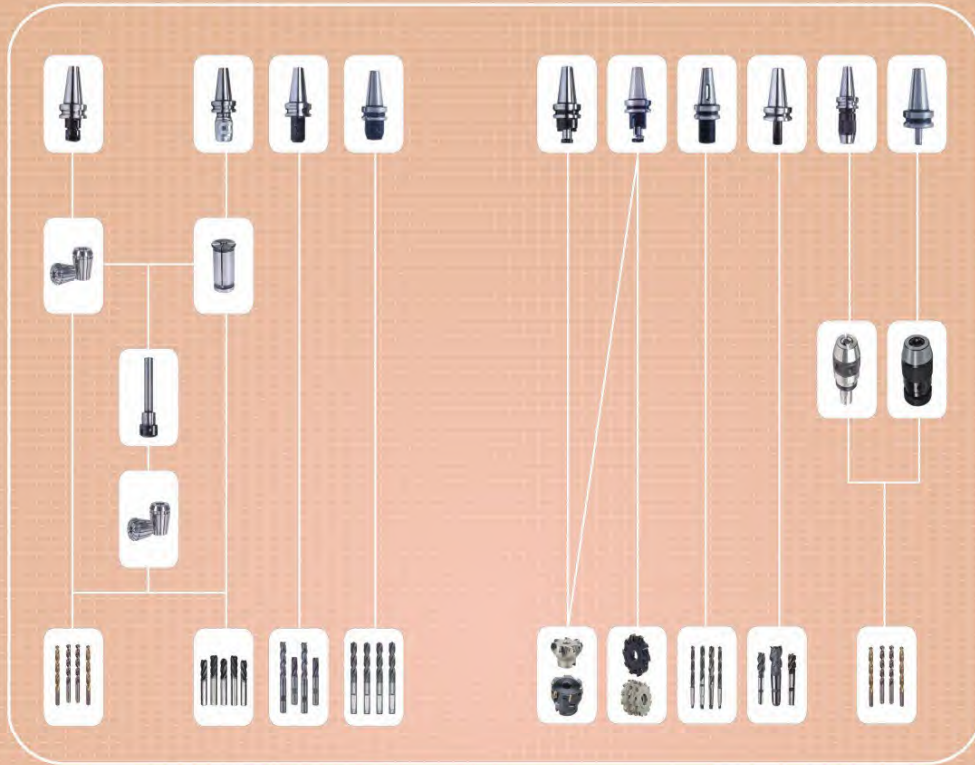


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 (An ISO 9001 : 2008 Certified Company)

ABOUT US

XTREME TOOLING has been established in 2011 and started manufacturing of carbide Tools under the brand name "Fighter". Because of consumer acceptance of our quality we kept adding Carbide Drill, End mill, Ball nose, Reamer etc... in Carbide Tools. We provide the right part, at the right price, on time-every time. Our precision cutting tools are manufactured with the perfection under inhouse production setup and tough checking process.

XTREME TOOLING has a team of highly qualified and technically competent professionals who can develop any type of cutting tools to national and international standard highest quality. Our development procedure with dure is always based upon the customer requirements as per their sample/specification or drawing. In order to upkeep the industries with the modern development, Dedicated people with high intentions, sincere efforts, intelligent direction and successful execution by adhering to stringent quality control system and quality management system are key to our success.

OUR PHILOSOPHY :

- Double The Expertise & Enhance the service level







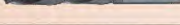








OUR MAIN OBJECTIVE :

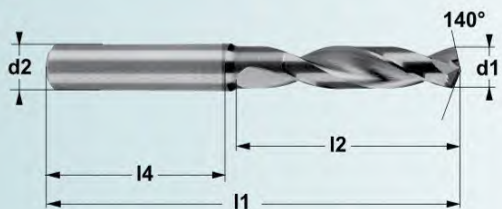
- To increase our Customers Competitiveness by offering solution for their machining needs
- We have specialized QC professionals to guarantee the Quality of each product

We provide carbide mills and drills with different kinds of angle/length and shape. Moreover we provide OEM service and can produce specific cutting tools according to your drawings. We always persist in the spirit of "Respecting work, Being Realistic, Quality first & Customer First" so as to serve our Customers



