

CARBIDE CATALOGUE 2023



• TOOLING SOLUTIONS FOR INDUSTRIES •



Automotive



Aerospace



Die & Mould



General Engineering

www.trucut-tool.com

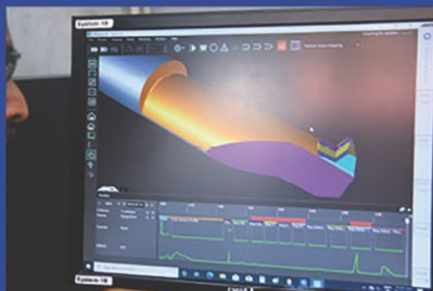
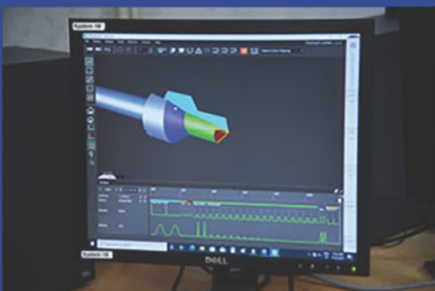


DRILLS | ENDMILLS | REAMERS | CHAMFERS | CENTRE DRILLS
SPOTTING DRILLS | ENGRAVER CUTTER | CUSTOM MADE TOOLS



Welcome to TruCut Precision Tools Pvt. Ltd.

TruCut is a Family Owned Company. Established in 2008, Promoter's Having 2 Decades of Experience in Cutting Tool Industries Our Main Motto was to Offer Customer a One - Stop Shop for All their Cutting Tool Needs.



Industry Recognitions



THE ECONOMIC TIMES

AWARDED US

**BEST BRAND IN
METAL CUTTING
INDUSTRY**

IndustryOutlook

RECOGNIZED US

**TOP 10
CUTTING TOOLS
MANUFACTURERS 2021**





QUALITY CUTTING TOOLS

An ISO 9001:2015 certified company

At Trucut Tool, we take great pride to introduce the Domestic and International market, a comprehensive range of Solid Carbide Rotating Tools.

We at Trucut believe that in this fierce competitive world where top notch quality will be an ultimate goal, we use High Grade Microfine and Ultra Fine Grade carbide rods imported from Europe.

All Tools are produced on latest 5 Axis CNC Tool Grinding Machine and inspected on CNC Inspection to ensure that tool manufactured at Trucut reaches the end users with consistent quality and tight tolerance.

We are extremely proud and confident that our quality and product line will meet all your requirements and end users will enjoy using our Quality products as we enjoy producing it...

Company Profile

Manufacturing Facilities



Microfine and Ultrafine Carbide Raw Materials and Hss-Co are imported from Europe to ensure consistent quality



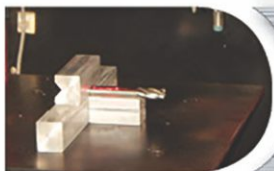
In-house forming section from un-ground carbide blanks



CNC 5 Axis and 7 Axis Grinding Machines for consistent tool performance



Non contact 5 Axis CMM Tool Inspection Machine for consistent Geometry and Dimension



Laser marking for permanent identification



High quality Single Piece packing used for best Tools protection



HYPERLine[®]

- ▶ For High Feed & Speed Machining
- ▶ For machining Alloy Steel & Super Alloys like Stainless Steel, Inconel etc
- ▶ Made From Ultra -Fine Carbide
- ▶ Smooth Coat For Better Wear Resistance & Chip Flow

PAGES **08-32**



HARDLine[®]

- ▶ High Speed Machining Application
- ▶ For Machining of High Hardened Material Upto 62 HRC
- ▶ Wide Range & Series to Suit Die & Mould Industry
- ▶ Made From Submicron Grade Carbide with High Cobalt
- ▶ Hard Coat For Better Wear Resistance at High Speed Finishing Application

PAGES **34-53**



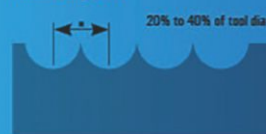
TRULine[®]

- ▶ Wide Machining Application at Moderate Cutting Condition
- ▶ For Machining Steel / Cast Iron / Alloy Steel Upto 40 HRC
- ▶ Made From Ultra Fine carbide
- ▶ Smooth Coat for Better Wear Resistance & Chip Flow

PAGES **56-78**

CUTTING PARAMETERS

Radial Step Over



Axial Depth



- 30-40 HRc Axial depth = 10% of tool diameter.
- 40-50 HRc Axial depth = 5% of tool diameter.
- 50-60 HRc Axial depth = 4% of tool diameter.

PAGES **81-91**



HYPERLine[®]

Hi-Feed & Hi-Speed Tools

- ▶ For High Feed & Speed Machining
- ▶ For machining Alloy Steel & Super Alloys like Stainless Steel, Inconel etc
- ▶ Made From Ultra -Fine Carbide
- ▶ Smooth Coat For Better Wear Resistance & Chip Flow

PAGES **08-32**



Tool Image	Series	Helix Angle	No. of Flute	Recommendation						Refer Page No
				Steel 15-30 HRC	Steel 30-40 HRC	Hard 62 HRC	Stainless Steel	Cast Iron	Aluminium / Copper	
	203	30°	Z=2	●	●			●		9
	205	30°	Z=2	●	●			●		12
	203IC	28°-32°	Z=2	●			●	●		16
	205IC	28°-32°	Z=2	●			●	●		19
	208IC	28°-32°	Z=2	●			●	●		22
	124RCS	30°	Z=4	●	●		●	●		23
	124RFS	45°	Z=4	●			●			23
	124VHS	35/38°	Z=4	●	●		●	●		24
	124TS	45°	Z=4	●	●			●		24
	123HHS	45°	Z=3	●		●	●	●		25
	123HHL	45°	Z=3	●		●	●	●		25
	124HHS	45°	Z=4	●		●	●	●		26
	124HHL	45°	Z=4	●		●	●	●		26
	240	20°	Z=2						●	27
	101ALL	45°	Z=1						●	30
	101ALS	45°	Z=1						●	30
	122ALS	45°	Z=2						●	31
	123ALS	45	Z=3						●	31

Recommended ● Partly Recommended ●



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
3.0	4	20	62	203P-0300	203M-0300	203K-0300
3.1	4	20	62	203P-0310	203M-0310	203K-0310
3.2	4	20	62	203P-0320	203M-0320	203K-0320
3.2	4	20	62	203P-0330	203M-0330	203K-0330
3.4	4	20	62	203P-0340	203M-0340	203K-0340
3.5	4	20	62	203P-0350	203M-0350	203K-0350
3.6	4	24	66	203P-0360	203M-0360	203K-0360
3.7	4	24	66	203P-0370	203M-0370	203K-0370
3.8	4	24	66	203P-0380	203M-0380	203K-0380
3.9	4	24	66	203P-0390	203M-0390	203K-0390
4.0	4	24	66	203P-0400	203M-0400	203K-0400
4.1	5	24	66	203P-0410	203M-0410	203K-0410
4.2	5	24	66	203P-0420	203M-0420	203K-0420
4.3	5	24	66	203P-0430	203M-0430	203K-0430
4.4	5	24	66	203P-0440	203M-0440	203K-0440
4.5	5	24	66	203P-0450	203M-0450	203K-0450
4.6	5	24	66	203P-0460	203M-0460	203K-0460
4.7	5	28	66	203P-0470	203M-0470	203K-0470
4.8	5	28	66	203P-0480	203M-0480	203K-0480
4.9	5	28	66	203P-0490	203M-0490	203K-0490
5.0	5	28	66	203P-0500	203M-0500	203K-0500
5.1	6	28	66	203P-0510	203M-0510	203K-0510
5.2	6	28	66	203P-0520	203M-0520	203K-0520
5.3	6	28	66	203P-0530	203M-0530	203K-0530
5.4	6	28	66	203P-0540	203M-0540	203K-0540
5.5	6	28	66	203P-0550	203M-0550	203K-0550
5.6	6	28	66	203P-0560	203M-0560	203K-0560
5.7	6	28	66	203P-0570	203M-0570	203K-0570
5.8	6	28	66	203P-0580	203M-0580	203K-0580
5.9	6	28	66	203P-0590	203M-0590	203K-0590
6.0	6	28	66	203P-0600	203M-0600	203K-0600
6.1	8	34	79	203P-0610	203M-0610	203K-0610
6.2	8	34	79	203P-0620	203M-0620	203K-0620
6.3	8	34	79	203P-0630	203M-0630	203K-0630
6.4	8	34	79	203P-0640	203M-0640	203K-0640
6.5	8	34	79	203P-0650	203M-0650	203K-0650
6.6	8	34	79	203P-0660	203M-0660	203K-0660
6.7	8	34	79	203P-0670	203M-0670	203K-0670
6.8	8	34	79	203P-0680	203M-0680	203K-0680
6.9	8	34	79	203P-0690	203M-0690	203K-0690

Application :

- Rigid Flute and Shank
- Self Centering
- Specially Designed for Hi-feed rate

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Series : 203
High Performance - 3 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
7.0	8	34	79	203P-0700	203M-0700	203K-0700
7.1	8	41	79	203P-0710	203M-0710	203K-0710
7.2	8	41	79	203P-0720	203M-0720	203K-0720
7.3	8	41	79	203P-0730	203M-0730	203K-0730
7.4	8	41	79	203P-0740	203M-0740	203K-0740
7.5	8	41	79	203P-0750	203M-0750	203K-0750
7.6	8	41	79	203P-0760	203M-0760	203K-0760
7.7	8	41	79	203P-0770	203M-0770	203K-0770
7.8	8	41	79	203P-0780	203M-0780	203K-0780
7.9	8	41	79	203P-0790	203M-0790	203K-0790
8.0	8	41	79	203P-0800	203M-0800	203K-0800
8.1	10	47	89	203P-0810	203M-0810	203K-0810
8.2	10	47	89	203P-0820	203M-0820	203K-0820
8.3	10	47	89	203P-0830	203M-0830	203K-0830
8.4	10	47	89	203P-0840	203M-0840	203K-0840
8.5	10	47	89	203P-0850	203M-0850	203K-0850
8.6	10	47	89	203P-0860	203M-0860	203K-0860
8.7	10	47	89	203P-0870	203M-0870	203K-0870
8.8	10	47	89	203P-0880	203M-0880	203K-0880
8.9	10	47	89	203P-0890	203M-0890	203K-0890
9.0	10	47	89	203P-0900	203M-0900	203K-0900
9.1	10	47	89	203P-0910	203M-0910	203K-0910
9.2	10	47	89	203P-0920	203M-0920	203K-0920
9.3	10	47	89	203P-0930	203M-0930	203K-0930
9.4	10	47	89	203P-0940	203M-0940	203K-0940
9.5	10	47	89	203P-0950	203M-0950	203K-0950
9.6	10	47	89	203P-0960	203M-0960	203K-0960
9.7	10	47	89	203P-0970	203M-0970	203K-0970
9.8	10	47	89	203P-0980	203M-0980	203K-0980
9.9	10	47	89	203P-0990	203M-0990	203K-0990
10.0	10	47	89	203P-1000	203M-1000	203K-1000
10.1	12	55	102	203P-1010	203M-1010	203K-1010
10.2	12	55	102	203P-1020	203M-1020	203K-1020
10.3	12	55	102	203P-1030	203M-1030	203K-1030
10.4	12	55	102	203P-1040	203M-1040	203K-1040
10.5	12	55	102	203P-1050	203M-1050	203K-1050
10.6	12	55	102	203P-1060	203M-1060	203K-1060
10.7	12	55	102	203P-1070	203M-1070	203K-1070
10.8	12	55	102	203P-1080	203M-1080	203K-1080
10.9	12	55	102	203P-1090	203M-1090	203K-1090

Application :

- Rigid Flute and Shank
- Self Centering
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Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
11.0	12	55	102	203P-1100	203M-1100	203K-1100
11.1	12	55	102	203P-1110	203M-1110	203K-1110
11.2	12	55	102	203P-1120	203M-1120	203K-1120
11.3	12	55	102	203P-1130	203M-1130	203K-1130
11.4	12	55	102	203P-1140	203M-1140	203K-1140
11.5	12	55	102	203P-1150	203M-1150	203K-1150
11.6	12	55	102	203P-1160	203M-1160	203K-1160
11.7	12	55	102	203P-1170	203M-1170	203K-1170
11.8	12	55	102	203P-1180	203M-1180	203K-1180
11.9	12	55	102	203P-1190	203M-1190	203K-1190
12.0	12	55	102	203P-1200	203M-1200	203K-1200
12.1	14	60	107	203P-1210	203M-1210	203K-1210
12.2	14	60	107	203P-1220	203M-1220	203K-1220
12.3	14	60	107	203P-1230	203M-1230	203K-1230
12.4	14	60	107	203P-1240	203M-1240	203K-1240
12.5	14	60	107	203P-1250	203M-1250	203K-1250
12.6	14	60	107	203P-1260	203M-1260	203K-1260
12.7	14	60	107	203P-1270	203M-1270	203K-1270
12.8	14	60	107	203P-1280	203M-1280	203K-1280
12.9	14	60	107	203P-1290	203M-1290	203K-1290
13.0	14	60	107	203P-1300	203M-1300	203K-1300
13.2	14	60	107	203P-1320	203M-1320	203K-1320
13.5	14	60	107	203P-1350	203M-1350	203K-1350
13.8	14	60	107	203P-1380	203M-1380	203K-1380
14.0	14	60	107	203P-1400	203M-1400	203K-1400
14.2	16	65	115	203P-1420	203M-1420	203K-1420
14.5	16	65	115	203P-1450	203M-1450	203K-1450
14.8	16	65	115	203P-1480	203M-1480	203K-1480
15.0	16	65	115	203P-1500	203M-1500	203K-1500
15.2	16	65	115	203P-1520	203M-1520	203K-1520
15.5	16	65	115	203P-1550	203M-1550	203K-1550
15.8	16	65	115	203P-1580	203M-1580	203K-1580
16.0	16	65	115	203P-1600	203M-1600	203K-1600
16.5	18	73	123	203P-1650	203M-1650	203K-1650
17.0	18	73	123	203P-1700	203M-1700	203K-1700
17.5	18	73	123	203P-1750	203M-1750	203K-1750
18.0	18	73	123	203P-1800	203M-1800	203K-1800
18.5	20	79	131	203P-1850	203M-1850	203K-1850
19.0	20	79	131	203P-1900	203M-1900	203K-1900
19.5	20	79	131	203P-1950	203M-1950	203K-1950
20.0	20	79	131	203P-2000	203M-2000	203K-2000

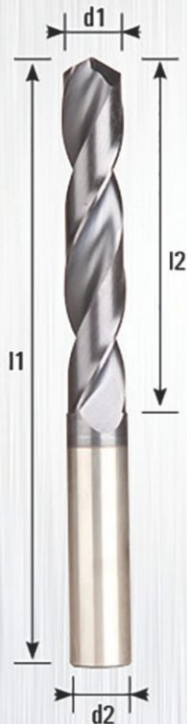
Application :

- Rigid Flute and Shank
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Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Series : 205
High Performance - 5 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
3.0	4	28	66	205P-0300	205M-0300	205K-0300
3.1	4	28	66	205P-0310	205M-0310	205K-0310
3.2	4	28	66	205P-0320	205M-0320	205K-0320
3.2	4	28	66	205P-0330	205M-0330	205K-0330
3.4	4	28	66	205P-0340	205M-0340	205K-0340
3.5	4	28	66	205P-0350	205M-0350	205K-0350
3.6	4	28	66	205P-0360	205M-0360	205K-0360
3.7	4	36	74	205P-0370	205M-0370	205K-0370
3.8	4	36	74	205P-0380	205M-0380	205K-0380
3.9	4	36	74	205P-0390	205M-0390	205K-0390
4.0	4	36	74	205P-0400	205M-0400	205K-0400
4.1	5	36	74	205P-0410	205M-0410	205K-0410
4.2	5	36	74	205P-0420	205M-0420	205K-0420
4.3	5	36	74	205P-0430	205M-0430	205K-0430
4.4	5	36	74	205P-0440	205M-0440	205K-0440
4.5	5	36	74	205P-0450	205M-0450	205K-0450
4.6	5	36	74	205P-0460	205M-0460	205K-0460
4.7	5	44	82	205P-0470	205M-0470	205K-0470
4.8	5	44	82	205P-0480	205M-0480	205K-0480
4.9	5	44	82	205P-0490	205M-0490	205K-0490
5.0	5	44	82	205P-0500	205M-0500	205K-0500
5.1	6	44	82	205P-0510	205M-0510	205K-0510
5.2	6	44	82	205P-0520	205M-0520	205K-0520
5.3	6	44	82	205P-0530	205M-0530	205K-0530
5.4	6	44	82	205P-0540	205M-0540	205K-0540
5.5	6	44	82	205P-0550	205M-0550	205K-0550
5.6	6	44	82	205P-0560	205M-0560	205K-0560
5.7	6	44	82	205P-0570	205M-0570	205K-0570
5.8	6	44	82	205P-0580	205M-0580	205K-0580
5.9	6	44	82	205P-0590	205M-0590	205K-0590
6.0	6	44	82	205P-0600	205M-0600	205K-0600
6.1	8	53	91	205P-0610	205M-0610	205K-0610
6.2	8	53	91	205P-0620	205M-0620	205K-0620
6.3	8	53	91	205P-0630	205M-0630	205K-0630
6.4	8	53	91	205P-0640	205M-0640	205K-0640
6.5	8	53	91	205P-0650	205M-0650	205K-0650
6.6	8	53	91	205P-0660	205M-0660	205K-0660
6.7	8	53	91	205P-0670	205M-0670	205K-0670
6.8	8	53	91	205P-0680	205M-0680	205K-0680
6.9	8	53	91	205P-0690	205M-0690	205K-0690

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d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
7.0	8	53	91	205P-0700	205M-0700	205K-0700
7.1	8	53	91	205P-0710	205M-0710	205K-0710
7.2	8	53	91	205P-0720	205M-0720	205K-0720
7.3	8	53	91	205P-0730	205M-0730	205K-0730
7.4	8	53	91	205P-0740	205M-0740	205K-0740
7.5	8	53	91	205P-0750	205M-0750	205K-0750
7.6	8	53	91	205P-0760	205M-0760	205K-0760
7.7	8	53	91	205P-0770	205M-0770	205K-0770
7.8	8	53	91	205P-0780	205M-0780	205K-0780
7.9	8	53	91	205P-0790	205M-0790	205K-0790
8.0	8	53	91	205P-0800	205M-0800	205K-0800
8.1	10	61	103	205P-0810	205M-0810	205K-0810
8.2	10	61	103	205P-0820	205M-0820	205K-0820
8.3	10	61	103	205P-0830	205M-0830	205K-0830
8.4	10	61	103	205P-0840	205M-0840	205K-0840
8.5	10	61	103	205P-0850	205M-0850	205K-0850
8.6	10	61	103	205P-0860	205M-0860	205K-0860
8.7	10	61	103	205P-0870	205M-0870	205K-0870
8.8	10	61	103	205P-0880	205M-0880	205K-0880
8.9	10	61	103	205P-0890	205M-0890	205K-0890
9.0	10	61	103	205P-0900	205M-0900	205K-0900
9.1	10	61	103	205P-0910	205M-0910	205K-0910
9.2	10	61	103	205P-0920	205M-0920	205K-0920
9.3	10	61	103	205P-0930	205M-0930	205K-0930
9.4	10	61	103	205P-0940	205M-0940	205K-0940
9.5	10	61	103	205P-0950	205M-0950	205K-0950
9.6	10	61	103	205P-0960	205M-0960	205K-0960
9.7	10	61	103	205P-0970	205M-0970	205K-0970
9.8	10	61	103	205P-0980	205M-0980	205K-0980
9.9	10	61	103	205P-0990	205M-0990	205K-0990
10.0	10	61	103	205P-1000	205M-1000	205K-1000
10.1	12	71	118	205P-1010	205M-1010	205K-1010
10.2	12	71	118	205P-1020	205M-1020	205K-1020
10.3	12	71	118	205P-1030	205M-1030	205K-1030
10.4	12	71	118	205P-1040	205M-1040	205K-1040
10.5	12	71	118	205P-1050	205M-1050	205K-1050
10.6	12	71	118	205P-1060	205M-1060	205K-1060
10.7	12	71	118	205P-1070	205M-1070	205K-1070
10.8	12	71	118	205P-1080	205M-1080	205K-1080
10.9	12	71	118	205P-1090	205M-1090	205K-1090

Application :

- Rigid Flute and Shank
- Self Centering
- Specially Designed for Hi-feed rate

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Series : 205
High Performance - 5 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
11.0	12	71	118	205P-1100	205M-1100	205K-1100
11.1	12	71	118	205P-1110	205M-1110	205K-1110
11.2	12	71	118	205P-1120	205M-1120	205K-1120
11.3	12	71	118	205P-1130	205M-1130	205K-1130
11.4	12	71	118	205P-1140	205M-1140	205K-1140
11.5	12	71	118	205P-1150	205M-1150	205K-1150
11.6	12	71	118	205P-1160	205M-1160	205K-1160
11.7	12	71	118	205P-1170	205M-1170	205K-1170
11.8	12	71	118	205P-1180	205M-1180	205K-1180
11.9	12	71	118	205P-1190	205M-1190	205K-1190
12.0	12	71	118	205P-1200	205M-1200	205K-1200
12.1	14	77	124	205P-1210	205M-1210	205K-1210
12.2	14	77	124	205P-1220	205M-1220	205K-1220
12.3	14	77	124	205P-1230	205M-1230	205K-1230
12.4	14	77	124	205P-1240	205M-1240	205K-1240
12.5	14	77	124	205P-1250	205M-1250	205K-1250
12.6	14	77	124	205P-1260	205M-1260	205K-1260
12.7	14	77	124	205P-1270	205M-1270	205K-1270
12.8	14	77	124	205P-1280	205M-1280	205K-1280
12.9	14	77	124	205P-1290	205M-1290	205K-1290
13.0	14	77	124	205P-1300	205M-1300	205K-1300
13.2	14	77	124	205P-1320	205M-1320	205K-1320
13.5	14	77	124	205P-1350	205M-1350	205K-1350
13.8	14	77	124	205P-1380	205M-1380	205K-1380
14.0	14	77	124	205P-1400	205M-1400	205K-1400
14.2	16	83	133	205P-1420	205M-1420	205K-1420
14.5	16	83	133	205P-1450	205M-1450	205K-1450
14.8	16	83	133	205P-1480	205M-1480	205K-1480
15.0	16	83	133	205P-1500	205M-1500	205K-1500
15.2	16	83	133	205P-1520	205M-1520	205K-1520
15.5	16	83	133	205P-1550	205M-1550	205K-1550
15.8	16	83	133	205P-1580	205M-1580	205K-1580
16.0	16	83	133	205P-1600	205M-1600	205K-1600
16.5	18	93	143	205P-1650	205M-1650	205K-1650
17.0	18	93	143	205P-1700	205M-1700	205K-1700
17.5	18	93	143	205P-1750	205M-1750	205K-1750
18.0	18	93	143	205P-1800	205M-1800	205K-1800
18.5	20	101	153	205P-1850	205M-1850	205K-1850
19.0	20	101	153	205P-1900	205M-1900	205K-1900
19.5	20	101	153	205P-1950	205M-1950	205K-1950
20.0	20	101	153	205P-2000	205M-2000	205K-2000

