PM     | 12.7   | 12.7   | 4.76 | 5.16 | 0.8 | GC4025 | 431-1375  |
| SNMG-120412-PM | SNMG-433-PM     | 12.7   | 12.7   | 4.76 | 5.16 | 1.2 | GC4025 | 431-1376  |
| SNMG-120416-PM | SNMG-434-PM     | 12.7   | 12.7   | 4.76 | 5.16 | 1.6 | GC4025 | 431-1377  |
| SNMG-150612-PM | SNMG-543-PM     | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | GC4025 | 431-1378  |
| SNMG-190612-PM | SNMG-643-PM     | 19.05  | 19.05  | 6.35 | 7.94 | 1.2 | GC4025 | 431-1379  |



### SPG

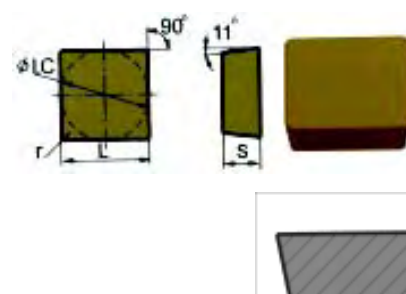
| ISO Insert No. | ANSI Insert No. | I.C.   | L      | S    | r   | Grade  | Order No. |
|----------------|-----------------|--------|--------|------|-----|--------|-----------|
| SPGN-090304    | SPG-321         | 9.525  | 9.525  | 3.18 | 0.4 | GC4025 | 431-1380  |
| SPGN-090308    | SPG-322         | 9.525  | 9.525  | 3.18 | 0.8 | GC4025 | 431-1381  |
| SPGN-120308    | SPG-422         | 12.7   | 12.7   | 3.18 | 0.8 | GC4025 | 431-1382  |
| SPGN-120404    | SPG-431         | 12.7   | 12.7   | 4.76 | 0.4 | GC4025 | 431-1383  |
| SPGN-120408    | SPG-432         | 12.7   | 12.7   | 4.76 | 0.8 | GC4025 | 431-1384  |
| SPGN-120412    | SPG-433         | 12.7   | 12.7   | 4.76 | 1.2 | GC4025 | 431-1385  |
| SPGN-150404    | SPG-531         | 15.875 | 15.875 | 4.76 | 0.4 | GC4025 | 431-1386  |
| SPGN-150408    | SPG-532         | 15.875 | 15.875 | 4.76 | 0.8 | GC4025 | 431-1387  |
| SPGN-190408    | SPG-632         | 19.05  | 19.05  | 4.76 | 0.8 | GC4025 | 431-1388  |
| SPGN-190416    | SPG-633         | 19.05  | 19.05  | 4.76 | 1.6 | GC4025 | 431-1389  |



## Carbide Inserts

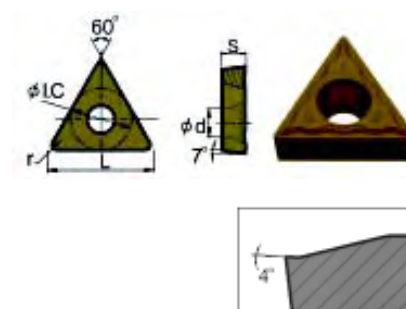
### SPU

| ISO Insert No. | ANSI Insert No. | I.C.   | L      | S    | r   | Grade  | Order No. |
|----------------|-----------------|--------|--------|------|-----|--------|-----------|
| SPUN-090304    | SPU-321         | 9.525  | 9.525  | 3.18 | 0.4 | GC4025 | 431-1390  |
| SPUN-090308    | SPU-322         | 9.525  | 9.525  | 3.18 | 0.8 | GC4025 | 431-1391  |
| SPUN-120304    | SPU-421         | 12.7   | 12.7   | 3.18 | 0.4 | GC4025 | 431-1392  |
| SPUN-120308    | SPU-422         | 12.7   | 12.7   | 3.18 | 0.8 | GC4025 | 431-1393  |
| SPUN-120312    | SPU-423         | 12.7   | 12.7   | 3.18 | 1.2 | GC4025 | 431-1394  |
| SPUN-120408    | SPU-432         | 12.7   | 12.7   | 4.76 | 0.8 | GC4025 | 431-1395  |
| SPUN-150408    | SPU-532         | 15.875 | 15.875 | 4.76 | 0.8 | GC4025 | 431-1396  |
| SPUN-150412    | SPU-533         | 15.875 | 15.875 | 4.76 | 1.2 | GC4025 | 431-1397  |
| SPUN-190408    | SPU-632         | 19.05  | 19.05  | 4.76 | 0.8 | GC4025 | 431-1398  |
| SPUN-190412    | SPU-633         | 19.05  | 19.05  | 4.76 | 1.2 | GC4025 | 431-1399  |
| SPUN-190416    | SPU-634         | 19.05  | 19.05  | 4.76 | 1.6 | GC4025 | 431-1400  |



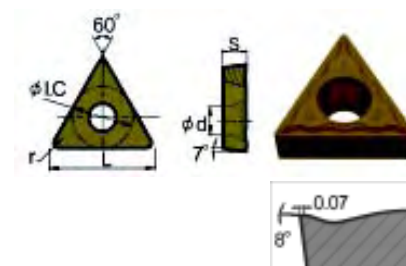
### TCMT/HF

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| TCMT-06T102-HF | TCMT-1.21.20-HF | 3.97  | 6.4  | 1.98 | 2.2 | 0.2 | GC4015 | 431-1401  |
| TCMT-06T104-HF | TCMT-1.21.21-HF | 3.97  | 6.4  | 1.98 | 2.2 | 0.4 | GC4015 | 431-1402  |
| TCMT-06T108-HF | TCMT-1.21.22-HF | 3.97  | 6.4  | 1.98 | 2.2 | 0.8 | GC4015 | 431-1403  |
| TCMT-090202-HF | TCMT-1.81.50-HF | 5.56  | 9.6  | 2.38 | 2.5 | 0.2 | GC4015 | 431-1404  |
| TCMT-090204-HF | TCMT-1.81.51-HF | 5.56  | 9.6  | 2.38 | 2.5 | 0.4 | GC4015 | 431-1405  |
| TCMT-090208-HF | TCMT-1.81.52-HF | 5.56  | 9.6  | 2.38 | 2.5 | 0.8 | GC4015 | 431-1406  |
| TCMT-110202-HF | TCMT-21.50-HF   | 6.35  | 11   | 2.38 | 2.8 | 0.2 | GC4015 | 431-1407  |
| TCMT-110204-HF | TCMT-21.51-HF   | 6.35  | 11   | 2.38 | 2.8 | 0.4 | GC4015 | 431-1408  |
| TCMT-110208-HF | TCMT-21.52-HF   | 6.35  | 11   | 2.38 | 2.8 | 0.8 | GC4015 | 431-1409  |
| TCMT-16T302-HF | TCMT-32.50-HF   | 9.525 | 16.5 | 3.97 | 4.4 | 0.2 | GC4015 | 431-1410  |
| TCMT-16T304-HF | TCMT-32.51-HF   | 9.525 | 16.5 | 3.97 | 4.4 | 0.4 | GC4015 | 431-1411  |
| TCMT-16T308-HF | TCMT-32.52-HF   | 9.525 | 16.5 | 3.97 | 4.4 | 0.8 | GC4015 | 431-1412  |



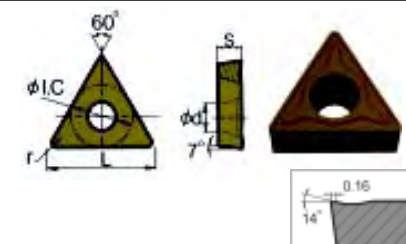
### TCMT/HM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| TCMT-090204-HM | TCMT-1.81.51-HM | 5.56  | 9.6  | 2.38 | 2.5 | 0.4 | GC4025 | 431-1421  |
| TCMT-090208-HM | TCMT-1.81.52-HM | 5.56  | 9.6  | 2.38 | 2.5 | 0.8 | GC4025 | 431-1422  |
| TCMT-110204-HM | TCMT-21.51-HM   | 6.35  | 11   | 2.38 | 2.8 | 0.4 | GC4025 | 431-1423  |
| TCMT-110208-HM | TCMT-21.52-HM   | 6.35  | 11   | 2.38 | 2.8 | 0.8 | GC4025 | 431-1424  |
| TCMT-16T304-HM | TCMT-32.51-HM   | 9.525 | 16.5 | 2.38 | 4.4 | 0.4 | GC4025 | 431-1425  |
| TCMT-16T308-HM | TCMT-32.52-HM   | 9.525 | 16.5 | 3.97 | 4.4 | 0.8 | GC4025 | 431-1426  |
| TCMT-16T312-HM | TCMT-32.53-HM   | 9.525 | 16.5 | 3.97 | 4.4 | 1.2 | GC4025 | 431-1427  |



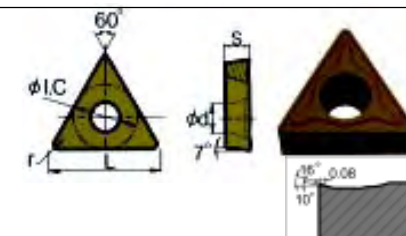
### TCMT/HR

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| TCMT-090204-HR | TCMT-1.81.51-HR | 5.56  | 9.6  | 2.38 | 2.5 | 0.4 | GC4025 | 431-1431  |
| TCMT-090208-HR | TCMT-1.81.52-HR | 5.56  | 9.6  | 2.38 | 2.5 | 0.8 | GC4025 | 431-1432  |
| TCMT-16T304-HR | TCMT-32.51-HR   | 9.525 | 16.5 | 3.97 | 4.4 | 0.4 | GC4025 | 431-1433  |
| TCMT-16T308-HR | TCMT-32.52-HR   | 9.525 | 16.5 | 3.97 | 4.4 | 0.8 | GC4025 | 431-1434  |
| TCMT-16T312-HR | TCMT-32.53-HR   | 9.525 | 16.5 | 3.97 | 4.4 | 1.2 | GC4025 | 431-1435  |
| TCMT-220408-HR | TCMT-432-HR     | 12.7  | 22   | 4.76 | 5.5 | 0.8 | GC4025 | 431-1436  |



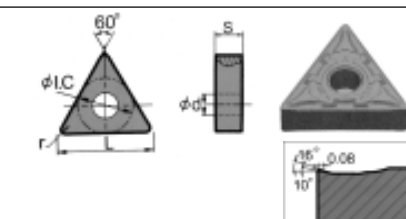
### TNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| TNMG-160404-DF | TNMG-331-DF     | 9.525 | 16.5 | 4.76 | 3.81 | 0.4 | GC4015 | 431-1441  |
| TNMG-160408-DF | TNMG-332-DF     | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | GC4015 | 431-1442  |
| TNMG-160412-DF | TNMG-333-DF     | 9.525 | 16.5 | 4.76 | 3.81 | 1.2 | GC4015 | 431-1443  |
| TNMG-220408-DF | TNMG-432-DF     | 12.7  | 22   | 4.76 | 5.16 | 0.8 | GC4015 | 431-1444  |
| TNMG-220412-DF | TNMG-433-DF     | 12.7  | 22   | 4.76 | 5.16 | 1.2 | GC4015 | 431-1445  |



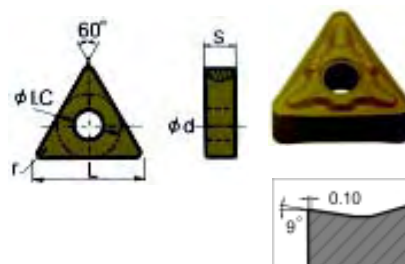
### TNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade | Order No. |
|----------------|-----------------|-------|------|------|------|-----|-------|-----------|
| TNMG-160404-DF | TNMG-331-DF     | 9.525 | 16.5 | 4.76 | 3.81 | 0.4 | CT525 | 431-1451  |
| TNMG-160408-DF | TNMG-332-DF     | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | CT525 | 431-1452  |
| TNMG-160412-DF | TNMG-333-DF     | 9.525 | 16.5 | 4.76 | 3.81 | 1.2 | CT525 | 431-1453  |

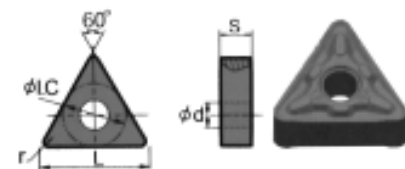


**Carbide Inserts**
**TNMG/DM**

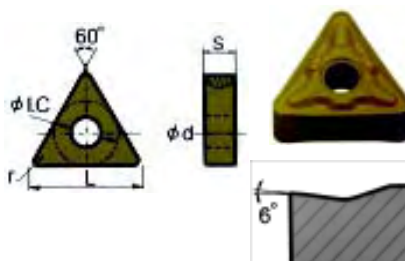
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| TNMG-110308-DM | TNMG-222-DM     | 6.35  | 11   | 3.18 | 2.26 | 0.4 | GC4025 | 431-1461  |
| TNMG-160404-DM | TNMG-331-DM     | 9.525 | 16.5 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1462  |
| TNMG-160408-DM | TNMG-332-DM     | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1463  |
| TNMG-160412-DM | TNMG-333-DM     | 9.525 | 16.5 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1464  |
| TNMG-220404-DM | TNMG-431-DM     | 12.7  | 22   | 4.76 | 5.16 | 0.4 | GC4025 | 431-1465  |
| TNMG-220408-DM | TNMG-432-DM     | 12.7  | 22   | 4.76 | 5.16 | 0.8 | GC4025 | 431-1466  |
| TNMG-220412-DM | TNMG-433-DM     | 12.7  | 22   | 4.76 | 5.16 | 1.2 | GC4025 | 431-1467  |
| TNMG-220416-DM | TNMG-434-DM     | 12.7  | 22   | 4.76 | 5.16 | 1.6 | GC4025 | 431-1468  |


**TNMG/DM**

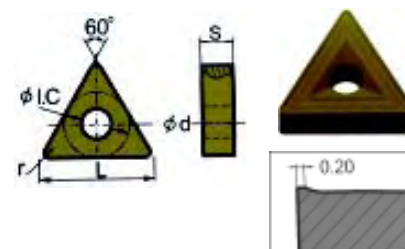
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade | Order No. |
|----------------|-----------------|-------|------|------|------|-----|-------|-----------|
| TNMG-160404-DM | TNMG-331-DM     | 9.525 | 16.5 | 4.76 | 3.81 | 0.4 | CT525 | 431-1471  |
| TNMG-160408-DM | TNMG-332-DM     | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | CT525 | 431-1472  |
| TNMG-220408-DM | TNMG-432-DM     | 12.7  | 22   | 4.76 | 5.16 | 0.8 | CT525 | 431-1473  |
| TNMG-220412-DM | TNMG-433-DM     | 12.7  | 22   | 4.76 | 5.16 | 1.2 | CT525 | 431-1474  |


**TNMG/PM**

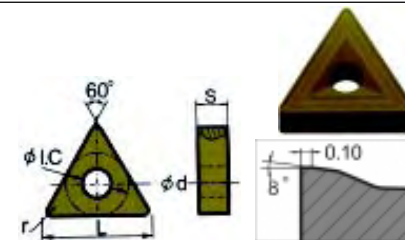
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| TNMG-110304-PM | TNMG-221-PM     | 6.35  | 11   | 3.18 | 2.2  | 0.4 | GC4025 | 431-1481  |
| TNMG-110308-PM | TNMG-222-PM     | 6.35  | 11   | 3.18 | 2.2  | 0.8 | GC4025 | 431-1482  |
| TNMG-160404-PM | TNMG-331-PM     | 9.525 | 16.5 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1483  |
| TNMG-160408-PM | TNMG-332-PM     | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1484  |
| TNMG-160412-PM | TNMG-333-PM     | 9.525 | 16.5 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1485  |
| TNMG-220408-PM | TNMG-432-PM     | 12.7  | 22   | 4.76 | 5.16 | 0.8 | GC4025 | 431-1486  |
| TNMG-220412-PM | TNMG-433-PM     | 12.7  | 22   | 4.76 | 5.16 | 1.2 | GC4025 | 431-1487  |
| TNMG-220416-PM | TNMG-434-PM     | 12.7  | 22   | 4.76 | 5.16 | 1.6 | GC4025 | 431-1488  |


**TNMM**

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| TNMM-160404    | TNMM-331        | 9.525 | 16.5 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1491  |
| TNMM-160408    | TNMM-332        | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1492  |
| TNMM-160412    | TNMM-333        | 9.525 | 16.5 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1493  |
| TNMM-220408    | TNMM-432        | 12.7  | 22   | 4.76 | 5.16 | 0.8 | GC4025 | 431-1494  |
| TNMM-220412    | TNMM-433        | 12.7  | 22   | 4.76 | 5.16 | 1.2 | GC4025 | 431-1495  |
| TNMM-220416    | TNMM-434        | 12.7  | 22   | 4.76 | 5.16 | 1.6 | GC4025 | 431-1496  |


**TNMM/DR**

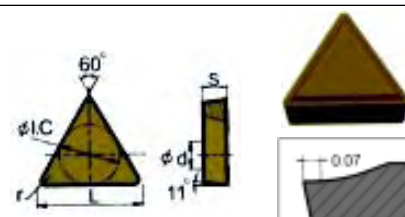
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| TNMM-160408-DR | TNMM-332-DR     | 9.525 | 16.5 | 4.76 | 3.81 | 0.8 | GC4035 | 431-1501  |
| TNMM-160412-DR | TNMM-333-DR     | 9.525 | 16.5 | 4.76 | 3.81 | 1.2 | GC4035 | 431-1502  |
| TNMM-220408-DR | TNMM-432-DR     | 12.7  | 22   | 4.76 | 5.16 | 0.8 | GC4035 | 431-1503  |
| TNMM-220412-DR | TNMM-433-DR     | 12.7  | 22   | 4.76 | 5.16 | 1.2 | GC4035 | 431-1504  |
| TNMM-220416-DR | TNMM-434-DR     | 12.7  | 22   | 4.76 | 5.16 | 1.6 | GC4035 | 431-1505  |


**TPG**

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|--------|-----------|
| TPG-110304     | TPG-221         | 6.35  | 11   | 3.18 | 0.4 | GC4015 | 431-1511  |
| TPG-110308     | TPG-222         | 6.35  | 11   | 3.18 | 0.8 | GC4015 | 431-1512  |
| TPG-160304     | TPG-321         | 9.525 | 16.5 | 3.18 | 0.4 | GC4015 | 431-1513  |
| TPG-160308     | TPG-322         | 9.525 | 16.5 | 3.18 | 0.8 | GC4015 | 431-1514  |
| TPG-160312     | TPG-323         | 9.525 | 16.5 | 3.18 | 1.2 | GC4015 | 431-1515  |
| TPG-160316     | TPG-324         | 9.525 | 16.5 | 3.18 | 1.6 | GC4015 | 431-1516  |
| TPG-160408     | TPG-332         | 9.525 | 16.5 | 4.76 | 0.8 | GC4015 | 431-1517  |
| TPG-160412     | TPG-333         | 9.525 | 16.5 | 4.76 | 1.2 | GC4015 | 431-1518  |


**TPMR**

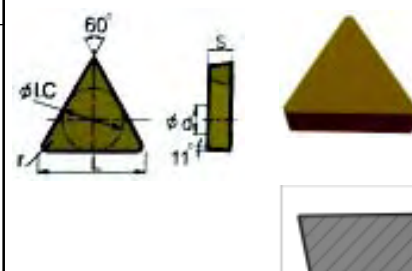
| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|--------|-----------|
| TPMR-110304    | TPMR-221        | 6.35  | 11   | 3.18 | 0.4 | GC4025 | 431-1521  |
| TPMR-110308    | TPMR-222        | 6.35  | 11   | 3.18 | 0.8 | GC4025 | 431-1522  |
| TPMR-160304    | TPMR-321        | 9.525 | 16.5 | 3.18 | 0.4 | GC4025 | 431-1523  |
| TPMR-160308    | TPMR-322        | 9.525 | 16.5 | 3.18 | 0.8 | GC4025 | 431-1524  |
| TPMR-160312    | TPMR-323        | 9.525 | 16.5 | 3.18 | 1.2 | GC4025 | 431-1525  |



## Carbide Inserts

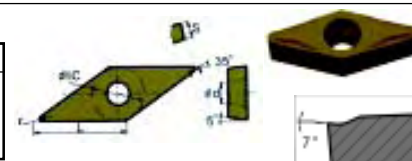
### TPUN

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|--------|-----------|
| TPUN-110304    | TPU-221         | 6.35  | 11   | 3.18 | 0.4 | GC3015 | 431-1531  |
| TPUN-110308    | TPU-222         | 6.35  | 11   | 3.18 | 0.8 | GC3015 | 431-1532  |
| TPUN-160304    | TPU-321         | 9.525 | 16.5 | 3.18 | 0.4 | GC3015 | 431-1533  |
| TPUN-160308    | TPU-322         | 9.525 | 16.5 | 3.18 | 0.8 | GC3015 | 431-1534  |
| TPUN-160312    | TPU-323         | 9.525 | 16.5 | 3.18 | 1.2 | GC3015 | 431-1535  |
| TPUN-160408    | TPU-332         | 9.525 | 16.5 | 4.76 | 0.8 | GC3015 | 431-1536  |
| TPUN-160412    | TPU-333         | 9.525 | 16.5 | 4.76 | 1.2 | GC3015 | 431-1537  |
| TPUN-220404    | TPU-431         | 12.7  | 22   | 4.76 | 0.4 | GC3015 | 431-1538  |
| TPUN-220408    | TPU-432         | 12.7  | 22   | 4.76 | 0.8 | GC3015 | 431-1539  |
| TPUN-220412    | TPU-433         | 12.7  | 22   | 4.76 | 1.2 | GC3015 | 431-1540  |
| TPUN-220416    | TPU-434         | 12.7  | 22   | 4.76 | 1.6 | GC3015 | 431-1541  |



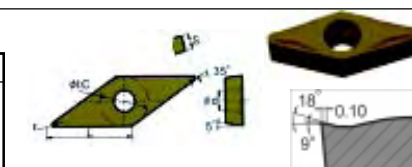
### VBMT/HF

| ISO Insert No. | ANSI Insert No. | I.C. | L  | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|------|----|------|-----|-----|--------|-----------|
| VBMT-110202-HF | VBMT-21.50-HF   | 6.35 | 11 | 2.38 | 2.8 | 0.2 | GC4015 | 431-1551  |
| VBMT-110204-HF | VBMT-21.51-HF   | 6.35 | 11 | 2.38 | 2.8 | 0.4 | GC4015 | 431-1552  |
| VBMT-110208-HF | VBMT-21.52-HF   | 6.35 | 11 | 2.38 | 2.8 | 0.8 | GC4015 | 431-1553  |



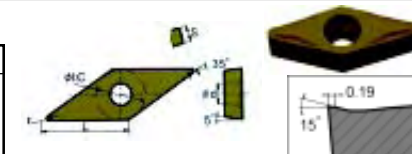
### VBMT/HM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| VBMT-160404-HM | VBMT-331-HM     | 9.525 | 16.6 | 4.76 | 4.4 | 0.4 | GC4025 | 431-1561  |
| VBMT-160408-HM | VBMT-332-HM     | 9.525 | 16.6 | 4.76 | 4.4 | 0.8 | GC4025 | 431-1562  |
| VBMT-160412-HM | VBMT-333-HM     | 9.525 | 16.6 | 4.76 | 4.4 | 1.2 | GC4025 | 431-1563  |



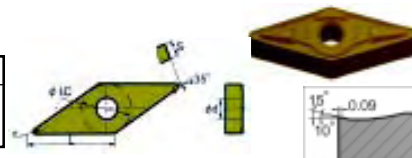
### VBMT/HR

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d   | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|-----|-----|--------|-----------|
| VBMT-160404-HR | VBMT-331-HR     | 9.525 | 16.6 | 4.76 | 4.4 | 0.4 | GC4025 | 431-1571  |
| VBMT-160408-HR | VBMT-332-HR     | 9.525 | 16.6 | 4.76 | 4.4 | 0.8 | GC4025 | 431-1572  |
| VBMT-160412-HR | VBMT-333-HR     | 9.525 | 16.6 | 4.76 | 4.4 | 1.2 | GC4025 | 431-1573  |



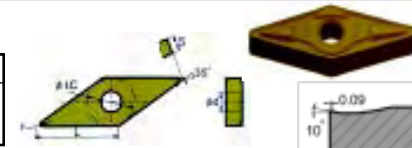
### VNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| VNMG-160404-DF | VNMG-331-DF     | 9.525 | 16.6 | 4.76 | 3.81 | 0.4 | GC4015 | 431-1581  |
| VNMG-160408-DF | VNMG-332-DF     | 9.525 | 16.6 | 4.76 | 3.81 | 0.8 | GC4015 | 431-1582  |



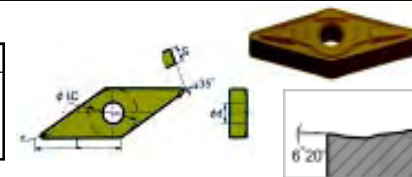
### VNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| VNMG-160408-DM | VNMG-332-DM     | 9.525 | 16.6 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1585  |
| VNMG-160412-DM | VNMG-333-DM     | 9.525 | 16.6 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1586  |



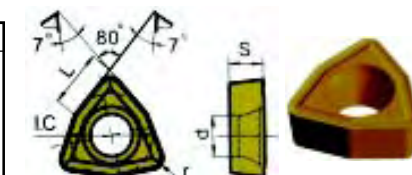
### VNMG/PM

| ISO Insert No. | ANSI Insert No. | I.C.  | L    | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|------|------|------|-----|--------|-----------|
| VNMG-160404-PM | VNMG-331-PM     | 9.525 | 16.6 | 4.76 | 3.81 | 0.4 | GC4025 | 431-1591  |
| VNMG-160408-PM | VNMG-332-PM     | 9.525 | 16.6 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1592  |
| VNMG-160412-PM | VNMG-333-PM     | 9.525 | 16.6 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1593  |



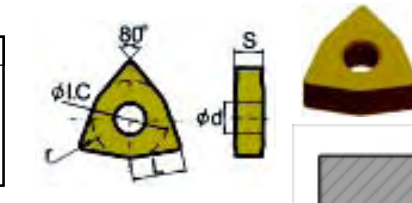
### WCMX

| ISO Insert No.  | I.C.  | L   | S    | d   | r   | Grade  | Order No. |
|-----------------|-------|-----|------|-----|-----|--------|-----------|
| WCMX-030208-53  | 5.56  | 3.8 | 2.38 | 2.8 | 0.8 | GC4015 | 431-1601  |
| WCMX-040208R-53 | 6.35  | 4.3 | 2.38 | 3.1 | 0.8 | GC4015 | 431-1602  |
| WCMX-050308R-53 | 7.94  | 5.4 | 3.18 | 3.2 | 0.8 | GC4015 | 431-1603  |
| WCMX-06T308R-53 | 9.525 | 6.5 | 3.97 | 3.7 | 0.8 | GC4015 | 431-1604  |
| WCMX-080412R-53 | 12.7  | 8.7 | 4.76 | 4.3 | 1.2 | GC4015 | 431-1605  |



### WNMA

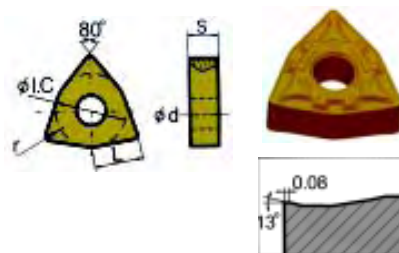
| ISO Insert No. | ANSI Insert No. | I.C.  | L   | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|-----|------|------|-----|--------|-----------|
| WNMA-060408    | WNMA-332        | 9.525 | 6.5 | 4.76 | 3.81 | 0.4 | GC3015 | 431-1611  |
| WNMA-080404    | WNMA-431        | 12.7  | 8.7 | 4.76 | 5.16 | 1.2 | GC3015 | 431-1612  |
| WNMA-080412    | WNMA-433        | 12.7  | 8.7 | 4.76 | 5.16 | 1.6 | GC3015 | 431-1613  |
| WNMA-080416    | WNMA-434        | 12.7  | 8.7 | 4.76 | 5.16 | 1.6 | GC3015 | 431-1614  |



## Carbide Inserts

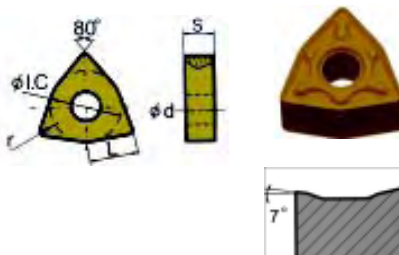
### WNMG/DF

| ISO Insert No. | ANSI Insert No. | I.C.  | L   | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|-----|------|------|-----|--------|-----------|
| WNMG-060404-DF | WNMG-331-DF     | 9.525 | 6.5 | 4.76 | 3.81 | 0.4 | GC4015 | 431-1621  |
| WNMG-060408-DF | WNMG-332-DF     | 9.525 | 6.5 | 4.76 | 3.81 | 0.8 | GC4015 | 431-1622  |
| WNMG-060412-DF | WNMG-333-DF     | 9.525 | 6.5 | 4.76 | 3.81 | 1.2 | GC4015 | 431-1623  |
| WNMG-080404-DF | WNMG-431-DF     | 12.7  | 8.7 | 4.76 | 5.16 | 0.4 | GC4015 | 431-1624  |
| WNMG-080408-DF | WNMG-432-DF     | 12.7  | 8.7 | 4.76 | 5.16 | 0.8 | GC4015 | 431-1625  |
| WNMG-080412-DF | WNMG-433-DF     | 12.7  | 8.7 | 4.76 | 5.16 | 1.2 | GC4015 | 431-1626  |



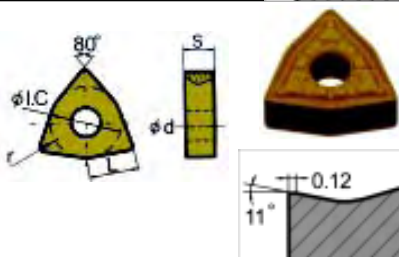
### WNMG/DM

| ISO Insert No. | ANSI Insert No. | I.C.  | L   | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|-----|------|------|-----|--------|-----------|
| WNMG-060408-DM | WNMG-332-DM     | 9.525 | 6.5 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1631  |
| WNMG-060412-DM | WNMG-333-DM     | 9.525 | 6.5 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1632  |
| WNMG-080404-DM | WNMG-431-DM     | 12.7  | 8.7 | 4.76 | 5.16 | 0.4 | GC4025 | 431-1633  |
| WNMG-080408-DM | WNMG-432-DM     | 12.7  | 8.7 | 4.76 | 5.16 | 0.8 | GC4025 | 431-1634  |
| WNMG-080412-DM | WNMG-433-DM     | 12.7  | 8.7 | 4.76 | 5.16 | 1.2 | GC4025 | 431-1635  |



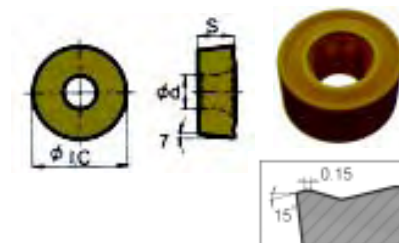
### WNMG/PM

| ISO Insert No. | ANSI Insert No. | I.C.  | L   | S    | d    | r   | Grade  | Order No. |
|----------------|-----------------|-------|-----|------|------|-----|--------|-----------|
| WNMG-060408-PM | WNMG-332-PM     | 9.525 | 6.5 | 4.76 | 3.81 | 0.8 | GC4025 | 431-1641  |
| WNMG-060412-PM | WNMG-333-PDM    | 9.525 | 6.5 | 4.76 | 3.81 | 1.2 | GC4025 | 431-1642  |
| WNMG-080404-PM | WNMG-431-PM     | 12.7  | 8.7 | 4.76 | 5.16 | 0.4 | GC4025 | 431-1643  |
| WNMG-080408-PM | WNMG-432-PM     | 12.7  | 8.7 | 4.76 | 5.16 | 0.8 | GC4025 | 431-1644  |
| WNMG-080412-PM | WNMG-433-PM     | 12.7  | 8.7 | 4.76 | 5.16 | 1.2 | GC4025 | 431-1645  |



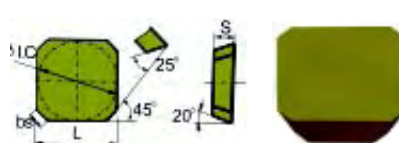
### RCMT

| ISO Insert No. | I.C. | S    | d    | Grade  | Order No. |
|----------------|------|------|------|--------|-----------|
| RCMT-1606-MO   | 16   | 6.35 | 5.2  | GC4025 | 431-1651  |
| RCMT-2507-MO   | 25   | 7.94 | 7.2  | GC4025 | 431-1652  |
| RCMT-0803-MO   | 8    | 3.18 | 3.36 | GC4025 | 431-1653  |
| RCMT-1204-MO   | 12   | 4.76 | 4.4  | GC4025 | 431-1654  |



### SEKN

| ISO Insert No. | I.C.   | L      | S    | bs  | Grade  | Order No. |
|----------------|--------|--------|------|-----|--------|-----------|
| SEKN-1203-AFN  | 12.7   | 12.7   | 3.18 | 2.4 | GC2025 | 431-1661  |
| SEKN-1203-AFTN | 12.7   | 12.7   | 3.18 | 2.4 | GC2025 | 431-1662  |
| SEKN-1204-AFN  | 12.7   | 12.7   | 4.76 | 2.4 | GC2025 | 431-1663  |
| SEKN-1204-AFTN | 12.7   | 12.7   | 4.76 | 2.4 | GC2025 | 431-1664  |
| SEKN-1504-AFN  | 15.875 | 15.875 | 4.76 | 2.4 | GC2025 | 431-1665  |
| SEKN-1504-AFTN | 15.875 | 15.875 | 4.76 | 2.4 | GC2025 | 431-1666  |



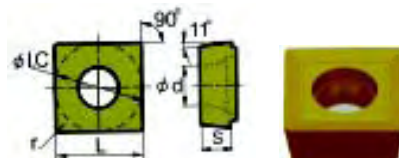
### SNKN

| ISO Insert No. | I.C.   | L      | S    | bs  | be  | Grade  | Order No. |
|----------------|--------|--------|------|-----|-----|--------|-----------|
| SNKN-1204-ENN  | 12.7   | 12.7   | 4.76 | 1.5 | 0.9 | GC4030 | 431-1671  |
| SNKN-1504-ENN  | 15.875 | 15.875 | 4.76 | 1.5 | 0.9 | GC4030 | 431-1672  |
| SNKN-1904-ENN  | 19.05  | 19.05  | 4.76 | 1.5 | 0.9 | GC4030 | 431-1673  |