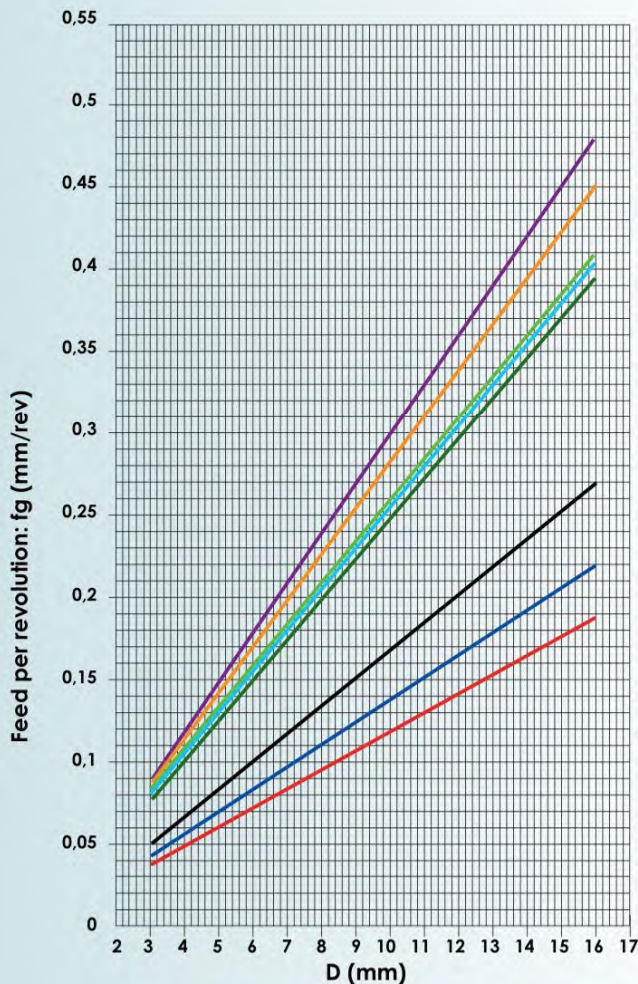
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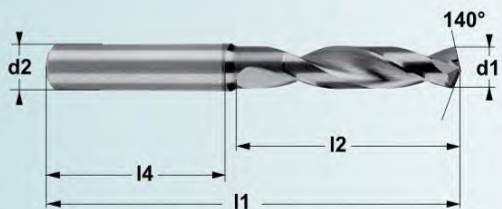
GEOMETRICAL HIGHLIGHTS :

- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.



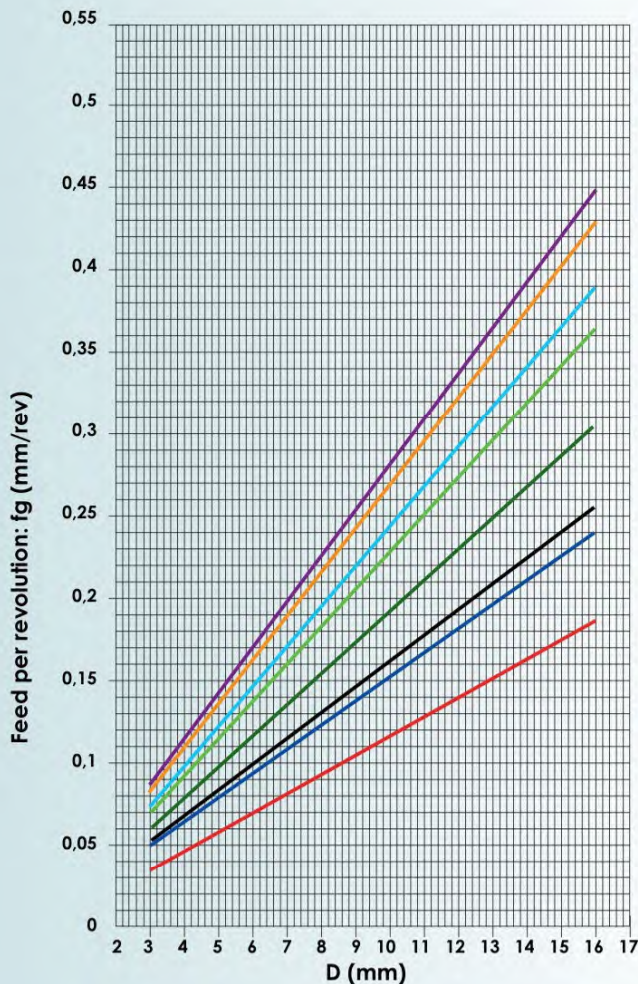
- Spheroidal cast iron**
Vc 155 m/min
- Brass**
Vc 200 m/min
- < 800 N/mm²**
Vc 110 m/min
- Alu alloys Si <6%**
Vc 230 m/min
- < 1000 N/mm²**
Vc 90 m/min
- < 1300 N/mm²**
Vc 55 m/min
- 12% Cr & Stainless Steel**
Vc 45 m/min
- < 1500 N/mm²**
Vc 40 m/m