Application :

- Rigid Flute and Shank
- Self Centering
- Specially Designed for Hi-feed rate

Drill Geometry Material Group :

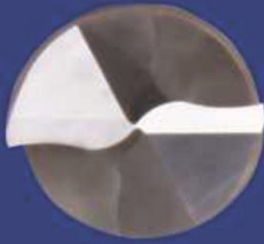
- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Hole Making Tools

Drill

Hole Mill

Reamer



Solution For
Your Precision Hole



Series
223 BH

Drilling Solution for
Rock Drill Button Head



Series : 203IC Through Coolant Hole Drill-3 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
3.0	4	20	62	203P IC-0300	203M IC-0300	203K IC-0300
3.1	4	20	62	203P IC-0310	203M IC-0310	203K IC-0310
3.2	4	20	62	203P IC-0320	203M IC-0320	203K IC-0320
3.2	4	20	62	203P IC-0330	203M IC-0330	203K IC-0330
3.4	4	20	62	203P IC-0340	203M IC-0340	203K IC-0340
3.5	4	20	62	203P IC-0350	203M IC-0350	203K IC-0350
3.6	4	24	66	203P IC-0360	203M IC-0360	203K IC-0360
3.7	4	24	66	203P IC-0370	203M IC-0370	203K IC-0370
3.8	4	24	66	203P IC-0380	203M IC-0380	203K IC-0380
3.9	4	24	66	203P IC-0390	203M IC-0390	203K IC-0390
4.0	4	24	66	203P IC-0400	203M IC-0400	203K IC-0400
4.1	5	24	66	203P IC-0410	203M IC-0410	203K IC-0410
4.2	5	24	66	203P IC-0420	203M IC-0420	203K IC-0420
4.3	5	24	66	203P IC-0430	203M IC-0430	203K IC-0430
4.4	5	24	66	203P IC-0440	203M IC-0440	203K IC-0440
4.5	5	24	66	203P IC-0450	203M IC-0450	203K IC-0450
4.6	5	24	66	203P IC-0460	203M IC-0460	203K IC-0460
4.7	5	28	66	203P IC-0470	203M IC-0470	203K IC-0470
4.8	5	28	66	203P IC-0480	203M IC-0480	203K IC-0480
4.9	5	28	66	203P IC-0490	203M IC-0490	203K IC-0490
5.0	5	28	66	203P IC-0500	203M IC-0500	203K IC-0500
5.1	6	28	66	203P IC-0510	203M IC-0510	203K IC-0510
5.2	6	28	66	203P IC-0520	203M IC-0520	203K IC-0520
5.3	6	28	66	203P IC-0530	203M IC-0530	203K IC-0530
5.4	6	28	66	203P IC-0540	203M IC-0540	203K IC-0540
5.5	6	28	66	203P IC-0550	203M IC-0550	203K IC-0550
5.6	6	28	66	203P IC-0560	203M IC-0560	203K IC-0560
5.7	6	28	66	203P IC-0570	203M IC-0570	203K IC-0570
5.8	6	28	66	203P IC-0580	203M IC-0580	203K IC-0580
5.9	6	28	66	203P IC-0590	203M IC-0590	203K IC-0590
6.0	6	28	66	203P IC-0600	203M IC-0600	203K IC-0600
6.1	8	34	79	203P IC-0610	203M IC-0610	203K IC-0610
6.2	8	34	79	203P IC-0620	203M IC-0620	203K IC-0620
6.3	8	34	79	203P IC-0630	203M IC-0630	203K IC-0630
6.4	8	34	79	203P IC-0640	203M IC-0640	203K IC-0640
6.5	8	34	79	203P IC-0650	203M IC-0650	203K IC-0650
6.6	8	34	79	203P IC-0660	203M IC-0660	203K IC-0660
6.7	8	34	79	203P IC-0670	203M IC-0670	203K IC-0670
6.8	8	34	79	203P IC-0680	203M IC-0680	203K IC-0680
6.9	8	34	79	203P IC-0690	203M IC-0690	203K IC-0690

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron



Series : 203IC

Through Coolant Hole Drill-3 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
7.0	8	34	79	203P IC-0700	203M IC-0700	203K IC-0700
7.1	8	41	79	203P IC-0710	203M IC-0710	203K IC-0710
7.2	8	41	79	203P IC-0720	203M IC-0720	203K IC-0720
7.3	8	41	79	203P IC-0730	203M IC-0730	203K IC-0730
7.4	8	41	79	203P IC-0740	203M IC-0740	203K IC-0740
7.5	8	41	79	203P IC-0750	203M IC-0750	203K IC-0750
7.6	8	41	79	203P IC-0760	203M IC-0760	203K IC-0760
7.7	8	41	79	203P IC-0770	203M IC-0770	203K IC-0770
7.8	8	41	79	203P IC-0780	203M IC-0780	203K IC-0780
7.9	8	41	79	203P IC-0790	203M IC-0790	203K IC-0790
8.0	8	41	79	203P IC-0800	203M IC-0800	203K IC-0800
8.1	10	47	89	203P IC-0810	203M IC-0810	203K IC-0810
8.2	10	47	89	203P IC-0820	203M IC-0820	203K IC-0820
8.3	10	47	89	203P IC-0830	203M IC-0830	203K IC-0830
8.4	10	47	89	203P IC-0840	203M IC-0840	203K IC-0840
8.5	10	47	89	203P IC-0850	203M IC-0850	203K IC-0850
8.6	10	47	89	203P IC-0860	203M IC-0860	203K IC-0860
8.7	10	47	89	203P IC-0870	203M IC-0870	203K IC-0870
8.8	10	47	89	203P IC-0880	203M IC-0880	203K IC-0880
8.9	10	47	89	203P IC-0890	203M IC-0890	203K IC-0890
9.0	10	47	89	203P IC-0900	203M IC-0900	203K IC-0900
9.1	10	47	89	203P IC-0910	203M IC-0910	203K IC-0910
9.2	10	47	89	203P IC-0920	203M IC-0920	203K IC-0920
9.3	10	47	89	203P IC-0930	203M IC-0930	203K IC-0930
9.4	10	47	89	203P IC-0940	203M IC-0940	203K IC-0940
9.5	10	47	89	203P IC-0950	203M IC-0950	203K IC-0950
9.6	10	47	89	203P IC-0960	203M IC-0960	203K IC-0960
9.7	10	47	89	203P IC-0970	203M IC-0970	203K IC-0970
9.8	10	47	89	203P IC-0980	203M IC-0980	203K IC-0980
9.9	10	47	89	203P IC-0990	203M IC-0990	203K IC-0990
10.0	10	47	89	203P IC-1000	203M IC-1000	203K IC-1000
10.1	12	55	102	203P IC-1010	203M IC-1010	203K IC-1010
10.2	12	55	102	203P IC-1020	203M IC-1020	203K IC-1020
10.3	12	55	102	203P IC-1030	203M IC-1030	203K IC-1030
10.4	12	55	102	203P IC-1040	203M IC-1040	203K IC-1040
10.5	12	55	102	203P IC-1050	203M IC-1050	203K IC-1050
10.6	12	55	102	203P IC-1060	203M IC-1060	203K IC-1060
10.7	12	55	102	203P IC-1070	203M IC-1070	203K IC-1070
10.8	12	55	102	203P IC-1080	203M IC-1080	203K IC-1080
10.9	12	55	102	203P IC-1090	203M IC-1090	203K IC-1090

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Series : 203IC Through Coolant Hole Drill-3 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
11.0	12	55	102	203P IC-1100	203M IC-1100	203K IC-1100
11.1	12	55	102	203P IC-1110	203M IC-1110	203K IC-1110
11.2	12	55	102	203P IC-1120	203M IC-1120	203K IC-1120
11.3	12	55	102	203P IC-1130	203M IC-1130	203K IC-1130
11.4	12	55	102	203P IC-1140	203M IC-1140	203K IC-1140
11.5	12	55	102	203P IC-1150	203M IC-1150	203K IC-1150
11.6	12	55	102	203P IC-1160	203M IC-1160	203K IC-1160
11.7	12	55	102	203P IC-1170	203M IC-1170	203K IC-1170
11.8	12	55	102	203P IC-1180	203M IC-1180	203K IC-1180
11.9	12	55	102	203P IC-1190	203M IC-1190	203K IC-1190
12.0	12	55	102	203P IC-1200	203M IC-1200	203K IC-1200
12.1	14	60	107	203P IC-1210	203M IC-1210	203K IC-1210
12.2	14	60	107	203P IC-1220	203M IC-1220	203K IC-1220
12.3	14	60	107	203P IC-1230	203M IC-1230	203K IC-1230
12.4	14	60	107	203P IC-1240	203M IC-1240	203K IC-1240
12.5	14	60	107	203P IC-1250	203M IC-1250	203K IC-1250
12.6	14	60	107	203P IC-1260	203M IC-1260	203K IC-1260
12.7	14	60	107	203P IC-1270	203M IC-1270	203K IC-1270
12.8	14	60	107	203P IC-1280	203M IC-1280	203K IC-1280
12.9	14	60	107	203P IC-1290	203M IC-1290	203K IC-1290
13.0	14	60	107	203P IC-1300	203M IC-1300	203K IC-1300
13.2	14	60	107	203P IC-1320	203M IC-1320	203K IC-1320
13.5	14	60	107	203P IC-1350	203M IC-1350	203K IC-1350
13.8	14	60	107	203P IC-1380	203M IC-1380	203K IC-1380
14.0	14	60	107	203P IC-1400	203M IC-1400	203K IC-1400
14.2	16	65	115	203P IC-1420	203M IC-1420	203K IC-1420
14.5	16	65	115	203P IC-1450	203M IC-1450	203K IC-1450
14.8	16	65	115	203P IC-1480	203M IC-1480	203K IC-1480
15.0	16	65	115	203P IC-1500	203M IC-1500	203K IC-1500
15.2	16	65	115	203P IC-1520	203M IC-1520	203K IC-1520
15.5	16	65	115	203P IC-1550	203M IC-1550	203K IC-1550
15.8	16	65	115	203P IC-1580	203M IC-1580	203K IC-1580
16.0	16	65	115	203P IC-1600	203M IC-1600	203K IC-1600
16.5	18	73	123	203P IC-1650	203M IC-1650	203K IC-1650
17.0	18	73	123	203P IC-1700	203M IC-1700	203K IC-1700
17.5	18	73	123	203P IC-1750	203M IC-1750	203K IC-1750
18.0	18	73	123	203P IC-1800	203M IC-1800	203K IC-1800
18.5	20	79	131	203P IC-1850	203M IC-1850	203K IC-1850
19.0	20	79	131	203P IC-1900	203M IC-1900	203K IC-1900
19.5	20	79	131	203P IC-1950	203M IC-1950	203K IC-1950
20.0	20	79	131	203P IC-2000	203M IC-2000	203K IC-2000

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
3.0	4	28	66	205P IC-0300	205M IC-0300	205K IC-0300
3.1	4	28	66	205P IC-0310	205M IC-0310	205K IC-0310
3.2	4	28	66	205P IC-0320	205M IC-0320	205K IC-0320
3.2	4	28	66	205P IC-0330	205M IC-0330	205K IC-0330
3.4	4	28	66	205P IC-0340	205M IC-0340	205K IC-0340
3.5	4	28	66	205P IC-0350	205M IC-0350	205K IC-0350
3.6	4	28	66	205P IC-0360	205M IC-0360	205K IC-0360
3.7	4	36	74	205P IC-0370	205M IC-0370	205K IC-0370
3.8	4	36	74	205P IC-0380	205M IC-0380	205K IC-0380
3.9	4	36	74	205P IC-0390	205M IC-0390	205K IC-0390
4.0	4	36	74	205P IC-0400	205M IC-0400	205K IC-0400
4.1	5	36	74	205P IC-0410	205M IC-0410	205K IC-0410
4.2	5	36	74	205P IC-0420	205M IC-0420	205K IC-0420
4.3	5	36	74	205P IC-0430	205M IC-0430	205K IC-0430
4.4	5	36	74	205P IC-0440	205M IC-0440	205K IC-0440
4.5	5	36	74	205P IC-0450	205M IC-0450	205K IC-0450
4.6	5	36	74	205P IC-0460	205M IC-0460	205K IC-0460
4.7	5	44	82	205P IC-0470	205M IC-0470	205K IC-0470
4.8	5	44	82	205P IC-0480	205M IC-0480	205K IC-0480
4.9	5	44	82	205P IC-0490	205M IC-0490	205K IC-0490
5.0	5	44	82	205P IC-0500	205M IC-0500	205K IC-0500
5.1	6	44	82	205P IC-0510	205M IC-0510	205K IC-0510
5.2	6	44	82	205P IC-0520	205M IC-0520	205K IC-0520
5.3	6	44	82	205P IC-0530	205M IC-0530	205K IC-0530
5.4	6	44	82	205P IC-0540	205M IC-0540	205K IC-0540
5.5	6	44	82	205P IC-0550	205M IC-0550	205K IC-0550
5.6	6	44	82	205P IC-0560	205M IC-0560	205K IC-0560
5.7	6	44	82	205P IC-0570	205M IC-0570	205K IC-0570
5.8	6	44	82	205P IC-0580	205M IC-0580	205K IC-0580
5.9	6	44	82	205P IC-0590	205M IC-0590	205K IC-0590
6.0	6	44	82	205P IC-0600	205M IC-0600	205K IC-0600
6.1	8	53	91	205P IC-0610	205M IC-0610	205K IC-0610
6.2	8	53	91	205P IC-0620	205M IC-0620	205K IC-0620
6.3	8	53	91	205P IC-0630	205M IC-0630	205K IC-0630
6.4	8	53	91	205P IC-0640	205M IC-0640	205K IC-0640
6.5	8	53	91	205P IC-0650	205M IC-0650	205K IC-0650
6.6	8	53	91	205P IC-0660	205M IC-0660	205K IC-0660
6.7	8	53	91	205P IC-0670	205M IC-0670	205K IC-0670
6.8	8	53	91	205P IC-0680	205M IC-0680	205K IC-0680
6.9	8	53	91	205P IC-0690	205M IC-0690	205K IC-0690

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Series : 205IC Through Coolant Hole Drill-5 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
7.0	8	53	91	205P IC-0700	205M IC-0700	205K IC-0700
7.1	8	53	91	205P IC-0710	205M IC-0710	205K IC-0710
7.2	8	53	91	205P IC-0720	205M IC-0720	205K IC-0720
7.3	8	53	91	205P IC-0730	205M IC-0730	205K IC-0730
7.4	8	53	91	205P IC-0740	205M IC-0740	205K IC-0740
7.5	8	53	91	205P IC-0750	205M IC-0750	205K IC-0750
7.6	8	53	91	205P IC-0760	205M IC-0760	205K IC-0760
7.7	8	53	91	205P IC-0770	205M IC-0770	205K IC-0770
7.8	8	53	91	205P IC-0780	205M IC-0780	205K IC-0780
7.9	8	53	91	205P IC-0790	205M IC-0790	205K IC-0790
8.0	8	53	91	205P IC-0800	205M IC-0800	205K IC-0800
8.1	10	61	103	205P IC-0810	205M IC-0810	205K IC-0810
8.2	10	61	103	205P IC-0820	205M IC-0820	205K IC-0820
8.3	10	61	103	205P IC-0830	205M IC-0830	205K IC-0830
8.4	10	61	103	205P IC-0840	205M IC-0840	205K IC-0840
8.5	10	61	103	205P IC-0850	205M IC-0850	205K IC-0850
8.6	10	61	103	205P IC-0860	205M IC-0860	205K IC-0860
8.7	10	61	103	205P IC-0870	205M IC-0870	205K IC-0870
8.8	10	61	103	205P IC-0880	205M IC-0880	205K IC-0880
8.9	10	61	103	205P IC-0890	205M IC-0890	205K IC-0890
9.0	10	61	103	205P IC-0900	205M IC-0900	205K IC-0900
9.1	10	61	103	205P IC-0910	205M IC-0910	205K IC-0910
9.2	10	61	103	205P IC-0920	205M IC-0920	205K IC-0920
9.3	10	61	103	205P IC-0930	205M IC-0930	205K IC-0930
9.4	10	61	103	205P IC-0940	205M IC-0940	205K IC-0940
9.5	10	61	103	205P IC-0950	205M IC-0950	205K IC-0950
9.6	10	61	103	205P IC-0960	205M IC-0960	205K IC-0960
9.7	10	61	103	205P IC-0970	205M IC-0970	205K IC-0970
9.8	10	61	103	205P IC-0980	205M IC-0980	205K IC-0980
9.9	10	61	103	205P IC-0990	205M IC-0990	205K IC-0990
10.0	10	61	103	205P IC-1000	205M IC-1000	205K IC-1000
10.1	12	71	118	205P IC-1010	205M IC-1010	205K IC-1010
10.2	12	71	118	205P IC-1020	205M IC-1020	205K IC-1020
10.3	12	71	118	205P IC-1030	205M IC-1030	205K IC-1030
10.4	12	71	118	205P IC-1040	205M IC-1040	205K IC-1040
10.5	12	71	118	205P IC-1050	205M IC-1050	205K IC-1050
10.6	12	71	118	205P IC-1060	205M IC-1060	205K IC-1060
10.7	12	71	118	205P IC-1070	205M IC-1070	205K IC-1070
10.8	12	71	118	205P IC-1080	205M IC-1080	205K IC-1080
10.9	12	71	118	205P IC-1090	205M IC-1090	205K IC-1090

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron



Series : 205IC

Through Coolant Hole Drill-5 L/D



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code		
				P	M	K
11.0	12	71	118	205P IC-1100	205M IC-1100	205K IC-1100
11.1	12	71	118	205P IC-1110	205M IC-1110	205K IC-1110
11.2	12	71	118	205P IC-1120	205M IC-1120	205K IC-1120
11.3	12	71	118	205P IC-1130	205M IC-1130	205K IC-1130
11.4	12	71	118	205P IC-1140	205M IC-1140	205K IC-1140
11.5	12	71	118	205P IC-1150	205M IC-1150	205K IC-1150
11.6	12	71	118	205P IC-1160	205M IC-1160	205K IC-1160
11.7	12	71	118	205P IC-1170	205M IC-1170	205K IC-1170
11.8	12	71	118	205P IC-1180	205M IC-1180	205K IC-1180
11.9	12	71	118	205P IC-1190	205M IC-1190	205K IC-1190
12.0	12	71	118	205P IC-1200	205M IC-1200	205K IC-1200
12.1	14	77	124	205P IC-1210	205M IC-1210	205K IC-1210
12.2	14	77	124	205P IC-1220	205M IC-1220	205K IC-1220
12.3	14	77	124	205P IC-1230	205M IC-1230	205K IC-1230
12.4	14	77	124	205P IC-1240	205M IC-1240	205K IC-1240
12.5	14	77	124	205P IC-1250	205M IC-1250	205K IC-1250
12.6	14	77	124	205P IC-1260	205M IC-1260	205K IC-1260
12.7	14	77	124	205P IC-1270	205M IC-1270	205K IC-1270
12.8	14	77	124	205P IC-1280	205M IC-1280	205K IC-1280
12.9	14	77	124	205P IC-1290	205M IC-1290	205K IC-1290
13.0	14	77	124	205P IC-1300	205M IC-1300	205K IC-1300
13.2	14	77	124	205P IC-1320	205M IC-1320	205K IC-1320
13.5	14	77	124	205P IC-1350	205M IC-1350	205K IC-1350
13.8	14	77	124	205P IC-1380	205M IC-1380	205K IC-1380
14.0	14	77	124	205P IC-1400	205M IC-1400	205K IC-1400
14.2	16	83	133	205P IC-1420	205M IC-1420	205K IC-1420
14.5	16	83	133	205P IC-1450	205M IC-1450	205K IC-1450
14.8	16	83	133	205P IC-1480	205M IC-1480	205K IC-1480
15.0	16	83	133	205P IC-1500	205M IC-1500	205K IC-1500
15.2	16	83	133	205P IC-1520	205M IC-1520	205K IC-1520
15.5	16	83	133	205P IC-1550	205M IC-1550	205K IC-1550
15.8	16	83	133	205P IC-1580	205M IC-1580	205K IC-1580
16.0	16	83	133	205P IC-1600	205M IC-1600	205K IC-1600
16.5	18	93	143	205P IC-1650	205M IC-1650	205K IC-1650
17.0	18	93	143	205P IC-1700	205M IC-1700	205K IC-1700
17.5	18	93	143	205P IC-1750	205M IC-1750	205K IC-1750
18.0	18	93	143	205P IC-1800	205M IC-1800	205K IC-1800
18.5	20	101	153	205P IC-1850	205M IC-1850	205K IC-1850
19.0	20	101	153	205P IC-1900	205M IC-1900	205K IC-1900
19.5	20	101	153	205P IC-1950	205M IC-1950	205K IC-1950
20.0	20	101	153	205P IC-2000	205M IC-2000	205K IC-2000

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Drill Geometry Material Group :

- P** Alloy Steel & Forged Steel
- M** Stainless Steel & Mild Steel
- K** Grey Cast Iron & Nodular Steel Cast Iron