### SPMT

| ISO Insert No. | I.C. | L    | S    | d   | r   | Grade  | Order No. |
|----------------|------|------|------|-----|-----|--------|-----------|
| SPMT-060304    | 6.35 | 6.35 | 3.18 | 2.8 | 0.4 | GC4030 | 431-1681  |
| SPMT-120408    | 12.7 | 12.7 | 4.76 | 5.5 | 0.8 | GC4030 | 431-1682  |



## MCLNR/L Tool Holders

### Metric

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MCLNR/L2020K12    | 20mm  | 125mm  | 25mm   | CN..1204     | C1203B | NL-0617  | CL-12 | XNS-0829    | 432-0001             | 432-1001            |
| MCLNR/L2525M12    | 25mm  | 150mm  | 32     | CN..1204     | C1203B | NL-0617  | CL-12 | XNS-0829    | 432-0002             | 432-1002            |
| MCLNR/L3225P16    | 25    | 170    | 32     | CN..1606     | C1604B | NL-0822  | CL-30 | XNS-0829    | 432-0003             | 432-1003            |
| MCLNR/L3232P16    | 32    | 170    | 40     | CN..1606     | C1604B | NL-0822  | CL-30 | XNS-0829    | 432-0004             | 432-1004            |

95°



### Inch

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MCLNR/L12-4A      | 0.75" | 4"     | 1"     | CN..432      | C1203B | NL-0617  | CL-12 | XNS-0829    | 432-0011             | 432-1011            |
| MCLNR/L12-4B      | 0.75" | 4.5"   | 1"     | CN..432      | C1203B | NL-0617  | CL-12 | XNS-0829    | 432-0012             | 432-1012            |
| MCLNR/L16-4D      | 1"    | 6"     | 1.25"  | CN..432      | C1203B | NL-0617  | CL-12 | XNS-0829    | 432-0013             | 432-1013            |
| MCLNR/L16-5D      | 1"    | 6"     | 1.5    | CN..543      | C1604B | NL-0822  | CL-30 | XNS-0829    | 432-0014             | 432-1014            |
| MCLNR/L20-4D      | 1.25  | 6      | 1.5    | CN..432      | C1203B | NL-0617  | CL-12 | XNS-0829    | 432-0015             | 432-1015            |

## MDJNR/L Tool Holders

### Metric

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MDJNR/L2020K11    | 20mm  | 125mm  | 20mm   | DN..1104     | D1103B | NL-0410  | CL-12 | XNS-0829    | 432-0021             | 432-1021            |
| MDJNR/L2525M11    | 25    | 150    | 32     | DN..1104     | D1103B | NL-0410  | CL-12 | XNS-0829    | 432-0022             | 432-1022            |
| MDJNR/L2525P15    | 25    | 150    | 32     | DN..1506     | D1504B | NL-0617  | CL-30 | XNS-0829    | 432-0023             | 432-1023            |
| MDJNR/L3225P15    | 25    | 170    | 32     | DN..1506     | D1504B | NL-0617  | CL-30 | XNS-0829    | 432-0024             | 432-1024            |

93°



### Inch

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MDJNR/L12-4B      | 0.75" | 4.5"   | 1.0"   | DN..432      | D1504B | NL-0617  | CL-30 | XNS-0829    | 432-0031             | 432-1031            |
| MDJNR/L16-4D      | 1     | 6      | 1.25   | DN..432      | D1504B | NL-0617  | CL-30 | XNS-0829    | 432-0032             | 432-1032            |
| MDJNR/L16-5D      | 1     | 6      | 1.25   | DN..543      | D1904B | NL-0823  | CL-30 | XNS-0829    | 432-0033             | 432-1033            |
| MDJNR/L20-4D      | 1.25  | 6      | 1.25   | DN..432      | D1504B | NL-0617  | CL-30 | XNS-0829    | 432-0034             | 432-1034            |
| MDJNR/L20-5D      | 1.25  | 6      | 1.25   | DN..543      | D1904B | NL-0823  | CL-30 | XNS-0829    | 432-0035             | 432-1035            |

## MTGNR/L Tool Holders

### Metric

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MTGNR/L2020K16    | 20mm  | 125mm  | 25mm   | TN..1604     | T1603B | NL-0414  | CL-6  | XNS-0520    | 432-0041             | 432-1041            |
| MTGNR/L2525M16    | 25    | 150    | 32     | TN..1604     | T1603B | NL-0414  | CL-6  | XNS-0520    | 432-0042             | 432-1042            |
| MTGNR/L3225P16    | 25    | 170    | 32     | TN..1604     | T1603B | NL-0414  | CL-6  | XNS-0520    | 432-0043             | 432-1043            |
| MTGNR/L3225P22    | 25    | 170    | 32     | TN..2204     | T2203B | NL-0617  | CL-12 | XNS-0829    | 432-0044             | 432-1044            |

90°



### Inch

| Tool Holder Style | Shank  | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|--------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MTGNR/L10-3B      | 0.625" | 4.5"   | 0.875" | TN..33       | T1603B | NL-0414  | CL-6  | XNS-0520    | 432-0051             | 432-1055            |
| MTGNR/L12-3B      | 0.75   | 4.5    | 1      | TN..33       | T1603B | NL-0414  | CL-6  | XNS-0520    | 432-0052             | 432-1056            |
| MTGNR/L16-3D      | 1      | 6.0    | 1.25   | TN..33       | T1603B | NL-0414  | CL-6  | XNS-0520    | 432-0053             | 432-1057            |
| MTGNR/L16-4D      | 1      | 6.0    | 1.5    | TN..43       | T2203B | NL-0617  | CL-12 | XNS-0829    | 432-0054             | 432-1058            |
| MTGNR/L20-4D      | 1.25   | 6      | 1.25   | TN..43       | T2203B | NL-0617  | CL-12 | XNS-0829    | 432-0055             | 432-1059            |

## MVJNR/L Tool Holders

### Metric

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MVJNR/L2020K16    | 20mm  | 125mm  | 25mm   | VN..1604     | V1603B | NL-0414  | CL-30 | XNS-0829    | 432-0061             | 432-1061            |
| MVJNR/L2525M16    | 25    | 150    | 32     | VN..1604     | V1603B | NL-0414  | CL-30 | XNS-0829    | 432-0062             | 432-1062            |
| MVJNR/L3225P16    | 25    | 170    | 32     | VN..1604     | V1603B | NL-0414  | CL-30 | XNS-0829    | 432-0063             | 432-1063            |
| MVJNR/L3232P16    | 32    | 170    | 40     | VN..1604     | V2203B | NL-0617  | CL-30 | XNS-0829    | 432-0064             | 432-1064            |

93°



## MVJNR/L Tool Holders

Inch

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim   | Lock Pin | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|--------|----------|-------|-------------|----------------------|---------------------|
| MVJNR/L12-3B      | 0.75" | 4.5"   | 1.0"   | VN..33.      | V1603B | NL-0414  | CL-30 | XNS-0829    | 432-0071             | 432-1071            |
| MVJNR/L16-3D      | 1.0   | 6.0    | 1.25   | VN..33.      | V1603B | NL-0414  | CL-30 | XNS-0829    | 432-0072             | 432-1072            |
| MVJNR/L16-4D      | 1.0   | 6.0    | 1.25   | VN..43.      | V2203B | NL-0617  | CL-30 | XNS-0829    | 432-0073             | 432-1073            |
| MVJNR/L20-4D      | 1.25  | 6.0    | 1.5    | VN..43.      | V2203B | NL-0617  | CL-30 | XNS-0829    | 432-0074             | 432-1074            |

93°



## PCLNR/L Tool Holders

Metric

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim | Pin    | Clamp | Clamp Screw | Hex Key | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|------|--------|-------|-------------|---------|----------------------|---------------------|
| PCLNR/L2020K12    | 20mm  | 125mm  | 25mm   | CN..1204     | C12A | GH0607 | G0514 | LGL-0822    | S4      | 432-0081             | 432-1081            |
| PCLNR/L2525M12    | 25    | 150    | 32     | CN..1204     | C12A | GH0607 | G0514 | LGL-0822    | S4      | 432-0082             | 432-1082            |
| PCLNR/L3232P12    | 32    | 170    | 40     | CN..1204     | C12A | GH0607 | G0514 | LGL-0822    | S4      | 432-0083             | 432-1083            |
| PCLNR/L2525M16    | 25    | 150    | 32     | CN..1606     | C16A | GH0709 | G0616 | LGL-0826    | S4      | 432-0084             | 432-1084            |

95°



Inch

| Tool Holder Style | Shank | Length | Offset | Insert style | Shim | Pin    | Clamp | Clamp Screw | Hex Key | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------|--------------|------|--------|-------|-------------|---------|----------------------|---------------------|
| PCLNR/L12-4C      | 0.75" | 5.0"   | 1.0"   | CN..43.      | C12A | GH0607 | G0514 | LGL-0822    | S4      | 432-0091             | 432-1091            |
| PCLNR/L12-4D      | 0.75  | 6.0    | 1.0    | CN..43.      | C12A | GH0607 | G0514 | LGL-0822    | S4      | 432-0092             | 432-1092            |
| PCLNR/L16-5C      | 1.0   | 5.0    | 0.75   | CN..54.      | C16A | GH0709 | G0616 | LGL-0826    | S4      | 432-0093             | 432-1093            |
| PCLNR/L16-5D      | 1.0   | 6.0    | 1.0    | CN..54.      | C16A | GH0709 | G0616 | LGL-0826    | S4      | 432-0094             | 432-1094            |

## CTAPR/L Tool Holders

Metric

| Tool Holder Style | Shank | Length | Insert style | Shim  | Lock | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------------|-------|------|-------|-------------|----------------------|---------------------|
| CTAPR/L1616F16    | 16mm  | 80mm   | TPG160304    | TP16D | M3X8 | CL6   | XNS-0520    | 432-0101             | 432-1101            |
| CTAPR/L2020K16    | 20    | 125    | TPG160304    | TP16D | M3X8 | CL6   | XNS-0520    | 432-0102             | 432-1102            |
| CTAPR/L2525M22    | 25    | 150    | TPG220404    | TP22D | M3X8 | CL12  | XNS-0829    | 432-0103             | 432-1103            |
| CTAPR/L3232P22    | 32    | 170    | TPG220404    | TP22D | M3X8 | CL12  | XNS-0829    | 432-0104             | 432-1104            |

Inch

| Tool Holder Style | Shank | Length | Insert style | Shim | Lock  | Offset | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------------|------|-------|--------|-------|-------------|----------------------|---------------------|
| CTAPR/L08-2J      | 0.5"  | 3.5"   | TPG221       | --   | --    | 0.515" | CL6   | XNS-0520    | 432-0111             | 432-1111            |
| CTAPR/L10-3B      | 0.625 | 4.5    | TPG321       | M3X8 | TP16D | .641   | CL6   | XNS-0520    | 432-0112             | 432-1112            |
| CTAPR/L12-3B      | 0.75  | 4.5    | TPG321       | M3X8 | TP16D | 0.756  | CL6   | XNS-0520    | 432-0113             | 432-1113            |
| CTAPR/L16-3D      | 1.0   | 6.0    | TPG431       | M3X8 | TP22D | 1.0    | CL12  | XNS-0829    | 432-0114             | 432-1114            |

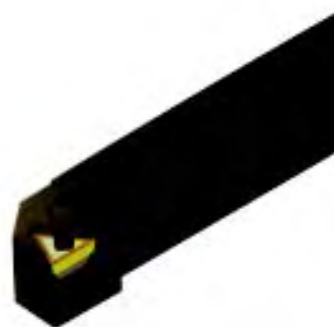
## CTGPR/L Tool Holders

Metric

| Tool Holder Style | Shank | Length | Insert style | Shim  | Lock | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------------|-------|------|-------|-------------|----------------------|---------------------|
| CTGPR/L2020K16    | 20mm  | 125mm  | TPG160304    | TP16D | M3X8 | CL6   | XNS-0520    | 432-0121             | 432-1121            |
| CTGPR/L2525M22    | 25    | 150    | TPG220404    | TP22D | M3X8 | CL12  | XNS-0829    | 432-0122             | 432-1122            |
| CTGPR/L3225P22    | 25    | 170    | TPG220404    | TP22D | M3X8 | CL12  | XNS-0829    | 432-0123             | 432-1123            |
| CTGPR/L3232P22    | 32    | 170    | TPG220404    | TP22D | M3X8 | CL12  | XNS-0829    | 432-0124             | 432-1124            |

Inch

| Tool Holder Style | Shank | Length | Insert style | Shim  | Lock | Clamp | Clamp Screw | Right Hand Order No. | Left Hand Order No. |
|-------------------|-------|--------|--------------|-------|------|-------|-------------|----------------------|---------------------|
| CTGPR/L10-3B      | .625" | 4.5"   | TPG321       | TP16D | M3X8 | CL6   | XNS-0520    | 432-0131             | 432-1131            |
| CTGPR/L12-3B      | .75   | 4.5    | TPG321       | TP16D | M3X8 | CL6   | XNS-0520    | 432-0132             | 432-1132            |
| CTGPR/L16-4D      | 1.0   | 6.0    | TPG431       | TP22D | M3X8 | CL12  | XNS-0829    | 432-0133             | 432-1133            |
| CTGPR/L20-4D      | 1.25  | 6.0    | TPG431       | TP22D | M3X8 | CL12  | XNS-0829    | 432-0134             | 432-1134            |

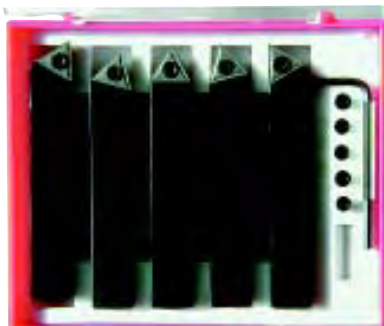


## Indexable Carbide Turning Tools

- An inexpensive way to replace carbide tipped tool bits.
- Versatile and economical.
- Available in 5 shank size and styles.
- Each tool cuts right, left or plunges.
- Positive rake cutting and built in chip breaker groove.
- Available with 3 different radio.

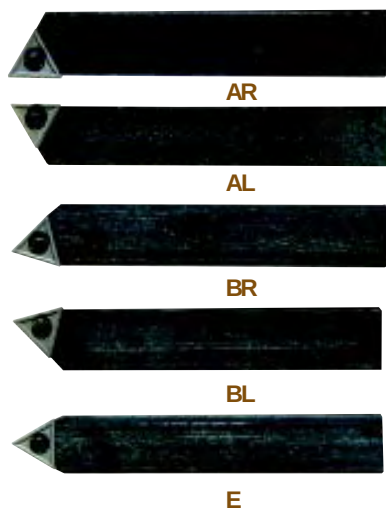
### 5 Piece Sets

- Set includes: 5 tools in styles-AR, AL, BR, BL and E insert, with 5 extra screws and 2 wrenches, set also comes in 1/4", 3/8", 1/2", 5/8", 3/4" and 1" sets.



| No. of Pieces | Shank (Square) | Set No. | Descriptions.                    | C-2 Order No. | C-6 Order No. |
|---------------|----------------|---------|----------------------------------|---------------|---------------|
| 5Pcs/set      | 1/4"           | ST-4    | AR-4, AL-4, BR-4, BL-4, E-4      | 250-1399      | 251-1399      |
| 5Pcs/set      | 3/8"           | ST-6    | AR-6, AL-6, BR-6, BL-6, E-6      | 250-1400      | 251-1400      |
| 5Pcs/set      | 1/2"           | ST-8    | AR-8, AL-8, BR-8, BL-8, E-8      | 250-1401      | 251-1401      |
| 5Pcs/set      | 5/8"           | ST-10   | AR-10, AL-10, BR-10, BL-10, E-10 | 250-1402      | 251-1402      |
| 5Pcs/set      | 3/4"           | ST-12   | AR-12, AL-12, BR-12, BL-12, E-12 | 250-1404      | 251-1404      |
| 5Pcs/set      | 1"             | ST-16   | AR-16, AL-16, BR-16, BL-16, E-16 | 250-1406      | 251-1406      |

## Individual Indexable Carbide Turning Tools



### 1/4" Shank, 3/16" I.C. Insert

| Type | Order No. |
|------|-----------|
| AR 4 | 250-1391  |
| AL 4 | 250-1392  |
| BR 4 | 250-1393  |
| BL 4 | 250-1394  |
| E 4  | 250-1395  |

### 3/8" Shank, 1/4" I.C. Insert

| Type | Order No. |
|------|-----------|
| AR 6 | 250-1411  |
| AL 6 | 250-1412  |
| BR 6 | 250-1413  |
| BL 6 | 250-1414  |
| E 6  | 250-1415  |

### 1/2" Shank, 3/8" I.C. Insert

| Type | Order No. |
|------|-----------|
| AR 8 | 250-1421  |
| AL 8 | 250-1422  |
| BR 8 | 250-1423  |
| BL 8 | 250-1424  |
| E 8  | 250-1425  |

### 5/8" Shank, 3/8" I.C. Insert.

| Type  | Order No. |
|-------|-----------|
| AR 10 | 250-1431  |
| AL 10 | 250-1432  |
| BR 10 | 250-1433  |
| BL 10 | 250-1434  |
| E 10  | 250-1435  |

### 3/4" Shank, 3/8" I.C. Insert

| Type  | Order No. |
|-------|-----------|
| AR 12 | 250-1441  |
| AL 12 | 250-1442  |
| BR 12 | 250-1443  |
| BL 12 | 250-1444  |
| E 12  | 250-1445  |

### 1" Shank, 1/2" I.C. Insert

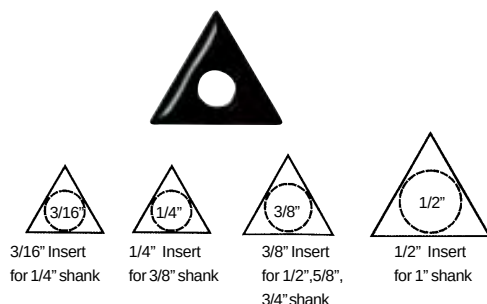
| Type  | Order No. |
|-------|-----------|
| AR 16 | 250-1451  |
| AL 16 | 250-1452  |
| BR 16 | 250-1453  |
| BL 16 | 250-1454  |
| E 16  | 250-1455  |

## Replacement Screws



| Descriptions                        | Order No. |
|-------------------------------------|-----------|
| M2.5 screw for 1/4", 3/8" shank     | 250-1297  |
| M4 screw for 1/2", 5/8", 3/4" shank | 250-1298  |
| M5 screw for 1" shank               | 250-1299  |

## Carbide Inserts



| Insert I.C. | Radius | Insert No. | C2 Order No. | C6 Order No. | Tin Coated Order No. |
|-------------|--------|------------|--------------|--------------|----------------------|
| 3/16"       |        |            | 340-0097     | 340-0098     | 340-0099             |
| 1/4"        | .015   | TT-221     | 340-1000     | 340-1002     | 340-1003             |
| 1/4"        | .032   | TT-222     | 340-1004     | 340-1006     | 340-1007             |
| 3/8"        | .015   | TT-321     | 340-1008     | 340-1010     | 340-1011             |
| 3/8"        | .032   | TT-322     | 340-1012     | 340-1014     | 340-1015             |
| 3/8"        | .046   | TT-323     | 340-1016     | 340-1018     | 340-1019             |
| 1/2"        | .015   | TT-431     | 340-1020     | 340-1022     | 340-1023             |
| 1/2"        | .032   | TT-432     | 340-1024     | 340-1026     | 340-1027             |
| 1/2"        | .046   | TT-433     | 340-1028     | 340-1030     | 340-1031             |

## Metric Indexable Carbide Turning Tools

### 5 Piece Sets

- Set includes: 5 tools in styles-AR, AL, BR, BL and E insert, with 5 extra screws and 2 wrenches, set also comes in 6mm, 8mm, 10mm, 12mm, 14mm, 16mm, 18mm, 20mm, and 25mm sets.



| Shank (Square) | Length | Description       | ISO K20 Order No. | ISO P20 Order No. |
|----------------|--------|-------------------|-------------------|-------------------|
| 6mm            |        | AR, AL, BR, BL, E | 250-5398          | 251-5398          |
| 8mm            |        | AR, AL, BR, BL, E | 250-5399          | 251-5399          |
| 10mm           | 63     | AR, AL, BR, BL, E | 250-5400          | 251-5400          |
| 12mm           | 76     | AR, AL, BR, BL, E | 250-5401          | 251-5401          |
| 16mm           | 102    | AR, AL, BR, BL, E | 250-5402          | 251-5402          |
| 14mm           | 76     | AR, AL, BR, BL, E | 250-5403          | 251-5403          |
| 20mm           | 120    | AR, AL, BR, BL, E | 250-5404          | 251-5404          |
| 18mm           | 115    | AR, AL, BR, BL, E | 250-5405          | 251-5405          |
| 25mm           | 150    | AR, AL, BR, BL, E | 250-5406          | 251-5406          |

### Individual Indexable Carbide Turning Tools

#### 10mm Shank 6.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1591  |
| AL   | 250-1592  |
| BR   | 250-1593  |
| BL   | 250-1594  |
| E    | 250-1595  |

#### 14mm Shank 9.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1621  |
| AL   | 250-1622  |
| BR   | 250-1623  |
| BL   | 250-1624  |
| E    | 250-1625  |

#### 20mm Shank 9.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1651  |
| AL   | 250-1652  |
| BR   | 250-1653  |
| BL   | 250-1654  |
| E    | 250-1655  |

#### 12mm Shank 9.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1611  |
| AL   | 250-1612  |
| BR   | 250-1613  |
| BL   | 250-1614  |
| E    | 250-1615  |

#### 16mm Shank 9.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1631  |
| AL   | 250-1632  |
| BR   | 250-1633  |
| BL   | 250-1634  |
| E    | 250-1635  |

#### 25mm Shank 12.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1661  |
| AL   | 250-1662  |
| BR   | 250-1663  |
| BL   | 250-1664  |
| E    | 250-1665  |

#### 18mm Shank 9.5mm I.C. Insert

| Type | Order No. |
|------|-----------|
| AR   | 250-1641  |
| AL   | 250-1642  |
| BR   | 250-1643  |
| BL   | 250-1644  |
| E    | 250-1645  |

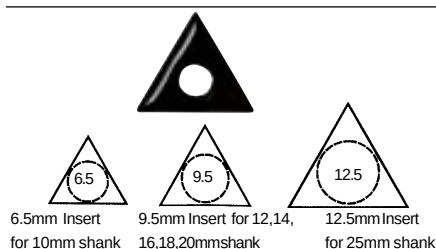
### Replacement Screws



| Descriptions                                      | Order No. |
|---------------------------------------------------|-----------|
| 6.5mm I.C. for 10mm shank                         | 250-1287  |
| 9.5mm I.C. for 12, 14, 16, 18, 20 mm square shank | 250-1288  |
| 12.5mm I.C. for 25mm shank only                   | 250-1289  |

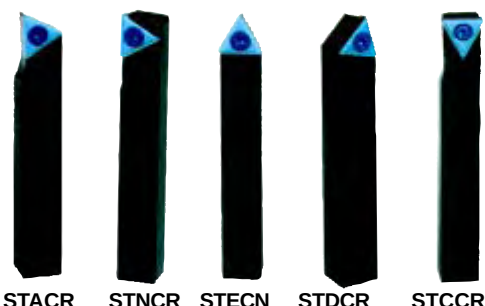
### Carbide Inserts

| Insert I.C. | Radius | ISO K20 Order No. | ISO P20 Order No. |
|-------------|--------|-------------------|-------------------|
| 6.5mm       | 0.8mm  | 340-1102          | 340-1100          |
| 9.5mm       | 0.8mm  | 340-1108          | 340-1106          |
| 12.5mm      | 0.8mm  | 340-1112          | 340-1110          |



## Turning Tool Holders & Sets

### with TCMT Carbide Insert



STACR STNCR STECN STDCR STCCR

### Sets

| Pieces      | Shank            | Order No. |
|-------------|------------------|-----------|
| 5 Piece Set | 3/8" Square      | 250-2091  |
| 5 Piece Set | 1/2" Square      | 250-2092  |
| 5 Piece Set | 5/8" Square      | 250-2093  |
| 5 Piece Set | 3/4" Square      | 250-2094  |
| 5 Piece Set | 1x3/4" Rectangle | 250-2095  |

### Individual

| Type  | Shank Size | Tool Length | Insert No. ISO | Order No. |
|-------|------------|-------------|----------------|-----------|
| STACR | 3/8 Sq.    | 2-1/2       | 110204         | 250-2007  |
| STACR | 1/2 Sq.    | 3-1/2       | 110204         | 250-2010  |
| STACR | 5/8 Sq.    | 4           | 110204         | 250-2013  |
| STACR | 3/4 Sq.    | 4-1/2       | 16T308         | 250-2016  |
| STACR | 1x3/4      | 6           | 16T308         | 250-2019  |
| STNCR | 3/8 Sq.    | 2-1/2       | 110204         | 250-2022  |
| STNCR | 1/2 Sq.    | 3-1/2       | 110204         | 250-2025  |
| STNCR | 5/8 Sq.    | 4           | 110204         | 250-2028  |
| STNCR | 3/4 Sq.    | 4-1/2       | 16T308         | 250-2031  |
| STNCR | 1x3/4      | 6           | 16T308         | 250-2034  |
| STECN | 3/8 Sq.    | 2-1/2       | 110204         | 250-2037  |
| STECN | 1/2 Sq.    | 3-1/2       | 110204         | 250-2040  |
| STECN | 5/8 Sq.    | 4           | 110204         | 250-2043  |
| STECN | 3/4 Sq.    | 4-1/2       | 16T308         | 250-2046  |
| STECN | 1x3/4      | 6           | 16T308         | 250-2049  |
| STDCR | 3/8 Sq.    | 2-1/2       | 110204         | 250-2052  |
| STDCR | 1/2 Sq.    | 3-1/2       | 110204         | 250-2055  |
| STDCR | 5/8 Sq.    | 4           | 110204         | 250-2058  |
| STDCR | 3/4 Sq.    | 4-1/2       | 16T308         | 250-2061  |
| STDCR | 1x3/4      | 6           | 16T308         | 250-2064  |
| STCCR | 3/8 Sq.    | 2-1/2       | 110204         | 250-2067  |
| STCCR | 1/2 Sq.    | 3-1/2       | 110204         | 250-2070  |
| STCCR | 5/8 Sq.    | 4           | 110204         | 250-2073  |
| STCCR | 3/4 Sq.    | 4-1/2       | 16T308         | 250-2076  |
| STCCR | 1x3/4      | 6           | 16T308         | 250-2079  |

## Multi-Purpose Indexable Tool Sets

### with Carbide Insert

#### 7 Piece Set

##### Set Include:

one each of  
 Right Hand 90°, 95°, 93°, 62.5° External Turning  
 Left Hand 95° External Turning  
 External Threading  
 Cut-Off Tool Holder  
 Wooden Case



| Piece | Shank Size | Order No. |
|-------|------------|-----------|
| 7     | 1/4"       | 250-8170  |
| 7     | 5/16"      | 250-8171  |
| 7     | 3/8"       | 250-8172  |
| 7     | 1/2"       | 250-8173  |
| 7     | 5/8"       | 250-8174  |
| 7     | 3/4"       | 250-8175  |

#### 7 Piece Set

##### Set Include:

one each of  
 Right Hand 90°, 95°, 93°, 62.5° External Turning  
 Left Hand 95° External Turning  
 External Threading  
 Cut-Off Tool Holder  
 Wooden Case



| Piece | Shank Size | Order No. |
|-------|------------|-----------|
| 7     | 6mm        | 250-8070  |
| 7     | 8mm        | 250-8071  |
| 7     | 10mm       | 250-8072  |
| 7     | 12mm       | 250-8073  |
| 7     | 16mm       | 250-8074  |
| 7     | 20mm       | 250-8075  |

#### 9 Piece Set

##### Set Include:

one each of  
 Right Hand 45°, 75°, 90° External Turning  
 45° Facing  
 75°, 93° Internal Turning(Boring Bar)  
 External Threading  
 Internal Threading  
 Cut-Off Tool Holder  
 Plastic Case/Wooden Case



| Piece | Shank Size | Order No. |
|-------|------------|-----------|
| 9     | 5/8"       | 250-8191  |
| 9     | 3/4"       | 250-8192  |
| 9     | 1"         | 250-8193  |
| 9     | 1-1/4"     | 250-8194  |

#### 9 Piece Set

##### Set Include:

one each of  
 Right Hand 45°, 75°, 90° External Turning  
 45° Facing  
 75°, 93° Internal Turning(Boring Bar)  
 External Threading  
 Internal Threading  
 Cut-Off Tool Holder  
 Plastic Case/Wooden Case



| Piece | Shank Size | Order No. |
|-------|------------|-----------|
| 9     | 16mm       | 250-8091  |
| 9     | 20mm       | 250-8092  |
| 9     | 25mm       | 250-8093  |
| 9     | 32mm       | 250-8094  |

#### 7 Piece Set

##### Set Include:

one each of  
 Right Hand 45°, 75°, 90°, Turning,



Left Hand 90° Turning,  
 93° Internal Turning(Boring Bar),  
 External Threading,  
 Cut-Off Tool Holder  
 Wooden Case

| Piece | Shank Size | Order No. |
|-------|------------|-----------|
| 7     | 5/8"       | 250-8177  |

#### 7 Piece Set

##### Set Include:

one each of  
 Right Hand 45°, 75°, 90°, Turning,



Left Hand 90° Turning,  
 93° Internal Turning(Boring Bar),  
 External Threading,  
 Cut-Off Tool Holder  
 Wooden Case

| Piece | Shank Size | Order No. |
|-------|------------|-----------|
| 7     | 16mm       | 250-8077  |

## S-SCLCR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank |     | OAL   | Min Bore | Insert Style | Right Hand | Left Hand |
|-------------------|-------|-----|-------|----------|--------------|------------|-----------|
|                   | Dia.  | F   |       |          |              | Order No.  | Order No. |
| S08H-SCLCR/L06    | 8mm   | 6mm | 100mm | 11mm     | C.MT0602.    | 432-0141   | 432-1141  |
| S10K-SCLCR/L06    | 10    | 7   | 125   | 13       | C.MT0602.    | 432-0142   | 432-1142  |
| S12M-SCLCR/L06    | 12    | 9   | 150   | 16       | C.MT0602.    | 432-0143   | 432-1143  |
| S16R-SCLCR/L09    | 16    | 11  | 200   | 20       | C.MT0973.    | 432-0144   | 432-1144  |



### Inch

| Tool Holder Style | Shank  |      | OAL  | Min Bore | Insert Style | Right Hand | Left Hand |
|-------------------|--------|------|------|----------|--------------|------------|-----------|
|                   | Dia.   | F    |      |          |              | Order No.  | Order No. |
| S05H-SCLCR/L2     | .3125" | .25" | 4.0" | 0.4375"  | C.MT21.51    | 432-0151   | 432-1151  |
| S06M-SCLCR/L2     | .375   | .25  | 6.0  | 0.5      | C.MT21.51    | 432-0152   | 432-1152  |
| S08M-SCLCR/L2     | .5     | .312 | 8.0  | 0.625    | C.MT21.51    | 432-0153   | 432-1153  |
| S10S-SCLCR/L3     | .625   | .406 | 10.0 | 0.812    | C.MT32.52    | 432-0154   | 432-1154  |
| S12S-SCLCR/L3     | .75    | .5   | 10.0 | 1.0      | C.MT32.52    | 432-0155   | 432-1155  |
| S16T-SCLCR/L4     | 1.0    | .651 | 12.0 | 1.5      | C.MT432      | 432-0156   | 432-1156  |

## S-SDUCR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank |     | OAL   | Min Bore | Insert Style | Right Hand | Left Hand |
|-------------------|-------|-----|-------|----------|--------------|------------|-----------|
|                   | Dia.  | F   |       |          |              | Order No.  | Order No. |
| S10K-SDUCR/L07    | 10mm  | 7mm | 125mm | 13mm     | D.MT0702.    | 432-0161   | 432-1161  |
| S12M-SDUCR/L07    | 12    | 9   | 150   | 16       | D.MT0702.    | 432-0162   | 432-1162  |
| S16R-SDUCR/L07    | 16    | 11  | 200   | 20       | D.MT07T3.    | 432-0163   | 432-1163  |
| S20S-SDUCR/L11    | 20    | 13  | 250   | 25       | D.MT11T3     | 432-0164   | 432-1164  |



### Inch

| Tool Holder Style | Shank |      | OAL  | Min Bore | Insert Style | Right Hand | Left Hand |
|-------------------|-------|------|------|----------|--------------|------------|-----------|
|                   | Dia.  | F    |      |          |              | Order No.  | Order No. |
| S06M-SDUCR/L2     | .375" | .25" | 6.0" | 0.5"     | D.MT21.51    | 432-0171   | 432-1171  |
| S08R-SDUCR/L2     | .5    | .312 | 8.0  | .625     | D.MT21.51    | 432-0172   | 432-1172  |
| S10S-SDUCR/L2     | .625  | .406 | 10.0 | .812     | D.MT21.51    | 432-0173   | 432-1173  |
| S12S-SDUCR/L3     | .75   | .5   | 10.0 | 1.0      | D.MT32.52    | 432-0174   | 432-1174  |

## S-STFCR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank |     | OAL   | Min Bore | Insert Style | Right Hand | Left Hand |
|-------------------|-------|-----|-------|----------|--------------|------------|-----------|
|                   | Dia.  | F   |       |          |              | Order No.  | Order No. |
| S08H-STFCR/L09    | 8mm   | 6mm | 100mm | 11mm     | T.MT0902.    | 432-0181   | 432-1181  |
| S10K-STFCR/L11    | 10    | 7   | 125   | 13       | T.MT1102.    | 432-0182   | 432-1182  |
| S12M-STFCR/L11    | 12    | 9   | 150   | 16       | T.MT1102.    | 432-0183   | 432-1183  |
| S16R-STFCR/L11    | 16    | 11  | 200   | 20       | T.MT1102.    | 432-0184   | 432-1184  |



### Inch

| Tool Holder Style | Shank |      | OAL  | Min Bore | Insert Style | Right Hand | Left Hand |
|-------------------|-------|------|------|----------|--------------|------------|-----------|
|                   | Dia.  | F    |      |          |              | Order No.  | Order No. |
| S06M-STFCR/L2     | .375" | .25" | 6.0" | 0.5"     | T.MT21.51    | 432-0191   | 432-1191  |
| S08R-STFCR/L2     | .5    | .312 | 8.0  | .625     | T.MT21.51    | 432-0192   | 432-1192  |
| S10S-STFCR/L2     | .625  | .406 | 10.0 | .812     | T.MT21.51    | 432-0193   | 432-1193  |
| S12R-STFCR/L3     | .75   | .5   | 10.0 | 1.0      | T.MT32.52    | 432-0194   | 432-1194  |