DIN L/D 3	XTREME X-PLUS	POINT ANGLE 140°	HELIX ANGLE 30°	SHANK	ROTATION RH						
X Plus	D1 m7	D2 h6	L2	L4	L1	X Plus	D1 m7	D2 h6	L2	L4	L1
XP53N0300	3.00	6.00	20.00	36.00	62.00	XP53N1080	10.80	12.00	55.00	45.00	102.00
XP53N0310	3.10	6.00	20.00	36.00	62.00	XP53N1090	10.90	12.00	55.00	45.00	102.00
XP53N0320	3.20	6.00	20.00	36.00	62.00	XP53N1100	11.00	12.00	55.00	45.00	102.00
XP53N0330	3.30	6.00	20.00	36.00	62.00	XP53N1110	11.10	12.00	55.00	45.00	102.00
XP53N0340	3.40	6.00	20.00	36.00	62.00	XP53N1120	11.20	12.00	55.00	45.00	102.00
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XP53N0360	3.60	6.00	20.00	36.00	62.00	XP53N1140	11.40	12.00	55.00	45.00	102.00
XP53N0370	3.70	6.00	20.00	36.00	62.00	XP53N1150	11.50	12.00	55.00	45.00	102.00
XP53N0380	3.80	6.00	24.00	36.00	66.00	XP53N1160	11.60	12.00	55.00	45.00	102.00
XP53N0390	3.90	6.00	24.00	36.00	66.00	XP53N1170	11.70	12.00	55.00	45.00	102.00
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XP53N0410	4.10	6.00	24.00	36.00	66.00	XP53N1190	11.90	12.00	55.00	45.00	102.00
XP53N0420	4.20	6.00	24.00	36.00	66.00	XP53N1200	12.00	12.00	55.00	45.00	102.00
XP53N0430	4.30	6.00	24.00	36.00	66.00	XP53N1230	12.30	14.00	60.00	45.00	107.00
XP53N0440	4.40	6.00	24.00	36.00	66.00	XP53N1240	12.40	14.00	60.00	45.00	107.00
XP53N0450	4.50	6.00	24.00	36.00	66.00	XP53N1250	12.50	14.00	60.00	45.00	107.00
XP53N0460	4.60	6.00	24.00	36.00	66.00	XP53N1260	12.60	14.00	60.00	45.00	107.00
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XP53N0550	5.50	6.00	28.00	36.00	66.00	XP53N1350	13.50	14.00	60.00	45.00	107.00
XP53N0560	5.60	6.00	28.00	36.00	66.00	XP53N1360	13.60	14.00	60.00	45.00	107.00
XP53N0570	5.70	6.00	28.00	36.00	66.00	XP53N1370	13.70	14.00	60.00	45.00	107.00
XP53N0580	5.80	6.00	28.00	36.00	66.00	XP53N1380	13.80	14.00	60.00	45.00	107.00
XP53N0590	5.90	6.00	28.00	36.00	66.00	XP53N1390	13.90	14.00	60.00	45.00	107.00
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XP53N0720	7.20	8.00	41.00	36.00	79.00	XP53N1560	15.60	16.00	65.00	48.00	115.00
XP53N0730	7.30	8.00	41.00	36.00	79.00	XP53N1570	15.70	16.00	65.00	48.00	115.00
XP53N0740	7.40	8.00	41.00	36.00	79.00	XP53N1580	15.80	16.00	65.00	48.00	115.00
XP53N0750	7.50	8.00	41.00	36.00	79.00	XP53N1590	15.90	16.00	65.00	48.00	115.00
XP53N0760	7.60	8.00	41.00	36.00	79.00	XP53N1600	16.00	16.00	65.00	48.00	115.00
XP53N0770	7.70	8.00	41.00	36.00	79.00	XP53N1650	16.50	18.00	73.00	48.00	123.00
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XP53N0790	7.90	8.00	41.00	36.00	79.00	XP53N1670	16.70	18.00	73.00	48.00	123.00
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XP53N0960	9.60	10.00	47.00	40.00	89.00	XP53N1880	18.80	20.00	79.00	50.00	131.00
XP53N0970	9.70	10.00	47.00	40.00	89.00	XP53N1890	18.90	20.00	79.00	50.00	131.00
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XP53N1060	10.60	12.00	55.00	45.00	102.00	XP53N1980	19.80	20.00	79.00	50.00	131.00
XP53N1070	10.70	12.00	55.00	45.00	102.00	XP53N2000	20.00	20.00	79.00	50.00	131.00