Series : 208IC

Through Coolant Hole Drill-8 L/D



A

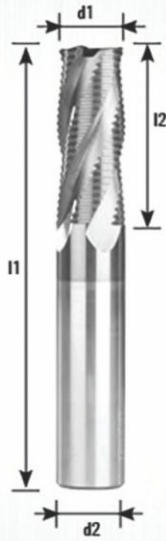


d1	d2	l2	l1	Item Code
Tool Diameter	Shank Diameter	Length of Cut	Overall Length	D M
5.0	5	50	90	208 DM IC-0500
5.1	6	50	90	208 DM IC-0510
5.5	6	50	90	208 DM IC-0550
6.0	6	50	90	208 DM IC-0600
6.35	8	66	106	208 DM IC-0635
6.5	8	66	106	208 DM IC-0650
6.8	8	66	106	208 DM IC-0680
6.9	8	66	106	208 DM IC-0690
7.0	8	66	106	208 DM IC-0700
7.5	8	76	116	208 DM IC-0750
7.8	8	76	116	208 DM IC-0780
8.0	8	76	116	208 DM IC-0800
8.5	10	87	131	208 DM IC-0850
8.6	10	87	131	208 DM IC-0860
9.0	10	87	131	208 DM IC-0900
9.5	10	95	139	208 DM IC-0950
10.0	10	95	139	208 DM IC-1000
10.2	12	106	155	208 DM IC-1020
10.3	12	106	155	208 DM IC-1030
10.5	12	106	155	208 DM IC-1050
11.0	12	106	155	208 DM IC-1100
11.5	12	114	163	208 DM IC-1150
12.0	12	114	163	208 DM IC-1200
12.1	14	133	182	208 DM IC-1210
12.5	14	133	182	208 DM IC-1250
12.7	14	133	182	208 DM IC-1270
13.0	14	133	182	208 DM IC-1300
13.5	14	133	182	208 DM IC-1350
14.0	14	133	182	208 DM IC-1400
14.2	16	152	204	208 DM IC-1420
14.5	16	152	204	208 DM IC-1450
14.8	16	152	204	208 DM IC-1480
15.0	16	152	204	208 DM IC-1500
15.5	16	152	204	208 DM IC-1550
16.0	16	152	204	208 DM IC-1600
16.5	18	171	223	208 DM IC-1650
17.0	18	171	223	208 DM IC-1700
17.5	18	171	223	208 DM IC-1750
18.0	18	171	223	208 DM IC-1800
18.5	20	190	244	208 DM IC-1850
19.0	20	190	244	208 DM IC-1900
19.5	20	190	244	208 DM IC-1950
20.0	20	190	244	208 DM IC-2000

Application :

- Self Centering
- Specially Designed for Hi-feed rate
- Suitable for Long Chip Material

Series : 124RCS
Roughing Course Pitch-Std Length



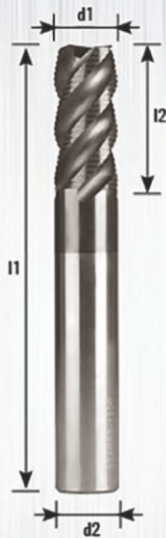
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
6	6	16	50	4	124RCS-0600
8	8	20	60	4	124RCS-0800
10	10	25	75	4	124RCS-1000
12	12	30	75	4	124RCS-1200
16	16	40	100	4	124RCS-1600
20	20	45	100	4	124RCS-2000

Application :

- For Dry and Wet Milling
- Very High Stock Removal
- Alloy Steel and Cast Iron



Series : 124RFS
Roughing Fine Pitch-Std Length



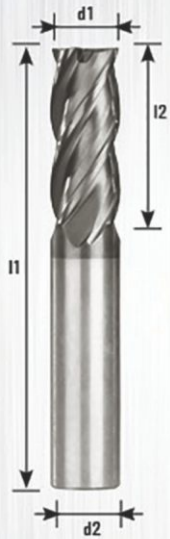
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	6	7	57	3	124RFS-0300
4	6	14	57	4	124RFS-0400
5	6	14	57	4	124RFS-0500
6	6	19	57	4	124RFS-0600
8	8	21	63	4	124RFS-0800
10	10	22	72	4	124RFS-1000
12	12	26	83	4	124RFS-1200
16	16	32	92	5	124RFS-1600
20	20	38	104	6	124RFS-2000

Application :

- For Dry and Wet Milling
- Very High Stock Removal
- Steel upto 30 HRC

Series : 124VHS

Variable Helix - Standard Length



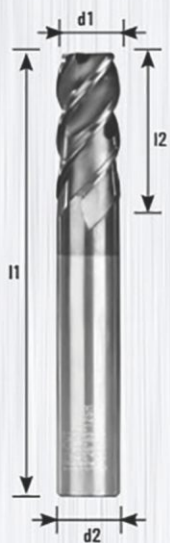
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	8	50	4	124VHS-0300
4	4	11	50	4	124VHS-0400
5	5	13	50	4	124VHS-0500
6	6	19	57	4	124VHS-0600
8	8	21	63	4	124VHS-0800
10	10	22	72	4	124VHS-1000
12	12	26	83	4	124VHS-1200
16	16	32	92	4	124VHS-1600
20	20	38	104	4	124VHS-2000

Application :

- Designed for High Feed Rate
- Side Milling

Series : 124TS

Turbo Keyway - Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
6	6	19	57	4	124TS-0600
8	8	21	63	4	124TS-0800
10	10	22	72	4	124TS-1000
12	12	26	83	4	124TS-1200
16	16	32	92	4	124TS-1600
20	20	38	104	4	124TS-2000

Application :

- Designed for Keyway Milling
- Direct Plugging upto 0.5 / d1 Possible

Series : 123HHS
High Helix - Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	15	57	3	123HHS-0300
4	4	16	57	3	123HHS-0400
5	5	19	57	3	123HHS-0500
6	6	19	57	3	123HHS-0600
8	8	21	63	3	123HHS-0800
10	10	22	72	3	123HHS-1000
12	12	26	83	3	123HHS-1200
16	16	32	92	3	123HHS-1600
20	20	38	104	3	123HHS-2000

Application :

- Specially Designed for Semi-Finish
- Suitable for Stainless Steel Machining
- Excellent Surface Finish



Series : 123HHL
High Helix - Long Length



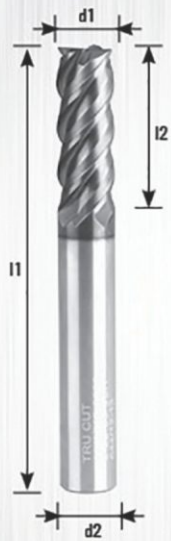
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	20	65	3	123HHL-0300
4	4	22	65	3	123HHL-0400
5	5	30	80	3	123HHL-0500
6	6	30	80	3	123HHL-0600
8	8	40	100	3	123HHL-0800
10	10	50	100	3	123HHL-1000
12	12	50	100	3	123HHL-1200
16	16	60	120	3	123HHL-1600
20	20	60	120	3	123HHL-2000

Application :

- Specially Designed for Semi-Finish
- Suitable for Stainless Steel Machining
- Excellent Surface Finish

Series : 124HHS

High Helix - Standard Length



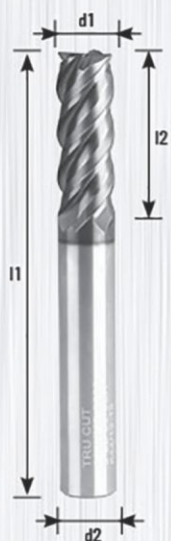
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	15	57	4	124HHS-0300
4	4	16	57	4	124HHS-0400
5	5	19	57	4	124HHS-0500
6	6	19	57	4	124HHS-0600
8	8	21	63	4	124HHS-0800
10	10	22	72	4	124HHS-1000
12	12	26	83	4	124HHS-1200
16	16	32	92	4	124HHS-1600
20	20	38	104	4	124HHS-2000

Application :

- Specially Designed for Finishing
- Excellent Surface Finish
- Side Milling

Series : 124HHL

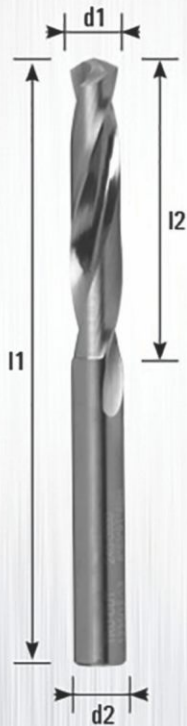
High Helix - Long Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	20	65	4	124HHL-0300
4	4	22	65	4	124HHL-0400
5	5	30	80	4	124HHL-0500
6	6	30	80	4	124HHL-0600
8	8	40	100	4	124HHL-0800
10	10	50	100	4	124HHL-1000
12	12	50	100	4	124HHL-1200
16	16	60	120	4	124HHL-1600
20	20	60	120	4	124HHL-2000

Application :

- Specially Designed for Finishing
- Excellent Surface Finish
- Side Milling

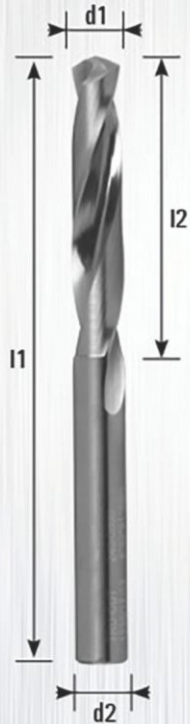


Application :

- Self Centering
- Specially Designed for Aluminium and Non Ferrous Drilling

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
3.0	3	25	59	240-0300
3.1	4	27	65	240-0310
3.2	4	27	65	240-0320
3.3	4	27	65	240-0330
3.4	4	30	65	240-0340
3.5	4	30	65	240-0350
3.6	4	30	65	240-0360
3.7	4	30	65	240-0370
3.8	4	33	65	240-0380
3.9	4	33	65	240-0390
4.0	4	33	65	240-0400
4.1	5	33	73	240-0410
4.2	5	33	73	240-0420
4.3	5	36	73	240-0430
4.4	5	36	73	240-0440
4.5	5	36	73	240-0450
4.6	5	36	73	240-0460
4.7	5	36	73	240-0470
4.8	5	39	73	240-0480
4.9	5	39	73	240-0490
5.0	5	39	73	240-0500
5.1	6	39	83	240-0510
5.2	6	39	83	240-0520
5.3	6	39	83	240-0530
5.4	6	43	83	240-0540
5.5	6	43	83	240-0550
5.6	6	43	83	240-0560
5.7	6	43	83	240-0570
5.8	6	43	83	240-0580
5.9	6	43	83	240-0590
6.0	6	43	83	240-0600
6.1	7	47	90	240-0610
6.2	7	47	90	240-0620
6.3	7	47	90	240-0630

Series : 240 Drills for Aluminium



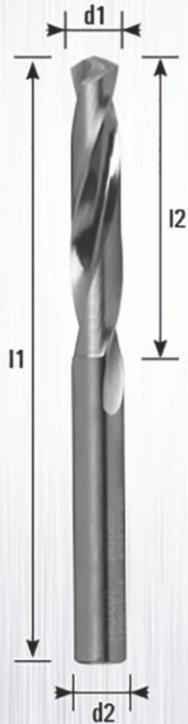
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
6.4	7	47	90	240-0640
6.5	7	47	90	240-0650
6.6	7	47	90	240-0660
6.7	7	47	90	240-0670
6.8	7	50	90	240-0680
6.9	7	50	90	240-0690
7.0	7	50	90	240-0700
7.1	8	52	96	240-0710
7.2	8	52	96	240-0720
7.3	8	52	96	240-0730
7.4	8	52	96	240-0740
7.5	8	52	96	240-0750
7.6	8	56	96	240-0760
7.7	8	56	96	240-0770
7.8	8	56	96	240-0780
7.9	8	56	96	240-0790
8.0	8	56	96	240-0800
8.1	9	56	101	240-0810
8.2	9	56	101	240-0820
8.3	9	56	101	240-0830
8.4	9	56	101	240-0840
8.5	9	56	101	240-0850
8.6	9	61	101	240-0860
8.7	9	61	101	240-0870
8.8	9	61	101	240-0880
8.9	9	61	101	240-0890
9.0	9	61	101	240-0900
9.1	10	61	109	240-0910
9.2	10	61	109	240-0920
9.3	10	61	109	240-0930
9.4	10	61	109	240-0940
9.5	10	61	109	240-0950
9.6	10	65	109	240-0960
9.7	10	65	109	240-0970

Application :

- Self Centering
- Specially Designed for Aluminium and Non Ferrous Drilling



Series : 240
Drills for Aluminium

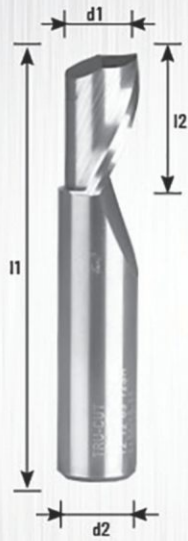


Application :

- Self Centering
- Specially Designed for Aluminium and Non Ferrous Drilling

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
9.8	10	65	109	240-0980
9.9	10	65	109	240-0990
10.0	10	65	109	240-1000
10.1	11	65	115	240-1010
10.2	11	65	115	240-1020
10.3	11	65	115	240-1030
10.4	11	65	115	240-1040
10.5	11	65	115	240-1050
10.6	11	65	115	240-1060
10.7	11	71	115	240-1070
10.8	11	71	115	240-1080
10.9	11	71	115	240-1090
11.0	11	71	115	240-1100
11.1	12	71	126	240-1110
11.2	12	71	126	240-1120
11.3	12	71	126	240-1130
11.4	12	71	126	240-1140
11.5	12	71	126	240-1150
11.6	12	71	126	240-1160
11.7	12	71	126	240-1170
11.8	12	71	126	240-1180
11.9	12	76	126	240-1190
12.0	12	76	126	240-1200
12.1	13	76	128	240-1210
12.2	13	76	128	240-1220
12.3	13	76	128	240-1230
12.4	13	76	128	240-1240
12.5	13	76	128	240-1250
12.6	13	76	128	240-1260
12.7	13	76	128	240-1270
12.8	13	76	128	240-1280
12.9	13	76	128	240-1290
13.0	13	76	128	240-1300

Series : 101ALL End Mill - Short Length

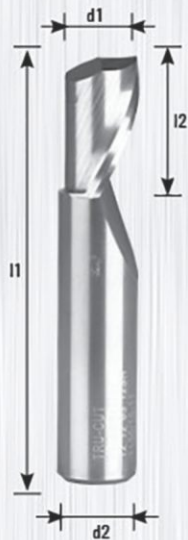


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	14	40	1	101ALL-0300
4	4	15	50	1	101ALL-0400
5	5	16	50	1	101ALL-0500
6	6	18	57	1	101ALL-0600
8	8	20	63	1	101ALL-0800
10	10	22	72	1	101ALL-1000
12	12	26	83	1	101ALL-1200

Application :

- Aluminium Machining
- Plastic Machining

Series : 101ALS End Mill - Standard Length

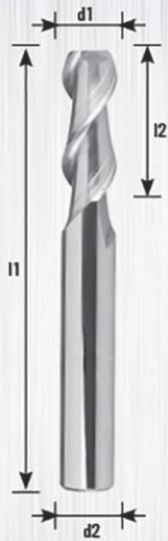


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	16	65	1	101ALS-0300
4	4	18	65	1	101ALS-0400
5	5	20	65	1	101ALS-0500
6	6	24	68	1	101ALS-0600
8	8	38	88	1	101ALS-0800
10	10	45	100	1	101ALS-1000
12	12	53	110	1	101ALS-1200

Application :

- Aluminium Machining
- Plastic Machining

Series : 122ALS
End Mill - Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	8	50	2	122ALS-0300
4	4	11	50	2	122ALS-0400
5	5	13	50	2	122ALS-0500
6	6	19	57	2	122ALS-0600
8	8	21	63	2	122ALS-0800
10	10	22	72	2	122ALS-1000
12	12	26	83	2	122ALS-1200
16	16	32	92	2	122ALS-1600
20	20	38	104	2	122ALS-2000

Application :

- Designed for Aluminium Machining
- High Feed Rate
- Heavy Stock Removal



Series : 123ALS
End Mill Aluminium Std. Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3	3	8	50	3	123ALS-0300
4	4	11	50	3	123ALS-0400
5	5	13	50	3	123ALS-0500
6	6	19	57	3	123ALS-0600
8	8	21	63	3	123ALS-0800
10	10	22	72	3	123ALS-1000
12	12	26	83	3	123ALS-1200
16	16	32	92	3	123ALS-1600
20	20	38	104	3	123ALS-2000

Application :

- Designed for Aluminium Machining
- High Feed Rate

The Super **3** Series For
Inconel, Titanium, Stainless Steel
Now Easy To Machine.



Series
154CR



Series
156CR



Series
124TS



HARDLine[®]

Die & Mould Upto 62 Hrc

- ▶ High Speed Machining Application
- ▶ For Machining of High Hardened Material Upto 62 HRC
- ▶ Wide Range & Series to Suit Die & Mould Industry
- ▶ Made From Submicron Grade Carbide with High Cobalt
- ▶ Hard Coat For Better Wear Resistance at High Speed Finishing Application

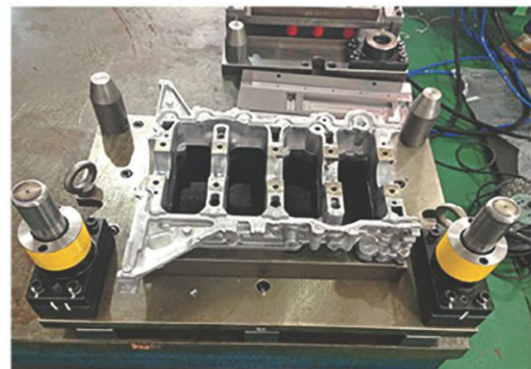
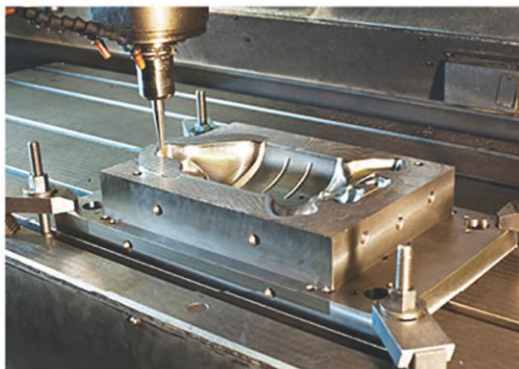
PAGES **34-53**



Tool Image	Series	Helix Anglite	No. of Flute	Recommendation						Refer Page No
				Steel 15-30 HRC	Steel 45-55 HRC	Hard 55-62Hrc	Stainless Steel	Cast Iron	Aluminium / Copper	
	212	12	2			●				37
	122SB	35°	2	●	●	●		●		38
	122LB	35°	2	●	●	●		●		38
	122ELB	35°	2	●	●	●		●		38
	122XLB	35°	2	●	●	●		●		39
	124SB	35°	4	●	●	●		●		39
	124LB	35°	4	●	●	●		●		40
	124ELB	35°	4	●	●	●		●		40
	124XLB	35°	4	●	●	●		●		40
	124CRS	35°	4	●	●	●		●		41
	124CRL	35°	4	●	●	●		●		41
	124CREL	35°	4	●	●	●		●		41
	124CRXL	35°	4	●	●	●		●		42
	124SF	35°	4	●	●	●		●		42
	124LF	35°	4	●	●	●		●		43
	124ELF	35°	4	●	●	●		●		43
	124XLF	35°	4	●	●	●		●		43

Recommended ● Partly Recommended ○

Tool Image	Series	Helix Angle	No. of Flute	Recommendation						Refer Page No
				Steel 15-30 HRC	Steel 45-55 HRC	Hard 55-62Hrc	Stainless Steel	Cast Iron	Aluminium / Copper	
	112SB MICRO	35°	2		●	●				44
	112SF MICRO	35°	2		●	●				44
	112SB	35°	2		●	●				45
	112LB	35°	2		●	●				45
	112ELB	35°	2		●	●				46
	112XLB	35°	2		●	●				46
	114SF	35°	4		●	●				47
	114LF	35°	4		●	●				48
	114ELF	35°	4		●	●				48
	112CRS	35°	2		●	●				47
	114CRS	35°	4		●	●				48
	112FRN	35°	2		●	●				50
	112BRN	35°	2	●	●	●				51
	132SB	35°	2	●	●	●				52
	132CR	35°	2	●	●	●				52
	116SF	45°	6	●	●	●				49
	116LF	45°	6	●	●	●				49
	122TEM	35°	2	●	●	●				53



Solid Tooling Solution For Machining Die & Mold - Roughing (to) Finishing

Ghasing

Helical Ball Ghasing for better Strength & Shearing Action

Hard Coat

New Hard Coat Now has Higher Hardness Properties Combined with Improved Toughness and smooth chip flow for low Friction with Hardened Material upto 50 HRC

Premium Carbide

Untrafine Substract material used for its Properties of Wear Resistance & Toughness



Series 122 & 124

Upto
50
HRC

Rigid Flute

Appropriate Designed Rack Angle Determines the Size & Shape of Chip as well Pressure and Temperature on Tool for Advance Hi speed Productivity

Ghasing

Helical Ball Ghasing for better Strength & Shearing Action

Rigid Flute

Appropriate Designed Rack Angle Determines the Size & Shape of Chip as well Pressure and Temperature on Tool for Advance Hi speed Productivity

TiSiN Coat

New TiSiN Coating Now has Higher Hardness Properties Combined with Improved Toughness and smooth chip flow for low Friction with Hardened Material upto 62 HRC

Premium Carbide

Untrafine Substract material used for its Properties of Wear Resistance & Toughness