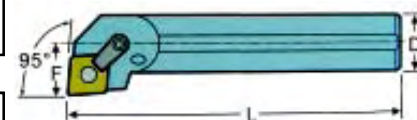
## S-MCLNR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank Dia. | F    | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|------|-------|----------|--------------|----------------------|---------------------|
| S25R-MCLNR/L09    | 25mm       | 17mm | 200mm | 32mm     | CN..0903.    | 432-0201             | 432-1200            |
| S32S-MCLNR/L09    | 32         | 22   | 250   | 40       | CN..0903.    | 432-0202             | 432-1202            |
| S25R-MCLNR/L12    | 25         | 17   | 200   | 32       | CN..1204.    | 432-0203             | 432-1203            |
| S32S-MCLNR/L12    | 32         | 22   | 250   | 40       | CN..1204.    | 432-0204             | 432-1204            |

### Inch

| Tool Holder Style | Shank Dia. | F     | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|-------|-------|----------|--------------|----------------------|---------------------|
| S20P-MCLNR/L4     | 1.25"      | .765" | 12.0" | 1.53"    | CN..43.      | 432-0211             | 432-1211            |
| S24U-MCLNR/L4     | 1.5        | .890  | 14.0  | 1.78     | CN..43.      | 432-0212             | 432-1212            |
| S28U-MCLNR/L4     | 1.75       | 1.015 | 14.0  | 2.03     | CN..43.      | 432-0213             | 432-1213            |
| S32U-MCLNR/L6     | 2.0        | 1.281 | 14.0  | 2.562    | CN..64.      | 432-0214             | 432-1214            |



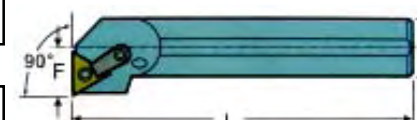
## S-MTFNR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank Dia. | F    | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|------|-------|----------|--------------|----------------------|---------------------|
| S25R-MTFNR/L16    | 25mm       | 17mm | 200mm | 32mm     | TN..1604.    | 432-0221             | 432-1215            |
| S32S-MTFNR/L16    | 32         | 22   | 250   | 40       | TN..1604.    | 432-0222             | 432-1216            |
| S40T-MTFNR/L16    | 40         | 27   | 300   | 50       | TN..1604.    | 432-0223             | 432-1217            |
| S50U-MTFNR/L22    | 50         | 35   | 350   | 63       | TN..2204.    | 432-0224             | 432-1218            |

### Inch

| Tool Holder Style | Shank Dia. | F     | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|-------|-------|----------|--------------|----------------------|---------------------|
| S16S-MTFNR/L3     | 1.0"       | .640" | 10.0" | 1.28"    | TN..33.      | 432-0231             | 432-1231            |
| S20T-MTFNR/L3     | 1.25       | .765  | 12.0  | 1.53     | TN..33.      | 432-0232             | 432-1232            |
| S24U-MTFNR/L4     | 1.5        | 1.031 | 14.0  | 2.062    | TN..43.      | 432-0233             | 432-1233            |
| S28U-MTFNR/L4     | 1.75       | 1.156 | 14.0  | 2.312    | TN..43.      | 432-0234             | 432-1234            |
| S32U-MTFNR/L4     | 2.0        | 1.281 | 14.0  | 2.562    | TN..43.      | 432-0235             | 432-1235            |



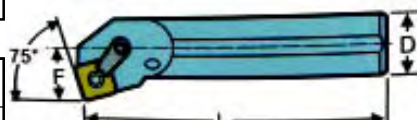
## S-MSKNR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank Dia. | F    | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|------|-------|----------|--------------|----------------------|---------------------|
| S25R-MSKNR/L12    | 25mm       | 17mm | 200mm | 32mm     | CN..1204.    | 432-0241             | 432-1241            |
| S32S-MSKNR/L12    | 32         | 22   | 250   | 40       | CN..1204.    | 432-0242             | 432-1242            |
| S40T-MSKNR/L12    | 40         | 27   | 300   | 50       | CN..1204.    | 432-0243             | 432-1243            |
| S50U-MSKNR/L19    | 50         | 35   | 350   | 50       | CN..1906.    | 432-0244             | 432-1244            |

### Inch

| Tool Holder Style | Shank Dia. | F     | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|-------|-------|----------|--------------|----------------------|---------------------|
| S20T-MSKNR/L4     | 1.25"      | .765" | 12.0" | 1.53"    | CN..43.      | 432-0251             | 432-1251            |
| S24U-MSKNR/L4     | 1.5        | .890  | 14.0  | 1.78     | CN..43.      | 432-0252             | 432-1252            |
| S28U-MSKNR/L4     | 1.75       | 1.015 | 14.0  | 2.03     | CN..43.      | 432-0253             | 432-1253            |
| S32U-MSKNR/L6     | 2.0        | 1.281 | 14.0  | 2.562    | CN..64.      | 432-0254             | 432-1254            |



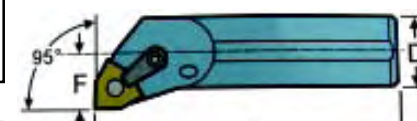
## S-MWLNR/L Indexable Boring Bars

### Metric

| Tool Holder Style | Shank Dia. | F    | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|------|-------|----------|--------------|----------------------|---------------------|
| S25R-MWLNR/L06    | 25mm       | 17mm | 200mm | 32mm     | WN..0604.    | 432-0261             | 432-1261            |
| S32S-MWLNR/L06    | 32         | 22   | 250   | 40       | WN..0604.    | 432-0262             | 432-1262            |
| S25R-MWLNR/L08    | 25         | 17   | 200   | 32       | WN..0806.    | 432-0263             | 432-1263            |
| S32S-MWLNR/L08    | 32         | 22   | 250   | 40       | WN..0806.    | 432-0264             | 432-1264            |

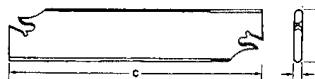
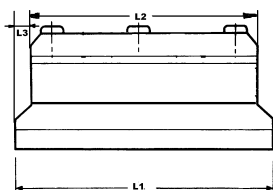
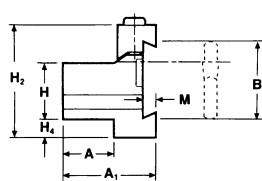
### Inch

| Tool Holder Style | Shank Dia. | F     | OAL   | Min Bore | Insert Style | Right Hand Order No. | Left Hand Order No. |
|-------------------|------------|-------|-------|----------|--------------|----------------------|---------------------|
| S16T-MWLNR/L3     | 1.00"      | 0.04" | 12.0" | 1.20"    | WN..33.      | 432-0271             | 432-1271            |
| S16T-MWLNR/L4     | 1.00       | 1.00  | 12.0  | 2.00     | WN..43.      | 432-0272             | 432-1272            |
| S20U-MWLNR/L3     | 1.25       | 0.765 | 14.0  | 1.47     | WN..33.      | 432-0273             | 432-1273            |
| S20U-MWLNR/L4     | 1.50       | 1.125 | 14.0  | 2.25     | WN..43.      | 432-0274             | 432-1274            |



## Indexable Cut-Off Tool Kits

### Inch



### Individual Blade

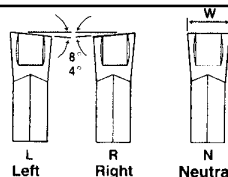
| Blade Style | Blade Length | Order No. |
|-------------|--------------|-----------|
| 26-3        | 4-5/16"      | 250-3103  |
| 26-4        | 4-5/16"      | 250-3104  |
| 26-5        | 4-5/16"      | 250-3105  |
| 32-3        | 5-7/8"       | 250-3113  |
| 32-4        | 5-7/8"       | 250-3114  |
| 32-5        | 5-7/8"       | 250-3115  |

### Individual Tool Blocks

| Clamping Height | Blade Height | Clamping Depth | Overall Block Width | Overall Block Height | Shoulder Height | Blade Pocket Depth | Block OAL | Blade          | Order No. |
|-----------------|--------------|----------------|---------------------|----------------------|-----------------|--------------------|-----------|----------------|-----------|
| H               | B            | A              | A1                  | H2                   | H4              | M                  | L1        |                |           |
| 0.75"           | 1.02"        | 0.790"         | 1.45"               | 1.70"                | .39"            | .16"               | 3.400"    | 26-3,26-4,26-5 | 250-3003  |
| 0.75            | 1.25         | 0.790          | 1.50                | 1.94                 | .55             | .21                | 3.950     | 32-3,32-4,32-5 | 250-3009  |
| 1.00            | 1.25         | 1.030          | 1.75                | 1.95                 | .30             | .21                | 4.330     | 32-3,32-4,32-5 | 250-3015  |
| 1.25            | 1.25         | 1.140          | 1.90                | 2.10                 | .20             | .21                | 4.330     | 32-3,32-4,32-5 | 250-3021  |

### Individual Inserts

| Insert Size | Blade Style | C2 Order No. | C6 Order No. |
|-------------|-------------|--------------|--------------|
| w           |             |              |              |
| 0.120"      | GTN-3       | 431-1201     | 431-1205     |
| 0.160"      | GTN-4       | 431-1202     | 431-1206     |
| 0.200"      | GTN-5       | 431-1203     | 431-1207     |



### Cut-Off Tool Sets

| Tool Block           |          |                    | C2        | C6        |
|----------------------|----------|--------------------|-----------|-----------|
| Clamping HTxBlade HT | Blade    | Insert             | Order No. | Order No. |
| 1pc 0.75"x1.02"      | 1pc/26-3 | 10pcs 0.120"/GTN-3 | 250-3203  | 250-3253  |
| 1pc 0.75x1.25        | 1pc/32-3 | 10pcs 0.120"/GTN-3 | 250-3206  | 250-3256  |
| 1pc 1.00x1.25        | 1pc/32-3 | 10pcs 0.120"/GTN-3 | 250-3209  | 250-3259  |
| 1pc 1.25x1.25        | 1pc/32-3 | 10pcs 0.120"/GTN-3 | 250-3212  | 250-3262  |

### 16 Piece 3/4" Shank Cut-Off Tool Kit

- 1pc .75x1.02" Tool Block
- 1pc 26-3 Blade
- 1pc 26-4 Blade
- 5pcs C6 0.120" GTN-3 Carbide Inserts
- 5pcs C6 0.160" GTN-4 Carbide Inserts
- 2pcs Insert Holders
- 1pc Allen Wrench

Order No. 250-3291

### Metric

#### Individual Tool Blocks

| Clamping Height | Blade Height | Overall Block Height | Shoulder Height | Shoulder Width | Shoulder Width | Clamping Depth | Block OAL | Beveled Side Length | Top Clamping Length | Blade          | Order No. |
|-----------------|--------------|----------------------|-----------------|----------------|----------------|----------------|-----------|---------------------|---------------------|----------------|-----------|
| H               | B            | H2                   | H4              | A1-A           | A1-A-M         | A              | C         | L2                  | L3                  |                |           |
| 20mm            | 20           | 45.5                 | 10              | 18             | 13.4           | 20             | 80        | 70                  | 5                   | 26-3,26-4,26-5 | 250-3053  |
| 25mm            | 25           | 52.5                 | 10              | 18             | 13.4           | 20             | 120       | 110                 | 5                   | 26-3,26-4,26-5 | 250-3059  |
| 32mm            | 32           | 54.5                 | 5               | 18             | 13.4           | 32             | 120       | 110                 | 5                   | 32-3,32-4,32-5 | 250-3065  |
| 32mm            | 32           | 82.5                 | 29.7            | 20.4           | 13.4           | 31.6           | 160       | 150                 | 5                   | 32-3,32-4,32-5 | 250-3071  |

#### Individual Blades

| Blade Style | Blade Length | Order No. |
|-------------|--------------|-----------|
| 26-3        | 109mm        | 250-3153  |
| 26-4        | 109mm        | 250-3154  |
| 26-5        | 109mm        | 250-3155  |
| 32-3        | 149mm        | 250-3163  |
| 32-4        | 149mm        | 250-3164  |
| 32-5        | 149mm        | 250-3165  |

#### Individual Inserts

| Insert Size | Blade Style | C2 Order No. | C6 Order No. |
|-------------|-------------|--------------|--------------|
| Size        |             |              |              |
| 3mm         | GTN-3       | 431-1201     | 431-1205     |
| 4mm         | GTN-4       | 431-1202     | 431-1206     |
| 5mm         | GTN-5       | 431-1203     | 431-1207     |

#### Cut-Off Tool Sets

| Tool Block           |          |                 | C2        | C6       |
|----------------------|----------|-----------------|-----------|----------|
| Clamping HTxBlade HT | Blade    | Insert          | Order No. | Order No |
| 1pc 20x20mm          | 1pc 26-3 | 10pcs 3mm/GTN-3 | 250-3223  | 250-3273 |
| 1pc 25x25mm          | 1pc 26-3 | 10pcs 3mm/GTN-3 | 250-3226  | 250-3276 |
| 1pc 32x32mm          | 1pc 32-3 | 10pcs 3mm/GTN-3 | 250-3229  | 250-3279 |
| 1pc 32x32mm          | 1pc 32-3 | 10pcs 3mm/GTN-3 | 250-3232  | 250-3282 |

## Indexable Countersink & Chamfering Tools

- Overall Length 2-3/8"
- Positive rake for smooth cutting without chatter.
- Uses standard inserts.



### Individuals & Sets

| Cutter body                 | Shank | Insert    | 60° Order No. | 82° Order No. | 90° Order No. |
|-----------------------------|-------|-----------|---------------|---------------|---------------|
| 1/4 - 3/4"                  | 1/2"  | TCMT32.51 | 380-4010      | 380-4110      | 380-4210      |
| 1/2 - 1-3/4                 | 1/2   | SCMT431   | 380-4015      | 380-4115      | 380-4215      |
| 1-1/4 - 2-1/2               | 3/4   | SCMT431   | 380-4020      | 380-4120      | 380-4220      |
| 3 Pcs/set with wooden stand |       |           | 380-4000      | 380-4100      | 380-4200      |

| Cutter body                 | Shank | Insert   | 60° Order No. | 82° Order No. | 90° Order No. |
|-----------------------------|-------|----------|---------------|---------------|---------------|
| 6-20mm                      | 12mm  | TCMT1604 | 380-4301      | 380-4311      | 380-4321      |
| 12-45                       | 12    | SCMT1204 | 380-4302      | 380-4312      | 380-4322      |
| 32-62                       | 20    | SCMT1204 | 380-4303      | 380-4313      | 380-4323      |
| 3 Pcs/set with wooden stand |       |          | 380-4300      | 380-4310      | 380-4320      |

## Indexable Carbide Insert End Mills

### 3 Piece Set

Size including 1, 1-1/4, 1-1/2"

Order No. 242-3201



### 3 Piece Set

Size including 1-3/4, 2, 2-1/2"

Order No. 242-3202

| Shank | Cutter Dia. | Inserts          | Order No. |
|-------|-------------|------------------|-----------|
| R8    | 1"          | 2 inserts TP.-22 | 242-3205  |
| R8    | 1-1/4       | 2 inserts TP.-32 | 242-3210  |
| R8    | 1-3/8       | 3 inserts TP.-32 | 242-3215  |
| R8    | 1-1/2       | 3 inserts TP.-32 | 242-3220  |
| R8    | 1-5/8       | 3 inserts TP.-32 | 242-3225  |
| R8    | 1-3/4       | 3 inserts TP.-32 | 242-3230  |
| R8    | 2           | 3 inserts TP.-43 | 242-3235  |
| R8    | 2-1/2       | 3 inserts TP.-43 | 242-3240  |
| R8    | 3           | 3 inserts TP.-43 | 242-3245  |

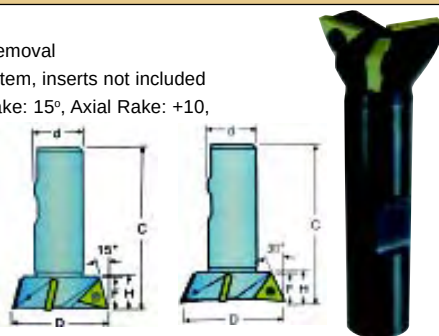
### Straight Shank



| Shank Dia. | Cutter Dia. | Insert           | Order No. |
|------------|-------------|------------------|-----------|
| 3/4"       | 3/4"        | 1 insert TP.-21  | 242-3005  |
| 3/4        | 7/8         | 2 inserts TP.-21 | 242-3010  |
| 3/4        | 1           | 2 inserts TP.-32 | 242-3015  |
| 3/4        | 1-1/4       | 2 inserts TP.-32 | 242-3020  |
| 3/4        | 1-3/8       | 2 inserts TP.-32 | 242-3025  |
| 3/4        | 1-1/2       | 3 inserts TP.-32 | 242-3030  |
| 3/4        | 1-5/8       | 3 inserts TP.-32 | 242-3035  |
| 3/4        | 1-3/4       | 3 inserts TP.-32 | 242-3040  |
| 3/4        | 2           | 3 inserts TP.-43 | 242-3045  |
| 1          | 1           | 2 inserts TP.-22 | 242-3105  |
| 1          | 1-1/4       | 2 inserts TP.-32 | 242-3110  |
| 1          | 1-3/8       | 2 inserts TP.-32 | 242-3115  |
| 1          | 1-1/2       | 3 inserts TP.-32 | 242-3120  |
| 1          | 1-5/8       | 3 inserts TP.-32 | 242-3125  |
| 1          | 1-3/4       | 3 inserts TP.-32 | 242-3130  |
| 1          | 2           | 3 inserts TP.-43 | 242-3135  |

## 15° & 60° Dovetail Mills

- Weldon shank
  - High rate of material removal
  - Torx screw locking system, inserts not included
- Tool Angle: Cutting Rake: 15°, Axial Rake: +10,  
Radial Rake: 14.



### 15° Dovetail Mills

| Cutter                   | Insert      | TiN-Coated          |
|--------------------------|-------------|---------------------|
| D d F H C                | No. & Style | Order No. Order No. |
| 1/2" 3/8" .359 .420 2.42 | 1 TDGW21.5  | 243-3011 243-3111   |
| 1 1/2 .359 .420 2.42     | 3 TDGW21.5  | 243-3012 243-3112   |
| 1-7/8 7/8 .550 .750 3.20 | 3 TDGW32.   | 243-3013 243-3113   |
| 2-1/2 1 .750 1.00 3.75   | 3 TDGW43.   | 243-3014 243-3114   |

### 60° Dovetail Mills

| Cutter                    | Insert      | TiN-Coated          |
|---------------------------|-------------|---------------------|
| D d F H C                 | No. & Style | Order No. Order No. |
| 1/2 3/8 .325 .142 2.39    | 1 TDGW21.5  | 243-3001 243-3101   |
| 3/4 3/8 .325 .282 2.39    | 2 TDGW21.5  | 243-3002 243-3102   |
| 1 1/2 .325 .375 2.375     | 3 TDGW21.5  | 243-3003 243-3103   |
| 1-3/8 5/8 .510 .550 2.862 | 3 TDGW32    | 243-3004 243-3104   |
| 1-7/8 7/8 .510 .550 3     | 3 TDGW32    | 243-3005 243-3105   |
| 2-1/4 1 .700 .750 3.5"    | 3 TDGW43    | 243-3006 243-3106   |
| 2-1/2 1 .700 .750 3.5"    | 3 TDGW43    | 243-3007 243-3107   |

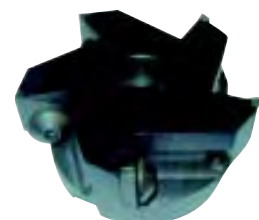
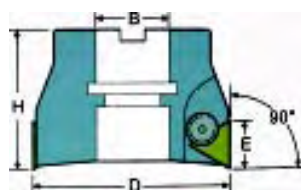
## 1/2" Shank Mini Indexable End Mills



| Cutter Dia. | Overall Length | Body Length | Insert | Order No. |
|-------------|----------------|-------------|--------|-----------|
| 1/2"        | 3"             | 1"          | TPG22  | 320-0820  |
| 9/16        | 3              | 1           | TPG22  | 320-0825  |
| 5/8         | 3              | 1           | TPG22  | 320-0830  |

| No. of Pieces | Include          | Order No. |
|---------------|------------------|-----------|
| 3 Pcs/set     | 1/2", 9/16, 5/8" | 320-0835  |

## Square Shoulder Face Mills

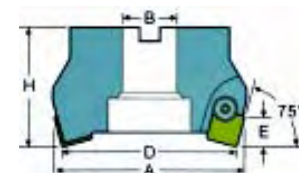


### 90° Clamp Style

| Cutter                 | No. of                | TiN-Coated          |
|------------------------|-----------------------|---------------------|
| D B H E                | Flutes Inserts Screws | Order No. Order No. |
| 1-1/2" .50 1.57 .511 3 | TP..322 MS6075        | 243-3021 243-3121   |
| 2 .75 1.57 .511 3      | TP..322 MS6075        | 243-3022 243-3122   |
| 2-1/2 .75 1.57 .511 4  | TP..322 MS6075        | 243-3023 243-3123   |
| 3 1.00 1.97 .511 5     | TP..322 MS6075        | 243-3024 243-3124   |
| 4 1.50 1.97 .700 5     | TP..432 MS810         | 243-3025 243-3125   |
| 5 1.50 2.48 .700 6     | TP..432 MS810         | 243-3026 243-3126   |
| 6 2.00 2.48 .700 7     | TP..432 MS810         | 243-3027 243-3127   |

| Cutter            | No. of                | TiN-Coated          |
|-------------------|-----------------------|---------------------|
| D B H E           | Flutes Inserts Screws | Order No. Order No. |
| 40mm 16 42 14.5 3 | TP..1603 MS6075       | 243-3031 243-3131   |
| 50 22 45 14.5 4   | TP..1603 MS6075       | 243-3032 243-3132   |
| 63 27 48 14.5 4   | TP..1603 MS6075       | 243-3033 243-3133   |
| 80 27 48 14.5 5   | TP..1603 MS6075       | 243-3034 243-3134   |
| 100 32 48 18 5    | TP..2204 MS810        | 243-3035 243-3135   |
| 125 40 50 18 6    | TP..2204 MS810        | 243-3036 243-3136   |
| 160 40 50 18 7    | TP..2204 MS810        | 243-3037 243-3137   |

### 75° Clamp Style



| Cutter                      | No. of         | TiN-Coated          |
|-----------------------------|----------------|---------------------|
| D B H A E                   | Flutes Inserts | Order No. Order No. |
| 2-1/2" 3/4 1.57 2.98 .354 4 | SP..42         | 243-3041 243-3141   |
| 3 1 1.97 3.65 .354 5        | SP..42         | 243-3042 243-3142   |
| 4 1-1/2 1.97 4.43 .354 6    | SP..42         | 243-3043 243-3143   |
| 5 1-1/2 2.48 5.42 .354 6    | SP..42         | 243-3044 243-3144   |

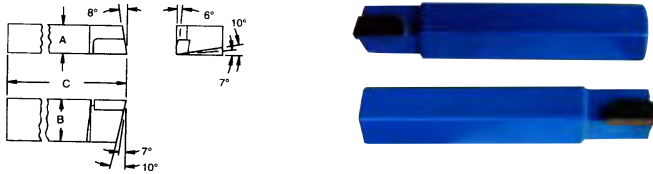
| Cutter            | No. of         | TiN-Coated          |
|-------------------|----------------|---------------------|
| D B H A E         | Flutes Inserts | Order No. Order No. |
| 50mm 22 45 56 9 4 | SP..1203       | 243-3051 243-3151   |
| 63 27 48 69 9 4   | SP..1203       | 243-3052 243-3152   |
| 80 27 48 86 9 5   | SP..1203       | 243-3053 243-3153   |
| 100 32 48 106 9 6 | SP..1203       | 243-3054 243-3154   |
| 125 40 50 131 9 6 | SP..1203       | 243-3055 243-3155   |

## Carbide Tipped Tool Bits

Grade C-2 for Cast Iron and Non-Ferrous Materials, Grade C-6 for Steel and Steel Alloys Premium Carbide

### Style AR & AL

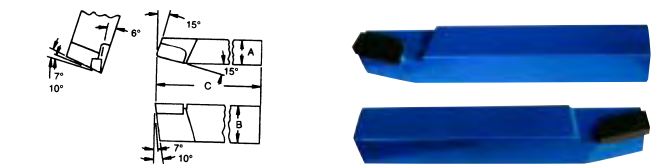
Straight Turning-for general machining applications such as turning, boring, facing and chamfering. Suitable for machining to a 90° shoulder.



| Square | Length | R.H          |           | L.H          |           |
|--------|--------|--------------|-----------|--------------|-----------|
|        |        | Industry C-2 | Order No. | Industry C-6 | Order No. |
| 1/4"   | 2"     | AR-4         | 383-0012  | AL-4         | 383-0112  |
| 5/16   | 2-1/4  | AR-5         | 383-0022  | AL-5         | 383-0122  |
| 3/8    | 2-1/2  | AR-6         | 383-0032  | AL-6         | 383-0132  |
| 7/16   | 3      | AR-7         | 383-0042  | AL-7         | 383-0142  |
| 1/2    | 3-1/2  | AR-8         | 383-0052  | AL-8         | 383-0152  |
| 5/8    | 4      | AR-10        | 383-0062  | AL-10        | 383-0162  |
| 3/4    | 4-1/2  | AR-12        | 383-0072  | AL-12        | 383-0172  |
| 1      | 6      | AR-16        | 383-0082  | AL-16        | 383-0182  |

### Style BR & BL

Lead Angle turning - for general applications on turning, boring, and facing where a lead angle is either required or acceptable.



| Square | Length | R.H          |           | L.H          |           |
|--------|--------|--------------|-----------|--------------|-----------|
|        |        | Industry C-2 | Order No. | Industry C-6 | Order No. |
| 1/4"   | 2"     | BR-4         | 383-1012  | BL-4         | 383-1112  |
| 5/16   | 2-1/4  | BR-5         | 383-1022  | BL-5         | 383-1122  |
| 3/8    | 2-1/2  | BR-6         | 383-1032  | BL-6         | 383-1132  |
| 7/16   | 3      | BR-7         | 383-1042  | BL-7         | 383-1142  |
| 1/2    | 3-1/2  | BR-8         | 383-1052  | BL-8         | 383-1152  |
| 5/8    | 4      | BR-10        | 383-1062  | BL-10        | 383-1162  |
| 3/4    | 4-1/2  | BR-12        | 383-1072  | BL-12        | 383-1172  |
| 1      | 6      | BR-16        | 383-1082  | BL-16        | 383-1182  |

### Style C

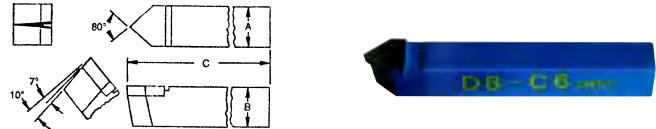
Broad nose - a general purpose tool of great utility for facing, chamfering, and turning. This tool is generally used for making special form tools.



| Square | Length | C-2          |           | C-6          |           |
|--------|--------|--------------|-----------|--------------|-----------|
|        |        | Industry No. | Order No. | Industry No. | Order No. |
| 1/4"   | 2"     | C-4          | 383-2002  | C-5          | 383-2006  |
| 5/16   | 2-1/4  | C-5          | 383-2012  | C-6          | 383-2016  |
| 3/8    | 2-1/2  | C-6          | 383-2022  | C-7          | 383-2036  |
| 7/16   | 3      | C-7          | 383-2032  | C-8          | 383-2046  |
| 1/2    | 3-1/2  | C-8          | 383-2042  | C-10         | 383-2056  |
| 5/8    | 4      | C-10         | 383-2052  | C-12         | 383-2066  |
| 3/4    | 4-1/2  | C-12         | 383-2062  | C-16         | 383-2076  |
| 1      | 6      | C-16         | 383-2072  |              |           |

### Style D

80° Round nose - an 80° included angle round nose tool for turning, boring, facing, chamfering and other miscellaneous machining operations.



| Square | Length | Industry No. | C-2       | C-6       |
|--------|--------|--------------|-----------|-----------|
|        |        |              | Order No. | Order No. |
| 1/4"   | 2"     | D-4          | 383-3012  | 383-3016  |
| 5/16   | 2-1/4  | D-5          | 383-3022  | 383-3026  |
| 3/8    | 2-1/2  | D-6          | 383-3032  | 383-3036  |
| 7/16   | 3      | D-7          | 383-3042  | 383-3046  |
| 1/2    | 3-1/2  | D-8          | 383-3052  | 383-3056  |
| 5/8    | 4      | D-10         | 383-3062  | 383-3066  |
| 3/4    | 4-1/2  | D-12         | 383-3072  | 383-3076  |
| 1      | 6      | D-16         | 383-3082  | 383-3086  |

### Style E

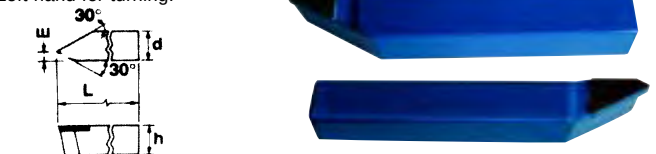
Threading - conforms with the U.S. Standard 60° included angle thread, also used for V-grooving chamfering, turning, boring and facing.



| Square | Length | Industry No. | C-2       | C-6       |
|--------|--------|--------------|-----------|-----------|
|        |        |              | Order No. | Order No. |
| 1/4"   | 2"     | E-4          | 383-4002  | 383-4006  |
| 5/16   | 2-1/4  | E-5          | 383-4012  | 383-4016  |
| 3/8    | 2-1/2  | E-6          | 383-4022  | 383-4026  |
| 7/16   | 3      | E-7          | 383-4032  | 383-4036  |
| 1/2    | 3-1/2  | E-8          | 383-4042  | 383-4046  |
| 5/8    | 4      | E-10         | 383-4052  | 383-4056  |
| 3/4    | 4-1/2  | E-12         | 383-4062  | 383-4066  |
| 1      | 6      | E-16         | 383-4072  | 383-4076  |

### Style ER-Right AND EL-Left

60° Offset Tool, Right hand for facing to square shoulder. Used mainly for turret lathe operations. Right and left hand tools are used together for straddle facing. Left hand for turning.



| E     | D    | H    | L     | R.H.         | ER.R.H        | ER.R.H.       |
|-------|------|------|-------|--------------|---------------|---------------|
|       |      |      |       | Industry No. | C-2 Order No. | C-6 Order No. |
| 1/16" | 1/4" | 1/4" | 2"    | ER-4         | 383-6202      | 383-6206      |
| 1/16  | 5/16 | 5/16 | 2-1/4 | ER-5         | 383-6232      | 383-6236      |
| 1/16  | 3/8  | 3/8  | 2-1/2 | ER-6         | 383-6212      | 383-6216      |
| 3/32  | 1/2  | 1/2  | 3-1/2 | ER-8         | 383-6222      | 383-6226      |
| 3/32  | 5/8  | 5/8  | 4     | ER-10        | 383-6242      | 383-6246      |

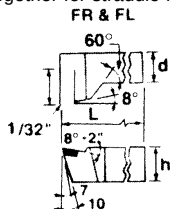
| E     | D    | H    | L     | L. H.        | EL.L.H.       | EL.L.H.       |
|-------|------|------|-------|--------------|---------------|---------------|
|       |      |      |       | Industry No. | C-2 Order No. | C-6 Order No. |
| 1/16" | 1/4" | 1/4" | 2"    | EL-4         | 383-6302      | 383-6306      |
| 1/16  | 5/16 | 5/16 | 2-1/4 | EL-5         | 383-6332      | 383-6336      |
| 1/16  | 3/8  | 3/8  | 2-1/2 | EL-6         | 383-6312      | 383-6316      |
| 3/32  | 1/2  | 1/2  | 3-1/2 | EL-8         | 383-6322      | 383-6326      |
| 3/32  | 5/8  | 5/8  | 4     | EL-10        | 383-6342      | 383-6346      |

## Carbide Tipped Tool Bits

Grade C-2 for Cast Iron and Non-Ferrous Materials, Grade C-6 for Steel and Steel Alloys Premium Carbide

### Style FR-Right and FL-Left

End Cutting Offset Tool, right hand for facing to square shoulder. Used mainly for turret lathe operations. Right and left hand tools are used together for straddle facing. Left hand for turning.



| E     | D    | H    | L      | R. H. Industry No. | FR.R.H C-2 Order No. | FR.R.H. C-6 Order No. |
|-------|------|------|--------|--------------------|----------------------|-----------------------|
| 1/32" | 1/2" | 1/2" | 3-1/2" | FR-8               | 383-8002             | 383-8006              |
| 1/32  | 5/8  | 5/8  | 4      | FR-10              | 383-8012             | 383-8016              |
| 1/32  | 3/4  | 3/4  | 4-1/2  | FR-12              | 383-8022             | 383-8026              |
| 1/32  | 1    | 1    | 7      | FR-16              | 383-8032             | 383-8036              |

| E     | D    | H    | L      | L. H. Industry No. | FL.L.H. C-2 Order No. | FL.L.H. C-6 Order No. |
|-------|------|------|--------|--------------------|-----------------------|-----------------------|
| 1/32" | 1/2" | 1/2" | 3-1/2" | FL-8               | 383-8102              | 383-8106              |
| 1/32  | 5/8  | 5/8  | 4      | FL-10              | 383-8112              | 383-8116              |
| 1/32  | 3/4  | 3/4  | 4-1/2  | FL-12              | 383-8122              | 383-8126              |
| 1/32  | 1    | 1    | 7      | FL-16              | 383-8132              | 383-8136              |

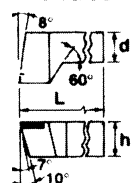
### Style GR-Right and GL-Left

Right, left hand for facing to square shoulder.

Side cutting offset tools.

Ideal for facing work close to chuck jaws on engine lathes, turret lathes, boring mills and vertical turret lathes.

GR & GL



| E     | D    | H    | L      | R. H. Industry No. | GR.R.H C-2 Order No. | GR.R.H. C-6 Order No. | L. H. Industry No. | GL.L.H. C-2 Order No. | GL.L.H. C-6 Order No. |
|-------|------|------|--------|--------------------|----------------------|-----------------------|--------------------|-----------------------|-----------------------|
| 1/32" | 1/2" | 1/2" | 3-1/2" | GR-8               | 383-8202             | 383-8206              | GL-8               | 383-8302              | 383-8306              |
| 1/32  | 5/8  | 5/8  | 4      | GR-10              | 383-8212             | 383-8216              | GL-10              | 383-8312              | 383-8316              |
| 1/32  | 3/4  | 3/4  | 4-1/2  | GR-12              | 383-8232             | 383-8236              | GL-12              | 383-8332              | 383-8336              |
| 1/32  | 1    | 1    | 7      | GR-16              | 383-8222             | 383-8226              | GL-16              | 383-8322              | 383-8326              |

### Style TSC

For boring to a square shoulder in a 30° boring bar, or internal Chamfering (30°) in a 0°.