GEOMETRICAL HIGHLIGHTS :

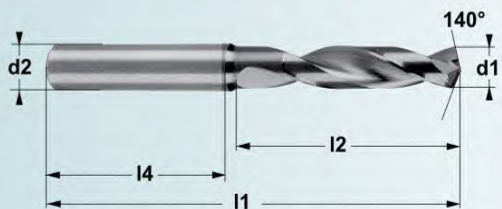
- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.



- Spheroidal cast iron**
Vc 155 m/min
- Brass**
Vc 200 m/min
- Alu alloys Si <6%**
Vc 230 m/min
- < 800 N/mm²**
Vc 110 m/min
- < 1000 N/mm²**
Vc 90 m/min
- < 1300 N/mm²**
Vc 55 m/min
- 12% Cr & Stainless Steel**
Vc 45 m/min
- < 1500 N/mm²**
Vc 40 m/m

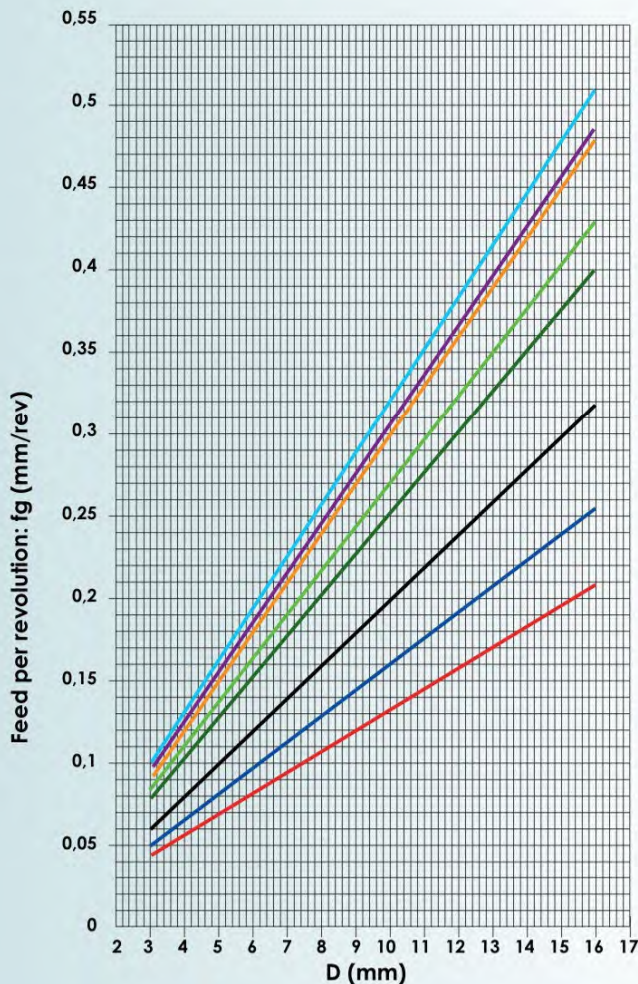
DIN L/D 5
XTREME X-PLUS
POINT ANGLE 140°
HELIX ANGLE 30°
SHANK
ROTATION RH

X Plus	D1 m7	D2 h6	L2	L4	L1	X Plus	D1 m7	D2 h6	L2	L4	L1
XPLS0300	3.00	6.00	28.00	36.00	66.00	XPLS1080	10.80	12.00	71.00	45.00	118.00
XPLS0310	3.10	6.00	28.00	36.00	66.00	XPLS1090	10.90	12.00	71.00	45.00	118.00
XPLS0320	3.20	6.00	28.00	36.00	66.00	XPLS1100	11.00	12.00	71.00	45.00	118.00
XPLS0330	3.30	6.00	28.00	36.00	66.00	XPLS1110	11.10	12.00	71.00	45.00	118.00
XPLS0340	3.40	6.00	28.00	36.00	66.00	XPLS1120	11.20	12.00	71.00	45.00	118.00
XPLS0350	3.50	6.00	28.00	36.00	66.00	XPLS1130	11.30	12.00	71.00	45.00	118.00
XPLS0360	3.60	6.00	28.00	36.00	66.00	XPLS1140	11.40	12.00	71.00	45.00	118.00
XPLS0370	3.70	6.00	28.00	36.00	66.00	XPLS1150	11.50	12.00	71.00	45.00	118.00
XPLS0380	3.80	6.00	36.00	36.00	74.00	XPLS1160	11.60	12.00	71.00	45.00	118.00
XPLS0390	3.90	6.00	36.00	36.00	74.00	XPLS1170	11.70	12.00	71.00	45.00	118.00
XPLS0400	4.00	6.00	36.00	36.00	74.00	XPLS1180	11.80	12.00	71.00	45.00	118.00
XPLS0410	4.10	6.00	36.00	36.00	74.00	XPLS1190	11.90	12.00	71.00	45.00	118.00
XPLS0420	4.20	6.00	36.00	36.00	74.00	XPLS1200	12.00	12.00	71.00	45.00	118.00
XPLS0430	4.30	6.00	36.00	36.00	74.00	XPLS1230	12.30	14.00	77.00	45.00	124.00
XPLS0440	4.40	6.00	36.00	36.00	74.00	XPLS1240	12.40	14.00	77.00	45.00	124.00
XPLS0450	4.50	6.00	36.00	36.00	74.00	XPLS1250	12.50	14.00	77.00	45.00	124.00