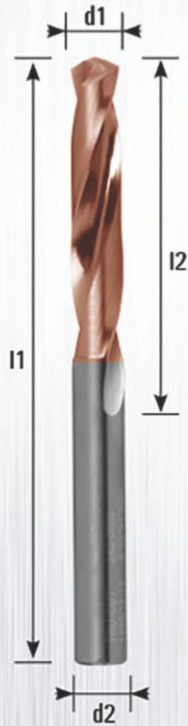


Upto
62
HRC

Series 112 & 114



Series : 212
Drills for Hard Metals



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
3.00	3.00	22	48	212-0300
3.50	4.00	24	49	212-0350
4.00	4.00	27	54	212-0400
4.50	5.00	29	56	212-0450
5.00	5.00	30	57	212-0500
5.50	6.00	32	60	212-0550
6.00	6.00	33	62	212-0600
6.50	7.00	35	64	212-0650
7.00	7.00	38	68	212-0700
7.50	8.00	40	70	212-0750
8.00	8.00	41	71	212-0800
8.50	9.00	43	76	212-0850
9.00	9.00	44	78	212-0900
9.50	10.00	46	79	212-0950
10.00	10.00	48	83	212-1000
10.50	11.00	51	86	212-1050
11.00	11.00	52	87	212-1100
11.50	12.00	54	90	212-1150
12.00	12.00	54	92	212-1200

Application :

- Self Centering
- Specially Designed for Hi-hard Material upto 65 HRC

B

Series : 122SB 50 HRC

Ball End Mill - Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
1	4	2	50	0.5	2	122SB-0100-M
1.5	4	4	50	0.75	2	122SB-0150-M
2	4	5	50	1	2	122SB-0200-M
2.5	4	6	50	1.25	2	122SB-0250-M
3	3	6	50	1.5	2	122SB-0300
4	4	8	50	2	2	122SB-0400
5	5	13	50	2.5	2	122SB-0500
6	6	12	50	3	2	122SB-0600
8	8	16	60	4	2	122SB-0800
10	10	20	75	5	2	122SB-1000
12	12	24	75	6	2	122SB-1200
14	14	32	100	7	2	122SB-1400
16	16	32	100	8	2	122SB-1600
18	18	32	100	9	2	122SB-1800
20	20	32	100	10	2	122SB-2000
25	25	32	100	12.5	2	122SB-2500

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 122LB / 122 ELB 50 HRC

Ball End Mill - Long & Extra Long

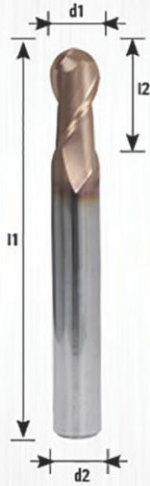


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	3	6	75	1.5	2	122LB-0300
4	4	8	75	2	2	122LB-0400
5	5	10	75	2.5	2	122LB-0500
6	6	12	75	3	2	122LB-0600
8	8	16	75	4	2	122LB-0800
3	3	6	100	1.5	2	122ELB-0300
4	4	8	100	2	2	122ELB-0400
5	5	10	100	2.5	2	122ELB-0500
6	6	12	100	3	2	122ELB-0600
8	8	16	100	4	2	122ELB-0800
10	10	20	100	5	2	122ELB-1000
12	12	24	100	6	2	122ELB-1200

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 122XLB **50 HRC**
Ball End Mill - Extended Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
6	6	12	150	3	2	122XLB-0600
8	8	16	150	5	2	122XLB-0800
10	10	20	150	5	2	122XLB-1000
12	12	24	150	6	2	122XLB-1200

B

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining



Series : 124SB **50 HRC**
Ball End Mill - Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	3	6	50	1.5	4	124SB-0300
4	4	8	50	2	4	124SB-0400
5	5	13	50	2.5	4	124SB-0500
6	6	12	50	3	4	124SB-0600
8	8	16	60	4	4	124SB-0800
10	10	20	75	5	4	124SB-1000
12	12	24	75	6	4	124SB-1200
14	14	32	100	7	4	124SB-1400
16	16	32	100	8	4	124SB-1600
18	18	32	100	9	4	124SB-1800
20	20	32	100	10	4	124SB-2000
25	25	32	100	12.5	4	124SB-2500

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 124LB / 124ELB **50 HRC**
Ball End Mill - Long & Extra Long



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	3	6	75	1.5	4	124LB-0300
4	4	8	75	2	4	124LB-0400
5	5	10	75	2.5	4	124LB-0500
6	6	12	75	3	4	124LB-0600
8	8	16	75	4	4	124LB-0800
3	3	6	100	1.5	4	124ELB-0300
4	4	8	100	2	4	124ELB-0400
5	5	10	100	2.5	4	124ELB-0500
6	6	12	100	3	4	124ELB-0600
8	8	16	100	4	4	124ELB-0800
10	10	20	100	5	4	124ELB-1000
12	12	24	100	6	4	124ELB-1200

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 124XLB **50 HRC**
Ball End Mill - Extended Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
6	6	12	150	3	4	124XLB-0600
8	8	16	150	4	4	124XLB-0800
10	10	20	150	5	4	124XLB-1000
12	12	24	150	6	4	124XLB-1200

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 124CRS **50 HRC**
Corner Radius End Mill – Std Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	3	8	50	0.5	4	124CRS-0305
3	3	8	50	1.0	4	124CRS-0310
4	4	11	50	0.5	4	124CRS-0405
4	4	11	50	1.0	4	124CRS-0410
5	5	13	50	0.5	4	124CRS-0505
5	5	13	50	1.0	4	124CRS-0510
6	6	16	50	0.5	4	124CRS-0605
6	6	16	50	1.0	4	124CRS-0610
8	8	20	75	1.0	4	124CRS-0810
10	10	25	75	1.0	4	124CRS-1010
12	12	30	75	1.0	4	124CRS-1210
12	12	30	75	2.0	4	124CRS-1220

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining



Series: 124CRL/124CREL **50 HRC**
Corner Radius End Mill – Long & Extra Long



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	3	8	75	1.0	4	124CRL-0310
4	4	11	75	1.0	4	124CRL-0410
5	5	12	75	1.0	4	124CRL-0510
6	6	16	75	1.0	4	124CRL-0610
3	3	8	100	1.0	4	124CREL-0310
4	4	11	100	1.0	4	124CREL-0410
5	5	12	100	1.0	4	124CREL-0510
6	6	16	100	1.0	4	124CREL-0610
8	8	20	100	1.0	4	124CREL-0810
10	10	25	100	1.0	4	124CREL-1010
12	12	30	100	1.0	4	124CREL-1210
12	12	30	100	2.0	4	124CREL-1220
16	16	32	100	1.0	4	124CREL-1610
16	16	32	100	2.0	4	124CREL-1620

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series: 124CRXL 50 HRC

Corner Radius End Mill -
Extended Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
6	6	16	150	1.0	4	124CRXL-0610
8	8	20	150	1.0	4	124CRXL-0810
10	10	25	150	1.0	4	124CRXL-1010
12	12	30	150	1.0	4	124CRXL-1210
12	12	30	150	2.0	4	124CRXL-1220
16	16	32	150	1.0	4	124CRXL-1610
16	16	32	150	2.0	4	124CRXL-1620

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 124SF 50 HRC

Flat End Mill - Std Length

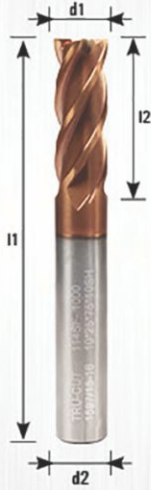


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
1	4	2	50	-	4	124SF-0100-M
1.5	4	4	50	-	4	124SF-0150-M
2	4	5	50	-	4	124SF-0200-M
2.5	4	6	50	-	4	124SF-0250-M
3	3	8	50	-	4	124SF-0300
4	4	11	50	-	4	124SF-0400
5	5	13	50	-	4	124SF-0500
6	6	16	50	-	4	124SF-0600
8	8	20	60	-	4	124SF-0800
10	10	25	75	-	4	124SF-1000
12	12	30	75	-	4	124SF-1200
14	14	40	100	-	4	124SF-1400
16	16	40	100	-	4	124SF-1600
18	18	40	100	-	4	124SF-1800
20	20	40	100	-	4	124SF-2000
25	25	40	100	-	4	124SF-2500

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 124LF & ELF **50 HRC**
Flat End Mill - Long & Extra Long



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	3	8	75	-	4	124LF-0300
4	4	11	75	-	4	124LF-0400
5	5	12	75	-	4	124LF-0500
6	6	16	75	-	4	124LF-0600
8	8	20	75	-	4	124LF-0800
3	3	8	100	-	4	124ELF-0300
4	4	11	100	-	4	124ELF-0400
5	5	16	100	-	4	124ELF-0500
6	6	16	100	-	4	124ELF-0600
8	8	20	100	-	4	124ELF-0800
10	10	25	100	-	4	124ELF-1000
12	12	30	100	-	4	124ELF-1200

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

B



Series : 124XLF **50 HRC**
Flat End Mill - Extended Length

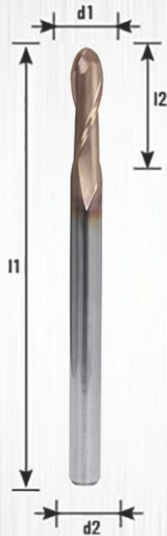


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
6	6	16	150	-	4	124XLF-0600
8	8	20	150	-	4	124XLF-0800
10	10	25	150	-	4	124XLF-1000
12	12	30	150	-	4	124XLF-1200

Application :

- Hi-Tensile Steel upto 50 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112SB **62 HRC** Ball End Mill - Micro



	d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
NEW	0.2	4.0	0.40	50.0	0.10	2	112SB-0020
NEW	0.3	4.0	0.60	50.0	0.15	2	112SB-0030
NEW	0.4	4.0	0.80	50.0	0.20	2	112SB-0040
NEW	0.5	4.0	1.00	50.0	0.25	2	112SB-0050
NEW	0.6	4.0	1.20	50.0	0.30	2	112SB-0060
NEW	0.7	4.0	1.40	50.0	0.35	2	112SB-0070
NEW	0.8	4.0	1.60	50.0	0.40	2	112SB-0080
NEW	0.9	4.0	1.80	50.0	0.45	2	112SB-0090

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112SF **62 HRC** Flat End Mill - Micro

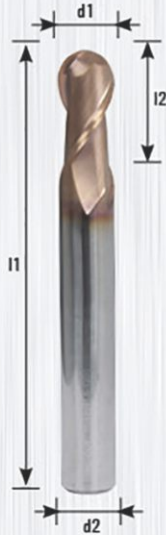


	d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
NEW	0.2	4.0	0.40	50.0	0.10	2	112SF-0020
NEW	0.3	4.0	0.60	50.0	0.15	2	112SF-0030
NEW	0.4	4.0	0.80	50.0	0.20	2	112SF-0040
NEW	0.5	4.0	1.00	50.0	0.25	2	112SF-0050
NEW	0.6	4.0	1.20	50.0	0.30	2	112SF-0060
NEW	0.7	4.0	1.40	50.0	0.35	2	112SF-0070
NEW	0.8	4.0	1.60	50.0	0.40	2	112SF-0080
NEW	0.9	4.0	1.80	50.0	0.45	2	112SF-0090

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112SB **62 HRC**
Ball End Mill – Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
1.0	4.0	2	50.0	0.50	2	112SB-0100
1.5	4.0	3	50.0	0.75	2	112SB-0150
2.0	4.0	4	50.0	1.00	2	112SB-0200
2.5	4.0	5	50.0	1.25	2	112SB-0250
3.0	4.0	6	50.0	1.50	2	112SB-0300
4.0	4.0	8	50.0	2.00	2	112SB-0400
5.0	6.0	10	50.0	2.50	2	112SB-0500
6.0	6.0	12	50.0	3.00	2	112SB-0600
8.0	8.0	16	60.0	4.00	2	112SB-0800
10.0	10.0	20	75.0	5.00	2	112SB-1000
12.0	12.0	24	75.0	6.00	2	112SB-1200
16.0	16.0	32	100.0	8.00	2	112SB-1600

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining



Series : 112LB **62 HRC**
Ball End Mill – Long Length

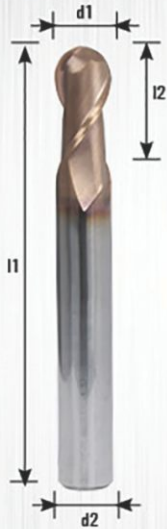


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
1.0	4.0	2	75.0	0.50	2	112LB-0100
1.5	4.0	3	75.0	0.75	2	112LB-0150
2.0	4.0	4	75.0	1.00	2	112LB-0200
2.5	4.0	5	75.0	1.25	2	112LB-0250
3.0	4.0	6	75.0	1.50	2	112LB-0300
4.0	4.0	8	75.0	2.00	2	112LB-0400
5.0	6.0	10	75.0	2.50	2	112LB-0500
6.0	6.0	12	75.0	3.00	2	112LB-0600

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112ELB 62 HRC Ball End Mill - Extra Long



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
2.0	4.0	4	100.0	1.00	2	112ELB-0200
3.0	4.0	6	100.0	1.50	2	112ELB-0300
4.0	4.0	8	100.0	2.00	2	112ELB-0400
5.0	6.0	10	100.0	2.50	2	112ELB-0500
6.0	6.0	12	100.0	3.00	2	112ELB-0600
8.0	8.0	16	100.0	4.00	2	112ELB-0800
10.0	10.0	20	100.0	5.00	2	112ELB-1000
12.0	12.0	24	100.0	6.00	2	112ELB-1200

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112XLB 62 HRC Ball End Mill - Extended Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
6.0	6.0	12	150.0	3.00	2	112XLB-0600
8.0	8.0	16	150.0	4.00	2	112XLB-0800
10.0	10.0	20	150.0	5.00	2	112XLB-1000
12.0	12.0	24	150.0	6.00	2	112XLB-1200

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112CRS **62 HRC**
Corner Radius – Standard Length



Application :

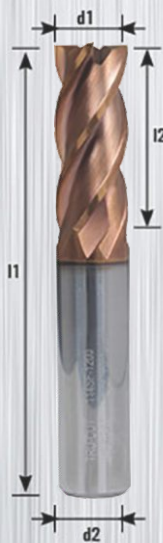
- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3.0	3.0	6	50	0.5	2	112CRS-0305
3.0	3.0	6	50	1.0	2	112CRS-0310
4.0	4.0	8	50	0.5	2	112CRS-0405
4.0	4.0	8	50	1.0	2	112CRS-0410
5.0	6.0	10	50	0.5	2	112CRS-0505
5.0	6.0	10	50	1.0	2	112CRS-0510
6.0	6.0	12	50	0.5	2	112CRS-0605
6.0	6.0	12	50	1.0	2	112CRS-0610
6.0	6.0	12	50	1.5	2	112CRS-0615
8.0	8.0	16	60	0.5	2	112CRS-0805
8.0	8.0	16	60	1.0	2	112CRS-0810
8.0	8.0	16	60	1.5	2	112CRS-0815
10.0	10.0	20	75	1.0	2	112CRS-1010
10.0	10.0	20	75	1.5	2	112CRS-1015
10.0	10.0	20	75	2.0	2	112CRS-1020
12.0	12.0	24	75	1.0	2	112CRS-1210
12.0	12.0	24	75	1.5	2	112CRS-1215
12.0	12.0	24	75	2.0	2	112CRS-1220

B



Series : 114SF **62 HRC**
Flat End Mill – Standard Length



Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
1	4	3	50	-	4	114SF-0100
2	4	4	50	-	4	114SF-0150
2	4	6	50	-	4	114SF-0200
3	4	8	50	-	4	114SF-0250
3	4	8	50	-	4	114SF-0300
4	4	11	50	-	4	114SF-0400
5	6	13	50	-	4	114SF-0500
6	6	16	50	-	4	114SF-0600
8	8	20	60	-	4	114SF-0800
10	10	25	75	-	4	114SF-1000
12	12	30	75	-	4	114SF-1200
14	14	40	100	-	14	114SF-1400
16	16	40	100	-	4	114SF-1600
18	18	45	100	-	4	114SF-1800
20	20	45	100	-	4	114SF-2000

Series : 114LF & 114ELF **62 HRC** Flat End Mill - Long & Extra Long



Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3	4	8	75	-	4	114LF-0300
4	4	11	75	-	4	114LF-0400
5	6	13	75	-	4	114LF-0500
6	6	16	75	-	4	114LF-0600
8	8	20	75	-	4	114LF-0800
3	4	8	100	-	4	114ELF-0300
4	4	11	100	-	4	114ELF-0400
5	6	13	100	-	4	114ELF-0500
6	6	16	100	-	4	114ELF-0600
8	8	20	100	-	4	114ELF-0800
10	10	25	100	-	4	114ELF-1000
12	12	30	100	-	4	114ELF-1200
6	6	16	150	-	4	114XLF-0600
8	8	20	150	-	4	114XLF-0800
10	10	25	150	-	4	114XLF-1000
12	12	30	150	-	4	114XLF-1200

Series : 114CRS **62 HRC** Corner Radius - Standard Length



Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
3.0	3.0	6	50	0.5	2	114CRS-0305
3.0	3.0	6	50	1.0	2	114CRS-0310
4.0	4.0	8	50	0.5	2	114CRS-0405
4.0	4.0	8	50	1.0	2	114CRS-0410
5.0	6.0	10	50	0.5	2	114CRS-0505
5.0	6.0	10	50	1.0	2	114CRS-0510
6.0	6.0	12	50	0.5	2	114CRS-0605
6.0	6.0	12	50	1.0	2	114CRS-0610
6.0	6.0	12	50	1.5	2	114CRS-0615
8.0	8.0	16	60	0.5	2	114CRS-0805
8.0	8.0	16	60	1.0	2	114CRS-0810
8.0	8.0	16	60	1.5	2	114CRS-0815
10.0	10.0	20	75	1.0	2	114CRS-1010
10.0	10.0	20	75	1.5	2	114CRS-1015
10.0	10.0	20	75	2.0	2	114CRS-1020
12.0	12.0	24	75	1.0	2	114CRS-1210
12.0	12.0	24	75	1.5	2	114CRS-1215
12.0	12.0	24	75	2.0	2	114CRS-1220

Series : 116SF & 116LF
Corner Radius – Std &
Long Length

62 HRC



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	No of Flute	Item Code
6.0	6.0	16	50.0	-	6	116SF-0600
8.0	8.0	20	60.0	-	6	116SF-0800
10.0	10.0	25	75.0	-	6	116SF-1000
12.0	12.0	30	75.0	-	6	116SF-1200
16.0	16.0	40	100.0	-	6	116SF-1600
6.0	6.0	25	65.0	-	6	116LF-0600
8.0	8.0	30	70.0	-	6	116LF-0800
10.0	10.0	35	75.0	-	6	116LF-1000
12.0	12.0	50	100.0	-	6	116LF-1200
16.0	16.0	60	100.0	-	6	116LF-1600

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

B

Series : 112FRN **62 HRC**
Flat - Long Neck Cutter



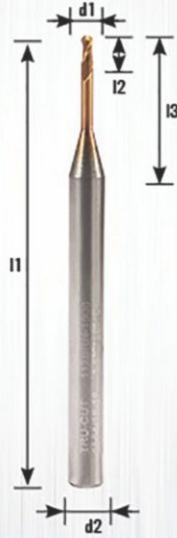
NEW
NEW
NEW
NEW
NEW
NEW
NEW
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NEW
NEW

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	l3 Neck Length	No of Flute	Item Code
0.4	4.0	0.8	50	2	2	112FRN-0042
0.4	4.0	0.8	50	4	2	112FRN-0044
0.5	4.0	1	50	2	2	112FRN-0052
0.5	4.0	1	50	4	2	112FRN-0054
0.6	4.0	1.2	50	4	2	112FRN-0064
0.6	4.0	1.2	50	6	2	112FRN-0066
0.8	4.0	1.6	50	4	2	112FRN-0084
0.8	4.0	1.6	50	6	2	112FRN-0086
0.9	4.0	1.8	50	6	2	112FRN-0096
0.9	4.0	1.8	50	8	2	112FRN-0098
1.0	4.0	1.5	50	6	2	112FRN-0106
1.0	4.0	1.5	50	8	2	112FRN-0108
1.0	4.0	1.5	50	10	2	112FRN-0110
1.5	4.0	2.0	50	8	2	112FRN-1508
1.5	4.0	2.0	50	12	2	112FRN-1512
1.5	4.0	2.0	50	16	2	112FRN-1516
2.0	4.0	3.0	50	6	2	112FRN-0206
2.0	4.0	3.0	50	8	2	112FRN-0208
2.0	4.0	3.0	50	10	2	112FRN-0210
2.0	4.0	3.0	50	12	2	112FRN-0212
2.0	4.0	3.0	50	16	2	112FRN-0216
2.0	4.0	3.0	50	20	2	112FRN-0220
2.5	4.0	4.0	50	8	2	112FRN-2508
2.5	4.0	4.0	50	12	2	112FRN-2512
2.5	4.0	4.0	50	16	2	112FRN-2516
2.5	4.0	4.0	50	20	2	112FRN-2520
3.0	6.0	4.5	60	10	2	112FRN-0310
3.0	6.0	4.5	60	16	2	112FRN-0316
3.0	6.0	4.5	60	20	2	112FRN-0320
4.0	6.0	6.0	60	10	2	112FRN-0410
4.0	6.0	6.0	60	16	2	112FRN-0416
4.0	6.0	6.0	60	20	2	112FRN-0420
5.0	6.0	8.0	60	16	2	112FRN-0516
5.0	6.0	8.0	60	25	2	112FRN-0525

Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

Series : 112BRN **62 HRC**
Ball - Long Neck Cutter



Application :