### Style TSE

For boring to square shoulder in a 45° boring bar, or boring with a 15° lead angle in a 30° boring bar.



| Style TSC |        |              |           | Style TSE |        |              |           |
|-----------|--------|--------------|-----------|-----------|--------|--------------|-----------|
| Size      | Radius | Industry No. | Order No. | Size      | Radius | Industry No. | Order No. |
| 5/1"      | 1/64"  | TSC5         | 383-8502  | 5/1"      | 1/64"  | TSE5         | 383-8602  |
| 3/8       | 1/64   | TSC6         | 383-8512  | 3/8       | 1/64   | TSE6         | 383-8612  |
| 1/2       | 1/32   | TSC8         | 383-8522  | 1/2       | 1/32   | TSE8         | 383-8622  |
| 5/8       | 1/32   | TSC10        | 383-8532  | 5/8       | 1/32   | TSE10        | 383-8632  |
| 3/4       | 1/32   | TSC12        | 383-8542  | 3/4       | 1/32   | TSE12        | 383-8642  |

### Style TSA

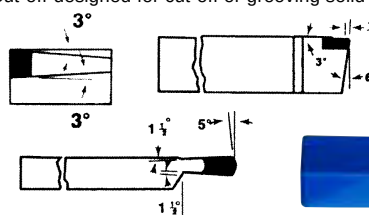
Square Shank Boring Tools for boring to a square shoulder in 90° boring bars.



| Size  | Radius | Industry No. | Style TSA C-2 Order No. | Style TSA C-6 Order No. |
|-------|--------|--------------|-------------------------|-------------------------|
| 5/16" | 1/64"  | TSA5         | 383-8402                | 383-8406                |
| 3/8   | 1/64   | TSA6         | 383-8412                | 383-8416                |
| 1/2   | 1/32   | TSA8         | 383-8422                | 383-8426                |
| 5/8   | 1/32   | TSA10        | 383-8432                | 383-8436                |
| 3/4   | 1/32   | TSA12        | 383-8442                | 383-8446                |

### Styles CTR & CTL

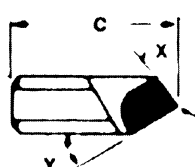
Cut-off-designed for cut-off or grooving solid bars and tube parting.



| Shank Size  | Tip Dia. | Overall Length | R. H. C-2 Order No. | R. H. C-6 Order No. |
|-------------|----------|----------------|---------------------|---------------------|
| 1/2 x 1"    | 1/8"     | 5"             | CTR-111             | 383-4602            |
| 1/2 x 1     | 3/16     | 5              | CTR-122             | 383-4612            |
| 1/2 x 1     | 5/16     | 5              | CTR-120             | 383-4622            |
| 1/2 x 1     | 1/4      | 5              | CTR-121             | 383-4632            |
| 5/8 x 1-1/4 | 3/8      | 5              | CTR-130             | 383-4642            |
| 3/4 x 1-1/2 | 3/8      | 6              | CTR-140             | 383-4652            |

| Shank Size  | Tip Dia. | Overall Length | L. H. C-2 Order No. | L. H. C-6 Order No. |
|-------------|----------|----------------|---------------------|---------------------|
| 1/2 x 1"    | 1/8"     | 5"             | CTL-111             | 383-4702            |
| 1/2 x 1     | 3/16     | 5              | CTL-122             | 383-4712            |
| 1/2 x 1     | 5/16     | 5              | CTL-120             | 383-4722            |
| 1/2 x 1     | 1/4      | 5              | CTL-121             | 383-4732            |
| 5/8 x 1-1/4 | 3/8      | 5              | CTL-130             | 383-4742            |
| 3/4 x 1-1/2 | 3/8      | 6              | CTL-140             | 383-4752            |

### Style TRC & TRE



Round Boring Tools. For boring to a square shoulder in 45° boring bars or with 15° lead angle in 30° boring bars. For recessing and internal chamfering in 90° boring bar.

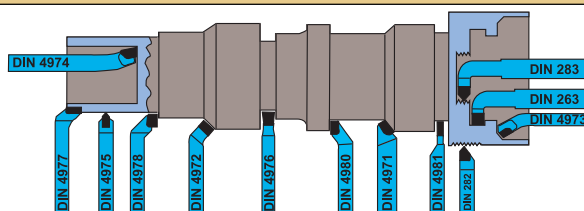


| Type | Description                                                               |
|------|---------------------------------------------------------------------------|
| TRC  | For Boring to Square Shoulder in 30° Bars                                 |
| TRE  | For Boring to a Square Shoulder in 45° Bars or with 15° Lead in 30° Bars. |

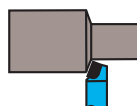
| Size   | Radius | Dia.  | Length | Industry Number | C - 2 Order No. | C - 6 Order No. |
|--------|--------|-------|--------|-----------------|-----------------|-----------------|
| .3120" | 1/64"  | 5/16" | 1-1/2" | TRC 5           | 383-8702        | 383-8706        |
| .3745  | 1/64   | 3/8   | 1-3/4  | TRC 6           | 383-8712        | 383-8716        |
| .4995  | 1/64   | 1/2   | 2-1/2  | TRC 8           | 383-8722        | 383-8726        |

| Size   | Radius | Dia.  | Length | Industry Number | C - 2 Order No. | C - 6 Order No. |
|--------|--------|-------|--------|-----------------|-----------------|-----------------|
| .3120" | 1/64"  | 5/16" | 1-1/2" | TRE 5           | 383-8802        | 383-8806        |
| .3745  | 1/64   | 3/8   | 1-3/4  | TRE 6           | 383-8812        | 383-8816        |
| .4995  | 1/64   | 1/2   | 2-1/2  | TRE 8           | 383-8822        | 383-8826        |

## DIN & ISO Carbide Tipped Tool Bits

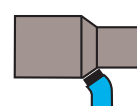


### Carbide Tipped Tool Bits, DIN4971-ISO1



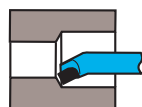
| Size        | K10/20 right<br>Order No. | K10/20 left<br>Order No. | P25/30 right<br>Order No. | P25/30 left<br>Order No. |
|-------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 10x10x90mm  | 4971-0001                 | 4971-1001                | 4971-2001                 | 4971-3001                |
| 12x12x100mm | 4971-0003                 | 4971-1003                | 4971-2003                 | 4971-3003                |
| 16x16x110mm | 4971-0005                 | 4971-1005                | 4971-2005                 | 4971-3005                |
| 20x20x125mm | 4971-0007                 | 4971-1007                | 4971-2007                 | 4971-3007                |
| 25x25x140mm | 4971-0009                 | 4971-1009                | 4971-2009                 | 4971-3009                |
| 32x32x170mm | 4971-0011                 | 4971-1011                | 4971-2011                 | 4971-3011                |

### Carbide Tipped Tool Bits, DIN4972-ISO2



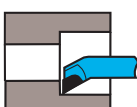
| Size        | K10/20 right<br>Order No. | K10/20 left<br>Order No. | P25/30 right<br>Order No. | P25/30 left<br>Order No. |
|-------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 10x10x90mm  | 4972-0001                 | 4972-1001                | 4972-2001                 | 4972-3001                |
| 12x12x100mm | 4972-0003                 | 4972-1003                | 4972-2003                 | 4972-3003                |
| 16x16x110mm | 4972-0005                 | 4972-1005                | 4972-2005                 | 4972-3005                |
| 20x20x125mm | 4972-0007                 | 4972-1007                | 4972-2007                 | 4972-3007                |
| 25x25x140mm | 4972-0009                 | 4972-1009                | 4972-2009                 | 4972-3009                |
| 32x32x170mm | 4972-0011                 | 4972-1011                | 4972-2011                 | 4972-3011                |

### Carbide Tipped Tool Bits, DIN4973-ISO8



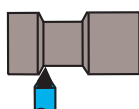
| Size           | K10/20<br>Order No. | P25/30<br>Order No. |
|----------------|---------------------|---------------------|
| 8x8x14x125mm   | 4973-0001           | 4973-2001           |
| 10x10x18x150mm | 4973-0003           | 4973-2003           |
| 12x12x21x180mm | 4973-0005           | 4973-2005           |
| 16x16x27x210mm | 4973-0007           | 4973-2007           |
| 20x20x34x250mm | 4973-0009           | 4973-2009           |
| 25x25x43x300mm | 4973-0011           | 4973-2011           |
| 32x32x52x355mm | 4973-0013           | 4973-2013           |

### Carbide Tipped Tool Bits DIN4974-ISO9



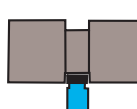
| Size           | K10/20<br>Order No. | P25/30<br>Order No. |
|----------------|---------------------|---------------------|
| 8x8x14x125mm   | 4974-0001           | 4974-2001           |
| 10x10x18x150mm | 4974-0003           | 4974-2003           |
| 12x12x21x180mm | 4974-0005           | 4974-2005           |
| 16x16x27x210mm | 4974-0007           | 4974-2007           |
| 20x20x34x250mm | 4974-0009           | 4974-2009           |
| 25x25x43x300mm | 4974-0011           | 4974-2011           |
| 32x32x52x355mm | 4974-0013           | 4974-2013           |

### Carbide Tipped Tool Bits. DIN 4975-ISO10



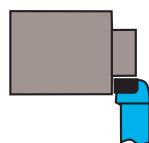
| Size        | K10/20<br>Order No. | P25/30<br>Order No. |
|-------------|---------------------|---------------------|
| 26x10x110mm | 4975-0001           | 4975-2001           |
| 20x12x125mm | 4975-0003           | 4975-2003           |
| 25x16x140mm | 4975-0005           | 4975-2005           |
| 32x20x170mm | 4975-0007           | 4975-2007           |

### Carbide Tipped Tool Bits. DIN 4976-ISO4



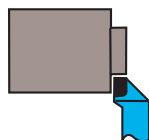
| Size        | K10/20<br>Order No. | P25/30<br>Order No. |
|-------------|---------------------|---------------------|
| 10x10x90mm  | 4976-0001           | 4976-2001           |
| 12x12x100mm | 4976-0003           | 4976-2003           |
| 16x16x110mm | 4976-0005           | 4976-2005           |
| 20x20x125mm | 4976-0007           | 4976-2007           |
| 25x25x140mm | 4976-0009           | 4976-2009           |
| 32x32x170mm | 4976-0011           | 4976-2011           |

### Carbide Tipped Tool Bits. DIN 4977-ISO5



| Size        | K10/20 right<br>Order No. | K10/20 left<br>Order No. | P25/30 right<br>Order No. | P25/30 left<br>Order No. |
|-------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 16x16x110mm | 4977-0001                 | 4977-1001                | 4977-2001                 | 4977-3001                |
| 20x20x125mm | 4977-0003                 | 4977-1003                | 4977-2003                 | 4977-3003                |
| 25x25x140mm | 4977-0005                 | 4977-1005                | 4977-2005                 | 4977-3005                |
| 32x32x170mm | 4977-0007                 | 4977-1007                | 4977-2007                 | 4977-3007                |

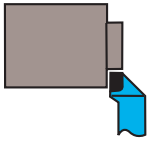
### Carbide Tipped Tool Bits. DIN 4978-ISO3



| Size        | K10/20 right<br>Order No. | K10/20 left<br>Order No. | P25/30 right<br>Order No. | P25/30 left<br>Order No. |
|-------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 16x10x110mm | 4978-0001                 | 4978-1001                | 4978-2001                 | 4978-3001                |
| 20x12x125mm | 4978-0003                 | 4978-1003                | 4978-2003                 | 4978-3003                |
| 25x16x140mm | 4978-0005                 | 4978-1005                | 4978-2005                 | 4978-3005                |
| 32x20x170mm | 4978-0007                 | 4978-1007                | 4978-2007                 | 4978-3007                |

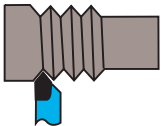
## DIN & ISO Carbide Tipped Tool Bits continued

### Carbide Tipped Tool Bits. DIN 4980-ISO6



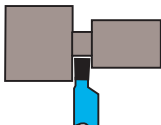
| Size        | K10/20 right<br>Order No. | K10/20 left<br>Order No. | P25/30 right<br>Order No. | P25/30 left<br>Order No. |
|-------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 10x10x90mm  | 4980-0001                 | 4980-1001                | 4980-2001                 | 4980-3001                |
| 12x12x100mm | 4980-0003                 | 4980-1003                | 4980-2003                 | 4980-3003                |
| 16x16x110mm | 4980-0005                 | 4980-1005                | 4980-2005                 | 4980-3005                |
| 20x20x125mm | 4980-0007                 | 4980-1007                | 4980-2007                 | 4980-3007                |
| 25x25x140mm | 4980-0009                 | 4980-1009                | 4980-2009                 | 4980-3009                |
| 32x32x170mm | 4980-0011                 | 4980-1011                | 4980-2011                 | 4980-3011                |

### Carbide Tipped Tool Bits. DIN 282-60 Degree



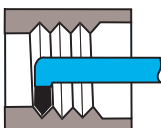
| Size        | K10/20<br>Order No. | P25/30<br>Order No. |
|-------------|---------------------|---------------------|
| 10x10x100mm | 2820-0001           | 2820-2001           |
| 12x12x110mm | 2820-0003           | 2820-2003           |
| 16x16x125mm | 2820-0005           | 2820-2005           |
| 20x20x140mm | 2820-0007           | 2820-2007           |
| 25x25x160mm | 2820-0009           | 2820-2009           |
| 32x32x180mm | 2820-0011           | 2820-2011           |

### Carbide Tipped Tool Bits. DIN 4981-ISO7



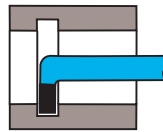
| Size        | K10/20 right<br>Order No. | K10/20 left<br>Order No. | P25/30 right<br>Order No. | P25/30 left<br>Order No. |
|-------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 12x8x100mm  | 4981-0001                 | 4981-1001                | 4981-2001                 | 4981-3001                |
| 16x10x110mm | 4981-0003                 | 4981-1003                | 4981-2003                 | 4981-3003                |
| 20x12x125mm | 4981-0005                 | 4981-1005                | 4981-2005                 | 4981-3005                |
| 25x16x140mm | 4981-0007                 | 4981-1007                | 4981-2007                 | 4981-3007                |
| 32x20x170mm | 4981-0009                 | 4981-1009                | 4981-2009                 | 4981-3009                |

### Carbide Tipped Tool Bits. DIN 283-60 degree



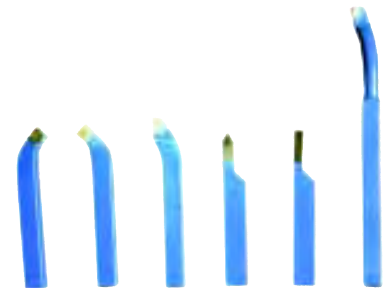
| Size           | K10/20<br>Order No. | P25/30<br>Order No. |
|----------------|---------------------|---------------------|
| 10x10x24x140mm | 2830-0001           | 2830-2001           |
| 12x12x30x160mm | 2830-0003           | 2830-2003           |
| 16x16x36x180mm | 2830-0005           | 2830-2005           |
| 20x20x45x210mm | 2830-0007           | 2830-2007           |
| 25x25x55x250mm | 2830-0009           | 2830-2009           |
| 32x32x70x300mm | 2830-0011           | 2830-2011           |

### Carbide Tipped Tool Bits. DIN 263



| Size           | K10/20<br>Order No. | P25/30<br>Order No. |
|----------------|---------------------|---------------------|
| 10x10x25x140mm | 2821-0001           | 2821-2001           |
| 12x12x30x160mm | 2821-0003           | 2821-2003           |
| 16x16x40x180mm | 2821-0005           | 2821-2005           |
| 20x20x50x210mm | 2821-0007           | 2821-2007           |
| 25x25x60x250mm | 2821-0009           | 2821-2009           |
| 32x32x85x300mm | 2821-0011           | 2821-2011           |

## Carbide Tipped Tool Bit Sets



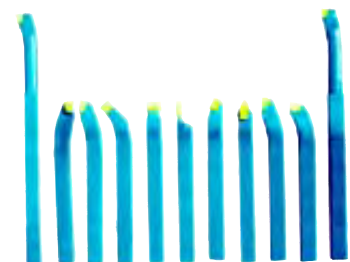
### 3/8" Shank 6 Pieces Tool Bit Set

| Description             | Shank<br>Size | Overall<br>Length | Order No. |
|-------------------------|---------------|-------------------|-----------|
| 45° Left Angle          | 3/8x3/8"      | 3-1/2"            | 383-4261  |
| 45° Right Angle         | 3/8x3/8       | 3-1/2             |           |
| 30° Angle               | 3/8x3/8       | 3-1/2             |           |
| 3/16 Wide, 60° Point    | 3/8x3/8       | 3-3/4             |           |
| 1/8x5/16 Straight Point | 3/8x1/2       | 4                 |           |
| 15° Angle               | 3/8x3/8       | 5-3/4             |           |

### 1/2" Shank 6 Pieces Tool Bit Sets

| Description             | Shank<br>Size | Overall<br>Length | Order No. |
|-------------------------|---------------|-------------------|-----------|
| 45° Left Angle          | 1/2x1/2"      | 4"                | 383-4262  |
| 45° Right Angle         | 1/2x1/2       | 4                 |           |
| 30° Angle               | 1/2x1/2       | 4                 |           |
| 1/4 Wide, 60° Point     | 1/2x1/2       | 4-3/8             |           |
| 5/32x3/8 Straight Point | 3/8x5/8       | 4-1/2             |           |
| 15° Angle               | 1/2x1/2       | 7-1/4             |           |

## 11 Piece Carbide Tipped Tool Bit Sets

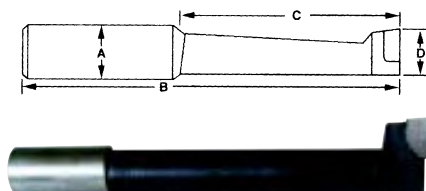


| Shank | Pieces | Size        | Description                                                                                                 | Order No. |
|-------|--------|-------------|-------------------------------------------------------------------------------------------------------------|-----------|
| 11    | 8x8mm  | one each of | DIN4971R, DIN4972R, DIN4973R, DIN4974R, DIN4975, DIN4976, DIN4977R, DIN4978R, DIN4980L, DIN4980R, DIIN4981R | 387-1811  |

## Carbide Tipped Boring Bars

- Tool life is extended because each bar has far more steel behind the cutting edge for heavier chatter free cut. Deeper bore and more precise work.
- The same bar can bore flat bottom hole or face. Grind bar on cutting end for special tools such as grooving, threading, or automatic operations.

- Up to 100% longer tool life.
- All shanks are ground to +0/-0.0005".
- All 1/2", 3/4" and 1" shanks fit most boring and facing heads.



### C2-Cast Iron C6-Steel

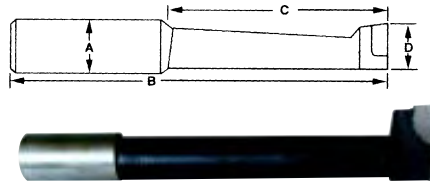
| "A"<br>Shank Dia. | "B"<br>Length | "C"<br>Bore Depth | "D"<br>Min. Bore | Tool No. | C2<br>Individual<br>Order No. | C6<br>Individual<br>Order No. | C2<br>Set<br>Order No.      | C6<br>Set<br>Order No. |
|-------------------|---------------|-------------------|------------------|----------|-------------------------------|-------------------------------|-----------------------------|------------------------|
| 3/8"              | 2"            | 3/4"              | 5/16"            | A5S      | 375-1012                      | 375-1016                      | 9Pcs/set,<br>Wooden Stand   | 375-1002 375-1006      |
| 3/8               | 2-3/8         | 1-1/8             | 5/16             | A5M      | 375-1022                      | 375-1026                      |                             |                        |
| 3/8               | 2-3/4         | 1-1/2             | 5/16             | A5L      | 375-1032                      | 375-1036                      |                             |                        |
| 3/8               | 2-3/16        | 15/16             | 3/8              | A3S      | 375-1042                      | 375-1046                      | 9Pcs/set,<br>Plastic Stand  | 375-1102 375-1106      |
| 3/8               | 2-21/32       | 1-13/32           | 3/8              | A3M      | 375-1052                      | 375-1056                      |                             |                        |
| 3/8               | 3-1/8         | 1-7/8             | 3/8              | A3L      | 375-1062                      | 375-1066                      |                             |                        |
| 3/8               | 2-3/8         | 1-1/8             | 7/16             | A7S      | 375-1072                      | 375-1076                      | 9Pcs/set,<br>Plastic Stand  | 375-1102 375-1106      |
| 3/8               | 3-15/16       | 1-11/16           | 7/16             | A7M      | 375-1082                      | 375-1086                      |                             |                        |
| 3/8               | 3-1/2         | 2-1/4             | 7/16             | A7L      | 375-1092                      | 375-1096                      |                             |                        |
| 1/2               | 2-1/4         | 3/4               | 5/16             | B5S      | 375-1212                      | 375-1216                      | 9Pcs/set,<br>Wooden Stand   | 375-1202 375-1206      |
| 1/2               | 2-5/8         | 1-1/8             | 5/16             | B5M      | 375-1222                      | 375-1226                      |                             |                        |
| 1/2               | 3             | 1-1/2'            | 5/16             | B5L      | 375-1232                      | 375-1236                      |                             |                        |
| 1/2               | 2-5/8         | 1-1/8             | 7/16             | B7S      | 375-1242                      | 375-1246                      | 9Pcs/set,<br>Plastic Stand  | 375-1302 375-1306      |
| 1/2               | 3-3/16        | 1-11/16           | 7/16             | B7M      | 375-1252                      | 375-1256                      |                             |                        |
| 1/2               | 3-3/4         | 2-1/4             | 7/16             | B7L      | 375-1262                      | 375-1266                      |                             |                        |
| 1/2               | 3             | 1-1/2             | 9/16             | B9S      | 375-1272                      | 375-1276                      | 9Pcs/set,<br>Plastic Stand  | 375-1302 375-1306      |
| 1/2               | 3-3/4         | 2-1/4             | 9/16             | B9M      | 375-1282                      | 375-1286                      |                             |                        |
| 1/2               | 4-1/2         | 3                 | 9/16             | B9L      | 375-1292                      | 375-1296                      |                             |                        |
| 5/8               | 2-1/4         | 3/4               | 5/16             | D5S      | 375-1412                      | 375-1416                      | 12Pcs/set,<br>Wooden Stand  | 375-1402 375-1406      |
| 5/8               | 2-5/8         | 1-1/8             | 5/16             | D5M      | 375-1422                      | 375-1426                      |                             |                        |
| 5/8               | 3             | 1-1/2             | 5/16             | D5L      | 375-1432                      | 375-1436                      |                             |                        |
| 5/8               | 2-5/8         | 1-1/8             | 7/16             | D7S      | 375-1442                      | 375-1446                      | 12Pcs/set,<br>Plastic Stand | 375-1532 375-1536      |
| 5/8               | 3-3/16        | 1-11/16           | 7/16             | D7M      | 375-1452                      | 375-1456                      |                             |                        |
| 5/8               | 3-3/4         | 2-1/4             | 7/16             | D7L      | 375-1462                      | 375-1466                      |                             |                        |
| 5/8               | 3             | 1-1/2             | 9/16             | D9S      | 375-1472                      | 375-1476                      | 12Pcs/set,<br>Plastic Stand | 375-1532 375-1536      |
| 5/8               | 3-3/4         | 2-1/4             | 9/16             | D9M      | 375-1482                      | 375-1486                      |                             |                        |
| 5/8               | 4-1/2         | 3                 | 9/16             | D9L      | 375-1492                      | 375-1496                      |                             |                        |
| 5/8               | 3-3/8         | 1-7/8             | 11/16            | D11S     | 375-1502                      | 375-1506                      | 12Pcs/set,<br>Wooden Stand  | 375-1602 375-1606      |
| 5/8               | 4-5/16        | 2-13/16           | 11/16            | D11M     | 375-1512                      | 375-1516                      |                             |                        |
| 5/8               | 5-1/4         | 3-3/4             | 11/16            | D11L     | 375-1522                      | 375-1526                      |                             |                        |
| 3/4               | 3-1/8         | 1-1/8             | 7/16             | C7S      | 375-1612                      | 375-1616                      | 12Pcs/set,<br>Wooden Stand  | 375-1602 375-1606      |
| 3/4               | 3-11/16       | 1-11/16           | 7/16             | C7M      | 375-1622                      | 375-1626                      |                             |                        |
| 3/4               | 4-1/4         | 2-1/4             | 7/16             | C7L      | 375-1632                      | 375-1636                      |                             |                        |
| 3/4               | 3-1/2         | 1-1/2             | 9/16             | C9S      | 375-1642                      | 375-1646                      | 12Pcs/set,<br>Plastic Stand | 375-1732 375-1736      |
| 3/4               | 4-1/4         | 2-1/4             | 9/16             | C9M      | 375-1652                      | 375-1656                      |                             |                        |
| 3/4               | 5             | 3                 | 9/16             | C9L      | 375-1662                      | 375-1666                      |                             |                        |
| 3/4               | 3-7/8         | 1-7/8             | 11/16            | C11S     | 375-1672                      | 375-1676                      | 12Pcs/set,<br>Plastic Stand | 375-1732 375-1736      |
| 3/4               | 4-13/16       | 2-13/16           | 11/16            | C11M     | 375-1682                      | 375-1686                      |                             |                        |
| 3/4               | 5-3/4         | 3-3/4             | 11/16            | C11L     | 375-1692                      | 375-1696                      |                             |                        |
| 3/4               | 4-1/4         | 2-1/4             | 13/16            | C13S     | 375-1702                      | 375-1706                      | 12Pcs/set,<br>Plastic Stand | 375-1732 375-1736      |
| 3/4               | 5-3/8         | 3-3/8             | 13/16            | C13M     | 375-1712                      | 375-1716                      |                             |                        |
| 3/4               | 6-1/2         | 4-1/2             | 13/16            | C13L     | 375-1722                      | 375-1726                      |                             |                        |
| 1                 | 5.0           | 3.0               | 9/16             | E9L      | 375-1812                      | 375-1816                      | 7Pcs/set,<br>Wooden Stand   | 375-1802 375-1806      |
| 1                 | 5-3/4         | 3-3/4             | 11/16            | E11L     | 375-1822                      | 375-1826                      |                             |                        |
| 1                 | 6-1/2         | 4-1/2             | 7/8              | E14L     | 375-1832                      | 375-1836                      |                             |                        |
| 1                 | 6-1/2         | 4-1/2             | 1-1/16           | E18L     | 375-1842                      | 375-1846                      | 7Pcs/set,<br>Wooden Stand   | 375-1802 375-1806      |
| 1                 | 7-3/4         | 5-3/4             | 1-1/4            | E20L     | 375-1852                      | 375-1856                      |                             |                        |
| 1                 | 8-1/4         | 6-1/4             | 1-1/2            | E24L     | 375-1862                      | 375-1866                      |                             |                        |
| 1                 | 9-1/2         | 7-1/2             | 1-5/8            | E26L     | 375-1872                      | 375-1876                      | 7Pcs/set,<br>Wooden Stand   | 375-1802 375-1806      |

## Metric Carbide Tipped Boring Bars

- Up to 100% longer tool life.
- All shanks are ground to +0/-0.01mm.
- Tool life is extended because each bar has far more steel behind the cutting edge for heavier chatter free cut. Deeper bore and more precise work.
- The same bar can bore flat bottom hole or face. Grind bar on cutting end for special tools such as grooving, threading, or automatic operations.

**ISOK20-For Cast iron**

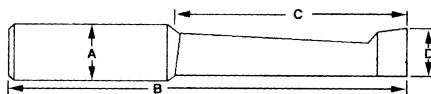
**ISOP20-For Steel**



| "A"<br>Shank Dia. | "B"<br>Length | "C"<br>Bore Depth | "D"<br>Min. Bore | ISOK20<br>Order No | ISOP20<br>Order No | ISOK20<br>Order No.         | ISOP20<br>Order No. |
|-------------------|---------------|-------------------|------------------|--------------------|--------------------|-----------------------------|---------------------|
| 10mm              | 50.8          | 19                | 7.9              | 375-3012           | 375-3016           | 9Pcs/set,<br>Wooden Stand   | 375-3002            |
| 10mm              | 60.3          | 28.5              | 7.9              | 375-3022           | 375-3026           |                             |                     |
| 10mm              | 69.8          | 38.1              | 7.9              | 375-3032           | 375-3036           |                             |                     |
| 10mm              | 55.5          | 23.8              | 9.5              | 375-3042           | 375-3046           | 9Pcs/set,<br>Plastic Stand  | 375-3102            |
| 10mm              | 67.46         | 35.71             | 9.5              | 375-3052           | 375-3056           |                             |                     |
| 10mm              | 79.3          | 47.6              | 9.5              | 375-3062           | 375-3066           |                             |                     |
| 10mm              | 60.3          | 28.5              | 11.1             | 375-3072           | 375-3076           | 9Pcs/set,<br>Plastic Stand  | 375-3106            |
| 10mm              | 100           | 42.8              | 11.1             | 375-3082           | 375-3086           |                             |                     |
| 10mm              | 88.9          | 57.1              | 11.1             | 375-3092           | 375-3096           |                             |                     |
| 12mm              | 57.1          | 19                | 7.9              | 375-3212           | 375-3216           | 9Pcs/set,<br>Wooden Stand   | 375-3202            |
| 12mm              | 66.6          | 28.5              | 7.9              | 375-3222           | 375-3226           |                             |                     |
| 12mm              | 76.2          | 38.1              | 7.9              | 375-3232           | 375-3236           |                             |                     |
| 12mm              | 66.6          | 28.5              | 11.1             | 375-3242           | 375-3246           | 9Pcs/set,<br>Plastic Stand  | 375-3302            |
| 12mm              | 80.9          | 42.8              | 11.1             | 375-3252           | 375-3256           |                             |                     |
| 12mm              | 95.2          | 57.15             | 11.1             | 375-3262           | 375-3266           |                             |                     |
| 12mm              | 76.2          | 38.1              | 13               | 375-3272           | 375-3276           | 9Pcs/set,<br>Plastic Stand  | 375-3306            |
| 12mm              | 95.2          | 57.1              | 13               | 375-3282           | 375-3286           |                             |                     |
| 12mm              | 114.3         | 76.2              | 13               | 375-3292           | 375-3296           |                             |                     |
| 16mm              | 57.1          | 19                | 7.9              | 375-3412           | 375-3416           | 12Pcs/set,<br>Wooden Stand  | 375-3402            |
| 16mm              | 66.6          | 28.5              | 7.9              | 375-3422           | 375-3426           |                             |                     |
| 16mm              | 76.2          | 38.1              | 7.9              | 375-3432           | 375-3436           |                             |                     |
| 16mm              | 66.6          | 28.5              | 11.1             | 375-3442           | 375-3446           | 12Pcs/set,<br>Plastic Stand | 375-3532            |
| 16mm              | 80.9          | 42.8              | 11.1             | 375-3452           | 375-3456           |                             |                     |
| 16mm              | 95.2          | 57.1              | 11.1             | 375-3462           | 375-3466           |                             |                     |
| 16mm              | 76.2          | 38.1              | 14.2             | 375-3472           | 375-3476           | 12Pcs/set,<br>Plastic Stand | 375-3732            |
| 16mm              | 95.2          | 57.1              | 14.2             | 375-3482           | 375-3486           |                             |                     |
| 16mm              | 114.3         | 76.2              | 14.2             | 375-3492           | 375-3496           |                             |                     |
| 16mm              | 85.7          | 47.6              | 17               | 375-3502           | 375-3506           | 12Pcs/set,<br>Plastic Stand | 375-3736            |
| 16mm              | 109.5         | 71.4              | 17               | 375-3512           | 375-3516           |                             |                     |
| 16mm              | 133.3         | 95.2              | 17               | 375-3522           | 375-3526           |                             |                     |
| 20mm              | 79.3          | 28.5              | 11.1             | 375-3612           | 375-3616           | 12Pcs/set,<br>Wooden Stand  | 375-3602            |
| 20mm              | 93.6          | 42.8              | 11.1             | 375-3622           | 375-3626           |                             |                     |
| 20mm              | 107.9         | 57.1              | 11.1             | 375-3632           | 375-3636           |                             |                     |
| 20mm              | 88.9          | 38.1              | 14.2             | 375-3642           | 375-3646           | 12Pcs/set,<br>Plastic Stand | 375-3706            |
| 20mm              | 107.9         | 57.1              | 14.2             | 375-3652           | 375-3656           |                             |                     |
| 20mm              | 127           | 76.2              | 14.2             | 375-3662           | 375-3666           |                             |                     |
| 20mm              | 98.4          | 47.6              | 17.4             | 375-3672           | 375-3676           | 12Pcs/set,<br>Plastic Stand | 375-3716            |
| 20mm              | 122.2         | 71.4              | 17.4             | 375-3682           | 375-3686           |                             |                     |
| 20mm              | 146           | 95.2              | 17.4             | 375-3692           | 375-3696           |                             |                     |
| 20mm              | 107.9         | 57.1              | 20.6             | 375-3702           | 375-3706           | 12Pcs/set,<br>Plastic Stand | 375-3722            |
| 20mm              | 136.5         | 85.7              | 20.6             | 375-3712           | 375-3716           |                             |                     |
| 20mm              | 165.1         | 114.3             | 20.6             | 375-3722           | 375-3726           |                             |                     |

## Solid HSS & Cobalt Boring Bars

- M-35 High Speed Cobalt Steel-PC60.
- The massive head behind the cutting edge promotes rigidity and long life by reducing vibration.
- Supplied in wooden stand.