XPLS0460	4.60	6.00	36.00	36.00	74.00	XPLS1260	12.60	14.00	77.00	45.00	124.00
XPLS0470	4.70	6.00	36.00	36.00	74.00	XPLS1270	12.70	14.00	77.00	45.00	124.00
XPLS0480	4.80	6.00	44.00	36.00	82.00	XPLS1280	12.80	14.00	77.00	45.00	124.00
XPLS0490	4.90	6.00	44.00	36.00	82.00	XPLS1290	12.90	14.00	77.00	45.00	124.00
XPLS0500	5.00	6.00	44.00	36.00	82.00	XPLS1300	13.00	14.00	77.00	45.00	124.00
XPLS0510	5.10	6.00	44.00	36.00	82.00	XPLS1310	13.10	14.00	77.00	45.00	124.00
XPLS0520	5.20	6.00	44.00	36.00	82.00	XPLS1320	13.20	14.00	77.00	45.00	124.00
XPLS0530	5.30	6.00	44.00	36.00	82.00	XPLS1330	13.30	14.00	77.00	45.00	124.00
XPLS0540	5.40	6.00	44.00	36.00	82.00	XPLS1340	13.40	14.00	77.00	45.00	124.00
XPLS0550	5.50	6.00	44.00	36.00	82.00	XPLS1350	13.50	14.00	77.00	45.00	124.00
XPLS0560	5.60	6.00	44.00	36.00	82.00	XPLS1360	13.60	14.00	77.00	45.00	124.00
XPLS0570	5.70	6.00	44.00	36.00	82.00	XPLS1370	13.70	14.00	77.00	45.00	124.00
XPLS0580	5.80	6.00	44.00	36.00	82.00	XPLS1380	13.80	14.00	77.00	45.00	124.00
XPLS0590	5.90	6.00	44.00	36.00	82.00	XPLS1390	13.90	14.00	77.00	45.00	124.00
XPLS0600	6.00	6.00	44.00	36.00	82.00	XPLS1400	14.00	14.00	77.00	45.00	124.00
XPLS0610	6.10	8.00	53.00	36.00	91.00	XPLS1450	14.50	16.00	83.00	48.00	133.00
XPLS0620	6.20	8.00	53.00	36.00	91.00	XPLS1460	14.60	16.00	83.00	48.00	133.00
XPLS0630	6.30	8.00	53.00	36.00	91.00	XPLS1470	14.70	16.00	83.00	48.00	133.00
XPLS0640	6.40	8.00	53.00	36.00	91.00	XPLS1480	14.80	16.00	83.00	48.00	133.00
XPLS0650	6.50	8.00	53.00	36.00	91.00	XPLS1490	14.90	16.00	83.00	48.00	133.00
XPLS0660	6.60	8.00	53.00	36.00	91.00	XPLS1500	15.00	16.00	83.00	48.00	133.00
XPLS0670	6.70	8.00	53.00	36.00	91.00	XPLS1510	15.10	16.00	83.00	48.00	133.00
XPLS0680	6.80	8.00	53.00	36.00	91.00	XPLS1520	15.20	16.00	83.00	48.00	133.00