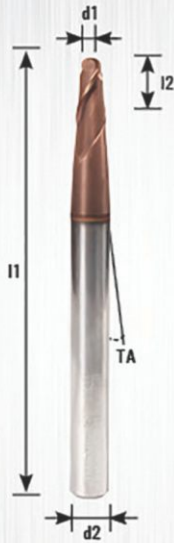
- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

	d1	d2	l2	l1	l3	No of Flute	Item Code
	Tool Diameter	Shank Diameter	Length of Cut	Overall Length	Neck Length		
NEW	0.4	4.0	0.8	50	2	2	112BRN-0042
NEW	0.4	4.0	0.8	50	4	2	112BRN-0044
NEW	0.5	4.0	1	50	2	2	112BRN-0052
NEW	0.5	4.0	1	50	4	2	112BRN-0054
NEW	0.6	4.0	1.2	50	4	2	112BRN-0064
NEW	0.6	4.0	1.2	50	6	2	112BRN-0066
NEW	0.8	4.0	1.6	50	4	2	112BRN-0084
NEW	0.8	4.0	1.6	50	6	2	112BRN-0086
NEW	0.9	4.0	1.8	50	6	2	112BRN-0096
NEW	0.9	4.0	1.8	50	8	2	112BRN-0098
	1.0	4.0	1.5	50	6	2	112BRN-0106
	1.0	4.0	1.5	50	8	2	112BRN-0108
	1.0	4.0	1.5	50	10	2	112BRN-0110
	1.5	4.0	2.0	50	8	2	112BRN-1508
	1.5	4.0	2.0	50	12	2	112BRN-1512
	1.5	4.0	2.0	50	16	2	112BRN-1516
	2.0	4.0	3.0	50	6	2	112BRN-0206
	2.0	4.0	3.0	50	8	2	112BRN-0208
	2.0	4.0	3.0	50	10	2	112BRN-0210
	2.0	4.0	3.0	50	12	2	112BRN-0212
	2.0	4.0	3.0	50	16	2	112BRN-0216
	2.0	4.0	3.0	50	20	2	112BRN-0220
	2.5	4.0	4.0	50	8	2	112BRN-2508
	2.5	4.0	4.0	50	12	2	112BRN-2512
	2.5	4.0	4.0	50	16	2	112BRN-2516
	2.5	4.0	4.0	50	20	2	112BRN-2520
	3.0	6.0	4.5	60	10	2	112BRN-0310
	3.0	6.0	4.5	60	16	2	112BRN-0316
	3.0	6.0	4.5	60	20	2	112BRN-0320
	4.0	6.0	6.0	60	10	2	112BRN-0410
	4.0	6.0	6.0	60	16	2	112BRN-0416
	4.0	6.0	6.0	60	20	2	112BRN-0420
	5.0	6.0	8.0	60	16	2	112BRN-0516

B

Series : 132SB Ball Taper Neck

62 HRC



Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	Neck Taper Angle	Item Code
3.0	6.0	6	70.0	1.50	3.0	132SB-0330
3.0	6.0	6	90.0	1.50	1.3	132SB-0313
4.0	6.0	8	70.0	2.00	3.0	132SB-0430
4.0	6.0	8	90.0	2.00	1.3	132SB-0413
5.0	8.0	10	90.0	2.50	3.0	132SB-0530
5.0	8.0	10	110.0	2.50	1.3	132SB-0513
6.0	8.0	12	90.0	3.00	3.0	132SB-0630
6.0	8.0	12	110.0	3.00	1.3	132SB-0613
8.0	10.0	14	100.0	4.00	3.0	132SB-0830
8.0	10.0	14	120.0	4.00	1.3	132SB-0813
10.0	12.0	18	110.0	5.00	3.0	132SB-1030
10.0	12.0	18	130.0	5.00	1.3	132SB-1013
12.0	16.0	22	140.0	6.00	3.0	132SB-1230
12.0	16.0	22	160.0	6.00	1.3	132SB-1213

Series : 132CR Corner Radius - Taper Neck

62 HRC



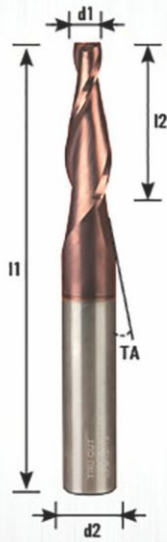
Application :

- Hi-Tensile Steel upto 62 HRC
- Hi-Speed Machining
- Specially Designed for Die and Mould Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Radius	Neck Taper Angle	Item Code
3.0	6.0	6	70.0	0.30	3.0	132CR-0330
3.0	6.0	6	90.0	0.30	1.3	132CR-0313
4.0	6.0	8	70.0	0.30	3.0	132CR-0430
4.0	6.0	8	90.0	0.30	1.3	132CR-0413
5.0	8.0	10	90.0	0.50	3.0	132CR-0530
5.0	8.0	10	110.0	0.50	1.3	132CR-0513
6.0	8.0	12	90.0	0.50	3.0	132CR-0630
6.0	8.0	12	110.0	0.50	1.3	132CR-0613
8.0	10.0	14	100.0	0.50	3.0	132CR-0830
8.0	10.0	14	120.0	0.50	1.3	132CR-0813
10.0	12.0	18	110.0	0.50	3.0	132CR-1030
10.0	12.0	18	130.0	1.00	1.3	132CR-1013
12.0	16.0	22	140.0	1.00	3.0	132CR-1230
12.0	16.0	22	160.0	1.00	1.3	132CR-1213



Series : 122TEM
Taper End Mills



Application :

- Designed for Aluminium Extrusion Die Machining

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Taper Angle	No of Flute	Item Code
2.0	6.0	40	78.0	1°30'	2	122TEM-0206-1.3
3.0	6.0	40	78.0	1°30'	2	122TEM-0306-1.3
4.0	8.0	40	78.0	1°30'	2	122TEM-0408-1.3
5.0	8.0	40	78.0	1°30'	2	122TEM-0508-1.3
2.5	8.0	40	78.0	2°	2	122TEM-2508-2
3.0	8.0	40	78.0	2°	2	122TEM-0308-2
3.5	8.0	40	78.0	2°	2	122TEM-3508-2
2.0	8.0	40	78.0	3°	2	122TEM-0208-3
2.5	8.0	40	78.0	3°	2	122TEM-2508-3
3.0	8.0	40	78.0	3°	2	122TEM-0308-3
3.0	10.0	50	92.0	3°	2	122TEM-0310-3
3.5	8.0	40	78.0	3°	2	122TEM-3508-3
3.5	10.0	50	92.0	3°	2	122TEM-3510-3
4.0	10.0	50	92.0	3°	2	122TEM-0410-3
4.5	10.0	50	92.0	3°	2	122TEM-4510-3
2.0	10.0	40	83.0	5°	2	122TEM-0210-5
2.5	8.0	30	78.0	5°	2	122TEM-2508-5
2.5	10.0	40	83.0	5°	2	122TEM-2510-5
3.0	10.0	40	83.0	5°	2	122TEM-0310-5
3.0	12.0	50	92.0	5°	2	122TEM-0312-5
3.5	12.0	40	92.0	5°	2	122TEM-3512-5
4.0	10.0	30	83.0	5°	2	122TEM-0410-5
4.0	12.0	40	92.0	5°	2	122TEM-0412-5
4.0	14.0	50	104.0	5°	2	122TEM-0414-5
5.0	12.0	40	92.0	5°	2	122TEM-0512-5
5.0	14.0	50	104.0	5°	2	122TEM-0514-5
5.0	16.0	60	130.0	5°	2	122TEM-0516-5
6.0	14.0	40	104.0	5°	2	122TEM-0614-5
6.0	18.0	60	130.0	5°	2	122TEM-0618-5



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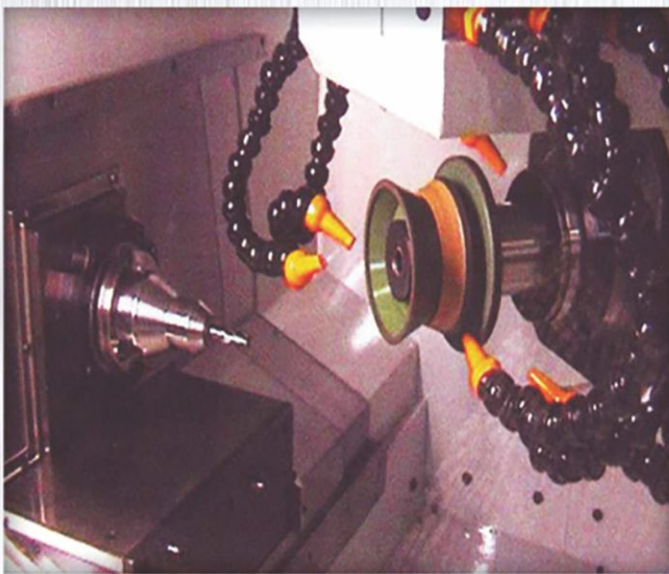
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PAGES 56-78



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Tool Image	Series	Helix Anglhte	No. of Flute	Recommendation						Refer Page No
				Steel 15-30 HRC	Steel 30-40 HRC	Hard 62 HRC	Stainless Steel	Cast Iron	Aluminium / Copper	
	230	30°	Z=2	●				●		59
	231	30°	Z=2	●				●		62
	102SF	30°	Z=2	●	◐		◐	●		65
	102LF	30°	Z=2	●	◐		◐	●		66
	102ELF	30°	Z=2	●	◐		◐	●		66
	102SB	30°	Z=2	●	◐		◐	●		67
	102LB	30°	Z=2	●	◐		◐	●		68
	102ELB	30°	Z=2	●	◐		◐	●		68
	104SF	30°	Z=4	●	◐		◐	●		69
	104LF	30°	Z=4	●	◐		◐	●		70
	104ELF	30°	Z=4	●	◐		◐	●		70

Recommended ● Partly Recommended ◐

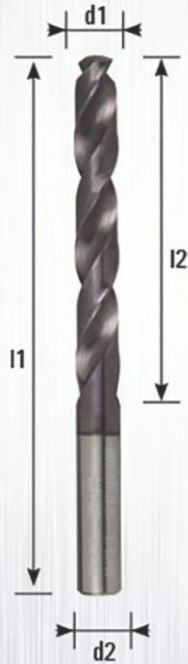
Tool Image	Series	Helix Angle	No. of Flute	Recommendation						Refer Page No
				Steel 15-30 HRC	Steel 30-40 HRC	Hard 62 HRC	Stainless Steel	Cast Iron	Aluminium / Copper	
	104XLF	30°	Z=4	●	●		●	●		70
	104SB	30°	Z=4	●	●		●	●		71
	104LB	30°	Z=4	●	●		●	●		72
	104ELB	30°	Z=4	●	●		●	●		72
	104XLB	30°	Z=4	●	●		●	●		72
	104SF-6SH	30°	Z=4	●	●		●	●		73
	104SB-6SH	30°	Z=4	●	●		●	●		73
	300	0°	Z=4/6/8			●		●		74
	301	7°	Z=4/6/8	●	●		●	●	●	74
	500	0°	Z=4-6	●	●	●	●	●	●	75
	501	0°	Z=4-6	●	●		●	●	●	75
	400	0°	Z=2	●	●		●	●		76
	401	0°	Z=2	●	●		●	●		76
	402	30°	Z=2	●	●		●	●		77
	403	30°	Z=2	●	●		●	●		77
	600	0°	Z=1	●						78
	601	0°	Z=1	●						78

Recommended ● Partly Recommended ●



Series : 230

General Application -Short Length

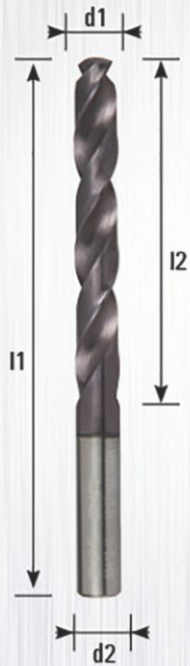


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
1.00	1.0	6	26	230-0100
1.10	1.1	7	28	230-0110
1.20	1.2	8	30	230-0120
1.30	1.3	8	30	230-0130
1.40	1.4	9	32	230-0140
1.50	1.5	9	32	230-0150
1.60	1.6	10	34	230-0160
1.70	1.7	10	34	230-0170
1.80	1.8	11	36	230-0180
1.90	1.9	12	38	230-0190
2.00	2.0	12	38	230-0200
2.10	2.1	12	38	230-0210
2.20	2.2	13	40	230-0220
2.30	2.3	13	40	230-0230
2.40	2.4	14	43	230-0240
2.50	2.5	14	43	230-0250
2.60	2.6	14	43	230-0260
2.70	2.7	16	46	230-0270
2.80	2.8	16	46	230-0280
2.90	2.9	16	46	230-0290
3.00	3.00	16	46	230-0300
3.10	3.10	18	49	230-0310
3.20	3.20	18	49	230-0320
3.30	3.30	18	49	230-0330
3.40	3.40	20	52	230-0340
3.50	3.50	20	52	230-0350
3.60	3.60	20	52	230-0360
3.70	3.70	20	52	230-0370
3.80	3.80	22	55	230-0380
3.90	3.90	22	55	230-0390
4.00	4.00	22	55	230-0400
4.10	4.10	22	55	230-0410
4.20	4.20	22	55	230-0420
4.30	4.30	24	58	230-0430
4.40	4.40	24	58	230-0440
4.50	4.50	24	58	230-0450
4.60	4.60	24	58	230-0460
4.70	4.70	24	58	230-0470
4.80	4.80	26	62	230-0480
4.90	4.90	26	62	230-0490
5.00	5.00	26	62	230-0500
5.10	5.10	26	62	230-0510
5.20	5.20	26	62	230-0520
5.30	5.30	26	62	230-0530
5.40	5.40	28	66	230-0540
5.50	5.50	28	66	230-0550
5.60	5.60	28	66	230-0560
5.70	5.70	28	66	230-0570
5.80	5.80	28	66	230-0580
5.90	5.90	28	66	230-0590
6.00	6.00	28	66	230-0600
6.10	6.10	31	70	230-0610
6.20	6.20	31	70	230-0620
6.30	6.30	31	70	230-0630
6.40	6.40	31	70	230-0640
6.50	6.50	31	70	230-0650
6.60	6.60	31	70	230-0660
6.70	6.70	31	70	230-0670

Application :

- Self Centering
- Parallel Shank Designed for General Application at Normal Cutting Parameters

Series : 230 General Application -Short Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
6.80	6.80	34	74	230-0680
6.90	6.90	34	74	230-0690
7.00	7.00	34	74	230-0700
7.10	7.10	34	74	230-0710
7.20	7.20	34	74	230-0720
7.30	7.30	34	74	230-0730
7.40	7.40	34	74	230-0740
7.50	7.50	34	74	230-0750
7.60	7.60	37	79	230-0760
7.70	7.70	37	79	230-0770
7.80	7.80	37	79	230-0780
7.90	7.90	37	79	230-0790
8.00	8.00	37	79	230-0800
8.10	8.10	37	79	230-0810
8.20	8.20	37	79	230-0820
8.30	8.30	37	79	230-0830
8.40	8.40	37	79	230-0840
8.50	8.50	37	79	230-0850
8.60	8.60	37	79	230-0860
8.70	8.70	37	79	230-0870
8.80	8.80	40	84	230-0880
8.90	8.90	40	84	230-0890
9.00	9.00	40	84	230-0900
9.10	9.10	40	84	230-0910
9.20	9.20	40	84	230-0920
9.30	9.30	40	84	230-0930
9.40	9.40	40	84	230-0940
9.50	9.50	40	84	230-0950
9.60	9.60	43	89	230-0960
9.70	9.70	43	89	230-0970
9.80	9.80	43	89	230-0980
9.90	9.90	43	89	230-0990
10.00	10.00	43	89	230-1000
10.10	10.10	43	89	230-1010
10.20	10.20	43	89	230-1020

Application :

- Self Centering
- Parallel Shank Designed for General Application at Normal Cutting Parameters



Series : 230

General Application -Short Length

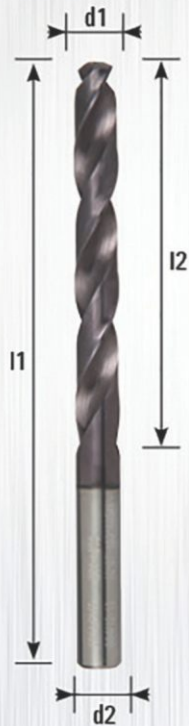


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
10.30	10.30	43	89	230-1030
10.40	10.40	43	89	230-1040
10.50	10.50	43	89	230-1050
10.60	10.60	43	89	230-1060
10.70	10.70	47	95	230-1070
10.80	10.80	47	95	230-1080
10.90	10.90	47	95	230-1090
11.00	11.00	47	95	230-1100
11.10	11.10	47	95	230-1110
11.20	11.20	47	95	230-1120
11.30	11.30	47	95	230-1130
11.40	11.40	47	95	230-1140
11.50	11.50	47	95	230-1150
11.60	11.60	47	95	230-1160
11.70	11.70	47	95	230-1170
11.80	11.80	47	95	230-1180
11.90	11.90	47	95	230-1190
12.00	12.00	51	102	230-1200
12.50	12.50	51	102	230-1250
13.00	13.00	51	102	230-1300
13.50	13.50	54	107	230-1350
14.00	14.00	54	107	230-1400
14.50	14.50	56	111	230-1450
15.00	15.00	56	111	230-1500
15.50	15.50	58	115	230-1550
16.00	16.00	58	115	230-1600
16.50	16.50	60	119	230-1650
17.00	17.00	60	119	230-1700
17.50	17.50	62	123	230-1750
18.00	18.00	62	123	230-1800
18.50	18.50	64	127	230-1850
19.00	19.00	64	127	230-1900
19.50	19.50	66	131	230-1950
20.00	20.00	66	131	230-2000

Application :

- Self Centering
- Parallel Shank Designed for General Application at Normal Cutting Parameters

Series : 231 General Application - Std Length



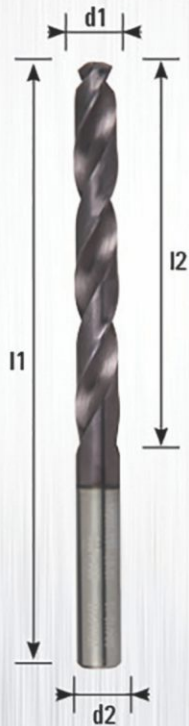
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
1.00	1.0	12	34	231-0100
1.10	1.1	14	36	231-0110
1.20	1.2	16	38	231-0120
1.30	1.3	16	38	231-0130
1.40	1.4	18	40	231-0140
1.50	1.5	18	40	231-0150
1.60	1.6	20	43	231-0160
1.70	1.7	20	43	231-0170
1.80	1.8	22	46	231-0180
1.90	1.9	22	46	231-0190
2.00	2.0	24	49	231-0200
2.10	2.1	24	49	231-0210
2.20	2.2	27	53	231-0220
2.30	2.3	27	53	231-0230
2.40	2.4	30	57	231-0240
2.50	2.5	30	57	231-0250
2.60	2.6	30	57	231-0260
2.70	2.7	33	61	231-0270
2.80	2.8	33	61	231-0280
2.90	2.9	33	61	231-0290
3.00	3.00	33	61	231-0300
3.10	3.10	36	65	231-0310
3.20	3.20	36	65	231-0320
3.30	3.30	36	65	231-0330
3.40	3.40	39	70	231-0340
3.50	3.50	39	70	231-0350
3.60	3.60	39	70	231-0360
3.70	3.70	39	70	231-0370
3.80	3.80	43	75	231-0380
3.90	3.90	43	75	231-0390
4.00	4.00	43	75	231-0400
4.10	4.10	43	75	231-0410
4.20	4.20	43	75	231-0420
4.30	4.30	47	80	231-0430
4.40	4.40	47	80	231-0440
4.50	4.50	47	80	231-0450
4.60	4.60	47	80	231-0460
4.70	4.70	47	80	231-0470
4.80	4.80	52	86	231-0480
4.90	4.90	52	86	231-0490
5.00	5.00	52	86	231-0500
5.10	5.10	52	86	231-0510
5.20	5.20	52	86	231-0520
5.30	5.30	52	86	231-0530
5.40	5.40	57	93	231-0540
5.50	5.50	57	93	231-0550
5.60	5.60	57	93	231-0560
5.70	5.70	57	93	231-0570
5.80	5.80	57	93	231-0580
5.90	5.90	57	93	231-0590
6.00	6.00	57	93	231-0600
6.10	6.10	63	101	231-0610
6.20	6.20	63	101	231-0620
6.30	6.30	63	101	231-0630
6.40	6.40	63	101	231-0640
6.50	6.50	63	101	231-0650
6.60	6.60	63	101	231-0660

Application :

- Self Centering
- Parallel Shank Designed for General Application at Normal Cutting Parameters



Series : 231
General Application -Std Length

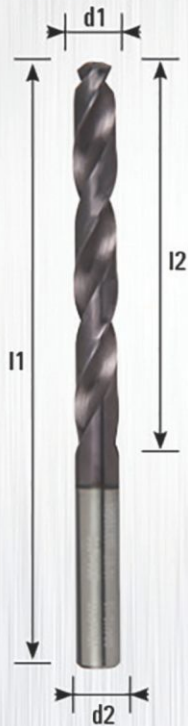


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
6.70	6.70	63	101	231-0670
6.80	6.80	69	109	231-0680
6.90	6.90	69	109	231-0690
7.00	7.00	69	109	231-0700
7.10	7.10	69	109	231-0710
7.20	7.20	69	109	231-0720
7.30	7.30	69	109	231-0730
7.40	7.40	69	109	231-0740
7.50	7.50	69	109	231-0750
7.60	7.60	75	117	231-0760
7.70	7.70	75	117	231-0770
7.80	7.80	75	117	231-0780
7.90	7.90	75	117	231-0790
8.00	8.00	75	117	231-0800
8.10	8.10	75	117	231-0810
8.20	8.20	75	117	231-0820
8.30	8.30	75	117	231-0830
8.40	8.40	75	117	231-0840
8.50	8.50	75	117	231-0850
8.60	8.60	81	125	231-0860
8.70	8.70	81	125	231-0870
8.80	8.80	81	125	231-0880
8.90	8.90	81	125	231-0890
9.00	9.00	81	125	231-0900
9.10	9.10	81	125	231-0910
9.20	9.20	81	125	231-0920
9.30	9.30	81	125	231-0930
9.40	9.40	81	125	231-0940
9.50	9.50	81	125	231-0950
9.60	9.60	87	133	231-0960
9.70	9.70	87	133	231-0970
9.80	9.80	87	133	231-0980
9.90	9.90	87	133	231-0990
10.00	10.00	87	133	231-1000
10.10	10.10	87	133	231-1010
10.20	10.20	87	133	231-1020
10.30	10.30	87	133	231-1030

Application :

- Self Centering
- Parallel Shank Designed for General Application at Normal Cutting Parameters