### 3/8" Shank

| Shank Dia.           | Length  | Bore Depth | Min. Bore | M35 Cobalt | M42 Cobalt |
|----------------------|---------|------------|-----------|------------|------------|
| A                    | B       | C          | D         | Order No.  | Order No.  |
| 3/8                  | 1-13/16 | 9/16       | 3/16      | 375-5008   | 375-4008   |
| 3/8                  | 2-3/16  | 15/16      | 3/16      | 375-5012   | 375-4012   |
| 3/8                  | 2       | 3/4        | 1/4       | 375-5016   | 375-4016   |
| 3/8                  | 2-1/2   | 1-1/4      | 1/4       | 375-5020   | 375-4020   |
| 3/8                  | 2-3/16  | 15/16      | 5/16      | 375-5024   | 375-4024   |
| 3/8                  | 2-13/16 | 1-9/16     | 5/16      | 375-5028   | 375-4028   |
| 3/8                  | 2-3/8   | 1-1/8      | 3/8       | 375-5032   | 375-4032   |
| 3/8                  | 3-1/8   | 1-7/8      | 3/8       | 375-5036   | 375-4036   |
| 8 Piece Set of Above |         |            |           | 375-1007   | 375-1009   |

### 3/4" Shank

| Shank Dia.            | Length  | Bore Depth | Min. Bore | M35 Cobalt | M42 Cobalt |
|-----------------------|---------|------------|-----------|------------|------------|
| A                     | B       | C          | D         | Order No.  | Order No.  |
| 3/4                   | 2-7/8   | 1-1/8      | 3/8       | 375-5120   | 375-4120   |
| 3/4                   | 3-5/8   | 1-7/8      | 3/8       | 375-5124   | 375-4124   |
| 3/4                   | 3-1/16  | 1-5/16     | 7/16      | 375-5128   | 375-4128   |
| 3/4                   | 3-15/16 | 2-3/16     | 7/16      | 375-5132   | 375-4132   |
| 3/4                   | 3-1/4   | 1-1/2      | 1/2       | 375-5136   | 375-4136   |
| 3/4                   | 4-1/4   | 2-1/2      | 1/2       | 375-5140   | 375-4140   |
| 3/4                   | 3-7/16  | 1-11/16    | 9/16      | 375-5144   | 375-4144   |
| 3/4                   | 4-9/16  | 2-13/16    | 9/16      | 375-5148   | 375-4148   |
| 3/4                   | 3-5/8   | 1-7/8      | 5/8       | 375-5152   | 375-4152   |
| 3/4                   | 4-7/8   | 3-1/8      | 5/8       | 375-5156   | 375-4156   |
| 3/4                   | 3-13/16 | 2-1/16     | 11/16     | 375-5160   | 375-4160   |
| 3/4                   | 5-3/16  | 3-7/16     | 11/16     | 375-5164   | 375-4164   |
| 3/4                   | 4       | 2-1/4      | 3/4       | 375-5168   | 375-4168   |
| 3/4                   | 5-1/2   | 3-3/4      | 3/4       | 375-5172   | 375-4172   |
| 14 Piece Set of Above |         |            |           | 375-1607   | 375-1609   |

### 1/2" Shank

| Shank Dia.            | Length  | Bore Depth | Min. Bore | M35 Cobalt | M42 Cobalt |
|-----------------------|---------|------------|-----------|------------|------------|
| A                     | B       | C          | D         | Order No.  | Order No.  |
| 1/2                   | 2-1/8   | 3/4        | 1/4       | 375-5040   | 375-4040   |
| 1/2                   | 2-5/8   | 1-1/4      | 1/4       | 375-5044   | 375-4044   |
| 1/2                   | 2-5/16  | 15/16      | 5/16      | 375-5048   | 375-4048   |
| 1/2                   | 2-15/16 | 1-9/16     | 5/16      | 375-5052   | 375-4052   |
| 1/2                   | 2-1/2   | 1-1/8      | 3/8       | 375-5056   | 375-4056   |
| 1/2                   | 3-1/4   | 1-7/8      | 3/8       | 375-5060   | 375-4060   |
| 1/2                   | 2-11/16 | 1-5/16     | 7/16      | 375-5064   | 375-4064   |
| 1/2                   | 3-9/16  | 2-3/16     | 7/16      | 375-5068   | 375-4068   |
| 1/2                   | 2-7/8   | 1-1/2      | 1/2       | 375-5072   | 375-4072   |
| 1/2                   | 3-7/8   | 2-1/2      | 1/2       | 375-5076   | 375-4076   |
| 10 Piece Set of Above |         |            |           | 375-1207   | 375-1209   |

### 5/8" Shank

| Shank Dia.            | Length  | Bore Depth | Min. Bore | M35 Cobalt | M42 Cobalt |
|-----------------------|---------|------------|-----------|------------|------------|
| A                     | B       | C          | D         | Order No.  | Order No.  |
| 5/8                   | 2-5/8   | 1-1/8      | 3/8       | 375-5080   | 375-4080   |
| 5/8                   | 3-3/8   | 1-7/8      | 3/8       | 375-5084   | 375-4084   |
| 5/8                   | 2-13/16 | 1-5/16     | 7/16      | 375-5088   | 375-4088   |
| 5/8                   | 3-11/16 | 2-3/16     | 7/16      | 375-5092   | 375-4092   |
| 5/8                   | 3       | 1-1/2      | 1/2       | 375-5096   | 375-4096   |
| 5/8                   | 4       | 2-1/2      | 1/2       | 375-5100   | 375-4100   |
| 5/8                   | 3-3/16  | 1-11/16    | 9/16      | 375-5104   | 375-4104   |
| 5/8                   | 4-5/16  | 2-13/16    | 9/16      | 375-5108   | 375-4108   |
| 5/8                   | 3-3/8   | 1-7/8      | 5/8       | 375-5112   | 375-4112   |
| 5/8                   | 4-5/8   | 3-1/8      | 5/8       | 375-5116   | 375-4116   |
| 10 Piece Set of Above |         |            |           | 375-1407   | 375-1409   |

## Round Shank Indexable Insert Boring Bars

### Individual

| Shank Dia. | Length | Bore Depth | Min Bore | Insert Style | Order No. | TiN Coated Order No. |
|------------|--------|------------|----------|--------------|-----------|----------------------|
| 1/2        | 2-3/4  | 1-1/4      | 7/16     | TCMT21.51    | 375-6001  | 375-6101             |
| 1/2        | 3-5/8  | 2-1/8      | 7/16     | TCMT21.51    | 375-6002  | 375-6102             |
| 1/2        | 3      | 1-1/2      | 1/2      | TCMT21.51    | 375-6003  | 375-6103             |
| 1/2        | 4      | 2-1/2      | 1/2      | TCMT21.51    | 375-6004  | 375-6104             |
| 5/8        | 3      | 1-1/4      | 7/16     | TCMT21.51    | 375-6005  | 375-6105             |
| 5/8        | 3-7/8  | 2-1/8      | 7/16     | TCMT21.51    | 375-6006  | 375-6106             |
| 5/8        | 3-1/4  | 1-1/2      | 1/2      | TCMT21.51    | 375-6007  | 375-6107             |
| 5/8        | 4-1/4  | 2-1/2      | 1/2      | TCMT21.51    | 375-6008  | 375-6108             |
| 5/8        | 3-1/2  | 1-3/4      | 9/16     | TCMT221      | 375-6009  | 375-6109             |
| 5/8        | 4-5/8  | 2-7/8      | 9/16     | TCMT221      | 375-6010  | 375-6110             |
| 3/4        | 3-3/8  | 1-3/8      | 7/16     | TCMT21.51    | 375-6011  | 375-6111             |
| 3/4        | 4-1/4  | 2-1/4      | 7/16     | TCMT21.51    | 375-6012  | 375-6112             |
| 3/4        | 3-5/8  | 1-5/8      | 1/2      | TCMT21.51    | 375-6013  | 375-6113             |
| 3/4        | 4-5/8  | 2-5/8      | 1/2      | TCMT21.51    | 375-6014  | 375-6114             |
| 3/4        | 3-7/8  | 1-7/8      | 9/16     | TCMT221      | 375-6015  | 375-6115             |
| 3/4        | 5      | 3          | 9/16     | TCMT221      | 375-6016  | 375-6116             |
| 3/4        | 4-1/4  | 2-1/4      | 11/16    | TCMT221      | 375-6017  | 375-6117             |
| 3/4        | 5-1/2  | 3-1/2      | 11/16    | TCMT221      | 375-6018  | 375-6118             |

- Screw Down Style
- Positive rake 90 degree lead



### Sets

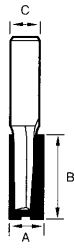
Set Includes:

- Inserts
- Tors Screw
- Boring bars

| No. of Pieces | Shank Size | Order No. | TiN Coated Order No. |
|---------------|------------|-----------|----------------------|
| 4 Pcs/set     | 1/2"       | 375-6021  | 375-6121             |
| 6 Pcs/set     | 5/8        | 375-6022  | 375-6122             |
| 8 Pcs/set     | 3/4        | 375-6023  | 375-6123             |

## Carbide Tipped Router Bits

### Straight Bits, 1/4" Shank



| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/4"        | 3/4"          | 1/4"       | 730-0163  |
| 1/4"        | 1             | 1/4"       | 730-0165  |
| 1/4"        | 1             | 1/4"       | 730-0205  |
| 1/4"        | 1             | 1/4"       | 730-0245  |
| 1/4"        | 1             | 1/4"       | 730-0285  |
| 5/16"       | 1             | 1/4"       | 730-0325  |
| 3/8"        | 1             | 1/4"       | 730-0365  |
| 3/8"        | 1             | 1/4"       | 730-0405  |
| 3/8"        | 3/4"          | 1/4"       | 730-0445  |
| 7/16"       | 3/4"          | 1/4"       | 730-0485  |
| 1/2"        | 3/4"          | 1/4"       | 730-0525  |
| 1/2"        | 3/4"          | 1/4"       | 730-0565  |
| 9/16"       | 3/4"          | 1/4"       | 730-0605  |
| 9/16"       | 3/4"          | 1/4"       | 730-0645  |



### Straight Cutters, 1/2" Shank



| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/4"        | 3/4"          | 1/2"       | 730-2165  |
| 5/16"       | 1             | 1/2"       | 730-2205  |
| 3/8"        | 1             | 1/2"       | 730-2245  |
| 7/16"       | 1             | 1/2"       | 730-2285  |
| 1/2"        | 1-1/4"        | 1/2"       | 730-2325  |
| 9/16"       | 1             | 1/2"       | 730-2365  |
| 5/8"        | 1-1/4"        | 1/2"       | 730-2405  |
| 11/16"      | 1-1/4"        | 1/2"       | 730-2445  |
| 3/4"        | 1-1/4"        | 1/2"       | 730-2485  |
| 13/16"      | 1-1/4"        | 1/2"       | 730-2525  |
| 7/8"        | 1-1/4"        | 1/2"       | 730-2565  |
| 15/16"      | 1-1/4"        | 1/2"       | 730-2605  |
| 1"          | 1-1/4"        | 1/2"       | 730-2645  |
| 1-1/4"      | 1-1/4"        | 1/2"       | 730-2805  |
| 1-1/2"      | 1-1/4"        | 1/2"       | 730-2965  |



### Metric Straight Bits, 1/4" Shank

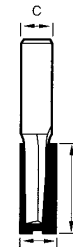


| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 6mm         | 3/4"          | 1/4"       | 730-4006  |
| 8mm         | 3/4"          | 1/4"       | 730-4008  |
| 11mm        | 3/4"          | 1/4"       | 730-4011  |
| 14mm        | 3/4"          | 1/4"       | 730-4014  |
| 16mm        | 3/4"          | 1/4"       | 730-4016  |
| 17mm        | 3/4"          | 1/4"       | 730-4017  |
| 18mm        | 3/4"          | 1/4"       | 730-4018  |
| 19mm        | 3/4"          | 1/4"       | 730-4019  |

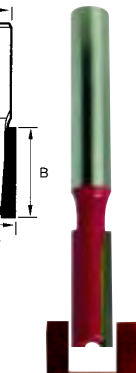


| Cutter Dia. | Cutter Length | Shank | Order No. |
|-------------|---------------|-------|-----------|
| A           | B             | C     |           |
| 6mm         | 45            | 6mm   | 730-0802  |
| 8mm         | 45            | 6mm   | 730-0804  |
| 10mm        | 50            | 6mm   | 730-0806  |
| 13mm        | 50            | 6mm   | 730-0808  |
| 16mm        | 50            | 6mm   | 730-0810  |
| 19mm        | 50            | 6mm   | 730-0812  |
| 22mm        | 55            | 12mm  | 730-0814  |
| 25mm        | 55            | 12mm  | 730-0816  |

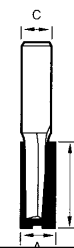
### Straight Plunge Bits, 1/4" Shank



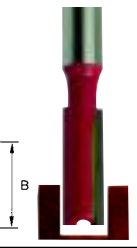
| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/4"        | 3/4"          | 1/4"       | 734-0163  |
| 1/4"        | 1             | 1/4"       | 734-0165  |
| 5/16"       | 1             | 1/4"       | 734-0205  |
| 3/8"        | 1             | 1/4"       | 734-0245  |
| 7/16"       | 1             | 1/4"       | 734-0285  |
| 1/2"        | 1             | 1/4"       | 734-0325  |
| 9/16"       | 1             | 1/4"       | 734-0365  |
| 5/8"        | 1             | 1/4"       | 734-0405  |
| 11/16"      | 3/4"          | 1/4"       | 734-0445  |
| 3/4"        | 3/4"          | 1/4"       | 734-0485  |
| 13/16"      | 3/4"          | 1/4"       | 734-0525  |
| 7/8"        | 3/4"          | 1/4"       | 734-0565  |
| 15/16"      | 3/4"          | 1/4"       | 734-0605  |
| 1"          | 3/4"          | 1/4"       | 734-0645  |



### Straight Plunge Bits, 1/2" Shank

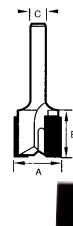


| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 3/8"        | 1-1/4"        | 1/2"       | 730-6324  |
| 1/2"        | 1-1/2"        | 1/2"       | 730-6332  |
| 3/4"        | 1-1/2"        | 1/2"       | 730-6348  |
| 1"          | 1-1/2"        | 1/2"       | 730-6364  |

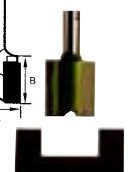


### Hinge Mortising Bits, Double Flute

- For Making mortise pockets to accept hinges, stringers and edge boards.



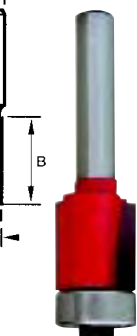
| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/2"        | 1/2"          | 1/4"       | 730-6632  |
| 3/4"        | 3/4"          | 1/4"       | 730-6648  |



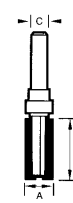
### Flush Trimming Bits with Bearing



| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/4"        | 3/4"          | 1/4"       | 730-7165  |
| 3/8"        | 7/16"         | 1/4"       | 730-7242  |
| 3/8"        | 1/2"          | 1/4"       | 730-7243  |
| 3/8"        | 1             | 1/4"       | 730-7244  |
| 3/8"        | 1-3/16"       | 1/4"       | 730-7246  |
| 1/2"        | 1/2"          | 1/4"       | 730-7320  |
| 1/2"        | 1             | 1/4"       | 730-7322  |
| 1/2"        | 1-1/4"        | 1/4"       | 730-7324  |
| 5/8"        | 1-3/16"       | 1/4"       | 730-7405  |
| 1/2"        | 1/2"          | 1/2"       | 730-7325  |
| 1/2"        | 1             | 1/2"       | 730-7326  |
| 1/2"        | 1-1/2"        | 1/2"       | 730-7327  |
| 1/2"        | 2             | 1/2"       | 730-7328  |
| 5/8"        | 1-3/16"       | 1/2"       | 730-7406  |



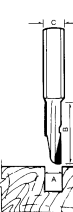
### Template Bits, Double Flute



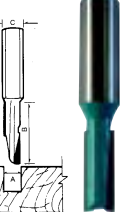
| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 5/16"       | 3/4"          | 1/4"       | 731-0205  |
| 1/2"        | 1             | 1/4"       | 731-0325  |
| 5/8"        | 1             | 1/4"       | 731-0405  |
| 3/4"        | 1             | 1/4"       | 731-0485  |
| 3/4"        | 1-1/4"        | 1/2"       | 731-0486  |
| 1-1/8"      | 1-1/2"        | 1/2"       | 731-0725  |



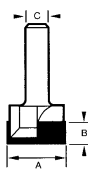
### Staggered Tooth Plunge Cutting with Drill Point



| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 3/8"        | 1/2"          | 1/2"       | 733-8224  |
| 1/2"        | 3/4"          | 1/2"       | 733-8232  |



## Carbide Tipped Router Bits Continued



### Bottom Cleaning Bits

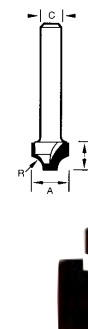
- Used to clean out and smooth pre-cut dados, inlays and shallow mortises.

| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 3/4"        | 15/32"        | 1/4"       | 731-9148  |
| 3/4"        | 15/32"        | 1/2"       | 731-9248  |
| 1"          | 15/32"        | 1/2"       | 731-9264  |



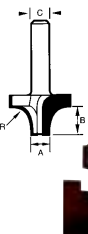
### Dovetail Bits, Double Flute

| Cutter Dia. | Cutter Length | Shank Dia. | Angle  | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          |        |           |
| 1/4"        | 5/16"         | 1/4"       | 7-1/2° | 731-6165  |
| 5/16"       | 3/8"          | 1/4"       | 9      | 731-6205  |
| 3/8"        | 3/8"          | 1/4"       | 9      | 731-6245  |
| 3/8"        | 7/16"         | 1/4"       | 9      | 731-6247  |
| 1/2"        | 1/2"          | 1/4"       | 14     | 731-6325  |
| 5/8"        | 7/8"          | 1/4"       | 7      | 731-6400  |
| 5/8"        | 5/8"          | 1/4"       | 14     | 731-6401  |
| 3/4"        | 7/8"          | 1/4"       | 7      | 731-6480  |
| 3/4"        | 3/4"          | 1/4"       | 14     | 731-6481  |
| 3/8"        | 3/8"          | 1/2"       | 9      | 731-6246  |
| 1/2"        | 1/2"          | 1/2"       | 14     | 731-6326  |
| 17/32"      | 1/2"          | 1/2"       | 14     | 731-6346  |
| 5/8"        | 7/8"          | 1/2"       | 7      | 731-6406  |
| 5/8"        | 5/8"          | 1/2"       | 14     | 731-6407  |
| 3/4"        | 7/8"          | 1/2"       | 7      | 731-6486  |
| 3/4"        | 3/4"          | 1/2"       | 14     | 731-6487  |
| 7/8"        | 7/8"          | 1/2"       | 14     | 731-6566  |
| 1"          | 7/8"          | 1/2"       | 14     | 731-6646  |



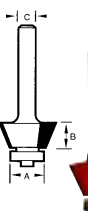
### Plunge Beading/Roundover Bits

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 3/8"        | 7/16"         | 1/4"       | 1/8"   | 731-9424  |
| 1/2"        | 7/16"         | 1/4"       | 3/16"  | 731-9432  |
| 5/8"        | 1/2"          | 1/4"       | 1/8"   | 731-9440  |
| 7/8"        | 9/16"         | 1/4"       | 3/16"  | 731-9456  |
| 1"          | 5/8"          | 1/4"       | 1/4"   | 731-9464  |
| 1-1/4"      | 5/8"          | 1/4"       | 3/8"   | 731-9466  |
| 1-1/2"      | 3/4"          | 1/4"       | 1/2"   | 731-9468  |
| 3/8"        | 7/16"         | 1/2"       | 1/8"   | 731-9524  |
| 5/8"        | 7/16"         | 1/2"       | 1/8"   | 731-9540  |
| 7/8"        | 1/2"          | 1/2"       | 3/16"  | 731-9556  |



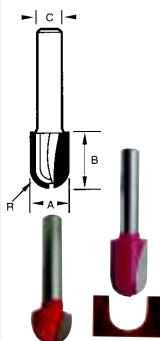
### Plunge Round Bits

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 1/4"        | 1/2"          | 1/4"       | 1/4"   | 732-1160  |
| 1/4"        | 5/8"          | 1/4"       | 3/8"   | 732-1162  |
| 1/4"        | 1/2"          | 1/2"       | 1/4"   | 732-1164  |
| 1/4"        | 5/8"          | 1/2"       | 3/8"   | 732-1166  |



### Chamfer Bits, Double Flute

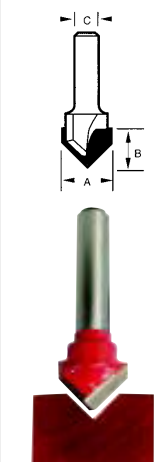
| Cutter Dia. | Cutter Length | Shank Dia. | Chamfer Angle | Order No. |
|-------------|---------------|------------|---------------|-----------|
| A           | B             | C          |               |           |
| 1/2"        | 3/8"          | 1/4"       | 15°           | 731-2322  |
| 1/2"        | 3/8"          | 1/4"       | 25°           | 731-2324  |



### Cove/Core Box Bits

- For veining or fluting with upshear angle lifts chips up to give a smooth cut with no burning.

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 1/4"        | 1/4"          | 1/4"       | 1/8"   | 732-8416  |
| 3/8"        | 3/8"          | 1/4"       | 3/16"  | 732-8424  |
| 1/2"        | 1/2"          | 1/4"       | 1/4"   | 732-8432  |
| 5/8"        | 5/8"          | 1/4"       | 5/16"  | 732-8440  |
| 3/4"        | 5/8"          | 1/4"       | 3/8"   | 732-8448  |
| 3/4"        | 5/8"          | 1/2"       | 3/8"   | 732-8648  |
| 1"          | 3/4"          | 1/2"       | 1/2"   | 732-8664  |



### 90° Groove Bits

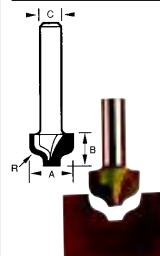
- For grooving in various widths and depths.

| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 3/8"        | 7/16"         | 1/4"       | 731-8224  |
| 1/2"        | 1/2"          | 1/4"       | 731-8232  |
| 3/4"        | 5/8"          | 1/4"       | 731-8248  |
| 1"          | 3/4"          | 1/4"       | 731-8264  |
| 3/4"        | 5/8"          | 1/2"       | 731-8348  |
| 1"          | 3/4"          | 1/2"       | 731-8364  |
| 1-1/4"      | 5/16"         | 1/2"       | 731-8380  |



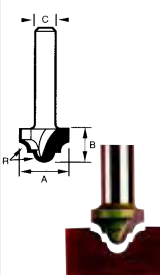
### 60° Groove Bits

| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/2"        | 5/8"          | 1/4"       | 731-8532  |



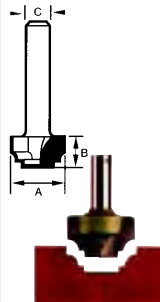
### Plunge Ogee Bits, Double Flute

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 3/8"        | 3/8"          | 1/4"       | 1/8"   | 731-9624  |
| 1/2"        | 3/8"          | 1/4"       | 1/8"   | 731-9632  |
| 3/8"        | 3/8"          | 1/2"       | 1/8"   | 731-9724  |
| 1/2"        | 3/8"          | 1/2"       | 1/8"   | 731-9732  |



### Plunge Classic Bits, Double Flute

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 1/2"        | 3/8"          | 1/4"       | 3/32"  | 732-0032  |
| 3/4"        | 1/2"          | 1/4"       | 5/32"  | 732-0048  |
| 1/2"        | 3/8"          | 1/2"       | 3/32"  | 732-0132  |
| 3/4"        | 1/2"          | 1/2"       | 5/32"  | 732-0148  |

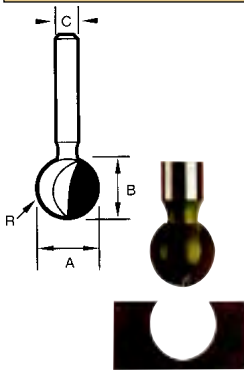


### Plunge Traditional Bits, Double Flute

- Use to profile the face of a workpiece where a decorative look is needed.

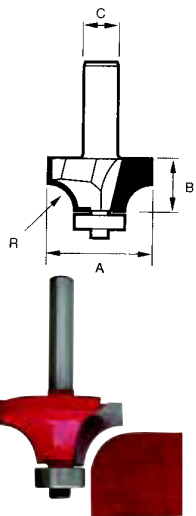
| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1/2"        | 3/8"          | 1/4"       | 732-0332  |
| 3/4"        | 7/16"         | 1/4"       | 732-0348  |

## Carbide Tipped Router Bits Continued



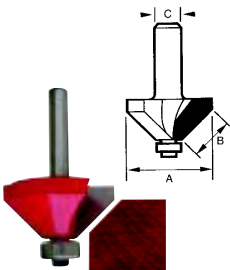
### Plunge Ball/Radius Bits, Double Flute

| Cutter Dia. A | Cutter Length B | Shank Dia. C | Radius R | Order No. |
|---------------|-----------------|--------------|----------|-----------|
| 3/8"          | 3/8"            | 1/4"         | 3/16"    | 731-9824  |
| 1/2           | 1/2             | 1/4          | 1/4      | 731-9832  |
| 5/8           | 5/8             | 1/4          | 5/16     | 731-9840  |
| 3/4           | 3/4             | 1/4          | 3/8      | 731-9848  |
| 3/8           | 3/8             | 1/2          | 3/16     | 731-9924  |
| 1/2           | 1/2             | 1/2          | 1/4      | 731-9932  |
| 3/4           | 3/4             | 1/2          | 3/8      | 731-9948  |
| 1             | 1               | 1/2          | 1/2      | 731-9964  |



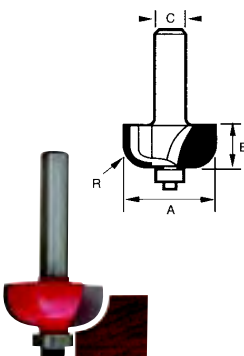
### Radius Round Over Bits, Double Flute

| Cutter Dia. A | Cutter Length B | Shank Dia. C | Radius R | Order No. |
|---------------|-----------------|--------------|----------|-----------|
| 5/8"          | 3/8"            | 1/4"         | 1/16"    | 732-0540  |
| 3/4           | 3/8             | 1/4          | 1/8      | 732-0548  |
| 7/8           | 3/8             | 1/4          | 3/16     | 732-0556  |
| 1             | 7/16            | 1/4          | 1/4      | 732-0564  |
| 1-1/8         | 1/2             | 1/4          | 5/16     | 732-0572  |
| 1-1/4         | 5/8             | 1/4          | 3/8      | 732-0580  |
| 1-1/2         | 3/4             | 1/4          | 1/2      | 732-0596  |
| 1             | 7/16            | 1/2          | 1/4      | 732-0764  |
| 1-1/8         | 1/2             | 1/2          | 5/16     | 732-0772  |
| 1-1/4         | 5/8             | 1/2          | 3/8      | 732-0780  |
| 1-1/2         | 3/4             | 1/2          | 1/2      | 732-0796  |
| 2             | 1               | 1/2          | 3/4      | 732-0828  |
| 2-1/2         | 1-1/4           | 1/2          | 1        | 732-0860  |
| 3             | 1-1/2           | 1/2          | 1-1/4    | 732-0892  |



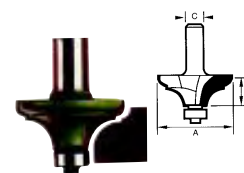
### 45° Chamfer Bits

| Cutter Dia. A | Bevel Length B | Shank Dia. C | Order No. |
|---------------|----------------|--------------|-----------|
| 1-3/16"       | 1/2"           | 1/4"         | 731-5112  |
| 1-3/16        | 1/2            | 1/2          | 731-5312  |
| 1-5/8         | 3/4            | 1/2          | 731-5340  |
| 2-1/4         | 1-1/4          | 1/2          | 731-5416  |



### Cover Bits, Double Flute

| Cutter Dia. A | Cutter Length B | Shank Dia. C | Radius R | Order No. |
|---------------|-----------------|--------------|----------|-----------|
| 5/8"          | 3/8"            | 1/4"         | 1/8"     | 732-2340  |
| 7/8           | 3/8             | 1/4          | 1/4      | 732-2356  |
| 1-1/8         | 1/2             | 1/4          | 3/8      | 732-2372  |
| 1-3/8         | 5/8             | 1/4          | 1/2      | 732-2388  |
| 5/8           | 3/8             | 1/2          | 1/8      | 732-2640  |
| 7/8           | 3/8             | 1/2          | 1/4      | 732-2656  |
| 1-1/8         | 1/2             | 1/2          | 3/8      | 732-2672  |
| 1-3/8         | 5/8             | 1/2          | 1/2      | 732-2688  |
| 1-7/8         | 7/8             | 1/2          | 3/4      | 732-2720  |



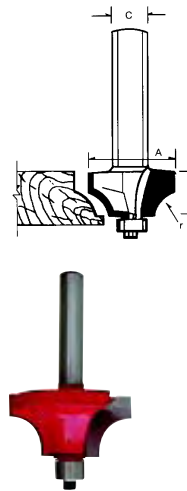
### French Table Bits, Double Flute

| Cutter Dia. A | Cutter Length B | Shank Dia. C | Order No. |
|---------------|-----------------|--------------|-----------|
| 1-1/2"        | 5/8"            | 1/4"         | 732-3496  |
| 1-1/2         | 5/8             | 1/2          | 732-3596  |



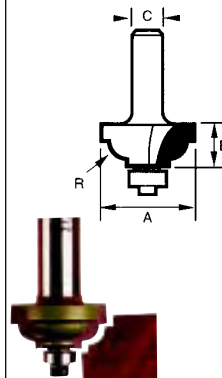
### "V" Grooving 45°

| Cutter Dia. A | Cutter Length B | Shank Dia. C | Order No. |
|---------------|-----------------|--------------|-----------|
| 3/8"          | 1/2"            | 1/4"         | 731-8624  |
| 3/4           | 5/8             | 1/2          | 731-8648  |



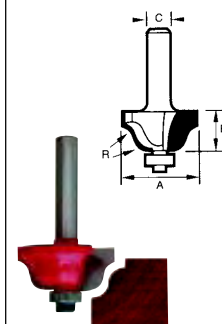
### Radius Beading Bits with Bearing

| Cutter Dia. A | Cutter Length B | Shank Dia. C | Radius R | Order No. |
|---------------|-----------------|--------------|----------|-----------|
| 3/4"          | 7/16"           | 1/4"         | 1/16"    | 732-7048  |
| 7/8           | 3/8             | 1/4          | 1/8      | 732-7056  |
| 1             | 3/8             | 1/4          | 3/16     | 732-7064  |
| 1-1/8         | 7/16            | 1/4          | 1/4      | 732-7072  |
| 1-1/4         | 5/8             | 1/4          | 3/8      | 732-7080  |
| 1-3/8         | 5/8             | 1/4          | 5/16     | 732-7088  |
| 1-1/2         | 3/4             | 1/4          | 1/2      | 732-7096  |
| 1-5/8         | 3/4             | 1/4          | 1/2      | 732-7104  |
| 3/4           | 3/8             | 1/2          | 1/8      | 732-7348  |
| 7/8           | 3/8             | 1/2          | 3/16     | 732-7356  |
| 1             | 7/16            | 1/2          | 1/4      | 732-7364  |
| 1-1/8         | 1/2             | 1/2          | 1/4      | 732-7372  |
| 1-1/4         | 1/2             | 1/2          | 5/16     | 732-7380  |
| 1-3/8         | 5/8             | 1/2          | 3/8      | 732-7388  |
| 1-1/2         | 3/4             | 1/2          | 1/2      | 732-7396  |
| 1-5/8         | 3/4             | 1/2          | 1/2      | 732-7404  |
| 1-3/4         | 7/8             | 1/2          | 5/8      | 732-7412  |
| 2             | 1               | 1/2          | 3/4      | 732-7428  |
| 2-1/2         | 1-1/4           | 1/2          | 1        | 732-7460  |
| 2-3/4         | 1-3/8           | 1/2          | 1-1/8    | 732-7476  |
| 3             | 1-1/2           | 1/2          | 1-1/4    | 732-7492  |



### Classic Cover Bits, Double Flute

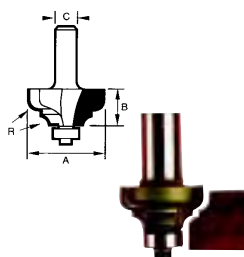
| Cutter Dia. A | Cutter Length B | Shank Dia. C | Radius R | Order No. |
|---------------|-----------------|--------------|----------|-----------|
| 1-1/16"       | 1/2"            | 1/4"         | 3/16"    | 732-2004  |
| 1-5/16        | 5/8             | 1/4          | 5/16     | 732-2020  |
| 1-1/16        | 1/2             | 1/2          | 3/16     | 732-2104  |
| 1-5/16        | 5/8             | 1/2          | 5/16     | 732-2120  |



### Roman Ogee Bits, Double Flute

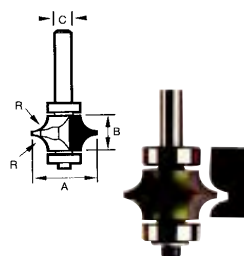
| Cutter Dia. A | Cutter Length B | Shank Dia. C | Radius R | Order No. |
|---------------|-----------------|--------------|----------|-----------|
| 1-1/16"       | 15/32"          | 1/4"         | 5/32"    | 732-2868  |
| 1-3/8         | 21/32           | 1/4          | 1/4      | 732-2888  |
| 1-1/16        | 15/32           | 1/2          | 5/32     | 732-2968  |
| 1-3/8         | 21/32           | 1/2          | 1/4      | 732-2988  |

## Carbide Tipped Router Bits Continued



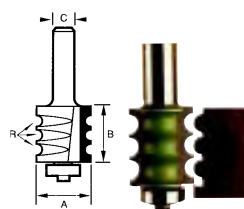
### Classic Panel Bits, Double Flute

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 1"          | 1/2"          | 1/4"       | 1/8"   | 732-3264  |
| 1-1/4       | 9/16          | 1/4        | 3/16   | 732-3280  |
| 1           | 1/2           | 1/2        | 1/8    | 732-3364  |
| 1-1/4       | 9/16          | 1/2        | 3/16   | 732-3380  |



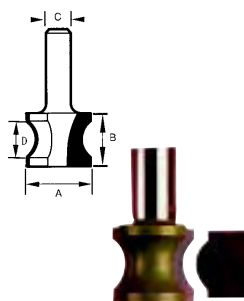
### Beading Bits

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 7/8"        | 3/8"          | 1/4"       | 1/8"   | 732-3656  |
| 1           | 1/2           | 1/4        | 3/16   | 732-3664  |
| 1-1/8       | 5/8           | 1/4        | 1/4    | 732-3672  |



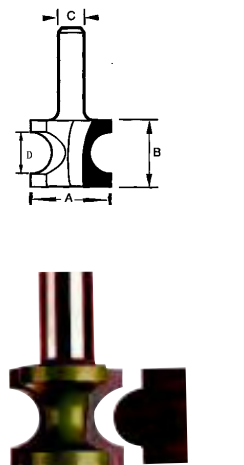
### Triple Bead Bits

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 7/8"        | 1-3/32"       | 1/4"       | 1/8"   | 732-4156  |
| 7/8         | 1-3/32        | 1/2        | 1/8    | 732-4256  |



### External Bull Nose Bits-Half Radius

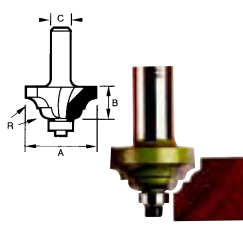
| Cutter Dia. | Cutter Length | Shank Dia. | Distance | Order No. |
|-------------|---------------|------------|----------|-----------|
| A           | B             | C          | D        |           |
| 3/4"        | 5/8"          | 1/4"       | 3/8"     | 732-4548  |
| 3/4         | 3/4           | 1/4        | 1/2      | 732-4549  |
| 7/8         | 1             | 1/4        | 3/4      | 732-4556  |
| 7/8         | 9/16          | 1/2        | 3/8      | 732-4656  |
| 7/8         | 3/4           | 1/2        | 1/2      | 732-4657  |
| 1           | 1             | 1/2        | 3/4      | 732-4664  |
| 1           | 1-3/8         | 1/2        | 1        | 732-4665  |
| 1-1/8       | 1-3/4         | 1/2        | 1-1/2    | 732-4672  |