XPLS0690	6.90	8.00	53.00	36.00	91.00	XPLS1530	15.30	16.00	83.00	48.00	133.00
XPLS0700	7.00	8.00	53.00	36.00	91.00	XPLS1540	15.40	16.00	83.00	48.00	133.00
XPLS0710	7.10	8.00	53.00	36.00	91.00	XPLS1550	15.50	16.00	83.00	48.00	133.00
XPLS0720	7.20	8.00	53.00	36.00	91.00	XPLS1560	15.60	16.00	83.00	48.00	133.00
XPLS0730	7.30	8.00	53.00	36.00	91.00	XPLS1570	15.70	16.00	83.00	48.00	133.00
XPLS0740	7.40	8.00	53.00	36.00	91.00	XPLS1580	15.80	16.00	83.00	48.00	133.00
XPLS0750	7.50	8.00	53.00	36.00	91.00	XPLS1590	15.90	16.00	83.00	48.00	133.00
XPLS0760	7.60	8.00	53.00	36.00	91.00	XPLS1600	16.00	16.00	83.00	48.00	133.00
XPLS0770	7.70	8.00	53.00	36.00	91.00	XPLS1650	16.50	18.00	93.00	48.00	143.00
XPLS0780	7.80	8.00	53.00	36.00	91.00	XPLS1660	16.60	18.00	93.00	48.00	143.00
XPLS0790	7.90	8.00	53.00	36.00	91.00	XPLS1670	16.70	18.00	93.00	48.00	143.00
XPLS0800	8.00	8.00	53.00	36.00	91.00	XPLS1680	16.80	18.00	93.00	48.00	143.00
XPLS0810	8.10	10.00	61.00	40.00	103.00	XPLS1690	16.90	18.00	93.00	48.00	143.00
XPLS0820	8.20	10.00	61.00	40.00	103.00	XPLS1700	17.00	18.00	93.00	48.00	143.00
XPLS0830	8.30	10.00	61.00	40.00	103.00	XPLS1710	17.10	18.00	93.00	48.00	143.00
XPLS0840	8.40	10.00	61.00	40.00	103.00	XPLS1720	17.20	18.00	93.00	48.00	143.00
XPLS0850	8.50	10.00	61.00	40.00	103.00	XPLS1730	17.30	18.00	93.00	48.00	143.00
XPLS0860	8.60	10.00	61.00	40.00	103.00	XPLS1740	17.40	18.00	93.00	48.00	143.00
XPLS0870	8.70	10.00	61.00	40.00	103.00	XPLS1750	17.50	18.00	93.00	48.00	143.00
XPLS0880	8.80	10.00	61.00	40.00	103.00	XPLS1760	17.60	18.00	93.00	48.00	143.00
XPLS0890	8.90	10.00	61.00	40.00	103.00	XPLS1770	17.70	18.00	93.00	48.00	143.00
XPLS0900	9.00	10.00	61.00	40.00	103.00	XPLS1780	17.80	18.00	93.00	48.00	143.00