Series : 231 General Application -Std Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
10.40	10.40	87	133	231-1040
10.50	10.50	87	133	231-1050
10.60	10.60	87	133	231-1060
10.70	10.70	94	142	231-1070
10.80	10.80	94	142	231-1080
10.90	10.90	94	142	231-1090
11.00	11.00	94	142	231-1100
11.10	11.10	94	142	231-1110
11.20	11.20	94	142	231-1120
11.30	11.30	94	142	231-1130
11.40	11.40	94	142	231-1140
11.50	11.50	94	142	231-1150
11.60	11.60	94	142	231-1160
11.70	11.70	94	142	231-1170
11.80	11.80	94	142	231-1180
11.90	11.90	94	142	231-1190
12.00	12.00	101	151	231-1200
12.50	12.50	101	151	231-1250
13.00	13.00	101	151	231-1300
13.50	13.50	108	160	231-1350
14.00	14.00	108	160	231-1400
14.50	14.50	114	169	231-1450
15.00	15.00	114	169	231-1500
15.50	15.50	120	178	231-1550
16.00	16.00	120	178	231-1600
16.50	16.50	125	184	231-1650
17.00	17.00	125	184	231-1700
17.50	17.50	130	191	231-1750
18.00	18.00	130	191	231-1800
18.50	18.50	135	198	231-1850
19.00	19.00	135	198	231-1900
19.50	19.50	140	205	231-1950
20.00	20.00	140	205	231-2000

Application :

- Self Centering
- Parallel Shank Designed for General Application at Normal Cutting Parameters



Series : 102SF
Flat - Standard Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
1.0	4.0	4.0	50	2	102SF-0100-M
1.5	4.0	4.5	50	2	102SF-0150-M
2.0	4.0	6.3	50	2	102SF-0200-M
2.5	4.0	9.5	50	2	102SF-0250-M
3.0	3.0	12.0	50	2	102SF-0300
3.5	4.0	14.0	50	2	102SF-0350
4.0	4.0	14.0	50	2	102SF-0400
4.5	5.0	16.0	50	2	102SF-0450
5.0	5.0	16.0	50	2	102SF-0500
5.5	6.0	16.0	50	2	102SF-0550
6.0	6.0	16.0	50	2	102SF-0600
6.5	8.0	19.0	63	2	102SF-0650
7.0	8.0	19.0	63	2	102SF-0700
7.5	8.0	20.0	63	2	102SF-0750
8.0	8.0	20.0	63	2	102SF-0800
8.5	10.0	22.0	75	2	102SF-0850
9.0	10.0	22.0	75	2	102SF-0900
9.5	10.0	22.0	75	2	102SF-0950
10.0	10.0	22.0	75	2	102SF-1000
10.5	12.0	25.0	75	2	102SF-1050
11.0	12.0	25.0	75	2	102SF-1100
11.5	12.0	25.0	75	2	102SF-1150
12.0	12.0	25.0	75	2	102SF-1200
14.0	14.0	32.0	89	2	102SF-1400
16.0	16.0	32.0	89	2	102SF-1600
18.0	18.0	38.0	100	2	102SF-1800
20.0	20.0	38.0	100	2	102SF-2000
22.0	22.0	38.0	100	2	102SF-2200
25.0	25.0	38.0	100	2	102SF-2500

Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous

Series : 102LF & 102ELF Flat - Long & Extra Long Length



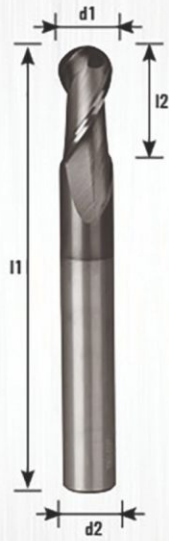
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.0	3.0	19	57	2	102LF-0300
3.0	3.0	25	75	2	102ELF-0300
4.0	4.0	19	57	2	102LF-0400
4.0	4.0	25	75	2	102ELF-0400
5.0	5.0	25	63	2	102LF-0500
5.0	5.0	25	75	2	102ELF-0500
6.0	6.0	28	76	2	102LF-0600
6.0	6.0	38	100	2	102ELF-0600
8.0	8.0	29	76	2	102LF-0800
8.0	8.0	38	100	2	102ELF-0800
10.0	10.0	32	76	2	102LF-1000
10.0	10.0	38	100	2	102ELF-1000
12.0	12.0	51	102	2	102LF-1200
12.0	12.0	75	150	2	102ELF-1200
14.0	14.0	57	127	2	102LF-1400
14.0	14.0	75	150	2	102ELF-1400
16.0	16.0	57	127	2	102LF-1600
16.0	16.0	75	150	2	102ELF-1600
18.0	18.0	57	127	2	102LF-1800
18.0	18.0	75	150	2	102ELF-1800
20.0	20.0	57	127	2	102LF-2000
20.0	20.0	75	150	2	102ELF-2000
25.0	25.0	57	127	2	102LF-2500
25.0	25.0	75	150	2	102ELF-2500

Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous



Series : 102SB
Ball - Standard Length



Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
1.0	4.0	4.0	50	2	102SB-0100-M
1.5	4.0	4.5	50	2	102SB-0150-M
2.0	4.0	6.3	50	2	102SB-0200-M
2.5	4.0	9.5	50	2	102SB-0250-M
3.0	3.0	12.0	50	2	102SB-0300
3.5	4.0	14.0	50	2	102SB-0350
4.0	4.0	14.0	50	2	102SB-0400
4.5	5.0	16.0	50	2	102SB-0450
5.0	5.0	16.0	50	2	102SB-0500
5.5	6.0	16.0	50	2	102SB-0550
6.0	6.0	16.0	50	2	102SB-0600
6.5	8.0	19.0	63	2	102SB-0650
7.0	8.0	19.0	63	2	102SB-0700
7.5	8.0	20.0	63	2	102SB-0750
8.0	8.0	20.0	63	2	102SB-0800
8.5	10.0	22.0	75	2	102SB-0850
9.0	10.0	22.0	75	2	102SB-0900
9.5	10.0	22.0	75	2	102SB-0950
10.0	10.0	22.0	75	2	102SB-1000
10.5	12.0	25.0	75	2	102SB-1050
11.0	12.0	25.0	75	2	102SB-1100
11.5	12.0	25.0	75	2	102SB-1150
12.0	12.0	25.0	75	2	102SB-1200
14.0	14.0	32.0	89	2	102SB-1400
16.0	16.0	32.0	89	2	102SB-1600
18.0	18.0	38.0	100	2	102SB-1800
20.0	20.0	38.0	100	2	102SB-2000
22.0	22.0	38.0	100	2	102SB-2200
25.0	25.0	38.0	100	2	102SB-2500

Series : 102LB & 102ELB Ball - Long & Extra Long Length



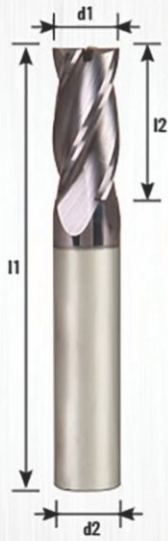
d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.0	3.0	19	57	2	102LB-0300
3.0	3.0	25	75	2	102ELB-0300
4.0	4.0	19	57	2	102LB-0400
4.0	4.0	25	75	2	102ELB-0400
5.0	5.0	25	63	2	102LB-0500
5.0	5.0	25	75	2	102ELB-0500
6.0	6.0	28	76	2	102LB-0600
6.0	6.0	38	100	2	102ELB-0600
8.0	8.0	29	76	2	102LB-0800
8.0	8.0	38	100	2	102ELB-0800
10.0	10.0	32	76	2	102LB-1000
10.0	10.0	38	100	2	102ELB-1000
12.0	12.0	51	102	2	102LB-1200
12.0	12.0	75	150	2	102ELB-1200
14.0	14.0	57	127	2	102LB-1400
14.0	14.0	75	150	2	102ELB-1400
16.0	16.0	57	127	2	102LB-1600
16.0	16.0	75	150	2	102ELB-1600
18.0	18.0	57	127	2	102LB-1800
18.0	18.0	75	150	2	102ELB-1800
20.0	20.0	57	127	2	102LB-2000
20.0	20.0	75	150	2	102ELB-2000
25.0	25.0	57	127	2	102LB-2500
25.0	25.0	75	150	2	102ELB-2500

Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous



Series : 104SF
Flat - Standard Length



Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
1.0	4.0	4.0	50	4	104SF-0100-M
1.5	4.0	4.5	50	4	104SF-0150-M
2.0	4.0	6.3	50	4	104SF-0200-M
2.5	4.0	9.5	50	4	104SF-0250-M
3.0	3.0	12.0	50	4	104SF-0300
3.5	4.0	14.0	50	4	104SF-0350
4.0	4.0	14.0	50	4	104SF-0400
4.5	5.0	16.0	50	4	104SF-0450
5.0	5.0	16.0	50	4	104SF-0500
5.5	6.0	16.0	50	4	104SF-0550
6.0	6.0	16.0	50	4	104SF-0600
6.5	8.0	19.0	63	4	104SF-0650
7.0	8.0	19.0	63	4	104SF-0700
7.5	8.0	20.0	63	4	104SF-0750
8.0	8.0	20.0	63	4	104SF-0800
8.5	10.0	22.0	75	4	104SF-0850
9.0	10.0	22.0	75	4	104SF-0900
9.5	10.0	22.0	75	4	104SF-0950
10.0	10.0	22.0	75	4	104SF-1000
10.5	12.0	25.0	75	4	104SF-1050
11.0	12.0	25.0	75	4	104SF-1100
11.5	12.0	25.0	75	4	104SF-1150
12.0	12.0	25.0	75	4	104SF-1200
14.0	14.0	32.0	89	4	104SF-1400
15.0	16.0	32.0	89	4	104SF-1500
16.0	16.0	32.0	89	4	104SF-1600
18.0	18.0	38.0	100	4	104SF-1800
20.0	20.0	38.0	100	4	104SF-2000
22.0	22.0	38.0	100	4	104SF-2200
25.0	25.0	38.0	100	4	104SF-2500

Series : 104LF & 104ELF Flat - Long & Extra Long Length



Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.0	3.0	19.0	57.0	4	104LF-0300
3.0	3.0	25.0	75.0	4	104ELF-0300
4.0	4.0	19.0	57.0	4	104LF-0400
4.0	4.0	25.0	75.0	4	104ELF-0400
5.0	5.0	25.0	63.0	4	104LF-0500
5.0	5.0	25.0	75.0	4	104ELF-0500
6.0	6.0	28.0	76.0	4	104LF-0600
6.0	6.0	38.0	100.0	4	104ELF-0600
8.0	8.0	29.0	76.0	4	104LF-0800
8.0	8.0	38.0	100.0	4	104ELF-0800
10.0	10.0	32.0	76.0	4	104LF-1000
10.0	10.0	38.0	100.0	4	104ELF-1000
12.0	12.0	51.0	102.0	4	104LF-1200
12.0	12.0	75.0	150.0	4	104ELF-1200
14.0	14.0	57.0	127.0	4	104LF-1400
14.0	14.0	75.0	150.0	4	104ELF-1400
16.0	16.0	57.0	127.0	4	104LF-1600
16.0	16.0	75.0	150.0	4	104ELF-1600
18.0	18.0	57.0	127.0	4	104LF-1800
18.0	18.0	75.0	150.0	4	104ELF-1800
20.0	20.0	57.0	127.0	4	104LF-2000
20.0	20.0	75.0	150.0	4	104ELF-2000
25.0	25.0	57.0	127.0	4	104LF-2500
25.0	25.0	75.0	150.0	4	104ELF-2500

Series : 104XLF Flat - Extended Length



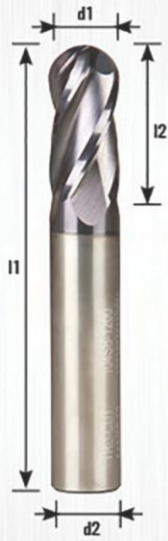
Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- For Pattern Work and Deep Milling

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
6.0	6.0	40.0	150.0	4	104XLF-0600
8.0	8.0	40.0	150.0	4	104XLF-0800
10.0	10.0	40.0	150.0	4	104XLF-1000
12.0	12.0	50.0	200.0	4	104XLF-1200
16.0	16.0	50.0	200.0	4	104XLF-1600



Series : 104SB
Ball - Standard Length



Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminum and Non-Ferrous

d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.0	3.0	12.0	50.0	4	104SB-0300
3.5	4.0	14.0	50.0	4	104SB-0350
4.0	4.0	14.0	50.0	4	104SB-0400
4.5	5.0	16.0	50.0	4	104SB-0450
5.0	5.0	16.0	50.0	4	104SB-0500
5.5	6.0	16.0	50.0	4	104SB-0550
6.0	6.0	16.0	50.0	4	104SB-0600
6.5	8.0	19.0	63.0	4	104SB-0650
7.0	8.0	19.0	63.0	4	104SB-0700
7.5	8.0	20.0	63.0	4	104SB-0750
8.0	8.0	20.0	63.0	4	104SB-0800
8.5	10.0	22.0	75.0	4	104SB-0850
9.0	10.0	22.0	75.0	4	104SB-0900
9.5	10.0	22.0	75.0	4	104SB-0950
10.0	10.0	22.0	75.0	4	104SB-1000
10.5	12.0	25.0	75.0	4	104SB-1050
11.0	12.0	25.0	75.0	4	104SB-1100
11.5	12.0	25.0	75.0	4	104SB-1150
12.0	12.0	25.0	75.0	4	104SB-1200
14.0	14.0	32.0	89.0	4	104SB-1400
15.0	16.0	32.0	89.0	4	104SB-1500
16.0	16.0	32.0	89.0	4	104SB-1600
18.0	18.0	38.0	100.0	4	104SB-1800
20.0	20.0	38.0	100.0	4	104SB-2000
22.0	22.0	38.0	100.0	4	104SB-2200
25.0	25.0	38.0	100.0	4	104SB-2500

Series : 104LB & 104ELB Ball - Long & Extra Long length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.0	3.0	19.0	57.0	4	104LB-0300
3.0	3.0	25.0	75.0	4	104ELB-0300
4.0	4.0	19.0	57.0	4	104LB-0400
4.0	4.0	25.0	75.0	4	104ELB-0400
5.0	5.0	25.0	63.0	4	104LB-0500
5.0	5.0	25.0	75.0	4	104ELB-0500
6.0	6.0	28.0	76.0	4	104LB-0600
6.0	6.0	38.0	100.0	4	104ELB-0600
8.0	8.0	29.0	76.0	4	104LB-0800
8.0	8.0	38.0	100.0	4	104ELB-0800
10.0	10.0	32.0	76.0	4	104LB-1000
10.0	10.0	38.0	100.0	4	104ELB-1000
12.0	12.0	51.0	102.0	4	104LB-1200
12.0	12.0	75.0	150.0	4	104ELB-1200
14.0	14.0	57.0	127.0	4	104LB-1400
14.0	14.0	75.0	150.0	4	104ELB-1400
16.0	16.0	57.0	127.0	4	104LB-1600
16.0	16.0	75.0	150.0	4	104ELB-1600
18.0	18.0	57.0	127.0	4	104LB-1800
18.0	18.0	75.0	150.0	4	104ELB-1800
20.0	20.0	57.0	127.0	4	104LB-2000
20.0	20.0	75.0	150.0	4	104ELB-2000
25.0	25.0	57.0	127.0	4	104LB-2500
25.0	25.0	75.0	150.0	4	104ELB-2500

Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous

Series : 104XLB Ball - Extended Length



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
6.0	6.0	40.0	150.0	4	104XLB-0600
8.0	8.0	40.0	150.0	4	104XLB-0800
10.0	10.0	40.0	150.0	4	104XLB-1000
12.0	12.0	50.0	200.0	4	104XLB-1200
16.0	16.0	50.0	200.0	4	104XLB-1600

Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- For Pattern Work and Deep Milling



Series : 104SF-6SH
Flat - Over Size Shank



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
2.0	6.0	6	50	4	104SF-0200-6SH
2.5	6.0	8	50	4	104SF-0250-6SH
3.0	6.0	8	50	4	104SF-0300-6SH
3.5	6.0	10	50	4	104SF-0350-6SH
4.0	6.0	10	50	4	104SF-0400-6SH
4.5	6.0	13	50	4	104SF-0450-6SH
5.0	6.0	13	50	4	104SF-0500-6SH
5.5	6.0	16	50	4	104SF-0550-6SH

Application :

- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous



Series : 104SB-6SH
Ball - Over Size Shank

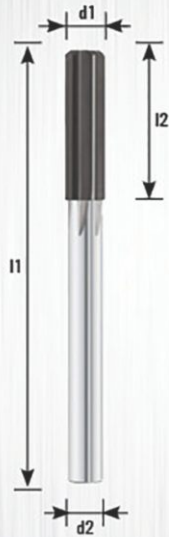


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
2.0	6.0	6	50	4	104SB-0200-6SH
2.5	6.0	8	50	4	104SB-0250-6SH
3.0	6.0	8	50	4	104SB-0300-6SH
3.5	6.0	10	50	4	104SB-0350-6SH
4.0	6.0	10	50	4	104SB-0400-6SH
4.5	6.0	13	50	4	104SB-0450-6SH
5.0	6.0	13	50	4	104SB-0500-6SH
5.5	6.0	16	50	4	104SB-0550-6SH

Application :

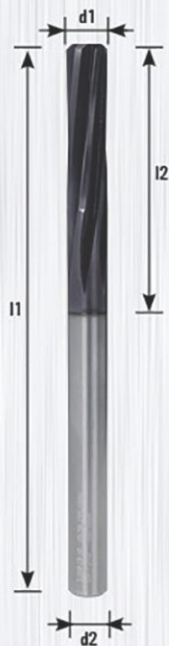
- Universal Purpose for Hi-Tensile Steel Upto 30 HRC
- Also Suitable for Aluminium and Non-Ferrous

Series : 300 Straight Flute Reamers



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.00	3.00	15	61	4	300-0300
4.00	4.00	19	75	4	300-0400
5.00	5.00	23	86	4	300-0500
6.00	6.00	26	93	4	300-0600
7.00	7.00	31	109	6	300-0700
8.00	8.00	33	117	6	300-0800
9.00	9.00	36	125	6	300-0900
10.00	10.00	38	133	6	300-1000
11.00	11.00	41	142	6	300-1100
12.00	12.00	44	151	6	300-1200
13.00	13.00	44	151	6	300-1300
14.00	14.00	47	160	6	300-1400
15.00	15.00	50	162	6	300-1500
16.00	16.00	52	170	6	300-1600

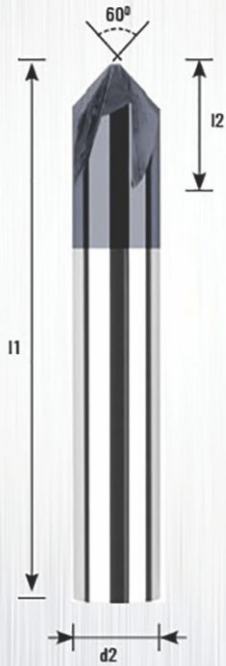
Series : 301 Left Hand Flute Reamers



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.00	3.00	15	61	4	301-0300
4.00	4.00	19	75	4	301-0400
5.00	5.00	23	86	4	301-0500
6.00	6.00	26	93	4	301-0600
7.00	7.00	31	109	6	301-0700
8.00	8.00	33	117	6	301-0800
9.00	9.00	36	125	6	301-0900
10.00	10.00	38	133	6	301-1000
11.00	11.00	41	142	6	301-1100
12.00	12.00	44	151	6	301-1200
13.00	13.00	44	151	6	301-1300
14.00	14.00	47	160	6	301-1400
15.00	15.00	50	162	6	301-1500
16.00	16.00	52	170	6	301-1600



Series : 500
Chamfer Cutter 60°



d1 Tool Diameter	d2 Shank Diameter	l2 Flute Length	l1 Overall Length	No of Flute	Item Code
4.00	4.00	6	54.00	4	500-0400
6.00	6.00	9	57.00	4	500-0600
8.00	8.00	12	63.00	5	500-0800
10.00	10.00	15	72.00	6	500-1000
12.00	12.00	18	83.00	6	500-1200
16.00	16.00	24	92.00	6	500-1600
20.00	20.00	30	104.00	6	500-2000



Series : 501
Chamfer Cutter 90°



d1 Tool Diameter	d2 Shank Diameter	l2 Flute Length	l1 Overall Length	No of Flute	Item Code
4.00	4.00	6	54.00	4	501-0400
6.00	6.00	9	57.00	4	501-0600
8.00	8.00	12	63.00	4	501-0800
10.00	10.00	15	72.00	4	501-1000
12.00	12.00	18	83.00	4	501-1200
16.00	16.00	24	92.00	4	501-1600
20.00	20.00	30	104.00	4	501-2000

Series : 400 Center Drill Metric



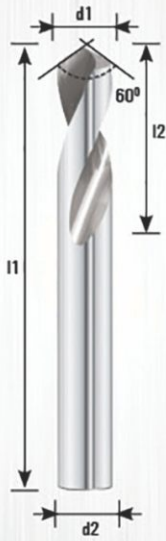
d1 Tool Diameter	d2 Shank Diameter	l2 Pilot Length	l1 Overall Length	Item Code
1.00	3.00	1.3	38.00	400-0100
1.25	3.00	1.6	38.00	400-0125
1.60	4.00	2.0	50.00	400-0160
2.00	5.00	2.5	50.00	400-0200
2.50	6.00	3.1	63.00	400-0250
3.15	8.00	3.9	63.00	400-0315
4.00	10.00	5.0	63.00	400-0400
5.00	12.00	6.3	63.00	400-0500
6.30	16.00	8.0	76.00	400-0630
8.00	20.00	10.1	80.00	400-0800

Series : 401 Center Drill Inch



d1 Tool Diameter	d2 Shank Diameter	l2 Pilot Length	l1 Overall Length	Item Code
3/64"	1/8"	5/64"	1-1/2"	401-0118
1/16"	3/16"	3/32"	1-3/4"	401-0158
3/32"	1/4"	5/32"	2"	401-0238
1/8"	5/16"	3/16"	2-1/4"	401-0317
3/16"	7/16"	9/32"	2-1/2"	401-0476
1/4"	5/8"	3/8"	3"	401-0635
5/16"	3/4"	15/32"	3-1/2"	401-0793