### External Bull Nose Bits-Full Radius

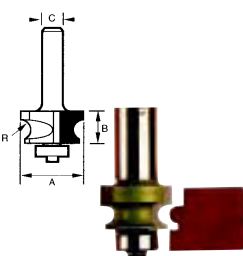
- For Making mortise pockets to accept hinges, stringers and edge boards.

| Cutter Dia. | Cutter Length | Shank Dia. | Diameter | Order No. |
|-------------|---------------|------------|----------|-----------|
| A           | B             | C          | D        |           |
| 3/4"        | 1/2"          | 1/4"       | 1/4"     | 732-5048  |
| 7/8         | 11/16         | 1/4        | 3/8      | 732-5056  |
| 1           | 13/16         | 1/4        | 1/2      | 732-5064  |
| 1-1/8       | 13/16         | 1/4        | 5/8      | 732-5072  |
| 1-1/4       | 1-1/16        | 1/4        | 3/4      | 732-5080  |
| 7/8         | 1/2           | 1/2        | 1/4      | 732-5156  |
| 1           | 5/8           | 1/2        | 3/8      | 732-5164  |
| 1-1/8       | 13/16         | 1/2        | 1/2      | 732-5172  |
| 1-1/4       | 13/16         | 1/2        | 5/8      | 732-5180  |
| 1-3/8       | 1-1/16        | 1/2        | 3/4      | 732-5190  |
| 1-5/8       | 1-3/8         | 1/2        | 1        | 732-5204  |
| 1-3/4       | 1-3/8         | 1/2        | 1-1/8    | 732-5212  |
| 1-7/8       | 1-5/8         | 1/2        | 1-1/4    | 732-5220  |
| 2           | 1-3/4         | 1/2        | 1-3/8    | 732-5228  |
| 2-1/8       | 1-3/4         | 1/2        | 1-1/2    | 732-5236  |



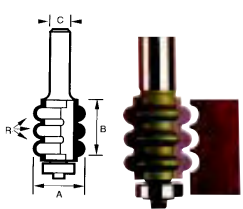
### Classic Roman Ogee Bits, Double Flute

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 1"          | 1/2"          | 1/4"       | 1/8"   | 732-3064  |
| 1-1/4       | 5/8           | 1/4        | 3/16   | 732-3080  |
| 1           | 1/2           | 1/2        | 1/8    | 732-3164  |
| 1-1/4       | 5/8           | 1/2        | 3/16   | 732-3180  |



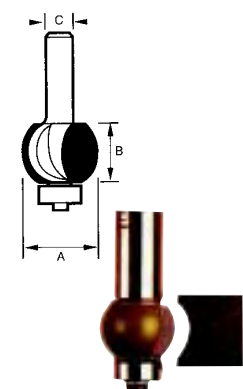
### Edge Beading Bits

| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 13/16"      | 1/2"          | 1/4"       | 3/32"  | 732-3752  |
| 7/8         | 9/16          | 1/4        | 1/8    | 732-3756  |
| 13/16       | 1/2           | 1/2        | 3/32   | 732-3852  |
| 7/8         | 9/16          | 1/2        | 1/8    | 732-3856  |



### Triple Flute Bits

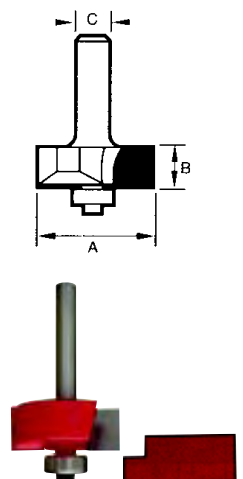
| Cutter Dia. | Cutter Length | Shank Dia. | Radius | Order No. |
|-------------|---------------|------------|--------|-----------|
| A           | B             | C          | R      |           |
| 7/8"        | 1"            | 1/4"       | 1/8"   | 732-4356  |
| 7/8         | 1             | 1/2        | 1/8    | 732-4456  |



### Internal Bull Nose Bits-Half Radius

- Used for fluting, grooving and irregular pieces.

| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 3/4"        | 3/8"          | 1/4"       | 732-4748  |
| 3/4         | 1/2           | 1/4        | 732-4749  |
| 13/16       | 5/8           | 1/4        | 732-4752  |
| 7/8         | 3/4           | 1/4        | 732-4756  |
| 3/4         | 1/2           | 1/2        | 732-4848  |
| 13/16       | 5/8           | 1/2        | 732-4852  |
| 7/8         | 3/4           | 1/2        | 732-4856  |
| 7/8         | 1             | 1/2        | 732-4857  |
| 1           | 1-1/4         | 1/2        | 732-4864  |



### Rabbeting Bits, With Bearing

- Used for rabbeting and slotting and grooving.

| Cutter Dia. | Cutter Length | Shank Dia. | Order No. |
|-------------|---------------|------------|-----------|
| A           | B             | C          |           |
| 1-1/4"      | 1/16"         | 1/4"       | 732-8004  |
| 1-1/4       | 1/8           | 1/4        | 732-8008  |
| 1-1/4       | 5/32          | 1/4        | 732-8010  |
| 1-1/4       | 3/16          | 1/4        | 732-8012  |
| 1-1/4       | 1/4           | 1/4        | 732-8016  |
| 1-1/4       | 3/8           | 1/4        | 732-8024  |
| 1-1/4       | 1/2           | 1/4        | 732-8032  |
| 1-1/4       | 1/8           | 1/2        | 732-8208  |
| 1-1/4       | 1/4           | 1/2        | 732-8216  |
| 1-1/4       | 3/8           | 1/2        | 732-8224  |
| 1-1/4       | 1/2           | 1/2        | 732-8232  |
| 1-1/4       | 5/8           | 1/2        | 732-8240  |
| 1-1/4       | 3/4           | 1/2        | 732-8248  |

## Carbide Tipped Router Bit Sets

### 4 Piece Sets



#### 4pcs,1/4"Shank

1 Each:  
1/4x3/4xR1/8",  
1/4x1xR1/4", 1/4x1-1/4xR3/8",  
1/4x1-1/2xR1/2" Rounding  
Over Bits

**Order No.738-0401**

#### 4pcs,1/4"Shank

1 Each:  
1/2x3/4xR1/8",  
1/2x1xR1/4",  
1/4x1-1/4xR3/8",  
1/2x1-1/2xR1/2" Rounding  
Over Bits

**Order No.738-0402**

#### 4pcs,1/4"Shank

1 Each:  
1/2x3/4xR1/8",  
1/2x1xR1/4",  
1/4x1-1/4xR3/8",  
1/2x1-1/2xR1/2" Rounding Over Bits

**Order No.738-0403**

### 5 Piece Sets



#### 5pcs,1/4"Shank

1 Each:  
1/2 Straight Bit  
1/2x14° Dovetail Bit  
1/2x90° V Grooving Bits  
1-1/8xR3/8 Rounding Over Bit  
1/2x3/4 Round Nose

**Order No.738-0501**

#### 5pcs,1/4"Shank

1 Each:  
3/4"xR3/16 Cove Bits  
7/8xR1/4 Cove Bits  
1xR5/16 Cove Bits  
1-1/8xR3/8 Cove Bits  
1-3/8xR1/2 Cove Bits

**Order No.738-0502**

#### 5pcs,1/4"Shank

1 Each:3/4 Straight.Bit  
1/2 Hinge Mortising Bit  
1/2x14° Dovetail Bit  
1-1/4x3/8 Rabbeting Bit  
1-3/8xR1/2 Cove Bit

**Order No.738-0504**

#### 5pcs,1/4"Shank

1 Each:  
1/2 Straight.Bit,  
3/8x90° V-Grooving Bit,  
1-1/4"x45° Chamfer Bit,  
1/4"xR1/8 Core Box Bit,  
3/4"xR1/8 Rounding Over Bit

**Order No.738-0505**

#### 5pcs,1/4"Shank

1 Each:  
1/4x25/32 Straight.Bit  
1/4 Panel Pilot Bit  
1/2 Flush Trim Bit  
1xR5/32 Roman Ogee Bit  
1xR1/4 Rounding Over Bit

**Order No.738-0506**

#### 5pcs,1/4"Shank

1 Each:  
1/2x1 Straight Bit  
1/4 Straight Bit  
1/2 Flush Trim Bit  
3/8x3/8 Core Box Bit  
1xR1/4 Rounding Over Bit

**Order No.738-0507**

#### 5pcs,1/2"Shank

1 Each:  
7/8xR3/16 Cove Bits  
1xR1/4 Cove Bits  
1-1/8xR5/16 Cove Bits  
1-1/4xR3/8 Cove Bits  
1-1/2xR1/2 Cove Bits

**Order No.738-0503**

#### 5pcs,1/2"Shank

1 Each:  
3/8 Straight Bit  
1/2x14° Dovetail Bit  
3/8 Core Box Bit  
1/2 Flush Trim Bit  
1xR1/4 Rounding Over Bit

**Order No.738-0508**

### 6 Piece Sets



#### 6pcs,1/4"Shank

1 Each:  
1/4,3/8,1/2" Straight Bit  
1/2"Core Box Bits  
1xR5/32 Roman Ogee Bit  
1-1/8xR3/8 Rounding Over Bit

**Order No.738-0601**

#### 6pcs,1/4"Shank

1 Each:  
1/4,3/8,1/2" Plunge Straight Bit  
1/2" Core Box Bits  
1xR5/32 Roman Ogee Bit  
1-1/8xR3/8 Rounding Over Bit

**Order No.738-0606**

#### 6pcs,1/4"Shank

1 Each:  
1/4,3/8,1/2" Straight Bit  
1/2" Core Box Bits  
1xR5/32 Roman Ogee Bit  
1-1/4xR3/8 Rounding Over Bit

**Order No.738-0608**

#### 6pcs,1/4"Shank

1 Each:  
3/4xR1/8 Rounding Over Bit  
7/8xR3/16 Rounding Over Bit  
1xR1/4 Rounding Over Bit  
1-1/8xR5/16 Rounding Over Bit  
1-1/4xR3/8 Rounding Over Bit  
1-1/2xR1/2 Rounding Over Bit

**Order No.738-0610**

#### 6pcs,1/4"Shank

1 Each:  
1/4,1/2 Straight Bit  
1/2x90° V Grooving Bit  
1/2Core Box Bit  
1xR5/32 Roman Ogee Bit  
1-1/4xR3/8 Rounding Over Bit

**Order No.738-0613**

#### 6pcs,1/4"Shank

1 Each:  
1/4,1/2 Straight Bit,  
1/2x14° Dovetail Bits,  
1/2 Flush Trim Bit,  
1-1/2xR1/2 Cove Bit,  
1-3/8xR3/8 Beading Bit

**Order No.738-0618**

#### 6pcs,1/4" Shank

1 Each:  
1/4,1/2 Straight Bit,  
1/2x90° V Grooving Bit,  
3/8 Core Box Bit,  
1-1/2xR1/4 Roman Ogee Bit,  
1-1/2xR1/2 Rounding Over Bit

**Order No.738-0619**

#### 6pcs,1/4" Shank

1 Each:  
1/4,1/2Straight Bit  
1/2x14° Dovetail Bit  
1/2 Flush Trim Bit  
7/8xR1/4 Cove Bit  
1xR1/4 Rounding Over Bit

**Order No.738-0623**

#### 6pcs,1/4"Shank

1 Each:  
1/4,1/2,3/4 Straight Bit  
1/2x14° Dovetail Bit  
1/2x90° V Groov Bit  
1/2Core Box Bit

**Order No.738-0624**

#### 6pcs,1/4"Shank

1 Each:  
1/4,5/16,3/8,1/2,5/8,3/4"  
Straight Bit  
**Order No.738-0607**

#### 6pcs,1/2"Shank

1 Each:  
1/4,5/16,3/8,1/2,5/8,3/4"  
Straight Bit,  
**Order No.738-0609**

#### 6pcs,1/2"Shank

1 Each:  
3/4xR1/8 Rounding Over Bit  
7/8xR3/16 Rounding Over Bit  
1xR1/4 Rounding Over Bit  
1-1/8xR5/16 Rounding Over Bit  
1-1/4xR3/8 Rounding Over Bit  
1-1/2xR1/2 Rounding Over Bit

**Order No.738-0611**

#### 6pcs,1/2"Shank

1 Each:  
1xR1/4 Rounding Over Bit  
1-1/4xR3/8 Rounding Over Bit  
1-1/2xR1/2 Rounding Over Bit  
1-3/4xR5/8 Rounding Over Bit  
2xR3/4 Rounding Over Bit  
2-1/2xR1 Rounding Over Bit

**Order No.738-0612**

#### 6pcs,1/2"Shank

1 Each:  
1/2,3/4 Straight Bit  
16mm Flush Trim Bit  
1-3/8xR3/16 Classical Bit  
1-1/2xR1/2 Cove Bit  
1-1/2xR1/2 Rounding Over Bit

**Order No.738-0616**

#### 6pcs,1/2"Shank

1 Each:  
1x1/4Rabbeting Bit,  
5/8Core Box Bit,  
1-1/2xR1/4 Ogee Bit,  
1xR1/4Cove Bit,  
1-1/8xR5/16,1-1/4xR3/8"  
Beading Bit

**Order No.738-0617**

#### 6pcs,1/2"Shank

1 Each:  
1/2 Straight Bit  
1/4 Chamfer Bit  
1-1/4x3/8 Rabbeting Bit  
1-1/2xR1/4 Roman Ogee Bit  
1-1/2xR1/2 Cove Bit  
1-1/4xR3/8 Rounding Over Bit

**Order No.738-0622**

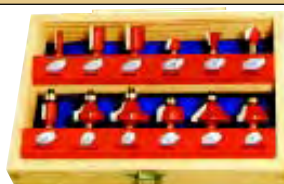
#### 6pcs,1/2"Shank

1 Each:  
1/4,3/8,1/2 Straight Bit,,  
1/2 Core Box Bit,  
1-1/8xR5/32 Roman Ogee Bit,  
1-1/2xR1/2 Rounding Over Bit

**Order No.738-0621**

## Carbide Tipped Router Bit Sets

### 12 Piece Sets



#### 12pcs,1/4"Shank

1 Each:  
1/4,1/2,3/4" Straight.Bit  
1/2x14° Dovetail Bit  
1/2x90°V Grooving Bit  
1x45° Chamfer Bit  
16mm Flush Trim Bit  
1/2Core Box Bit  
1xR5/32 Roman Ogee Bit  
7/8xR1/4 Cove Bit  
1xR1/4,1-1/4xR3/8Rounding Over Bit

**Order No.738-1202**

#### 12pcs,1/4"Shank

1 Each:  
1/4,1/2,5/8" Straight Bit  
1/2x14° Dovetail Bit  
1/2x90°V Grooving Bit  
1x45° Chamfer Bit  
1/2 Flush Trim Bit  
1/2 Core Box Bit  
1xR5/32 Roman Ogee Bit  
1-1/8xR3/8Cove Bit  
1xR1/4,1-1/4xR3/8Rounding Over Bit

**Order No.738-1207**

#### 12pcs,1/4"Shank

1 Each:  
1/4,1/2x1-1/4,3/4x1-1/4" Straight.Bit  
1/2x14° Dovetail Bit  
1/2x90°V Grooving Bit  
1x45° Chamfer Bit  
16mm Flush Trim Bit  
1/2Core Box Bit  
1xR5/32Roman Ogee Bit  
1-1/8xR3/8Cove Bit  
1-1/4xR3/8Rounding Over Bit  
1xR1/4Beading Bit  
with extra bearing,washer&hexkey

**Order No.738-1211**

#### 12pcs,1/4"Shank

1Each:  
1/4,1/2x1-1/4,3/4x1-1/4" Straight.Bit  
1/2x14° Dovetail Bit  
5/8x90°V Grooving Bit  
1-1/4x45° Chamfer Bit  
16mm Flush Trim Bit  
1/2 Core Box Bit  
1-1/2xR1/4 Roman Ogee Bit  
1-1/2xR1/2 Cove Bit  
1-1/2xR1/2 Rounding Over Bit  
1-3/8xR3/8 Beading Bit

**Order No.738-1213**

#### 12pcs,1/4"Shank

1 Each:  
1/4x25/32,1/2x1,3/4Straight.Bit  
1/2Hinge Mortising Bit  
1/4 Panel Pilot Bit  
1/2x14° Dovetail Bit  
3/8x90°V Grooving Bit  
1-1/4x45° Chamfer Bit  
1-1/4x3/8 Rabbeting Bit  
1xR5/32 Roman Ogee Bit  
1-3/8xR1/2 Cove Bit  
1-1/4xR3/8 Rounding Over Bit

**Order No.738-1215**

#### 12pcs,1/4"Shank

1 Each:  
1/4,1/2,5/8" Straight.Bit  
9/16x14° Dovetail Bit  
1/2x90° V Grooving Bit  
1-1/4x45° Chamfer Bit  
1/2 Flush Trim Bit  
1/2 Core Box Bit  
1xR5/32 Roman Ogee Bit  
1-1/8xR3/8 Cove Bit  
1xR1/4,1-1/4xR3/8 Rounding Over Bit

**Order No.738-1217**

#### 12pcs,1/2" Shank

1 Each:  
1/4,1/2,5/8" Straight.Bit  
1/2x14° Dovetail Bit  
1/2x90° V Grooving Bit  
1x45° Chamfer Bit  
1/2 Flush Trim Bit  
1/2 Core Box Bit  
1-1/8xR5/32 Roman Ogee Bit  
1-1/8xR5/16 Cove Bit  
1xR1/4,1-1/4xR3/8 Rounding Over Bit

**Order No.738-1206**

#### 12pcs,1/2"Shank

1 Each:  
5/16,3/8,3/4Straight.Bit  
1-1/4x3/8Rabbeting Bit  
3/8Flush Trim Bit  
5/8Core Box Bit  
1-1/2xR1/4Roman Ogee Bit  
1-1/4xR3/16Ogee Bit  
1-1/8xR1/8Classical Bit  
1-1/8xR5/16Rounding Over Bit  
1xR1/4,1-1/2xR1/2Beading Bit  
with Extra Bearing,washer&hex key

**Order No.738-1209**

#### 12pcs,1/4"Shank

Round Nose Bit R1/8x1/2"  
90° V Grooving Bit 3/8x7/16"  
Straight Bit 1/4"x3/4"  
Mortising Bit 1/2x1/2"  
Straight Bit 1/2x1"  
Straight Bit 3/4"x3/4"  
Dovetail Bit 1/2x1/2"  
Slot Cutter Bit 1-1/4x3/8"  
45° Chamfer Bit 1-5/8x3/4"  
Rounding Over Bit R3/8x5/8"  
Cove Bit R1/2x5/8"  
Roman ogee Bit R1/4x21/32"

**Order No.738-1203**

#### 12pcs,1/4"Shank

1 Each:  
Cove Box Bit R6.3x9.5mm  
Cove Bit R6.3x10mm  
Dovetail Bit 12.7x13mm  
45° Chamfer Bit 32.0x13mm  
Flush Trim Bit 12.7x13mm  
Straight Bit 16.0x20mm  
Rounding Over Bit R6.3x11mm  
Straight Bit 12.0x20mm  
Straight Bit 6.0x19mm  
Rounding Over Bit R9.5x16  
90° V Grooving Bit 12.7x10mm  
Roman ogee Bit R4.0x12mm

**Order No.738-1210**

#### 12pcs,1/2"Shank

1 Each:  
1/4,1/2 Straight.Bit  
1/2 Hinge Mortising Bit  
1/2x14° Dovetail Bit  
1/2x90° V Grooving Bit  
1-1/4x45° Chamfer Bit  
1-1/4x3/8 Rabbeting Bit  
1/2 Flush Trim Bit  
3/4 Core Box Bit  
1-1/8xR5/32 Roman Ogee Bit  
1xR1/4 Cove Bit  
1-1/4xR3/8 Rounding Over Bit

**Order No.738-1208**

#### 12pcs,1/2"Shank

1 Each:  
Cove Box Bit R6.3x9.5mm  
Cove Bit R6.3x10mm  
Dovetail Bit 12.7x13mm  
45° Chamfer Bit 32.0x13mm  
Flush Trim Bit 12.7x13mm  
Straight Bit 16.0x20mm  
Rounding Over Bit R6.3x11mm  
Straight Bit 12.0x20mm  
Straight Bit 6.0x19mm  
Rounding Over Bit R9.5x16  
90° V Grooving Bit 12.7x10mm  
Roman ogee Bit R4.0x12mm

**Order No.738-1219**

#### 12pcs,1/2"Shank

1Each:  
1/4,5/16,1/2,3/4 Straight Bit  
3/8x90° V Grooving Bit  
1-5/8x45° Chamfer Bit  
1-1/4x3/8 Rabbeting Bit  
3/8 Flush Trim Bit  
1/2 Core Box Bit  
1-1/8xR5/32 Roman Ogee  
1-1/4xR3/8 Cove Bit  
1-1/4xR3/8 Rounding Over Bit

**Order No.738-1214**

#### 12pcs,1/2"Shank

1 Each:  
1/2,3/4 Straight Bit  
1x1/4 Rabbeting Bit  
5/8 Flush Trim Bit  
3/4 Core Box Bit  
1-1/2xR1/4 Ogee Bit  
1-3/8xR3/16 Classical Bit  
1xR1/4,1-1/2x1/2 Cove Bit  
1-1/2xR1/2 Rounding Over Bit  
1-1/8xR5/16,1-1/4xR3/8 Beading Bit

**Order No.738-1216**

#### 12pcs,1/4"Shank

1 Each:  
5/16,3/8,3/4 Straight Bit  
1-1/8x3/8 Rabbeting Bit  
3/8 Flush Trim Bit  
5/8 Core Box Bit  
1-3/8xR1/4 Roman Ogee Bit  
1-1/4xR3/16 Ogee Bit  
1-1/8xR1/8 Classical Bit  
1xR1/4,1-1/8xR5/16 Rounding Over Bit  
1xR1/4,1-1/2xR1/2 Beading Bit

**Order No.738-1218**

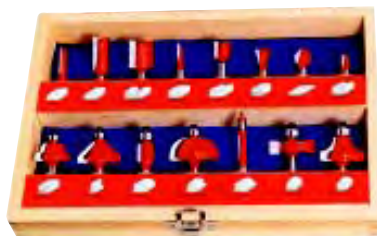
#### 12pcs,1/2"Shank

1 Each:  
1/2,3/4 Straight Bit  
1x1/4 Rabbeting Bit  
5/8 Flush Trim Bit  
3/4 Core Box Bit  
1-1/2xR1/4 Roman Ogee Bit  
1-3/8xR3/16 Classical Bit  
1xR1/4,1-1/2x1/2 Cove Bit  
1-1/2xR1/2 Rounding Over Bit  
1-1/8xR5/16,1-1/4xR3/8 Beading Bit

**Order No.738-1220**

## Carbide Tipped Router Bit Sets Continued

## 15 Piece Sets

**15pcs,1/4" Shank**

1 Each:  
 1/4,1/2 Straight.Bit  
 1/2 Hinge Moristing Bit  
 1/4 Panel Pilot Bit  
 1/2x14° Dovetail Bit  
 1/2x90° VGrooving Bit  
 3/8 Keyhole Bit  
 1-1/4x45° Chamfer Bit  
 1-1/8x3/8 Rabbeting Bit  
 1/2 Flush Trim Bit  
 3/4 Core Box Bit  
 1xR5/32 Roman Ogee Bit  
 7/8xR1/4 Cove Bit  
 1xR1/4,1-1/4xR3/8 Rounding Over Bit

**Order No.738-1501****15pcs,1/4"Shank**

1 Each:  
 Straight Bit(1F) 3/16x3/8"  
 Cove Box Bit R1/8x1/4"  
 Panel Pilot Bit 1/4x3/4"  
 90°V Grooving Bit 3/8x7/16"  
 Straight Bit 1/4x3/4"  
 Straight Bit 1/2x1"  
 Straight Bit 3/4x3/4"  
 Dovetail Bit 1/2x1/2"  
 Flush Trim Bit 1/2x1/2"  
 Slot Cutter Bit 1-1/4x3/8"  
 45° Chamfer Bit 1-3/16x1/2"  
 Rounding Over Bit R3/8"x5/8"  
 Cove Bit R1/2x15/32"  
 Roman Ogee Bit R5/32x15/32

**Order No.738-1502****15pcs,1/4"Shank**

1 Each:  
 1/4,1/2,3/4 Straight.Bit  
 1/2x14° Dovetail Bit  
 1/2x90°V Grooving Bit  
 1-1/4x45° Chamfer Bit  
 1-1/8x3/8 Rabbeting Bit  
 1/2 Flush Trim Bit  
 1/2 Core Box Bit  
 1xR5/32,1-3/8xR1/4 Roman Ogee Bit  
 1-1/8xR3/8 Cove Bit  
 1xR1/4,1-1/4xR3/8 Rounding Over Bit  
 1-1/4xR3/8 Beading Bit with extra Bearing, Spring Washer&hexkey

**Order No.738-1503****15pcs,1/4"Shank**

1 Each:  
 1/4,1/2,3/4Straight Bit  
 3/8x9°1/2x14°Dovetail Bit  
 5/8x90°VGrooving Bit  
 1-1/4x45°Chamfer Bit  
 1xR5/32,1-3/8xR1/4RomanOgee Bit  
 1-1/8xR3/8,1-3/8xR1/2Core Box Bit  
 1xR1/4,1-1/2xR1/2Rounding Over Bit  
 1xR1/4,1-1/2xR1/2Beading Bit with extra Bearing, Spring Washer&hexkey

**Order No.738-1504****15pcs,1/2"Shank**

1 Each:  
 1/4,1/2,3/4 Straight Bit  
 3/8x9°,1/2x14° Dovetail Bit  
 5/8x90°V Grooving Bit  
 1-1/4x45° Chamfer Bit  
 1-1/8xR5/32,1-1/2xR1/4 Roman Ogee Bit  
 1-1/4xR3/8,1-1/2xR1/2 Core Box Bit  
 1xR1/4,1-1/2xR1/2 Rounding Over Bit  
 1xR1/4,1-1/2xR1/2 Beading Bit with extra Bearing, Spring Washer&hexkey

**Order No.738-1505****15pcs,1/4"Shank**

1 Each:  
 1/4,1/2,3/4 Straight.Bit,  
 1/2x14° Dovetail Bit,  
 1/2x90°V Grooving Bit,  
 1-1/4x45° Chamfer Bit,  
 1-1/4x3/8 Rabbeting Bit,  
 1/2 Flush Trim Bit,  
 1/2 Core Box Bit,  
 1-1/8xR5/32,1-1/2xR1/4 Roman Ogee Bit,  
 1-1/4xR3/8 Cove Bit,  
 1xR1/4,1-1/4xR3/8 Rounding Over Bit,  
 1-1/4xR3/8 Beading Bit with extra Bearing, Spring Washer&hexkey

**Order No.738-1506**

## 24 Piece Sets

**24pcs,1/4"Shank**

1 Each:  
 Mortising Bit 1/2"x1/2"  
 Combination Bevel Bit 1/2"x5/8"  
 Dovetail Bit 3/8"x3/8"  
 Dovetail Bit 1/2"x1/2"  
 90°VGrooving Bit 1/2"x1/2"  
 Round Nose Bit R3/16"x5/8"  
 Round Nose Bit R1/4"x3/4"  
 Trimming Bit 3/8"x5/8"  
 Panel Pilot Bit 1/4x3/4"  
 Straight Bit 1/4x3/4"  
 Straight Bit 3/8x1"  
 Straight Bit 1/2x1"  
 Straight Bit 3/4x3/4"  
 Flush Trim Bit 1/2x1"  
 Rounding Over Bit R1/8x1/4"  
 Rounding Over Bit R3/16x3/8"  
 Rounding Over Bit R1/4x7/16"  
 Rounding Over Bit R3/8x5/8"  
 Cove Bit R3/8x1/2"  
 Cove Bit R1/4x3/8"  
 45° Chamfer Bit 1-3/16"x1/2"  
 Roman Ogee Bit R5/32x15/32"  
 Slot Cutter Bit 1-1/4"x1/4"  
 Rabbeting Bit 1-1/4"x1/2"

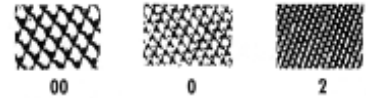
**OrderNo.738-2401****24pcs,1/2"Shank**

1 Each:  
 Mortising Bit 1/2"x1/2"  
 Combination Bevel Bit 1/2"x5/8"  
 Dovetail Bit 3/8"x3/8"  
 Dovetail Bit 1/2"x1/2"  
 90°VGrooving Bit 1/2"x1/2"  
 Round Nose Bit R3/16"x5/8"  
 Round Nose Bit R1/4"x3/4"  
 Trimming Bit 3/8"x5/8"  
 Panel Pilot Bit 1/4x3/4"  
 Straight Bit 1/4x3/4"  
 Straight Bit 3/8x1"  
 Straight Bit 1/2x1"  
 Straight Bit 3/4x3/4"  
 Flush Trim Bit 1/2x1"  
 Rounding Over Bit R1/8x1/4"  
 Rounding Over Bit R3/16x3/8"  
 Rounding Over Bit R1/4x7/16"  
 Rounding Over Bit R3/8x5/8"  
 Cove Bit R3/8x1/2"  
 Cove Bit R1/4x3/8"  
 45° Chamfer Bit 1-3/16"x1/2"  
 Roman Ogee Bit R5/32x15/32"  
 Slot Cutter Bit 1-1/4"x1/4"  
 Rabbeting Bit 1-1/4"x1/2"

**Order No.738-2402**

## Swiss Pattern Files

### Industrial grade



### Pillar Files

- Similar in shape to hand files but only two-thirds as wide.
- Double cut on two sides only.



| Length | Approx. Width  | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|----------------|-------------------------|------------------------|------------------------|
| 4"     | 3/8 x 7/64"    | 511-0004                | 511-0104               | 511-0204               |
| 6"     | 1/2 x 9/64"    | 511-0006                | 511-0106               | 511-0206               |
| 8"     | 39/64 x 13/64" | 511-0008                | 511-0108               | 511-0208               |

### Pillar Narrow & Extra Narrow Files

- Similar in shape to hand files but only two-thirds as wide.
- Double cut on two sides only.
- Edges are safe.



| Length | Approx. Width  | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|----------------|-------------------------|------------------------|------------------------|
| 6"     | 23/64 x 9/64"  | 511-1006                | 511-1106               | 511-1206               |
| 8"     | 29/64 x 13/64" | 511-1008                | 511-1108               | 511-1208               |
| 8"     | 1/4 x 5/32"    | 511-1018                | 511-1118               | 511-1218               |

### Half Round Files

- Taper in thickness and width to a point.
- Double cut on both flat and half round sides



| Length | Approx. Width | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|---------------|-------------------------|------------------------|------------------------|
| 4"     | 11/32 x 1/8"  | 511-2004                | 511-2104               | 511-2204               |
| 6"     | 17/32 x 9/64" | 511-2006                | 511-2106               | 511-2206               |
| 8"     | 45/64 x 3/16" | 511-2008                | 511-2108               | 511-2208               |

### Round Files

- Taper throughout length to a fine point.
- Double cut .



| Length | Approx. Width | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|---------------|-------------------------|------------------------|------------------------|
| 4"     | 1/8"          | 511-3004                | 511-3104               | 511-3204               |
| 6"     | 3/16"         | 511-3006                | 511-3106               | 511-3206               |
| 8"     | 1/4"          | 511-3008                | 511-3108               | 511-3208               |

### Hand Files

- Parallel in width but taper in thickness
- Sides are double cut.
- Single cut on one edge, safe cut on other edge.



| Length | Approx. Width | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|---------------|-------------------------|------------------------|------------------------|
| 4"     | 17/32 x 1/8"  | 511-4004                | 511-4104               | 511-4204               |
| 6"     | 3/4 x 5/32"   | 511-4006                | 511-4106               | 511-4206               |

### Warding Files

- Rectangular in cross section.
- Taper slightly in thickness and to a point in width.
- Double cut on flat sides & single on edges.



| Length | Approx. Width | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|---------------|-------------------------|------------------------|------------------------|
| 4"     | 17/32 x 3/64" | 511-5004                | 511-5104               | 511-5204               |
| 6"     | 5/16 x 5/64"  | 511-5006                | 511-5106               | 511-5206               |

### Three square Files

- A triangular section with 60° angles.
- Gradually tapered on all sides to fine point.
- Ideal for filing corners and edges in extrusion dies where sharp edges must be held.



| Length | Approx. Width | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|---------------|-------------------------|------------------------|------------------------|
| 4"     | 9/32"         | 511-6004                | 511-6104               | 511-6204               |
| 6"     | 3/8"          | 511-6006                | 511-6106               | 511-6206               |

### Knife Files

- Tapered in width and thickness .
- Same thickness from point to shoulder at the knife edge.
- Approx 10° included angle of sharp edge.
- Ideal for filing in a slot, wedge shape opening, or restricted area.



| Length | Approx. Width | Cut No. 00<br>Order No. | Cut No. 0<br>Order No. | Cut No. 2<br>Order No. |
|--------|---------------|-------------------------|------------------------|------------------------|
| 4"     | 15/32x1/8"    | 511-7004                | 511-7104               | 511-7204               |
| 6"     | 23/32x5/32"   | 511-7006                | 511-7106               | 511-7206               |

## American Pattern Files

## Industrial Grade

## Three square files

- Machinist's files.
- Triangular in cross-section, double-cut, have fairly sharp corners.
- For filing internal angles.
- More acute than the right angle for clearing out square corners.



| Length | Approx. Width | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|---------------|-----------------------|----------------------|----------------------|
| 4"     | 11/32"        | 510-6004              | 510-6104             | 510-6204             |
| 6"     | 15/32"        | 510-6006              | 510-6106             | 510-6206             |
| 8"     | 5/8"          | 510-6008              | 510-6108             | 510-6208             |
| 10"    | 3/4"          | 510-6010              | 510-6110             | 510-6210             |
| 12"    | 27/32"        | 510-6012              | 510-6112             | 510-6212             |
| 14"    | 15/16"        | 510-6014              | 510-6114             | 510-6214             |

## Mill files

- For sharpening mill or circular Saws, and finishing metals.
- All sizes tapered slightly in width.
- 12", 14" and 16" tapered slightly in thickness for about one-third of length.
- Two square edges.
- Single cut on sides and edges.



| Length | Approx. Width  | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|----------------|-----------------------|----------------------|----------------------|
| 4"     | 7/16 x 5/64"   | 510-7004              | 510-7104             | 510-7204             |
| 6"     | 19/32 x 7/64"  | 510-7006              | 510-7106             | 510-7206             |
| 8"     | 25/32 x 9/64"  | 510-7008              | 510-7108             | 510-7208             |
| 10"    | 31/32 x 11/64" | 510-7010              | 510-7110             | 510-7210             |
| 12"    | 1-5/32 x 7/32" | 510-7012              | 510-7112             | 510-7212             |
| 14"    | 1-5/16 x 1/4"  | 510-7014              | 510-7114             | 510-7214             |
| 16"    | 1-1/2 x 9/32"  | 510-7016              | 510-7116             | 510-7216             |