Series : 402
NC Spoting - 60 Degree

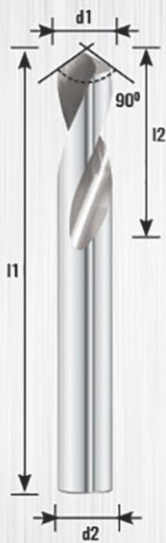


d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
3.00	3.00	8.00	35.00	402-0300
4.00	4.00	10.00	40.00	402-0400
5.00	5.00	13.00	50.00	402-0500
6.00	6.00	13.00	50.00	402-0600
8.00	8.00	19.00	63.00	402-0800
10.00	10.00	20.00	70.00	402-1000
12.00	12.00	22.00	73.00	402-1200
16.00	16.00	24.00	80.00	402-1600
20.00	20.00	30.00	100.00	402-2000

C



Series : 403
NC Spoting - 90 Degree



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	Item Code
3.00	3.00	8.00	35.00	403-0300
4.00	4.00	10.00	40.00	403-0400
5.00	5.00	13.00	50.00	403-0500
6.00	6.00	13.00	50.00	403-0600
8.00	8.00	19.00	63.00	403-0800
10.00	10.00	20.00	70.00	403-1000
12.00	12.00	22.00	73.00	403-1200
16.00	16.00	24.00	80.00	403-1600
20.00	20.00	30.00	100.00	403-2000

Series : 600 Engraver Cutter 60°



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.00	3	6	38.00	1	600-0300
4.00	4	6	50.00	1	600-0400
5.00	5	8	50.00	1	600-0500
6.00	6	10	50.00	1	600-0600
8.00	8	14	60.00	1	600-0800
10.00	10	16	70.00	1	600-1000
12.00	12	18	70.00	1	600-1200

Series : 601 Engraver Cutter 90°



d1 Tool Diameter	d2 Shank Diameter	l2 Length of Cut	l1 Overall Length	No of Flute	Item Code
3.00	3	6	38.00	1	601-0300
4.00	4	6	50.00	1	601-0400
5.00	5	8	50.00	1	601-0500
6.00	6	10	50.00	1	601-0600
8.00	8	14	60.00	1	601-0800
10.00	10	16	70.00	1	601-1000
12.00	12	18	70.00	1	601-1200

Test Report for DRILLING

Company Name: <input style="width: 90%;" type="text"/>	Phone: <input style="width: 90%;" type="text"/>	Date : <input style="width: 90%;" type="text"/>
Contact Person: <input style="width: 90%;" type="text"/>	Fax: <input style="width: 90%;" type="text"/>	Trucut tool dealer <div style="border: 2px solid orange; height: 100px; width: 100%;"></div>
Address: <input style="width: 90%;" type="text"/>	Email: <input style="width: 90%;" type="text"/>	
<input style="width: 90%;" type="text"/>	Customer number: <input style="width: 90%;" type="text"/>	

All dimensions are in mm

Work Piece material:

Work Piece hardness:

Drilling depth:

Hole type:

Coolant:

internal

external

dry

Shank acc to DIN6535

HE

HB

HE

	Competitor	Trucut
Tool Description*		
Brand Name / Made IN *		
Tool Dia *		
Shank Dia*		
Flute Length*		
Over All Length*		
No. of Flutes*		
Cutting Data		
Cutting Speed Vc (M/MIN)		
Spindle Speed - RPM*		
Feed (MM / REV)*		
Feed (MM / MIN)*		
Coolant: OIL / MIST / DRY		
Tool Life:		
Average Tool Life		
% Increase / Productivity		
Tool Condition		
Tool Cost		
Monthly Consumption		

Test Report for MILLING

Company Name:	Phone:	Date :
<input type="text"/>	<input type="text"/>	<input type="text"/>
Contact Person:	Fax:	Trucut tool dealer <input type="text"/>
<input type="text"/>	<input type="text"/>	
Address:	Email:	
<input type="text"/>	<input type="text"/>	
<input type="text"/>	Customer number:	
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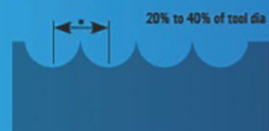
Material hardness: (N/mm ² or HRC)	<input type="text"/>	<input type="checkbox"/> Carbon steel	<input type="checkbox"/> Grey cast iron	<input type="checkbox"/> Roughing	Helix angle <input type="checkbox"/> 30° <input type="checkbox"/> 38° <input type="checkbox"/> 45°
ae:	<input type="text"/>	<input type="checkbox"/> Alloy steel	<input type="checkbox"/> Nodular cast iron	<input type="checkbox"/> Semi roughing	
ap:	<input type="text"/>	<input type="checkbox"/> Pre-hardened steel	<input type="checkbox"/> Titanium alloy	<input type="checkbox"/> Finishing	
No of passes:	<input type="text"/>	<input type="checkbox"/> Hardened steel	<input type="checkbox"/> Heat Resistant alloy		
		<input type="checkbox"/> Stainless steel	<input type="checkbox"/> Copper/Aluminium		

End mill main group	Type of Shank	Coating	Flat	Corner radius	No of flutes
<input type="checkbox"/> Tru - line	<input type="checkbox"/> HE	<input type="checkbox"/> TIN	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="text"/>
<input type="checkbox"/> Hard - line	<input type="checkbox"/> HB	<input type="checkbox"/> TIALIN	<input type="checkbox"/> Chamfer 	<input type="checkbox"/> Ball nose 	
<input type="checkbox"/> Hyper line	<input type="checkbox"/> HE	<input type="checkbox"/> Uncoated			

	Competitor	TruCut
Tool Description*		
Brand Name / Made IN *		
Tool Dia *		
Shank Dia*		
Flute Length*		
Over All Length*		
No. of Flutes*		
Cutting Data		
Cutting Speed Vc (M/MIN)		
Spindle Speed - RPM*		
Feed (MM / REV)*		
Feed (MM / MIN)*		
Coolant: OIL / MIST / DRY		
Tool Life:		
Average Tool Life		
% Increase / Productivity		
Tool Condition		
Tool Cost		
Monthly Consumption		

CUTTING PARAMETERS

Radial Step Over



Axial Depth



- 30-40 HRc Axial depth = 10% of tool diameter.
- 40-50 HRc Axial depth = 5% of tool diameter.
- 50-60 HRc Axial depth = 4% of tool diameter.

PAGES **8 | -9 |**

Material	Speed (M / Min)	Feed/Tooth		
		Dia < = 6mm	Dia < = 12mm	Dia < = 25mm
Carbon & Alloy Steel Up to 30 HRC	50 ~ 190	0.005 - 0.040	0.025 - 0.076	0.076 - 0.179
Carbon & Alloy Steel < 38 ~ 40 HRC	20 ~ 60	0.005 - 0.013	0.005 - 0.025	0.025 - 0.076
Die Steel Up to - 40 HRC	20 ~ 80	0.005 - 0.025	0.025 - 0.050	0.050 - 0.152
Stainless Steels - 300 Series	40 ~ 80	0.005 - 0.025	0.025 - 0.050	0.050 - 0.152
Stainless Steels - 400 Series	30 ~ 60	0.005 - 0.013	0.013 - 0.025	0.025 - 0.130
Grey Cast Iron	50 ~ 180	0.005 - 0.040	0.040 - 0.076	0.076 - 0.203
Ductile Cast Iron	30 ~ 120	0.005 - 0.025	0.025 - 0.050	0.050 - 0.152
Malleable Cast Iron	40 ~ 150	0.005 - 0.025	0.025 - 0.076	0.076 - 0.178
Nickel Based Alloys	5 ~ 40	0.008 - 0.020	0.020 - 0.025	0.025 - 0.050
Titanium Alloys	10 ~ 60	0.005 - 0.020	0.020 - 0.050	0.050 - 0.102
Cobalt Based Alloys	5 ~ 30	0.005 - 0.020	0.020 - 0.025	0.025 - 0.050
Aluminium	180 ~ 400	0.005 - 0.050	0.050 - 0.102	0.102 - 0.203
Magnesium	300 ~ 400	0.013 - 0.050	0.050 - 0.102	0.102 - 0.254
Copper / Brass	80 ~ 280	0.013 - 0.050	0.050 - 0.076	0.076 - 0.152
Plastic	180 ~ 400	0.015 - 0.076	0.076 - 0.152	0.152 - 0.381
Fibreglass	90 ~ 240	0.015 - 0.076	0.076 - 0.102	0.102 - 0.254
Graphite	180 ~ 300	0.076 - 0.130	0.130 - 0.203	0.203 - 0.254
Wood*	15,000 - 25,000 RPM*	0.038 - 0.076	0.076 - 0.130	0.130 - 0.179

CONVERSION FORMULAS

Cutting Speed : RPM (To) M/Min (3.14 X Tool Dia)X RPM/1000

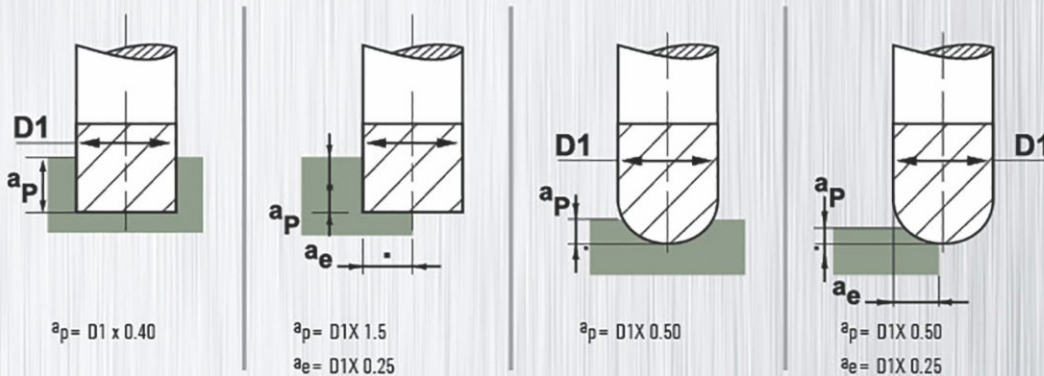
Cutting Speed : M/Min (To) RPM 1000 X M/Min / (3.14 X Tool Dia)

Feed : RPM X No's Of Tooth

D1 = Cutter Dia

a_p = Axial Depth Of Cut

a_e = Radial Depth Of Cut



All suggested parameter should be considered as starting point with possible variations to achieve optimum results.

Cutting Speed Vc (m / min)

Feed Rate f (mm / rev) with Drill Ø

Material	Cutting Speed Vc (m / min)		Feed Rate f (mm / rev) with Drill Ø			
	Without coolant Hole 203, 205, 208	With Coolant Hole 203IC, 205IC, 208IC	Ø 3 - 5	Ø 6 - 8	Ø 10 - 12	Ø 16 - 20
Carbon & Alloy Steel < Upto 30 HRC	110 ~ 140	140 ~ 180	0.100-0.160	0.200-0.240	0.260-0.300	0.440-0.500
Carbon & Alloy Steel < 38 ~ 40 HRC	70 ~ 110	90 ~ 140	0.100-0.160	0.200-0.240	0.220-0.240	0.440-0.500
Alloyed Steel < 48 < 55 HRC	20 ~ 30	40 ~ 50	0.060-0.070	0.080-0.120	0.070-0.090	0.090-0.100
Stainless Steels - 300 & 400 Series	60 ~ 80	70 ~ 100	0.060-0.010	0.080-0.150	0.070-0.150	0.090-0.150
Cast Iron and Malleable Cast Iron	100 ~ 180	140 ~ 220	0.200-0.240	0.260-0.300	0.300-0.320	0.500-0.600
Titanium Alloys	70 ~ 90	90 ~ 110	0.080-0.120	0.160-0.200	0.240-0.260	0.400-0.500
Copper / Brass	140 ~ 220	180 ~ 270	0.160-0.200	0.300-0.400	0.560-0.600	0.500-0.600

These Data May Be Adjusted According To Your Individual Requirement.

The Above Mentioned Recommended Data Vc (Cutting Speed) Are Valid For Drilling Depth 3 X D. For Other Drilling Depths.

Please multiply with Specific Correction Factor

Drilling Depth Without Internal Coolant 1 X D | 3 X D | 5 X D
VCX1.2 | VC X 1.0 | VCX0.7

Drilling Depth With Internal Coolant 1 X D | 3 X D | 5 X D | 12 X D
VCX1.2 | VC X 1.0 | VCX0.8 | VC X 0.5

Series: 230 & 231

Cutter Diameter	Plain Steel		Low Alloy Steel		Malleable Cast Iron		Grey Cast Iron	
	Rpm	Feed/rev.	Rpm	Feed/rev.	Rpm	Feed/rev.	Rpm	Feed/rev.
3.0 - 6.0	3819-5093	0.080-0.140	2546-3820	0.080-0.140	2546-4456	0.090-0.150	3820-5730	0.150-0.250
6.0 - 9.0	2387-3183	0.110-0.180	1592-2387	0.110-0.180	1592-2758	0.150-0.200	2387-3581	0.250-0.380
9.0 - 12.0	1591-2122	0.150-0.230	1061-1592	0.150-0.230	1061-1857	0.200-0.250	1592-2387	0.300-0.350
12.0 - 16.0	1364-1819	0.180-0.280	909-1364	0.180-0.280	909-1592	0.230-0.330	1364-2046	0.300-0.400
16.0 - 20.0	1061-1415	0.200-0.340	707-1061	0.200-0.340	707-1238	0.300-0.380	1061-1592	0.350-0.500

Series : 212

Cutter Diameter	Steels 50-55HRc		Steels 55-60HRc		Steels 60-70HRc	
	Rpm	Feed/rev.	Rpm	Feed/rev.	Rpm	Feed/rev.
3.0	1485-2334	0.030-0.040	1061-1698	0.030-0.040	849-1379	0.030-0.040
4.0	1114-1751	0.030-0.040	796-1273	0.030-0.040	637-1035	0.030-0.040
5.0	891-1401	0.030-0.040	637-1019	0.030-0.040	509-828	0.030-0.040
6.0	743-1167	0.030-0.040	531-849	0.030-0.040	424-690	0.030-0.040
8.0	557-875	0.030-0.040	398-637	0.030-0.040	318-517	0.030-0.040
10.0	446-700	0.030-0.040	318-509	0.030-0.040	255-414	0.030-0.040
12.0	371-584	0.030-0.040	265-424	0.030-0.040	212-345	0.030-0.040

Series : 240

Cutter Diameter	Aluminum/Aluminum Alloys		Aluminum Alloyed Si > 10%		Brass		Copper/Copper Alloys	
	Rpm	Feed/rev.	Rpm	Feed/rev.	Rpm	Feed/rev.	Rpm	Feed/rev.
3.0 - 6.0	5820-8730	0.053-0.076	2910-5820	0.036-0.051	3880-5820	0.036-0.051	2910-5820	0.053-0.076
6.0 - 8.0	4160-6240	0.124-0.178	2080-4160	0.107-0.152	2770-4160	0.053-0.076	2080-4160	0.107-0.152
8.0 - 10.0	3910-5370	0.213-0.260	3300-3710	0.148-0.200	3300-3710	0.065-0.085	1860-3210	0.168-0.224
10.0 - 13.0	2910-4370	0.265-0.305	1460-2910	0.178-0.254	1940-2910	0.071-0.102	1460-2910	0.178-0.254

Series : 112SF

Cutter Diameter	Steels 30HRC		Steels 30 - 35 HRC		Steels 35 - 40HRC		Steels 40 - 45HRC		Steels 45 - 65HRC	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
1.0	5120-6400	0.013-0.018	4736-5920	0.012-0.019	4448-5560	0.011-0.016	4160-5200	0.011-0.015	3360-4200	0.013-0.018
2.0	4736-5920	0.021-0.040	4448-5560	0.016-0.023	4096-5120	0.016-0.023	3568-4460	0.018-0.026	2880-3600	0.019-0.028
3.0	3840-4800	0.032-0.045	3520-4400	0.032-0.045	3136-3920	0.032-0.046	2880-3600	0.031-0.044	2496-3120	0.022-0.032
4.0	3840-4600	0.049-0.069	3136-3920	0.048-0.068	2880-3600	0.037-0.052	2720-3400	0.031-0.044	2240-2800	0.034-0.049
5.0	3200-4000	0.070-0.100	3040-3800	0.063-0.089	2848-3560	0.051-0.073	2496-3120	0.036-0.051	1760-2200	0.038-0.054
6.0	3200-4000	0.070-0.100	2880-3600	0.064-0.092	2624-3280	0.051-0.073	2432-3040	0.044-0.062	1600-2000	0.039-0.055
8.0	2080-2600	0.118-0.169	1920-2400	0.105-0.150	1440-1800	0.117-0.166	1280-1600	0.105-0.150	800-1000	0.091-0.130
10.0	1216-1520	0.175-0.250	960-1200	0.175-0.250	800-1000	0.154-0.220	640-800	0.158-0.225	512-640	0.109-0.156
12.0	1024-1280	0.197-0.281	864-1080	0.278-0.278	800-1000	0.168-0.240	640-800	0.175-0.250	384-480	0.131-0.187
16.0	900-1100	0.210-0.300	750-990	0.200-0.210	700-900	0.178-0.260	600-700	0.180-275	325-450	0.157-0.190

Series: 114SF / 124SF

Cutter Diameter	Steels 30HRc		Steels 50HRc		Steels 50HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
1.0	11040-13800	0.006-0.008	8540-10675	0.006-0.008	6451-8064	0.006-0.009
1.5	10368-12960	0.008-0.011	7920-9900	0.008-0.011	6144-7680	0.008-0.011
2.0	9093-11366	0.008-0.012	7864-9830	0.008-0.011	5530-6912	0.010-0.013
3.0	7373-9216	0.013-0.018	6864-8580	0.012-0.016	4792-5990	0.011-0.016
4.0	6672-8340	0.017-0.024	6096-7620	0.016-0.022	4301-5376	0.014-0.020
5.0	6144-7680	0.019-0.028	5616-7020	0.018-0.025	4138-5172	0.015-0.021
6.0	5952-7440	0.021-0.030	5664-7080	0.019-0.027	3744-4680	0.017-0.025
8.0	5400-4320	0.037-0.052	2765-3456	0.049-0.069	1744-2220	0.044-0.064
10.0	2784-3480	0.084-0.121	1440-1800	0.088-0.125	1056-1320	0.060-0.086
12.0	2352-2940	0.071-0.102	979-1224	0.072-0.103	758-948	0.047-0.066
16.0	1344-1680	0.075-0.107	643-804	0.078-0.120	470-588	0.061-0.086
20.0	883-1104	0.105-0.149	422-528	0.084-0.119	298-372	0.068-0.096
25.0	749-936	0.090-0.128	365-456	0.076-0.108	269-336	0.075-0.107

Series: 114LF & 114ELF 124LF & 124ELF

Cutter Diameter	Steels 30HRc		Steels 30 - 35 HRc		Steels 35 - 40HRc		Steels 40 - 45HRc		Steels 45 - 65HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
6.0	4000-5000	0.035-0.050	3600-4500	0.032-0.045	3280-4100	0.026-0.036	3040-3800	0.022-0.031	2000-2500	0.019-0.027
8.0	2600-3250	0.068-0.084	2400-3000	0.067-0.083	1800-2250	0.067-0.083	1600-2000	0.060-0.075	1000-1250	0.052-0.065
10.0	1520-1900	0.100-0.125	1200-1500	0.100-0.125	1000-1250	0.088-0.110	800-1000	0.090-0.113	640-800	0.063-0.078
12.0	1280-1600	0.113-0.145	1080-1350	0.111-0.138	1000-1250	0.096-0.120	800-1000	0.100-0.125	480-600	0.075-0.094

Series: 116SF&116LF

Cutter Diameter	Steels 30-50HRc		Steels 50-55HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth
6.0	6659-8320	0.041-0.059	3328-4160	0.038-0.054
8.0	3712-4640	0.060-0.086	1920-2400	0.066-0.094
10.0	2688-3360	0.092-0.132	1600-2000	0.079-0.113
12.0	1984-2480	0.106-0.151	1216-1520	0.086-0.123
16.0	1152-1440	0.137-0.195	864-1080	0.091-0.130

Series: 112CRS

Cutter Diameter	Steels 30HRc		Steels 50HRc		Steels 60HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
0302	5096-6370	0.049-0.069	3842-4802	0.043-0.061	2940-3675	0.023-0.033
0305	5096-6370	0.054-0.077	3842-4802	0.054-0.076	2940-3675	0.023-0.033
0402	4900-6125	0.056-0.080	3646-4557	0.040-0.056	2666-3332	0.026-0.037
0405	4900-6125	0.056-0.080	3646-4557	0.040-0.057	2666-3332	0.026-0.037
0605	4508-5635	0.091-0.130	3450-4312	0.080-0.114	1803-2254	0.057-0.082
0610	5184-6480	0.091-0.130	3967-4959	0.080-0.114	2074-2592	0.057-0.082
0615	5410-6762	0.091-0.130	4139-5174	0.080-0.114	2164-2705	0.057-0.082
0805	3391-4239	0.138-0.197	2098-2622	0.111-0.159	1510-1887	0.075-0.107
0810	3900-4875	0.138-0.197	2412-3015	0.111-0.159	1736-2170	0.075-0.106
0815	4069-5086	0.138-0.197	2517-3146	0.111-0.159	1811-2264	0.075-0.106
1010	2479-3099	0.177-0.252	1442-1803	0.120-0.172	744-930	0.123-0.176
1015	2587-3234	0.178-0.254	1506-1882	0.120-0.172	776-970	0.123-0.176
1020	2803-3504	0.178-0.254	1630-2038	0.120-0.172	841-1051	0.123-0.176
1210	2097-2621	0.218-0.311	992-1240	0.197-0.281	586-733	0.143-0.204
1215	2187-2734	0.218-0.311	1035-1294	0.151-0.216	611-764	0.143-0.204
1220	2370-2962	0.218-0.311	1121-1401	0.151-0.216	662-828	0.143-0.204

Series: 114CRS / 124CRS 124CRL / 124CREL

Cutter Diameter	Steels 30HRc		Steels 50HRc		Steels 60HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
0605	5152-6440	0.046-0.065	3942-4928	0.040-0.057	2061-2576	0.029-0.041
0610	5925-7406	0.046-0.065	4534-5667	0.040-0.057	2370-2962	0.029-0.041
0615	6182-7728	0.046-0.065	4731-5914	0.040-0.057	2473-3091	0.029-0.041
0805	3875-4844	0.069-0.098	2397-2996	0.056-0.079	1725-2156	0.037-0.053
0810	4457-5571	0.069-0.098	2757-3446	0.056-0.079	1984-2480	0.037-0.053
0815	4650-5813	0.069-0.098	2876-3595	0.056-0.079	2070-2587	0.037-0.053
1010	2833-3541	0.089-0.127	1613-2016	0.060-0.086	850-1063	0.062-0.088
1015	2957-3696	0.089-0.127	1720-2150	0.060-0.086	887-1109	0.062-0.088
1020	3203-4004	0.089-0.127	1864-2330	0.060-0.086	961-1201	0.062-0.088
1210	2396-2995	0.109-0.156	1134-1417	0.076-0.108	670-837	0.071-0.102
1215	2500-3125	0.109-0.156	1182-1478	0.076-0.108	699-874	0.071-0.102
1220	2708-3385	0.109-0.156	1282-1602	0.076-0.108	757-946	0.071-0.102

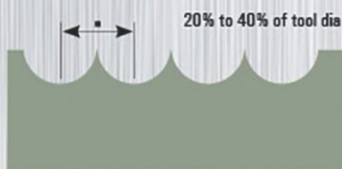
Series: 112SB & 112LB 122SB & 122LB

Cutter Diameter	Steels 30-40HRc		Steels 40-50HRc		Steels 50-60HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
1.0	20000-40000	0.020-0.024	20000-40000	0.016-0.020	20000-40000	0.012-0.016
1.5	20000-40000	0.030-0.036	20000-40000	0.024-0.030	20000-38600	0.018-0.024
2.0	20000-38100	0.040-0.048	20000-38100	0.032-0.040	19400-28900	0.024-0.032
3.0	16100-25400	0.060-0.072	19300-25400	0.048-0.060	12900-19300	0.036-0.048
4.0	12100-19100	0.080-0.096	14500-19100	0.064-0.080	9700-14500	0.048-0.064
5.0	9600-15300	0.100-0.120	11600-15300	0.080-0.100	7800-11600	0.060-0.080
6.0	8000-12700	0.120-0.144	9700-12700	0.096-0.120	6500-9600	0.072-0.096
8.0	6000-9500	0.160-0.192	7200-9500	0.128-0.160	4900-7200	0.096-0.128
10.0	4800-7600	0.200-0.240	5800-7600	0.160-0.200	3900-5800	0.120-0.160
12.0	4000-6400	0.240-0.288	4800-6400	0.192-0.240	3200-4800	0.144-0.192
16.0	3500-5700	0.280-0.300	3500-5700	0.220-0.260	3000-4200	0.160-0.220

Series: 112ELB & 112XLB 122ELB & 122XLB

Cutter Diameter	Steels 30-40HRc		Steels 40-50HRc		Steels 50-60HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
1.0	20000-40000	0.020-0.024	20000-40000	0.016-0.020	20000-40000	0.012-0.016
1.5	20000-40000	0.030-0.036	20000-40000	0.024-0.030	20000-38600	0.018-0.024
2.0	20000-38100	0.040-0.048	20000-38100	0.032-0.040	19400-28900	0.024-0.032
3.0	16100-25400	0.060-0.072	19300-25400	0.048-0.060	12900-19300	0.036-0.048
4.0	12100-19100	0.080-0.096	14500-19100	0.064-0.080	9700-14500	0.048-0.064
5.0	9600-15300	0.100-0.120	11600-15300	0.080-0.100	7800-11600	0.060-0.080
6.0	8000-12700	0.120-0.144	9700-12700	0.096-0.120	6500-9600	0.072-0.096
8.0	6000-9500	0.160-0.192	7200-9500	0.128-0.160	4900-7200	0.096-0.128
10.0	4800-7600	0.200-0.240	5800-7600	0.160-0.200	3900-5800	0.120-0.160
12.0	4000-6400	0.240-0.288	4800-6400	0.192-0.240	3200-4800	0.144-0.192
16.0	3500-5700	0.280-0.300	3500-5700	0.220-0.260	3000-4200	0.160-0.220

Radial Step Over



30-40 HRc Axial depth = 10% of tool diameter.
40-50 HRc Axial depth = 5% of tool diameter.
50-60 HRc Axial depth = 4% of tool diameter.

Axial Depth



Series: 112BRN&112FRN

Cutter Diameter	Steels 45-52HRc		Steels 52-62HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth
1.0	7040-8800	0.010-0.014	6336-7920	0.010-0.014
1.5	5520-6900	0.010-0.013	3960-4950	0.012-0.017
2.0	4480-5600	0.026-0.037	4032-5040	0.026-0.037
2.5	3840-4800	0.031-0.044	3456-4320	0.031-0.043
3.0	5760-7200	0.018-0.026	5184-6480	0.018-0.026
4.0	5760-7200	0.018-0.026	5184-6480	0.018-0.026
5.0	7987-9984	0.045-0.064	5632-7040	0.038-0.054

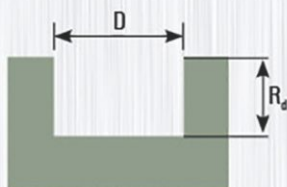
Series: 132SB & 132CR

Cutter Diameter	Steels 45-52HRc		Steels 52-62HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth
3.0	5760-7200	0.018-0.026	5184-6480	0.018-0.026
4.0	5760-7200	0.018-0.026	5184-6480	0.018-0.026
5.0	7987-9984	0.045-0.064	5632-7040	0.038-0.054
6.0	7782-9728	0.043-0.062	5120-6400	0.039-0.055
8.0	4096-5120	0.105-0.150	2560-3200	0.091-0.130
10.0	2048-2560	0.158-0.225	1638-2048	0.109-0.156
12.0	1800-2250	0.175-0.250	1584-1980	0.119-0.170

Series: 123HHS & 123HHL

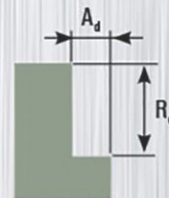
Cutter Diameter	Carbon Steels		Alloy Steels		Stainless Steels		Prehardened Steels	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
6.0	3840-4800	0.050-0.083	1600-2000	0.050-0.067	1440-1800	0.022-0.056	2400-3000	0.036-0.067
8.0	2880-3600	0.070-0.092	1280-1600	0.062-0.083	1120-1400	0.028-0.065	1760-2200	0.050-0.091
10.0	2400-3000	0.089-0.100	1040-1300	0.051-0.090	880-1100	0.030-0.070	1360-1700	0.039-0.078
12.0	2080-2600	0.095-0.108	880-1100	0.054-0.103	720-900	0.037-0.078	1200-1500	0.040-0.076
16.0	1976-2470	0.072-0.103	850-1050	0.069-0.098	685-855	0.052-0.074	1135-1420	0.050-0.072
20.0	1880-2350	0.069-0.098	795-995	0.065-0.093	650-810	0.049-0.070	1080-1350	0.048-0.068

SLOTING



$R_d = \varnothing 6\text{mm to } 12\text{mm} - 1.0\text{D}$
 $R_d = \varnothing 16\text{mm to } 20\text{mm} - 1.2\text{D}$

SIDE MILLING

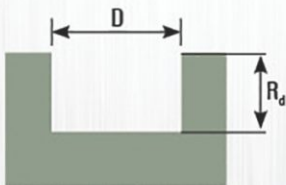


$A_d = 0.3\text{D}$
 $R_d = 1.5\text{D}$

Series: 124HHS & 124HHL

Cutter Diameter	Steels 30HRc		Steels 30-45HRc		Stainless Steels		Steels 45-50HRc		Steels 50-60HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
6.0	2000-2500	0.009-0.018	1600-2000	0.009-0.018	1200-1500	0.009-0.018	1040-1300	0.007-0.013	800-1000	0.005-0.010
8.0	1520-1900	0.013-0.026	1200-1500	0.012-0.023	960-1200	0.011-0.023	800-1000	0.008-0.018	640-800	0.006-0.013
10.0	1280-1600	0.015-0.032	1040-1300	0.013-0.027	760-950	0.014-0.029	640-800	0.011-0.022	520-650	0.008-0.015
12.0	1040-1300	0.017-0.035	880-1100	0.015-0.032	640-800	0.017-0.034	536-670	0.013-0.026	424-530	0.009-0.019
16.0	800-1000	0.015-0.030	656-820	0.015-0.030	480-600	0.016-0.033	400-500	0.015-0.025	320-400	0.009-0.019
20.0	640-800	0.014-0.030	520-650	0.013-0.029	384-480	0.018-0.033	320-400	0.012-0.025	256-320	0.009-0.020

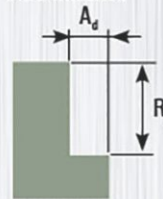
SLOTTING



$$R_d = \varnothing 6\text{mm to } 12\text{mm} - 0.2D$$

$$R_d = \varnothing 16\text{mm to } 20\text{mm} - 0.15D$$

SIDE MILLING



$$A_d = 0.5D$$

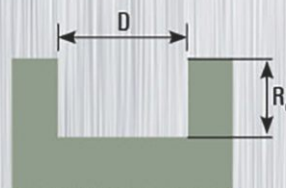
$$R_d = 2.0D$$

D

Series: 124 RFS

Cutter Diameter	Steels 30HRc		Steels 30-35HRc		Steels 35-45HRc		Steels 45 - 50HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
3.0	8500-9900	0.008-0.012	5200-6500	0.008-0.014	4400-5000	0.005-0.010	4200-4800	0.003-0.005
4.0	7500-8700	0.012-0.020	4500-5300	0.010-0.018	3800-4400	0.008-0.013	3200-4000	0.004-0.006
5.0	6400-7600	0.017-0.024	3800-4500	0.015-0.021	3200-3800	0.012-0.017	1900-3200	0.005-0.008
6.0	5300-6400	0.021-0.029	3200-3700	0.018-0.026	2700-3200	0.016-0.022	1600-2700	0.007-0.010
8.0	4000-4800	0.028-0.040	2400-2800	0.026-0.037	2000-2400	0.025-0.035	1200-2000	0.012-0.017
10.0	3200-3800	0.036-0.051	1900-2200	0.033-0.048	1600-1900	0.031-0.045	1000-1600	0.016-0.023
12.0	2700-3200	0.043-0.062	1600-1900	0.039-0.055	1300-1600	0.035-0.050	800-1300	0.020-0.028
16.0	2000-2400	0.056-0.080	1200-1400	0.049-0.069	1000-1200	0.044-0.062	600-1000	0.026-0.037
20.0	1600-1900	0.070-0.100	1000-1100	0.059-0.084	800-1000	0.053-0.075	500-800	0.031-0.043

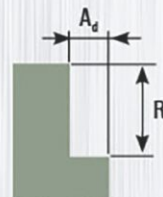
SLOTTING



$$R_d \text{ Min} = 0.6D$$

$$R_d \text{ Max} = 10\text{mm}$$

SIDE MILLING



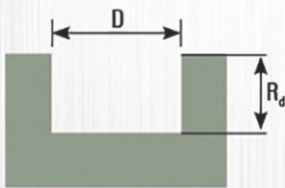
$$A_d = 0.5D$$

$$R_d = 1.5D$$

Series: 124RCS

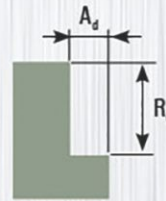
Cutter Diameter	Cast Iron		Mild Steel		Steels 30HRc		Steels 30 - 38HRc		Steels 38-45HRc	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
6.0	5300-6350	0.030-0.040	4500-5300	0.021-0.030	3700-4500	0.014-0.020	2900-3450	0.014-0.020	2400-2650	0.014-0.020
8.0	4000-4750	0.040-0.053	3400-4000	0.028-0.040	2800-3400	0.021-0.030	2200-2600	0.021-0.029	1800-2000	0.021-0.029
10.0	3200-3800	0.050-0.066	2700-3200	0.035-0.050	2250-2700	0.028-0.040	1750-2050	0.028-0.040	1450-1600	0.028-0.040
12.0	2650-3200	0.060-0.081	2250-2650	0.042-0.060	1850-2250	0.035-0.050	1450-1700	0.035-0.050	1200-1350	0.035-0.050
16.0	2000-2400	0.080-0.107	1700-2000	0.056-0.080	1400-1700	0.049-0.071	1100-1300	0.048-0.069	900-1000	0.049-0.069
20.0	1600-1900	0.100-0.133	1350-1600	0.067-0.095	1100-1350	0.061-0.087	900-1050	0.058-0.083	700-800	0.057-0.083

SLOTING



$R_d \text{ Min} = 0.75D$
 $R_d \text{ Max} = 12\text{mm}$

SIDE MILLING

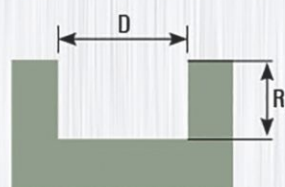


$A_d = 0.6D$
 $R_d = 1.5D$

Series: 123ALS & 123ALL

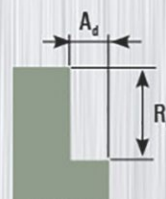
Cutter Diameter	Aluminum Alloy		Aluminum Alloy casting < Sil 13%		Copper Alloy C1100	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
5.0	10000-12500	0.020-0.029	10000-12500	0.020-0.029	3800-4750	0.019-0.026
6.0	8400-10500	0.026-0.038	8400-10500	0.026-0.038	3160-3950	0.024-0.034
8.0	6360-7950	0.036-0.055	6360-7950	0.036-0.055	2360-2950	0.036-0.051
10.0	5080-6350	0.051-0.078	5080-6350	0.051-0.078	1880-2350	0.048-0.068
12.0	4240-5300	0.065-0.092	4240-5300	0.065-0.092	1560-1950	0.061-0.087
14.0	3850-4800	0.075-0.110	3850-4800	0.075-0.110	1230-1875	0.072-0.105
16.0	3160-3950	0.087-0.120	3160-3950	0.087-0.120	1160-1450	0.082-0.117
18.0	3010-3780	0.097-0.130	3010-3780	0.097-0.130	1075-1375	0.095-0.120
20.0	2520-3150	0.109-0.134	2520-3150	0.109-0.134	920-1150	0.103-0.148

SLOTING



$D = 1D$
 $R_d = 0.5D$

SIDE MILLING



$A_d = 0.1D$
 $R_d = 1.5D$

Series: 122ALS & 122ALL

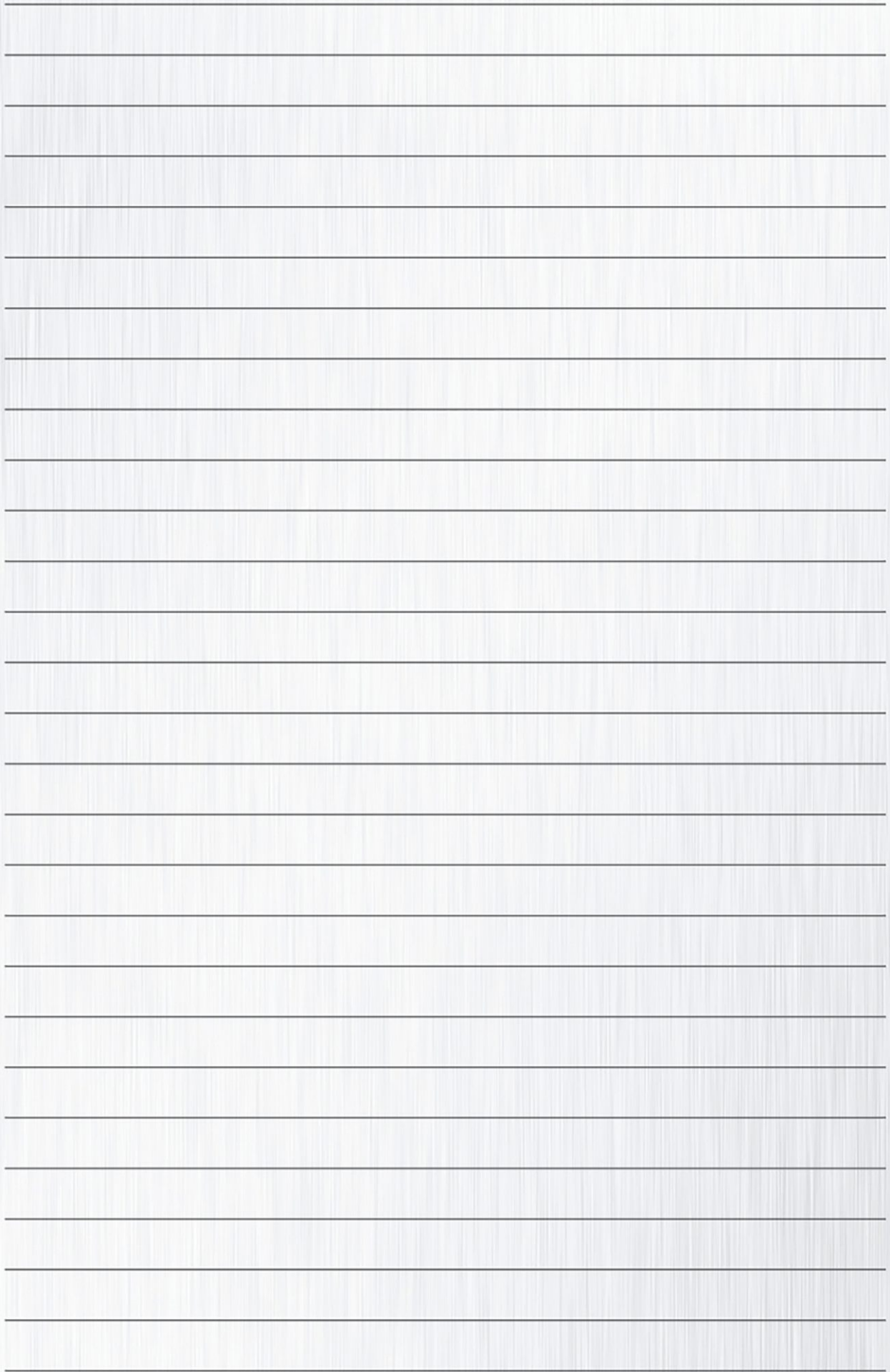
Cutter Diameter	Aluminum Alloys		Plastics		Copper Alloys		Brass	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
5.0	31190-38830	0.056-0.080	232340-31200	0.112-0.160	15600-23240	0.056-0.080	15600-28970	0.056-0.080
6.0	25990-32360	0.063-0.090	19360-25990	0.126-0.180	12990-19360	0.063-0.090	12990-24140	0.063-0.090
8.0	19500-24270	0.105-0.150	14520-19500	0.182-0.260	9750-14520	0.105-0.150	9750-18100	0.105-0.150
10.0	15600-19420	0.133-0.190	11620-15600	0.217-0.310	7800-11620	0.112-0.160	7800-14480	0.105-0.150
12.0	12990-16180	0.140-0.200	9680-12990	0.273-0.390	6500-9680	0.140-0.200	6500-12070	0.140-0.200
14.0	11140-13870	0.154-0.220	8300-11140	0.308-0.440	5570-8300	0.154-0.220	5570-10350	0.154-0.220
16.0	9750-12140	0.161-0.230	7260-9750	0.329-0.470	4870-7260	0.161-0.230	4870-9050	0.161-0.230
18.0	8800-10150	0.170-0.250	6300-8200	0.350-0.520	4150-6500	0.170-0.250	4150-7500	0.075-0.260
20.0	7800-9710	0.196-0.280	5810-7800	0.399-0.570	3900-5810	0.196-0.280	3900-7240	0.196-0.280

Series: 124VHS & 124TS

Cutter Diameter	Unalloyed Steel Over 23 N/mm ²		Alloyed Steel Over 38 N/mm ²		Stainless Steel To 22 N/mm ²		Titanium - Alloyed To 44 N/mm ²	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
5.0	8276-12732	0.015-0.025	5093-7003	0.015-0.025	5730-7003	0.020-0.025	2546-4456	0.015-0.025
6.0	6897-10610	0.025-0.035	4244-5836	0.025-0.035	4775-5836	0.032-0.035	2122-3714	0.025-0.035
8.0	5173-7958	0.030-0.070	3183-4377	0.030-0.070	3581-4377	0.040-0.070	1592-2785	0.030-0.070
10.0	4138-6366	0.038-0.090	2546-3501	0.038-0.090	2865-3501	0.050-0.090	1273-2228	0.038-0.090
12.0	3448-5305	0.046-0.100	2122-2918	0.046-0.100	2387-2918	0.065-0.100	1061-1857	0.046-0.100
16.0	2586-3979	0.052-0.110	1592-2188	0.052-0.110	1790-2188	0.073-0.110	796-1393	0.052-0.110
20.0	2069-3183	0.060-0.120	1273-1751	0.060-0.120	1432-1751	0.081-0.120	637-1114	0.060-0.120

Series: 122TEM

Cutter Diameter	Aluminum 6061		Copper, Brass		Copper Alloys, Bronze		Graphite	
	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth	Rpm	Feed/Tooth
Ø 2.0 - 3.0	18628-23284	0.009-0.012	2794-3492	0.005-0.008	3105-3880	0.005-0.008	2484-3104	0.004-0.005
Ø 3.5 - 4.5	11642-14553	0.018-0.025	1746-2182	0.007-0.010	1940-2425	0.007-0.010	1552-1940	0.005-0.008
Ø 5.0 - 6.0	8467-10584	0.023-0.033	1270-1587	0.009-0.013	1411-1764	0.012-0.018	1129-1411	0.007-0.010

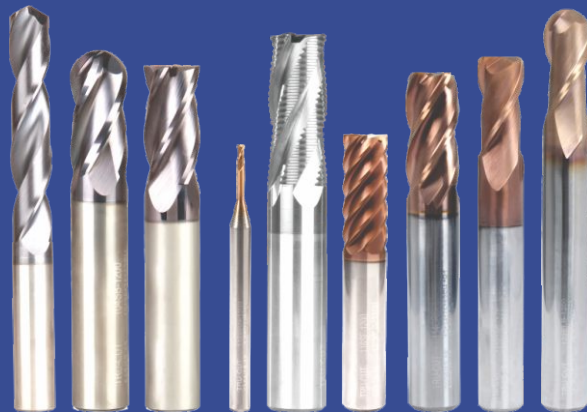






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