## Warding files

- Rectangular in section and used principally by locksmiths in repairing or in filing ward notches in keys.
- Also suitable for use in narrow spaces where other files will not fit. All double cut on sides, single cut on edges.



| Length | Approx. Width  | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|----------------|-----------------------|----------------------|----------------------|
| 4"     | 15/32 x 3/64"  | 510-8004              | 510-8104             | 510-8204             |
| 6"     | 5/8 x 5/64"    | 510-8006              | 510-8106             | 510-8206             |
| 8"     | 25/32 x 3/32"  | 510-8008              | 510-8108             | 510-8208             |
| 10"    | 15/16 x 1/8"   | 510-8010              | 510-8110             | 510-8210             |
| 12"    | 1-3/32 x 5/32" | 510-8012              | 510-8112             | 510-8212             |
| 14"    | 1-1/4 x 3/16"  | 510-8014              | 510-8114             | 510-8214             |

## Knife files

- Double cut.
- Used in getting through very small.
- Crevices, slots, keyways, etc.
- Generally used by tool and die makers on work having acute angles



| Length | Approx. Width | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|---------------|-----------------------|----------------------|----------------------|
| 4"     | 15/32 x 7/64" | 510-0004              | 510-0104             | 510-0204             |
| 6"     | 21/32 x 5/32" | 510-0006              | 510-0106             | 510-0206             |
| 8"     | 27/32 x 3/16" | 510-0008              | 510-0108             | 510-0208             |
| 10"    | 1-1/32 x 1/4" | 510-0010              | 510-0110             | 510-0210             |

## Flat files

- Rectangular cross-section.
- Double cut teeth.
- Slight taper.
- Cut on both sides.
- Used wherever metal must be removed rapidly.



| Length | Approx. Width    | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|------------------|-----------------------|----------------------|----------------------|
| 4"     | 7/16 x 1/8"      | 510-1004              | 510-1104             | 510-1204             |
| 6"     | 19/32 x 5/32"    | 510-1006              | 510-1106             | 510-1206             |
| 8"     | 3/4 x 7/32"      | 510-1008              | 510-1108             | 510-1208             |
| 10"    | 15/16 x 9/32"    | 510-1010              | 510-1110             | 510-1210             |
| 12"    | 1-1/8 x 11/32"   | 510-1012              | 510-1112             | 510-1212             |
| 14"    | 1-9/32 x 13/32"  | 510-1014              | 510-1114             | 510-1214             |
| 16"    | 1-15/32 x 15/32" | 510-1016              | 510-1116             | 510-1216             |

## Half round files

- The cross-section is rounded on one side and flat on the other.
- Allows the file to be used effectively on convex and concave surfaces.
- Tapered towards the points in width and thickness.



| Length | Approx. Width    | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|------------------|-----------------------|----------------------|----------------------|
| 4"     | 7/16 x 1/8"      | 510-2004              | 510-2104             | 510-2204             |
| 6"     | 19/32 x 5/32"    | 510-2006              | 510-2106             | 510-2206             |
| 8"     | 3/4 x 7/32"      | 510-2008              | 510-2108             | 510-2208             |
| 10"    | 15/16 x 9/32"    | 510-2010              | 510-2110             | 510-2210             |
| 12"    | 1-1/8 x 11/32"   | 510-2012              | 510-2112             | 510-2212             |
| 14"    | 1-9/32 x 13/32"  | 510-2014              | 510-2114             | 510-2214             |
| 16"    | 1-15/32 x 15/32" | 510-2016              | 510-2116             | 510-2216             |

## American Pattern Files continued

### Industrial Grade

#### Round files

- Machinist's file.
- Circular in cross-section.
- Use to file circular openings or concave surfaces.
- Bastard cut 6" and longer, second cut files 12" and longer are double cut. All others are single cut.

| Length | Approx. Width | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|---------------|-----------------------|----------------------|----------------------|
| 4"     | 5/32"         | 510-4004              | 510-4104             | 510-4204             |
| 6"     | 1/4"          | 510-4006              | 510-4106             | 510-4206             |
| 8"     | 5/16"         | 510-4008              | 510-4108             | 510-4208             |
| 10"    | 3/8"          | 510-4010              | 510-4110             | 510-4210             |
| 12"    | 1/2"          | 510-4012              | 510-4112             | 510-4212             |
| 14"    | 5/8"          | 510-4014              | 510-4114             | 510-4214             |

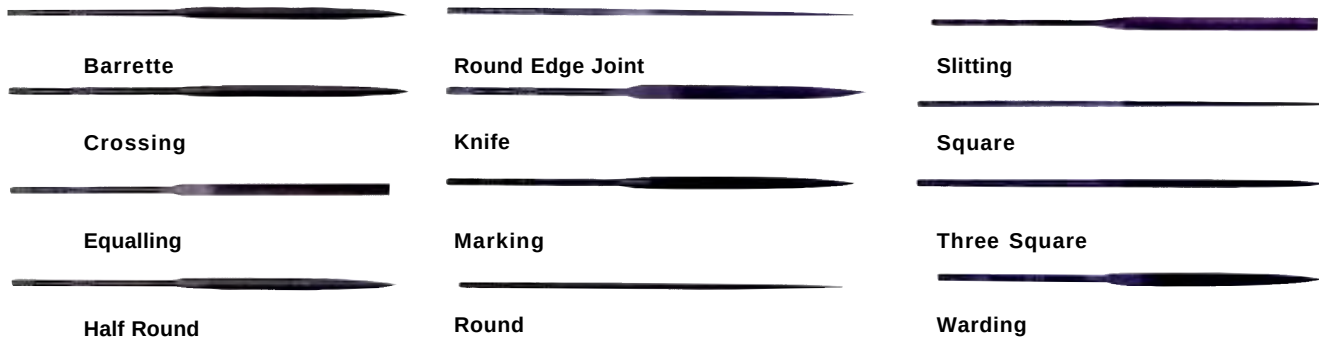
#### Square files

- Square in cross-section.
- Used principally for filing slots, keyways.
- General surface filing.
- Double cut.

| Length | Approx. Width | Bastard Cut Order No. | Second Cut Order No. | Smooth Cut Order No. |
|--------|---------------|-----------------------|----------------------|----------------------|
| 4"     | 5/32"         | 510-5004              | 510-5104             | 510-5204             |
| 6"     | 1/4"          | 510-5006              | 510-5106             | 510-5206             |
| 8"     | 5/16"         | 510-5008              | 510-5108             | 510-5208             |
| 10"    | 3/8"          | 510-5010              | 510-5110             | 510-5210             |
| 12"    | 1/2"          | 510-5012              | 510-5112             | 510-5212             |
| 14"    | 5/8"          | 510-5014              | 510-5114             | 510-5214             |



## Swiss Pattern Knurled Round Handle Needle Files & Sets



#### Individual Files

| Type         | Overall Length | Length Of Cut | Cut No. 0 Order No. | Cut No. 2 Order No. | Cut No. 3 Order No. |
|--------------|----------------|---------------|---------------------|---------------------|---------------------|
| Round        | 4"             | 2"            | 382-0401            | 382-0421            | 382-0431            |
| Round        | 5-1/2"         | 2-1/2"        | 382-0501            | 382-0521            | 382-0531            |
| Round        | 6-1/4"         | 3"            | 382-0601            | 382-0621            | 382-0631            |
| Half Round   | 4"             | 2"            | 382-0402            | 382-0422            | 382-0432            |
| Half Round   | 5-1/2"         | 2-1/2"        | 382-0502            | 382-0522            | 382-0532            |
| Half Round   | 6-1/4"         | 3"            | 382-0602            | 382-0622            | 382-0632            |
| Square       | 4"             | 2"            | 382-0403            | 382-0423            | 382-0433            |
| Square       | 5-1/2"         | 2-1/2"        | 382-0503            | 382-0523            | 382-0533            |
| Square       | 6-1/4"         | 3"            | 382-0603            | 382-0623            | 382-0633            |
| Three Square | 4"             | 2"            | 382-0404            | 382-0424            | 382-0434            |
| Three Square | 5-1/2"         | 2-1/2"        | 382-0504            | 382-0524            | 382-0534            |
| Three Square | 6-1/4"         | 3"            | 382-0604            | 382-0624            | 382-0634            |
| Knife        | 4"             | 2"            | 382-0405            | 382-0425            | 382-0435            |
| Knife        | 5-1/2"         | 2-1/2"        | 382-0505            | 382-0525            | 382-0535            |
| Knife        | 6-1/4"         | 3"            | 382-0605            | 382-0625            | 382-0635            |
| Flat         | 4"             | 2"            | 382-0406            | 382-0426            | 382-0436            |
| Flat         | 5-1/2"         | 2-1/2"        | 382-0506            | 382-0526            | 382-0536            |
| Flat         | 6-1/4"         | 3"            | 382-0606            | 382-0626            | 382-0636            |

| Type     | Overall Length | Length Of Cut | Cut No. 0 Order No. | Cut No. 2 Order No. | Cut No. 3 Order No. |
|----------|----------------|---------------|---------------------|---------------------|---------------------|
| Equaling | 4"             | 2"            | 382-0407            | 382-0427            | 382-0437            |
| Equaling | 5-1/2"         | 2-1/2"        | 382-0507            | 382-0527            | 382-0537            |
| Equaling | 6-1/4"         | 3"            | 382-0607            | 382-0627            | 382-0637            |
| Barrette | 4"             | 2"            | 382-0408            | 382-0428            | 382-0438            |
| Barrette | 5-1/2"         | 2-1/2"        | 382-0508            | 382-0528            | 382-0538            |
| Barrette | 6-1/4"         | 3"            | 382-0608            | 382-0628            | 382-0638            |
| Crossing | 4"             | 2"            | 382-0409            | 382-0429            | 382-0439            |
| Crossing | 5-1/2"         | 2-1/2"        | 382-0509            | 382-0529            | 382-0539            |
| Crossing | 6-1/4"         | 3"            | 382-0609            | 382-0629            | 382-0639            |
| Joint    | 4"             | 2"            | 382-0410            | 382-0420            | 382-0430            |
| Joint    | 5-1/2"         | 2-1/2"        | 382-0510            | 382-0520            | 382-0530            |
| Joint    | 6-1/4"         | 3"            | 382-0610            | 382-0620            | 382-0630            |
| Marking  | 4"             | 2"            | 382-1411            | 382-1421            | 382-1431            |
| Marking  | 5-1/2"         | 2-1/2"        | 382-1511            | 382-1521            | 382-1531            |
| Marking  | 6-1/4"         | 3"            | 382-1611            | 382-1621            | 382-1631            |
| Slitting | 4"             | 2"            | 382-1412            | 382-1422            | 382-1432            |
| Slitting | 5-1/2"         | 2-1/2"        | 382-1512            | 382-1522            | 382-1532            |
| Slitting | 6-1/4"         | 3"            | 382-1612            | 382-1622            | 382-1632            |



#### Needle File Sets

##### 6 Pcs/set

| Size   | Cut No. 0 Order No. | Cut No. 2 Order No. | Cut No. 3 Order No. |
|--------|---------------------|---------------------|---------------------|
| 4"     | 382-0640            | 382-0642            | 382-0643            |
| 5-1/2" | 382-0650            | 382-0652            | 382-0653            |
| 6-1/4" | 382-0660            | 382-0662            | 382-0663            |
| 7"     | 382-0740            | 382-0742            | 382-0743            |

##### 10 Pcs/set

| Size   | Cut No. 0 Order No. | Cut No. 2 Order No. | Cut No. 3 Order No. |
|--------|---------------------|---------------------|---------------------|
| 4"     | 382-0140            | 382-0142            | 382-0143            |
| 5-1/2" | 382-0150            | 382-0152            | 382-0153            |
| 6-1/4" | 382-0160            | 382-0162            | 382-0163            |
| 7"     | 382-0170            | 382-0172            | 382-0173            |

##### 12 Pcs/set

| Size   | Cut No. 0 Order No. | Cut No. 2 Order No. | Cut No. 3 Order No. |
|--------|---------------------|---------------------|---------------------|
| 4"     | 382-0040            | 382-0042            | 382-0043            |
| 5-1/2" | 382-0050            | 382-0052            | 382-0053            |
| 6-1/4" | 382-0060            | 382-0062            | 382-0063            |
| 7"     | 382-0064            | 382-0065            | 382-0066            |

## Flexible Thin Equalling Diamond Files

- Completes with soft plastic handle providing enough friction.
- Diamond cutting length is 30mm/1-1/5".
- Supplied in fitted pouch.



| Total Length | Cutting Length | Approx. Thickness | Fine Order No. | Coarse Order No. |
|--------------|----------------|-------------------|----------------|------------------|
| 140mm/5-1/2" | 50mm/2"        | 0.85mm/0.033"     | 382-1081       | 382-1091         |
| 160mm/6-1/3" | 50mm/2"        | 0.92mm/0.036"     | 382-1083       | 382-1093         |
| 180mm/7"     | 70mm/2-4/5"    | 0.92mm/0.036"     | 382-1085       | 382-1095         |

## 8 Pc. Die Maker Riffler File Set

## Extra Rough Cut, Heavy Duty

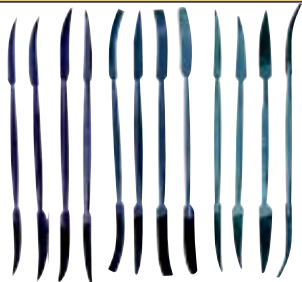
8" Long, 3/16" square handle,  
16 different file shapes.  
Complete with plastic pouch.



| No. of Piece | Long | Handle | Order No. |
|--------------|------|--------|-----------|
| 8Pcs/set     | 8"   | 3/16"  | 382-0039  |

## Die Makers Riffler File Sets

Riffler files are used by tool and die makers to clean odd and difficult places. A hobbyist's dream. Available in 6-3/4". No.0 and No.2 cut.

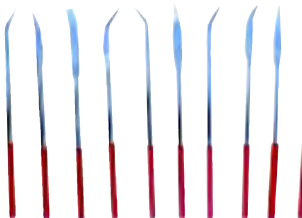


| No. of Piece | Cut No. | Order No. |
|--------------|---------|-----------|
| 12Pcs/set    | No. 0   | 382-0032  |
| 12Pcs/set    | No. 2   | 382-0034  |

## Diamond Die Maker's Riffler File Sets

## Single Head

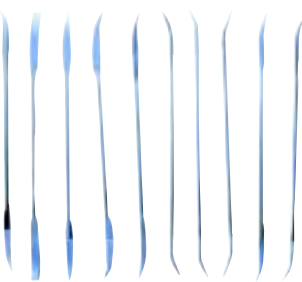
- Can be used on cleaning odd and difficult places.
- Total file length is 140mm/5-1/2".
- Diamond cutting length is 30mm/1-1/5".
- Completes with soft plastic handle provide enough friction.
- Supplied in fitted pouch.



| No. of Piece | Grit   | Order No. |
|--------------|--------|-----------|
| 10Pcs/set    | Fine   | 382-1010  |
| 10Pcs/set    | Coarse | 382-1011  |

## Double Head

- Can be used on cleaning odd and difficult places.
- Total file length is 180mm/7".
- Diamond cutting length is 30mm/1-1/5".
- Supplied in fitted pouch.



| No. of Piece | Grit   | Order No. |
|--------------|--------|-----------|
| 10Pcs/set    | Fine   | 382-1012  |
| 10Pcs/set    | Coarse | 382-1013  |

## 5 Pc. General Purpose File Set

## With rectangular plastic handle

- Overall length: 6-1/2".
- For home or professional use.
- Supplied in fitted pouch.

5Pcs/set, includes 1 each:

Round, flat, square, triangle, half round.

| No. of Piece | OAL    | Dial Dia. | Order No. |
|--------------|--------|-----------|-----------|
| 5            | 6-1/2" | Coarse    | 382-0736  |
| 5            | 6-1/2" | Medium    | 382-0737  |
| 5            | 6-1/2" | Fine      | 382-0738  |



## Die Sinker Riffler File Sets

## 5 &amp; 10 Pcs/set

5 Pcs/set  
Double end No. 2 Cut  
Complete with plastic wallet



| No. of Piece | Type       | Body Dia. | OAL   | Order No. |
|--------------|------------|-----------|-------|-----------|
| 5Pcs/set     | Heavy duty | 3/16"     | 7"    | 382-0035  |
| 5Pcs/set     | Standard   | 1/8       | 7     | 382-0038  |
| 10Pcs/set    | Heavy duty | 3/16      | 6-1/2 | 382-0044  |
| 10Pcs/set    | Standard   | 1/8       | 6-1/2 | 382-0041  |

## Diamond Needle File Sets

## With round plastic handle

Can be used on carbide, hardened steel, and ceramics, made with a hard chrome bond that gives a long life and wears extremely well.

## 5 Pcs/set

| Pieces | Description | Size     | Order No. |
|--------|-------------|----------|-----------|
| 5      | Medium/D126 | 2-7/8x7" | 399-6784  |

## 5 Pcs/set

Set include one each of:

Round, Half Round, Square, Equaling, Triangle

| No. of Pieces | Approx. Length | Coarse Order No. | Medium Order No. | Fine Order No. |
|---------------|----------------|------------------|------------------|----------------|
| 5             | 7-1/4"         | 382-0707         | 382-0708         | 382-0709       |
| 5             | 5-3/4"         | 382-0711         | 382-0715         | 382-0720       |
| 5             | 5-3/4"         | 382-0701         | 382-0705         | 382-0710       |



## 5 Pcs/set

Set include one each of: Round, Half Round, Square, Three Square, Flat.

| OAL    | Length of Cut | Coarse Order No. | Medium Order No. |
|--------|---------------|------------------|------------------|
| 5-1/2" | 2-3/4"        | 382-0726         | 382-0728         |

## 10 Pcs/set

Sets include one each of:

Round, Half Round, Square, Three Square, Flat, Crossing, Equaling, Barrette, Marking, Slitting.

## Medium Type

| No. of Pieces | OAL    | Length of Cut | Order No. |
|---------------|--------|---------------|-----------|
| 10            | 5-1/2" | 2-3/4"        | 382-0724  |
| 10            | 6-1/4" | 3"            | 382-0725  |

### Heavy Duty Diamond Files & Sets



#### Sets

| Pieces | Diamond Length | Overall length | Coarse/D181 Order No. | Medium/D126 Order No. | Fine/D19 Order No. |
|--------|----------------|----------------|-----------------------|-----------------------|--------------------|
| 5      | 4-3/8          | 8-11/16"       | 399-6781              | 399-6782              | 399-6783           |

#### Individuals

| File Shape | Diamond Length | Overall length | Coarse/D181 Order No. | Medium/D126 Order No. | Fine/D19 Order No. |
|------------|----------------|----------------|-----------------------|-----------------------|--------------------|
| Flat       | 4-3/8          | 8-11/16"       | 399-6731              | 399-6741              | 399-6751           |
| Triangle   | 4-3/8          | 8-11/16"       | 399-6732              | 399-6742              | 399-6752           |
| Round      | 4-3/8          | 8-11/16"       | 399-6733              | 399-6743              | 399-6753           |
| Half Round | 4-3/8          | 8-11/16"       | 399-6734              | 399-6744              | 399-6754           |
| Square     | 4-3/8          | 8-11/16"       | 399-6735              | 399-6745              | 399-6755           |

### Diamond Mounted Point Sets



| No. of Pieces | Shank Size | Overall Length | Order No. |
|---------------|------------|----------------|-----------|
| 10            | 3/32"      | 1-3/4"         | 389-9100  |
| 20            | 3/32"      | 1-3/4"         | 389-9200  |
| 25            | 3/32"      | 1-3/4"         | 389-9250  |
| 10            | 1/8"       | 1-3/4"         | 389-9101  |
| 20            | 1/8"       | 1-3/4"         | 389-9201  |
| 25            | 1/8"       | 1-3/4"         | 389-9251  |
| 30            | 1/8"       | 1-3/4"         | 389-9300  |
| 10            | 1/4"       | 2-3/8"         | 389-9102  |
| 20            | 1/4"       | 2-3/8"         | 389-9202  |

| No. of Pieces | Shank Size | Overall Length | Order No. |
|---------------|------------|----------------|-----------|
| 20            | 3mm        | 45mm           | 389-9204  |
| 25            | 3mm        | 45mm           | 389-9254  |
| 30            | 3mm        | 45mm           | 389-9304  |
| 10            | 6mm        | 45mm           | 389-9104  |
| 10            | 6mm        | 60mm           | 389-9106  |
| 20            | 6mm        | 60mm           | 389-9206  |

### Wood Handle Diamond Flat Files



| Size   | Description | Handle | Order No. |
|--------|-------------|--------|-----------|
| 6x3/4" | Fine/Coarse | Wood   | 399-6770  |
| 8x1"   | Fine/Coarse | Wood   | 399-6771  |

### Sharpening Stones

Coarse and fine grit vitrified into one stone.



| Size       | Aluminum Oxide 120/240 Grit Order No. | Silicon Carbide 100/180Grit Order No. | Silicon Carbide 120/240 Grit Order No. |
|------------|---------------------------------------|---------------------------------------|----------------------------------------|
| 1 x 2 x 6" | 399-6790                              | 399-6792                              | 399-6796                               |
| 1 x 2 x 8" | 399-6791                              | 399-6793                              | 399-6797                               |

### Toolroom Finishing Sticks

- 4" Length, for Lapping, Honing, Polishing



#### Aluminum Oxide

| Size | Shape        | Coarse Grit Order No. | Medium Grit Order No. | Fine Grit Order No. |
|------|--------------|-----------------------|-----------------------|---------------------|
| 1/4" | Square       | 399-0003              | 399-0103              | 399-0203            |
| 3/8" | Square       | 399-0006              | 399-0106              | 399-0206            |
| 1/2" | Square       | 399-0009              | 399-0109              | 399-0209            |
| 1/4" | Half Round   | 399-0013              | 399-0113              | 399-0213            |
| 3/8" | Half Round   | 399-0016              | 399-0116              | 399-0216            |
| 1/2" | Half Round   | 399-0019              | 399-0119              | 399-0219            |
| 1/4" | Round        | 399-0023              | 399-0123              | 399-0223            |
| 3/8" | Round        | 399-0026              | 399-0126              | 399-0226            |
| 1/2" | Round        | 399-0029              | 399-0129              | 399-0229            |
| 1/4" | Three Square | 399-0033              | 399-0133              | 399-0233            |
| 3/8" | Three Square | 399-0036              | 399-0136              | 399-0236            |
| 1/2" | Three Square | 399-0039              | 399-0139              | 399-0239            |

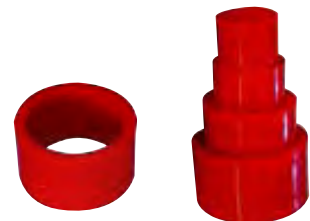
#### Silicon Carbide

| Size | Shape        | Coarse Grit Order No. | Medium Grit Order No. | Fine Grit Order No. |
|------|--------------|-----------------------|-----------------------|---------------------|
| 1/4" | Square       | 399-1003              | 399-1103              | 399-1203            |
| 3/8" | Square       | 399-1006              | 399-1106              | 399-1206            |
| 1/2" | Square       | 399-1009              | 399-1109              | 399-1209            |
| 1/4" | Half Round   | 399-1013              | 399-1113              | 399-1213            |
| 3/8" | Half Round   | 399-1016              | 399-1116              | 399-1216            |
| 1/2" | Half Round   | 399-1019              | 399-1119              | 399-1219            |
| 1/4" | Round        | 399-1023              | 399-1123              | 399-1223            |
| 3/8" | Round        | 399-1026              | 399-1126              | 399-1226            |
| 1/2" | Round        | 399-1029              | 399-1129              | 399-1229            |
| 1/4" | Three Square | 399-1033              | 399-1133              | 399-1233            |
| 3/8" | Three Square | 399-1036              | 399-1136              | 399-1236            |
| 1/2" | Three Square | 399-1039              | 399-1139              | 399-1239            |

### Plastic Reducer Bushing

#### for Grinding Wheel

For use with aluminum oxide and silicon carbide bench grinding wheels.



#### Individual

| Size                   | Length | Order No. |
|------------------------|--------|-----------|
| 1-1/4" OD to 1" ID     | 1/4"   | 391-0011  |
| 1-1/4" OD to 7/8" ID   | 1/4"   | 391-0012  |
| 1-1/4" OD to 3/4" ID   | 1/4"   | 391-0013  |
| 1-1/4" OD to 5/8" ID   | 1/4"   | 391-0014  |
| 1-1/4" OD to 1/2" ID   | 1/4"   | 391-0015  |
| 1-1/2" OD to 1-1/4" ID | 1/4"   | 391-0021  |

#### Sets

| Descriptions                                                 | Order No. |
|--------------------------------------------------------------|-----------|
| 3 In 1, 1"OD to 3/4,5/8 and 1/2" ID ,wide :45/64" each       | 391-0003  |
| 4 In 1, 1-1/4"OD to 1,3/4,5/8 and 1/2" ID ,wide :45/64" each | 391-0004  |

## Sanding Drum Kits



399-2001



399-2012



399-2020



399-2025



Mini  
399-2026

| Pieces | Size<br>((Working Diameter x Height)            | Drums | 80 Grit<br>Abrasive Sleeves | 120Grit<br>Abrasive Sleeves | Order No. |
|--------|-------------------------------------------------|-------|-----------------------------|-----------------------------|-----------|
| 2      | 3x3"                                            | 1     | 1                           |                             | 399-2001  |
| 12     | 1x3", 2x3", 2-1/2x3", 3x3"                      | 4     | 4 (1 each of 4 sizes)       | 4 (1 each of 4 sizes)       | 399-2012  |
| 20     | 1/2x2-1/2", 3/4x2-1/2", 1x2-1/2", 1-1/2x2-1/2"  | 4     | 8 (2 each of 4 sizes)       | 8 (2 each of 4 sizes)       | 399-2020  |
| 25     | 1/2x1/2", 3/4x1", 1x1", 1-1/2x1-1/2", 2"x1-1/2" | 5     | 10 (2 each of 5 sizes)      | 10 (2 each of 5 sizes)      | 399-2025  |
| 25     | 3/8x1/2", 1/2x1/2", 3/4x1", 1x1", 1-1/2x1-1/2"  | 5     | 10 (2 each of 5 sizes)      | 10 (2 each of 5 sizes)      | 399-2026  |

## Wood Rasps

### Tine Files



- Rasp cut on both sides and single cut on edges. Tapers from heel to oint in both width and thickness.
- Used by cabinetmakers, woodworkers, Leather and aluminum workers.

| Length | Bastard Cut<br>Order No. | Smooth Cut<br>Order No. |
|--------|--------------------------|-------------------------|
| 6"     | 511-8101                 | 511-8105                |
| 8"     | 511-8102                 | 511-8106                |
| 10"    | 511-8103                 | 511-8107                |
| 12"    | 511-8104                 | 511-8108                |

### Round Files



- TRound rasp cut tapers in thickness.
- For curved wood or doft metal.

| Length | Bastard Cut<br>Order No. | Smooth Cut<br>Order No. |
|--------|--------------------------|-------------------------|
| 6"     | 511-8111                 | 511-8115                |
| 8"     | 511-8112                 | 511-8116                |
| 10"    | 511-8113                 | 511-8117                |
| 12"    | 511-8114                 | 511-8118                |

### Flat Files



- Rasp cut on both sides and single cut on edges. Width toward point.
- Used by cabinetmakers, woodworkers, Leather and aluminum workers.

| Length | Bastard Cut<br>Order No. | Smooth Cut<br>Order No. |
|--------|--------------------------|-------------------------|
| 6"     | 511-8121                 | 511-8125                |
| 8"     | 511-8122                 | 511-8126                |
| 10"    | 511-8123                 | 511-8127                |
| 12"    | 511-8124                 | 511-8128                |

### Half Round Files



- Rasp cut on both sides and single cut on edges. Tapers from heel to oint in both width and thickness.
- Useful for curved wood or doft metal.

| Length | Bastard Cut<br>Order No. | Smooth Cut<br>Order No. |
|--------|--------------------------|-------------------------|
| 6"     | 511-8149                 | 511-8153                |
| 8"     | 511-8150                 | 511-8154                |
| 10"    | 511-8151                 | 511-8155                |
| 12"    | 511-8152                 | 511-8156                |

## Punch Grinder

- The small punch grinder can process from diameter 0.5mm to 10mm.
- Grinding diameter: 0.5-6mm
- Right pressure must be put on the screw to avoid over pressure.



Order No.287-6804

## Motor Punch Grinder

Put the work on the rollers to realize non-centering grinding by motor, no need to set center before working. Available for long pin or punch. Equipped with magnetic sine plate, it can grinding various angle. With profile wheel to grind punch in different shapes.

### Main Parameters:

Length of workpiece: 20-120mm  
Outside grinding length :5-35mm  
Grinding diameter: 1.5-25mm  
Accuracy: 0.005mm  
Roller driving motor:  
110V/60Hz 129rpm or 220V/50Hz 108rpm



Order No.287-6806

## Punch Grinder

Punch grinder is a precision product which installed on a plane plate, and grind the top surface of round punch simply and accurately. The operation can be stable handled due to use the depressed roller to fix the handle. Heavy grinding can be done also. Ascertain the surface of the turning roller and depressed bearing without scratch and rust to keep its accuracy before using.

Accuracy of roller is within 0.005mm. It can grind punches of outside diameter from 1.5~30mm, extended grinding length is within 5~35mm.



Order No. 287-6802

### Adjustable Dresser

- Use on all grinding machines.
- Dress OD and face of wheels.
- Adjustable to 7" height.
- Dress any width.



Order No. 225-2016

### Brake Truing Unit

- Used for dressing diamond and CBN wheels.
- Surface is treated with blaze-dried lacquer.
- Axis part is fixed with shaft bearing and can be rotated at high speed and with great precision.



Order No. 225-3000

### Sine Dresser

- Range of angles: 0-60°.
- Cross feed up to 50mm, center distance 0.01mm.
- Combination sine system and crossfeed for dressing grinding wheel precise angles.



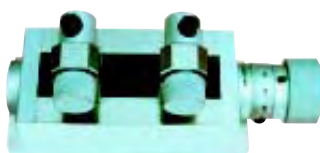
Order No. 225-1009

### Precision Duplex Dresser

*Dress any custom width up to 1-9/16"*

- Designed to simultaneously dress both sides of a grinding wheel, precisely and without deformation.
- Useful for thinning grinding wheels or dressing thin wheels.
- Tool steel construction and hardened throughout to HRC 60 for life time use.

Max. Width of Wheel.....1-9/16"  
Max. Dressing Depth.....1-9/16"  
Min. Dressing Width.....0.0079"  
Graduation.....0.001"  
Weight.....71lbs



Order No. 225-1005

### Optical Radius & Angle Dresser

Magnification through the lens in the spindle, makes it possible for the operator to see how to dress the form on the grinding wheel.

Overall Height.....4"  
Length.....8-1/4"  
Swing Arm.....180°  
Max. Size Grinding Wheel.....8"  
Max. Outside Radius(on Wheel)...5/8" approx.  
Max. Inside Radius(on Wheel).....1" approx.  
Spindle.....1"OD



Order No. 287-6060

### "Geiger" Wheel Dresser

- Features a shank 3/8" diamond.
- Restores your grinding wheels back to perfection.
- Complete with an extremely hard 1/2 carat industrial diamond tip.
- Accurate and simple to use tool that accomodates most any bench or pedestal type grinder.



Order No. 225-6812

### Hi-Lo Wheel Dresser

- Minimum Height.....2"
- Maximum Height.....9"
- Cast iron construction.
- 1/4 Carat and 3/8" shank diamond included.



Order No. 225-1213

### Angle Dresser

- Features a shank 3/8" diamond.
- Heavy precision ground base plate.
- All 6 sides square to .0002"
- Side block pivots on shoulder hardened screws.



Order No. 225-2017

### Grinding Wheel Dresser & Cutters

- Fulfill most general dressing needs where fast dressing is the primary requirement.
- Hunting on type cutters will quickly remove the load form grinding wheels and present a new and faze grinding surface.



| No. size | For (Dia)  | Dresser with one cutter Order No. | Replacement Cutters Order No. |
|----------|------------|-----------------------------------|-------------------------------|
| #0       | UP to 10"  | 287-6300                          | 287-6350                      |
| #1       | 10" to 16" | 287-6301                          | 287-6351                      |
| #2       | 16" to 26" | 287-6302                          | 287-6352                      |



| No. size | For (Dia)  | Face   | Dresser with one cutter Order No. |
|----------|------------|--------|-----------------------------------|
| #0       | UP to 10"  | 2"     | 287-6310                          |
| #1       | 10" to 16" | 3"     | 287-6311                          |
| #2       | 16" to 26" | 3-1/2" | 287-6312                          |

## Wheel Dressers

### Cut-Off Wheel Mandrels

- 2 Piece safety tested
- No washer needed
- Head is slotted on locking screw for fast change

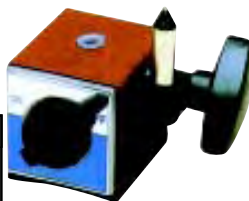


| Arbor Size | Shank Size | Wheel Thickness | OAL      | Order No. |
|------------|------------|-----------------|----------|-----------|
| 1/8"       | 1/8"       | .025-1/8"       | 1-13/16" | 262-0161  |
| 1/4        | 1/4        | .035-1/4        | 2-13/16  | 262-0162  |
| 3/8        | 1/4        | .035-1/4        | 2-13/16  | 262-0163  |

### Magnetic Diamond Dressers Holder

- Magnetic Base with On/Off switch.
- Magnetic Power: 60kgs(130lbs)
- Hold 3/8" or 10mm shank Diamond Dresser.
- Working angle adjustable.

| Descriptions                    | Order No. |
|---------------------------------|-----------|
| without Diamond Dresser         | 225-1300  |
| with 10mm shank Diamond Dresser | 225-1301  |



### Concave Radius Diamond Dressers

#### 3/8x2" Shank



| Radius | Order No. |
|--------|-----------|
| .010"  | 389-8205  |
| .015   | 389-8208  |
| .020   | 389-8211  |
| .025   | 389-8214  |
| .030   | 389-8217  |

| Radius | Order No. |
|--------|-----------|
| .040"  | 389-8220  |
| .050   | 389-8223  |
| .060   | 389-8226  |
| .090   | 389-8229  |
| .125   | 389-8232  |

### Small Landis Dressers

#### 7/16x5/8" Head

#### 1/4x1-1/8" Shank



| Carat Weight | Order No. |
|--------------|-----------|
| 1/4          | 389-8265  |
| 1/2          | 389-8268  |
| 3/4          | 389-8271  |

| Carat Weight | Order No. |
|--------------|-----------|
| 1            | 389-8274  |
| 1-1/2        | 389-8277  |

### Cincinnati Dressers

#### 5/8x5/8" Head

#### 7/16x2" Shank



| Carat Weight | Order No. |
|--------------|-----------|
| 1/4          | 389-8305  |
| 1/2          | 389-8308  |
| 3/4          | 389-8311  |
| 1            | 389-8314  |

| Carat Weight | Order No. |
|--------------|-----------|
| 1-1/2        | 389-8317  |
| 2            | 389-8320  |
| 3            | 389-8323  |

### Thread-Grinding Diamond Tools

Available with 60°, 75°, 90° front clearance angle



|           | 60°       | 75°       | 90°       |
|-----------|-----------|-----------|-----------|
| Size      | Order No. | Order No. | Order No. |
| 1/4x1"    | 389-8445  | 389-8457  | 389-8469  |
| 1/4x1-1/4 | 389-8448  | 389-8460  | 389-8472  |
| 1/4x1-1/2 | 389-8451  | 389-8463  | 389-8475  |
| 3/8x1-5/8 | 389-8454  | 389-8466  | 389-8478  |

### Single Point Diamond Dressers



| Carat Weight | 3/8" Shank Order No. | 7/16" Shank Order No. | 1/2" Shank Order No. |
|--------------|----------------------|-----------------------|----------------------|
| 1/4          | 389-8005             | 389-8045              | 389-8105             |
| 1/3          | 389-8008             | 389-8048              | 389-8108             |
| 1/2          | 389-8011             | 389-8051              | 389-8111             |
| 3/4          | 389-8014             | 389-8054              | 389-8114             |
| 1            | 389-8017             | 389-8057              | 389-8117             |
| 1-1/2        | 389-8020             | 389-8060              | 389-8120             |
| 2            | 389-8023             | 389-8063              | 389-8123             |
| 2-1/2        | 389-8026             | 389-8066              | 389-8126             |
| 3            | 389-8029             | 389-8069              | 389-8129             |
| 4            | 389-8032             | 389-8072              | 389-8132             |
| 5            | 389-8035             | 389-8075              | 389-8135             |

### Large Norton Dressers

#### 5/8x5/8" Head

#### 7/16x1-1/2" Shank



| Carat Weight | Order No. |
|--------------|-----------|
| 1/4          | 389-8405  |
| 1/2          | 389-8408  |
| 3/4          | 389-8411  |
| 1            | 389-8414  |

| Carat Weight | Order No. |
|--------------|-----------|
| 1-1/2        | 389-8417  |
| 2            | 389-8420  |
| 3            | 389-8423  |

### Diamond Dressers For Machine Use

#### 7/16x1-1/8" Shank



| Carat Weight | Order No. |
|--------------|-----------|
| 1/4          | 389-8345  |
| 1/2          | 389-8348  |
| 3/4          | 389-8351  |

| Carat Weight | Order No. |
|--------------|-----------|
| 1            | 389-8354  |
| 1-1/2        | 389-8357  |
| 2            | 389-8360  |

### Convex Radius Diamond Dressers

#### 3/8x2" Shank

| Radius     | Order No. |
|------------|-----------|
| .020-.125" | 389-8250  |
| .125-.250  | 389-8251  |
| .250&UP    | 389-8252  |



### Diamond T-Bar Dresser

| Specification                            | Order No. |
|------------------------------------------|-----------|
| 1 Carat,<br>Head Size:<br>3/8x1/2x1-1/2" | 389-8599  |



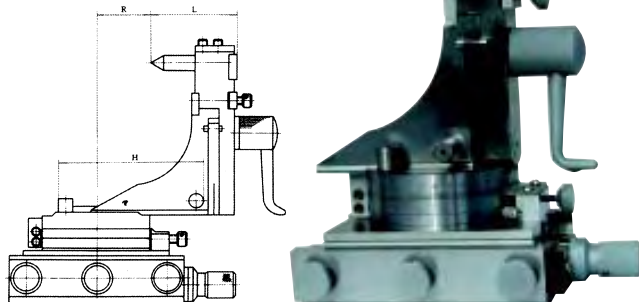
### Single-Layer Cluster Tools

| Carat Weight | 3/8" Shank Order No. | 7/16" Shank Order No. | 1/2" Shank Order No. |
|--------------|----------------------|-----------------------|----------------------|
| 1            | 389-8505             | 389-8511              | 389-8517             |
| 2            | 389-8508             | 389-8514              | 389-8520             |



### Universal Wheel Dresser

- Universal Wheel Dresser Adaptable on surface grinder and universal tool grinder for dressing grinding wheels into various cross sections of flat or curved shapes.
- To dress convex arc surface:  $H = L + R$
- To dress concave arc surface:  $H = L - R$
- **H.** — Distance between outer generation lines of two location pins.
- **R.** — Radius of the arc surface to be dressed.
- **L.** — Distance from tip of diamond cutter to base plate.



Order No.287-6070

#### Specifications

|                                       |                   |
|---------------------------------------|-------------------|
| Center Height                         | 165mm (6-2/5")    |
| Measuring quasi-pin dia               | 10mm (0.4")       |
| Max. Swing Distance of diamond cutter | +/-20mm (+/-0.8") |
| Max. Wheel Diameter                   | 200mm (8")        |
| Reading Accuracy or Turret Index      | 5"                |
| Max. Translation of Feed              | 20mm (0.8")       |
| Feed per division of handle scale     | 0.02mm            |
| Weight                                | 5kg               |

### Radius and Angle Dresser

- No height gage or set-up aids required.
- Radius is set on the grinder by measuring over the two pins or by inserting a gage block, for direct reading.
- Inside or outside radius is determined by using either the left hand or right hand pins.
- Uses 3/8" shank diamond.



Rat Tail Adapter Only

Order No. 225-1030

Order No. 225-1020

#### Accuracy:

|                                                   |        |
|---------------------------------------------------|--------|
| Squareness of Face Plate to Dresser Arm, per 2"   | .0005" |
| Squareness of Face Plate to Base                  | .0006" |
| Center Run out of Dovetail Groove to Wheel Center | .0006" |

#### Specifications

|                                      |          |
|--------------------------------------|----------|
| Maximum Diameter of Wheel            |          |
| Convex Radii                         | 12"      |
| Concave Radii                        | 0-1-5/8" |
| Tangent Travel Either Side of Center | 0-4"     |
| Center Line of Tool                  | 2"       |
| Over Length                          | 3.4"     |
| Weight                               | 16.61"   |
| Rat Tail Adapter                     | 30lbs    |

### Punch Former & Radius Dresser

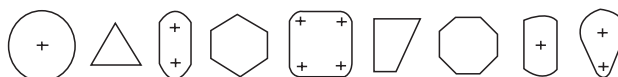
A precision Grinding Machine Accessory for dressing grinding wheel, also adaptable to Grinding Machine and Electrical Discharge Machine (EDM) for precision punch forming.

- Use for concave and convex radius.
- Hardened tool steel construction.
- Radius dresser standard with both models.
- With oscillating Vee Block for tangent dressing.
- Compare to units costing 2 or 3 times as much.
- Complete with fitted case.



Order No.287-6801

#### Punch Forming

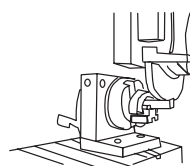


Order No.287-6803

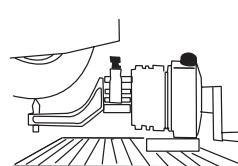
#### Wheel Dresser



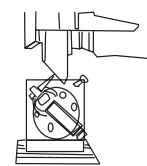
#### Punch Forming



#### Radius Dressing



#### Angle Dressing



#### Specifications

|                                              |                                   |
|----------------------------------------------|-----------------------------------|
| Center height.....                           | 3-1/2"(80mm)                      |
| Indexing Div.....                            | 24 every 15 degree +/- 10 seconds |
| Tangential travel either side of center..... | 25/32"(19.8mm)                    |
| Dia. Workpiece of V-block.....               | 0.16"-1.18"(4-30mm)               |
| V-block adjusting system.....                | Rack and Pinon                    |
| Max. Size Grinding Wheel.....                | 7.87"(200mm)                      |
| Max. Outside Radius ( on wheel).....         | 1.89"(48mm)                       |
| Max.inside Radius( on wheel).....            | 3.9"(100mm)                       |
| Dimension.....                               | 14.2x4.6x5.7"(360x116x145mm)      |

#### Descriptions

Standard  
With Thru Hole  
(for Long Working Piece)

#### Order No.

287-6801  
287-6803

## Carbide Burrs

### Shape A- Cylindrical



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SA-43 | 1/16"        | 1/2"           | 1/8"       | 389-0002             | 389-0102             |
| SA-42 | 3/32         | 7/16           | 1/8        | 389-0004             | 389-0104             |
| SA-41 | 1/8          | 9/16           | 1/8        | 389-0006             | 389-0106             |
| SA-13 | 5/32         | 5/8            | 1/4        | 389-0010             | 389-0110             |
| SA-14 | 3/16         | 5/8            | 1/4        | 389-0012             | 389-0112             |
| SA-51 | 1/4          | 1/2            | 1/8        | 389-0011             | 389-0111             |
| SA-1  | 1/4          | 5/8            | 1/4        | 389-0014             | 389-0114             |
| SA-2  | 5/16         | 3/4            | 1/4        | 389-0016             | 389-0116             |
| SA-3  | 3/8          | 3/4            | 1/4        | 389-0018             | 389-0118             |
| SA-4  | 7/16         | 1              | 1/4        | 389-0020             | 389-0120             |
| SA-5  | 1/2          | 1              | 1/4        | 389-0022             | 389-0122             |
| SA-7  | 3/4          | 1              | 1/4        | 389-0024             | 389-0124             |
| SA-9  | 1            | 1              | 1/4        | 389-0026             | 389-0126             |

### Shape B- Cylindrical End Cut



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SB-42 | 3/32"        | 7/16"          | 1/8"       | 389-0504             | 389-0604             |
| SB-43 | 1/8          | 9/16           | 1/8        | 389-0506             | 389-0606             |
| SB-41 | 1/16         | 1/2            | 1/4        | 389-0510             | 389-0610             |
| SB-13 | 5/32         | 5/8            | 1/4        | 389-0512             | 389-0612             |
| SB-14 | 3/16         | 5/8            | 1/4        | 389-0514             | 389-0614             |
| SB-1  | 1/4          | 5/8            | 1/4        | 389-0516             | 389-0616             |
| SB-2  | 5/16         | 3/4            | 1/4        | 389-0518             | 389-0618             |
| SB-3  | 3/8          | 3/4            | 1/4        | 389-0520             | 389-0620             |
| SB-4  | 7/16         | 1              | 1/4        | 389-0522             | 389-0622             |
| SB-5  | 1/2          | 1              | 1/4        | 389-0524             | 389-0624             |
| SB-7  | 3/4          | 1              | 1/4        | 389-0526             | 389-0626             |
| SB-9  | 1            | 1              | 1/4        | 389-0528             | 389-0628             |

### Shape C- Cylindrical Radius End



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SC-41 | 3/32"        | 7/16"          | 1/8"       | 389-1004             | 389-1104             |
| SC-42 | 1/8          | 9/16           | 1/8        | 389-1006             | 389-1106             |
| SC-11 | 1/8          | 1/2            | 1/4        | 389-1010             | 389-1110             |
| SC-13 | 5/32         | 5/8            | 1/4        | 389-1012             | 389-1112             |
| SC-14 | 3/16         | 5/8            | 1/4        | 389-1014             | 389-1114             |
| SC1L6 | 1/4          | 1/2            | 1/4        | 389-1015             | 389-1115             |
| SC-1  | 1/4          | 5/8            | 1/4        | 389-1016             | 389-1116             |
| SC-2  | 5/16         | 3/4            | 1/4        | 389-1018             | 389-1118             |
| SC-3  | 3/8          | 3/4            | 1/4        | 389-1020             | 389-1120             |
| SC3L6 | 3/8          | 3/4            | 1/4        | 389-1019             | 389-1119             |
| SC-4  | 7/16         | 1              | 1/4        | 389-1022             | 389-1122             |
| SC-5  | 1/2          | 1              | 1/4        | 389-1024             | 389-1124             |
| SC-7  | 5/8          | 1              | 1/4        | 389-1026             | 389-1126             |
| SC-9  | 3/4          | 1              | 1/4        | 389-1028             | 389-1128             |

### Shape D- Ball



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SD-41 | 3/32"        | 3/32"          | 1/8"       | 389-1504             | 389-1604             |
| SD-42 | 1/8          | 1/8            | 1/8        | 389-1506             | 389-1606             |
| SD-14 | 3/16         | 3/16           | 1/4        | 389-1510             | 389-1610             |
| SD-53 | 3/16         | 5/32           | 1/8        | 389-1509             | 389-1609             |
| SD-51 | 1/4          | 7/32           | 1/8        | 389-1513             | 389-1613             |
| SD-11 | 1/8          | 1/8            | 1/4        | 389-1512             | 389-1612             |
| SD-1  | 1/4          | 1/4            | 1/4        | 389-1514             | 389-1614             |
| SD-2  | 5/16         | 5/16           | 1/4        | 389-1516             | 389-1616             |
| SD-3  | 3/8          | 3/8            | 1/4        | 389-1518             | 389-1618             |
| SD-5  | 1/2          | 1/2            | 1/4        | 389-1520             | 389-1620             |
| SD5L6 | 1/2          | 7/17           | 1/4        | 389-1519             | 389-1619             |
| SD-6  | 5/8          | 5/8            | 1/4        | 389-1522             | 389-1622             |
| SD-7  | 3/4          | 3/4            | 1/4        | 389-1524             | 389-1624             |
| SD-9  | 1            | 1              | 1/4        | 389-1526             | 389-1626             |

### Shape E- Oval



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SE-53 | 3/16"        | 9/32"          | 1/8"       | 389-2004             | 389-2104             |
| SE-41 | 1/8          | 7/32           | 1/8        | 389-2006             | 389-2106             |
| SE-51 | 1/4          | 3/8            | 1/8        | 389-2007             | 389-2107             |
| SE-1  | 1/4          | 3/8            | 1/4        | 389-2010             | 389-2110             |
| SE1L6 | 1/4          | 3/8            | 1/4        | 389-2009             | 389-2109             |
| SE-3  | 3/8          | 5/8            | 1/4        | 389-2012             | 389-2112             |
| SE3L6 | 3/8          | 5/8            | 1/4        | 389-2011             | 389-2111             |
| SE-5  | 1/2          | 7/8            | 1/4        | 389-2014             | 389-2114             |
| SE-6  | 5/8          | 1              | 1/4        | 389-2016             | 389-2116             |
| SE-7  | 3/4          | 1              | 1/4        | 389-2018             | 389-2118             |

### Shape F- Tree Radius End



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SF-53 | 3/16"        | 1/2"           | 1/8"       | 389-3002             | 389-3102             |
| SF-41 | 1/8          | 1/4            | 1/8        | 389-3004             | 389-3104             |
| SF-42 | 1/8          | 1/2            | 1/8        | 389-3006             | 389-3106             |
| SF-11 | 1/8          | 1/2            | 1/4        | 389-3010             | 389-3110             |
| SF-1  | 1/4          | 5/8            | 1/4        | 389-3012             | 389-3112             |
| SF-3  | 3/8          | 3/4            | 1/4        | 389-3014             | 389-3114             |
| SF-5  | 1/2          | 1              | 1/4        | 389-3016             | 389-3116             |
| SF-6  | 5/8          | 1              | 1/4        | 389-3018             | 389-3118             |
| SF-7  | 3/4          | 1              | 1/4        | 389-3020             | 389-3120             |

## Carbide Burrs

### Shape G- Tree Pointed End



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SG-43 | 1/8"         | 3/8"           | 1/8"       | 389-3502             | 389-3602             |
| SG-44 | 1/8          | 1/2            | 1/8        | 389-3501             | 389-3601             |
| SG-42 | 1/8          | 5/16           | 1/8        | 389-3504             | 389-3604             |
| SG-41 | 1/8          | 1/4            | 1/8        | 389-3506             | 389-3606             |
| SG-1  | 1/4          | 5/8            | 1/4        | 389-3510             | 389-3610             |
| SG-3  | 3/8          | 3/4            | 1/4        | 389-3512             | 389-3612             |
| SG-13 | 1/2          | 3/4            | 1/4        | 389-3514             | 389-3614             |
| SG-5  | 1/2          | 1              | 1/4        | 389-3516             | 389-3616             |
| SG-6  | 5/8          | 1              | 1/4        | 389-3518             | 389-3618             |
| SG-7  | 3/4          | 1              | 1/4        | 389-3520             | 389-3620             |

### Shape H- Flame



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SH-53 | 3/16"        | 3/8"           | 1/8"       | 389-2504             | 389-2604             |
| SH41  | 1/8          | 1/4            | 1/8        | 389-2506             | 389-2606             |
| SH-1  | 1/4          | 5/8            | 1/4        | 389-2510             | 389-2610             |
| SH-2  | 5/16         | 3/4            | 1/4        | 389-2512             | 389-2612             |
| SH-5  | 1/2          | 1-1/4          | 1/4        | 389-2514             | 389-2614             |
| SH-6  | 5/8          | 1-7/16         | 1/4        | 389-2516             | 389-2616             |
| SH-7  | 3/4          | 1-5/8          | 1/4        | 389-2518             | 389-2618             |

### Shape J- 60° Cone



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SJ-42 | 1/8"         | 3/32"          | 1/8"       | 389-4006             | 389-4106             |
| SJ-1  | 1/4          | 3/16           | 1/4        | 389-4010             | 389-4110             |
| SJ-2  | 5/16         | 3/16           | 1/4        | 389-4012             | 389-4112             |
| SJ-3  | 3/8          | 5/16           | 1/4        | 389-4014             | 389-4114             |
| SJ-5  | 1/2          | 7/16           | 1/4        | 389-4016             | 389-4116             |
| SJ-6  | 5/8          | 9/16           | 1/4        | 389-4018             | 389-4118             |
| SJ-7  | 3/4          | 11/16          | 1/4        | 389-4020             | 389-4120             |
| SJ-9  | 1            | 15/16          | 1/4        | 389-4022             | 389-4122             |

### Shape K- 90° Cone



| Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-------|--------------|----------------|------------|----------------------|----------------------|
| SK-42 | 1/8"         | 1/16"          | 1/8"       | 389-4506             | 389-4606             |
| SK-1  | 1/4          | 1/8            | 1/4        | 389-4510             | 389-4610             |
| SK-2  | 5/16         | 3/16           | 1/4        | 389-4512             | 389-4612             |
| SK-3  | 3/8          | 3/16           | 1/4        | 389-4514             | 389-4614             |
| SK-5  | 1/2          | 1/4            | 1/4        | 389-4516             | 389-4616             |
| SK-6  | 5/8          | 5/16           | 1/4        | 389-4518             | 389-4618             |
| SK-7  | 3/4          | 3/8            | 1/4        | 389-4520             | 389-4620             |
| SK-9  | 1            | 1/2            | 1/4        | 389-4522             | 389-4622             |

### Shape L- Taper or Cone Radius End



| Shape     | Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-----------|-------|--------------|----------------|------------|----------------------|----------------------|
| 8° Taper  | SL-53 | 3/16"        | 1/2"           | 1/8"       | 389-5002             | 389-5102             |
| 8° Taper  | SL-42 | 1/8          | 1/2            | 1/8        | 389-5004             | 389-5104             |
| 8° Taper  | SL-41 | 1/8          | 3/8            | 1/8        | 389-5006             | 389-5106             |
| 14° Taper | SL-1  | 1/4          | 5/8            | 1/4        | 389-5010             | 389-5110             |
| 14° Taper | SL-2  | 5/16         | 7/8            | 1/4        | 389-5012             | 389-5112             |
| 14° Taper | SL-3  | 3/8          | 1-1/16         | 1/4        | 389-5014             | 389-5114             |
| 14° Taper | SL-4  | 1/2          | 1-1/8          | 1/4        | 389-5016             | 389-5116             |
| 14° Taper | SL-5  | 5/8          | 1-3/16         | 1/4        | 389-5018             | 389-5118             |
| 14° Taper | SL-6  | 5/8          | 1-5/16         | 1/4        | 389-5020             | 389-5120             |
| 14° Taper | SL-7  | 3/4          | 1-1/2          | 1/4        | 389-5022             | 389-5122             |

### Shape M- Taper or Cone Flat End



| Shape     | Style | Cutting Dia. | Cutting Length | Shank Diameter | Single Cut Order No. | Double Cut Order No. |
|-----------|-------|--------------|----------------|----------------|----------------------|----------------------|
| 16° Taper | SM-53 | 3/16"        | 1/2"           | 1/8"           | 389-5502             | 389-5602             |
| 7° Taper  | SM-43 | 1/8          | 1/8            | 1/8            | 389-5504             | 389-5604             |
| 14° Taper | SM-42 | 1/8          | 7/16           | 1/8            | 389-5506             | 389-5606             |
| 12° Taper | SM-41 | 1/8          | 11/32          | 1/8            | 389-5508             | 389-5608             |
| 22° Taper | SM-51 | 1/4          | 1/2            | 1/8            | 389-5509             | 389-5609             |
| 22° Taper | SM-1  | 1/4          | 1/2            | 1/4            | 389-5510             | 389-5610             |
| 14° Taper | SM-2  | 1/4          | 3/4            | 1/4            | 389-5512             | 389-5612             |
| 10° Taper | SM-3  | 1/4          | 1              | 1/4            | 389-5514             | 389-5614             |
| 28° Taper | SM-4  | 3/8          | 5/8            | 1/4            | 389-5516             | 389-5616             |
| 28° Taper | SM-5  | 1/2          | 5/8            | 1/4            | 389-5518             | 389-5618             |
| 30° Taper | SM-6  | 5/8          | 1              | 1/4            | 389-5520             | 389-5620             |

### Shape N- Inverted Cone



| Shape     | Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-----------|-------|--------------|----------------|------------|----------------------|----------------------|
| 10° Taper | SN-41 | 3/32"        | 1/8"           | 1/8"       | 389-6002             | 389-6102             |
| 10° Taper | SN-42 | 1/8          | 3/16           | 1/8        | 389-6004             | 389-6104             |
| 10° Taper | SN-53 | 3/16         | 1/4            | 1/8        | 389-6006             | 389-6106             |
| 10° Taper | SN-51 | 1/4          | 1/4            | 1/8        | 389-6009             | 389-6109             |
| 10° Taper | SN-1  | 1/4          | 5/16           | 1/4        | 389-6010             | 389-6110             |

| Shape     | Style | Cutting Dia. | Cutting Length | Shank Dia. | Single Cut Order No. | Double Cut Order No. |
|-----------|-------|--------------|----------------|------------|----------------------|----------------------|
| 13° Taper | SN-2  | 3/8"         | 3/8"           | 1/4"       | 389-6012             | 389-6112             |
| 28° Taper | SN-4  | 1/2          | 1/2            | 1/4        | 389-6014             | 389-6114             |
| 18° Taper | SN-6  | 5/8          | 3/4            | 1/4        | 389-6016             | 389-6116             |
| 30° Taper | SN-7  | 3/4          | 5/8            | 1/4        | 389-6018             | 389-6118             |

## DIN8032 Carbide Burrs

### 6mm Shank Dia.

Carbide burs feature a chisel type cutting edge. Machine ground and tool built to exacting tolerances of concentricity, size, and shape. Results in smooth running, fast metal removal and fine finishes when used with precision grinders.

#### Carbide Burrs-ZYA (Cylindrical)



| Style   | Cutting Dia. | Cutting Length | Order No. |
|---------|--------------|----------------|-----------|
| ZYA0413 | 4mm          | 13             | 489-0004  |
| ZYA0616 | 6mm          | 16             | 489-0006  |
| ZYA0820 | 8mm          | 20             | 489-0008  |
| ZYA1013 | 10mm         | 13             | 489-0010  |
| ZYA1020 | 10mm         | 20             | 489-0011  |
| ZYA1225 | 12mm         | 25             | 489-0012  |
| ZYA1625 | 16mm         | 25             | 489-0016  |

#### Carbide Burrs-ZYAS (Cylindrical End Cut)



| Style     | Cutting Dia. | Cutting Length | Order No. |
|-----------|--------------|----------------|-----------|
| ZYAS 0413 | 4mm          | 13             | 489-0104  |
| ZYAS 0616 | 6mm          | 16             | 489-0106  |
| ZYAS 0820 | 8mm          | 20             | 489-0108  |
| ZYAS 1013 | 10mm         | 13             | 489-0110  |
| ZYAS 1020 | 10mm         | 20             | 489-0111  |
| ZYAS 1225 | 12mm         | 25             | 489-0112  |
| ZYAS 1625 | 16mm         | 25             | 489-0116  |

#### Carbide Burrs-WRC (Cylindrical Radius End)



| Style   | Cutting Dia. | Cutting Length | Order No. |
|---------|--------------|----------------|-----------|
| WRC0413 | 4mm          | 13             | 489-0204  |
| WRC0616 | 6mm          | 16             | 489-0206  |
| WRC0820 | 8mm          | 20             | 489-0208  |
| WRC1020 | 10mm         | 20             | 489-0210  |
| WRC1225 | 12mm         | 25             | 489-0212  |
| WRC1625 | 16mm         | 25             | 489-0216  |

#### Carbide Burrs-KUD (Ball)



| Style    | Cutting Dia. | Cutting Length | Order No. |
|----------|--------------|----------------|-----------|
| KUD 0403 | 4mm          | 3.6            | 489-0304  |
| KUD 0605 | 6mm          | 5.4            | 489-0306  |
| KUD 0807 | 8mm          | 7.0            | 489-0308  |
| KUD 1009 | 10mm         | 9.0            | 489-0310  |
| KUD 1210 | 12mm         | 10.8           | 489-0312  |
| KUD 1614 | 16mm         | 14.3           | 489-0316  |
| KUD 2018 | 20mm         | 18.0           | 489-0320  |

#### Carbide Burrs-SPG (Three Pointed End)



| Style    | Cutting Dia. | Cutting Length | Order No. |
|----------|--------------|----------------|-----------|
| SPG 0618 | 6mm          | 18             | 489-0406  |
| SPG 1020 | 10mm         | 20             | 489-0410  |
| SPG 1225 | 12mm         | 25             | 489-0412  |
| SPG 1230 | 12mm         | 30             | 489-0413  |
| SPG 1630 | 16mm         | 30             | 489-0416  |

#### Carbide Burrs-Tre (Oval)



| Style   | Cutting Dia. | Cutting Length | Order No. |
|---------|--------------|----------------|-----------|
| TRE0610 | 6mm          | 10             | 489-0506  |
| TRE0813 | 8mm          | 13             | 489-0508  |
| TRE1016 | 10mm         | 16             | 489-0510  |
| TRE1220 | 12mm         | 20             | 489-0512  |
| TRE1625 | 16mm         | 25             | 489-0516  |

#### Carbide Burrs-SKM (Taper or Cone Flat End)



| Style   | Shape    | Cutting Length | Order No. |
|---------|----------|----------------|-----------|
| SKM0618 | 18° 6mm  | 18             | 489-0606  |
| SKM1020 | 28° 10mm | 20             | 489-0610  |
| SKM1225 | 26° 12mm | 25             | 489-0612  |

#### Carbide Burrs-KEL (Taper or Cone Radius End)



| Style   | Cutting Dia. | Cutting Length | Order No. |
|---------|--------------|----------------|-----------|
| KEL1020 | 14° 10mm     | 20             | 489-0710  |
| KEL1225 | 14° 12mm     | 25             | 489-0712  |
| KEL1230 | 14° 12mm     | 30             | 489-0713  |
| KEL1630 | 14° 16mm     | 30             | 489-0716  |

#### Carbide Burrs-RBF (Three Radius End)



| Style   | Cutting Dia. | Cutting Length | Order No. |
|---------|--------------|----------------|-----------|
| RBF0618 | 6mm          | 18             | 489-0806  |
| RBF0820 | 8mm          | 20             | 489-0808  |
| RBF1020 | 10mm         | 20             | 489-0810  |
| RBF1225 | 12mm         | 25             | 489-0812  |
| RBF1630 | 16mm         | 30             | 489-0816  |

#### Carbide Burrs-B (Flame)



| Style  | Cutting Dia. | Cutting Length | Order No. |
|--------|--------------|----------------|-----------|
| B 0820 | 8mm          | 20             | 489-0908  |
| B 1230 | 12mm         | 30             | 489-0912  |
| B 1635 | 16mm         | 35             | 489-0916  |

## Carbide Burr Sets

### 5 pc set, 1/8" Shank Diameter

Single Cut

**Order No. 389-0972**

Double Cut

**Order No. 389-0982**

Specifications

| Style | Shank Dia. | Cutting Dia. | Cutting Length | OAL | Sharp                  |
|-------|------------|--------------|----------------|-----|------------------------|
| SA-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Cylindrical            |
| SC-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Cylindrical Radius End |
| SF-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Tree                   |
| SD-51 | 1/8"       | 1/4"         | 7/32"          | 2"  | Ball                   |
| SM-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Cone,22deg             |



### 5 pc set, 1/4" Shank Diameter

Single Cut

**Order No. 389-0971**

Double Cut

**Order No. 389-0981**

Specifications

| Style | Shank Dia. | Cutting Dia. | Cutting Length | OAL | Sharp                  |
|-------|------------|--------------|----------------|-----|------------------------|
| SA-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Cylindrical            |
| SC-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Cylindrical Radius End |
| SF-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Tree                   |
| SD-1  | 1/4"       | 1/4"         | 3/16"          | 2"  | Ball                   |
| SM-1  | 1/4"       | 1/4"         | 1/2"           | 2"  | Cone,22deg             |



### 12 pc set, 1/4" Shank Diameter

Single Cut

**Order No. 389-0974**

Double Cut

**Order No. 389-0984**

Specifications

| Style | Shank Dia. | Cutting Dia. | Cutting Length | OAL | Sharp                  |
|-------|------------|--------------|----------------|-----|------------------------|
| SA-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Cylindrical            |
| SC-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Cylindrical Radius End |
| SD-1  | 1/4"       | 1/4"         | 1/4"           | 2"  | Ball                   |
| SE-1  | 1/4"       | 1/4"         | 3/8"           | 2"  | Oval                   |
| SF-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Tree                   |
| SG-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Tree Point End         |
| SH-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Flame                  |
| SJ-1  | 1/4"       | 1/4"         | 3/16"          | 2"  | Cone,60Deg             |
| SK-1  | 1/4"       | 1/4"         | 1/8"           | 2"  | Cone,60Deg             |
| SL-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Taper radius End,14deg |
| SM-1  | 1/4"       | 1/4"         | 1/2"           | 2"  | Cone,22deg             |
| SN-1  | 1/4"       | 1/4"         | 5/16"          | 2"  | Inverted Cone,10deg    |



### 9 pc set, 1/8" Shank Diameter

Single Cut

**Order No. 389-0951**

Double Cut

**Order No. 389-0961**

Specifications

| Style | Shank Dia. | Cutting Dia. | Cutting Length | OAL | Sharp                  |
|-------|------------|--------------|----------------|-----|------------------------|
| SA-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Cylindrical            |
| SB-51 | 1/8"       | 1/4"         | 3/16"          | 2"  | Cylindrical End Cut    |
| SC-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Cylindrical Radius End |
| SD-51 | 1/8"       | 1/4"         | 7/32"          | 2"  | Ball                   |
| SE-51 | 1/8"       | 1/4"         | 3/8"           | 2"  | Oval                   |
| SF-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Tree                   |
| SG-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Tree Point End         |
| SM-51 | 1/8"       | 1/4"         | 1/2"           | 2"  | Cone,22deg             |
| SN-51 | 1/8"       | 1/4"         | 1/4"           | 2"  | Inverted Cone,10deg    |



### 12 pc set, 1/8" Shank Diameter

Single Cut

**Order No. 389-0976**

Double Cut

**Order No. 389-0986**

Specifications

| Style | Shank Dia. | Cutting Dia. | Cutting Length | OAL    | Sharp                  |
|-------|------------|--------------|----------------|--------|------------------------|
| SA-1  | 1/8"       | 3/32"        | 7/16"          | 1-1/2" | Cylindrical            |
| SC-1  | 1/8"       | 1/8"         | 9/16"          | 1-1/2" | Cylindrical Radius End |
| SD-1  | 1/8"       | 3/32"        | 7/16"          | 1-1/2" | Ball                   |
| SE-1  | 1/8"       | 1/8"         | 9/16"          | 1-1/2" | Oval                   |
| SF-1  | 1/8"       | 1/8"         | 1/8"           | 1-1/2" | Tree                   |
| SG-1  | 1/8"       | 1/8"         | 7/32"          | 1-1/2" | Tree Point End         |
| SH-1  | 1/8"       | 1/8"         | 1/2"           | 1-1/2" | Flame                  |
| SJ-1  | 1/8"       | 1/8"         | 3/8"           | 1-1/2" | Cone,60Deg             |
| SK-1  | 1/8"       | 1/8"         | 1/4"           | 1-1/2" | Cone,60Deg             |
| SL-1  | 1/8"       | 1/8"         | 1/2"           | 1-1/2" | Taper radius End,14deg |
| SM-1  | 1/8"       | 1/8"         | 7/16"          | 1-1/2" | Cone,22deg             |
| SN-1  | 1/8"       | 1/8"         | 3/16"          | 1-1/2" | Inverted Cone,10deg    |



### 16 pc set, 1/4" Shank Diameter

Single Cut

**Order No. 389-0978**

Double Cut

**Order No. 389-0988**

Specifications

| Style | Shank Dia. | Cutting Dia. | Cutting Length | OAL | Sharp                  |
|-------|------------|--------------|----------------|-----|------------------------|
| SA-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Cylindrical            |
| SA-3  | 1/4"       | 3/8"         | 3/4"           | 2"  | Cylindrical            |
| SA-5  | 1/4"       | 1/2"         | 1"             | 2"  | Cylindrical            |
| SC-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Cylindrical Radius End |
| SC-3  | 1/4"       | 3/8"         | 3/4"           | 2"  | Cylindrical Radius End |
| SC-5  | 1/4"       | 1/2"         | 1"             | 2"  | Cylindrical Radius End |
| SD-3  | 1/4"       | 3/8"         | 3/8"           | 2"  | Ball                   |
| SD-5  | 1/4"       | 1/2"         | 1/2"           | 2"  | Ball                   |
| SE-3  | 1/4"       | 3/8"         | 5/8"           | 2"  | Oval                   |
| SF-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Tree                   |
| SF-3  | 1/4"       | 3/8"         | 3/4"           | 2"  | Tree                   |
| SF-5  | 1/4"       | 1/2"         | 1"             | 2"  | Tree                   |
| SG-1  | 1/4"       | 1/4"         | 5/8"           | 2"  | Tree Point End         |
| SG-3  | 1/4"       | 3/8"         | 3/4"           | 2"  | Tree Point End         |
| SL-3  | 1/4"       | 3/8"         | 1-1/16"        | 2"  | Taper radius End,14deg |
| SL-4  | 1/4"       | 1/2"         | 1-1/8"         | 2"  | Taper radius End,14deg |





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