XPLS0910	9.10	10.00	61.00	40.00	103.00	XPLS1790	17.90	18.00	93.00	48.00	143.00
XPLS0920	9.20	10.00	61.00	40.00	103.00	XPLS1800	18.00	18.00	93.00	48.00	143.00
XPLS0930	9.30	10.00	61.00	40.00	103.00	XPLS1850	18.50	20.00	101.00	50.00	153.00
XPLS0940	9.40	10.00	61.00	40.00	103.00	XPLS1860	18.60	20.00	101.00	50.00	153.00
XPLS0950	9.50	10.00	61.00	40.00	103.00	XPLS1870	18.70	20.00	101.00	50.00	153.00
XPLS0960	9.60	10.00	61.00	40.00	103.00	XPLS1880	18.80	20.00	101.00	50.00	153.00
XPLS0970	9.70	10.00	61.00	40.00	103.00	XPLS1890	18.90	20.00	101.00	50.00	153.00
XPLS0980	9.80	10.00	61.00	40.00	103.00	XPLS1900	19.00	20.00	101.00	50.00	153.00
XPLS0990	9.90	10.00	61.00	40.00	103.00	XPLS1910	19.10	20.00	101.00	50.00	153.00
XPLS1000	10.00	10.00	61.00	40.00	103.00	XPLS1920	19.20	20.00	101.00	50.00	153.00
XPLS1010	10.10	12.00	71.00	45.00	118.00	XPLS1930	19.30	20.00	101.00	50.00	153.00
XPLS1020	10.20	12.00	71.00	45.00	118.00	XPLS1940	19.40	20.00	101.00	50.00	153.00
XPLS1030	10.30	12.00	71.00	45.00	118.00	XPLS1950	19.50	20.00	101.00	50.00	153.00
XPLS1040	10.40	12.00	71.00	45.00	118.00	XPLS1960	19.60	20.00	101.00	50.00	153.00
XPLS1050	10.50	12.00	71.00	45.00	118.00	XPLS1970	19.70	20.00	101.00	50.00	153.00
XPLS1060	10.60	12.00	71.00	45.00	118.00	XPLS1980	19.80	20.00	101.00	50.00	153.00
XPLS1070	10.70	12.00	71.00	45.00	118.00	XPLS2000	20.00	20.00	101.00	50.00	153.00

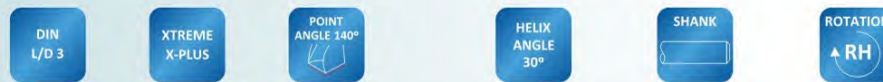


GEOMETRICAL HIGHLIGHTS :

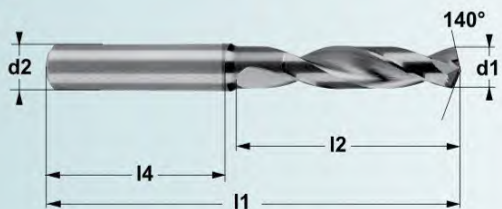
- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.



- Alu alloys Si <6%**
Vc 250 m/min
- Spheroidal cast iron**
Vc 190 m/min
- Brass**
Vc 220 m/min
- < 800 N/mm²**
Vc 145 m/min
- < 1000 N/mm²**
Vc 110 m/min
- < 1300 N/mm²**
Vc 75 m/min
- 12% Cr & Stainless Steel**
Vc 55 m/min
- < 1500 N/mm²**
Vc 45 m/m

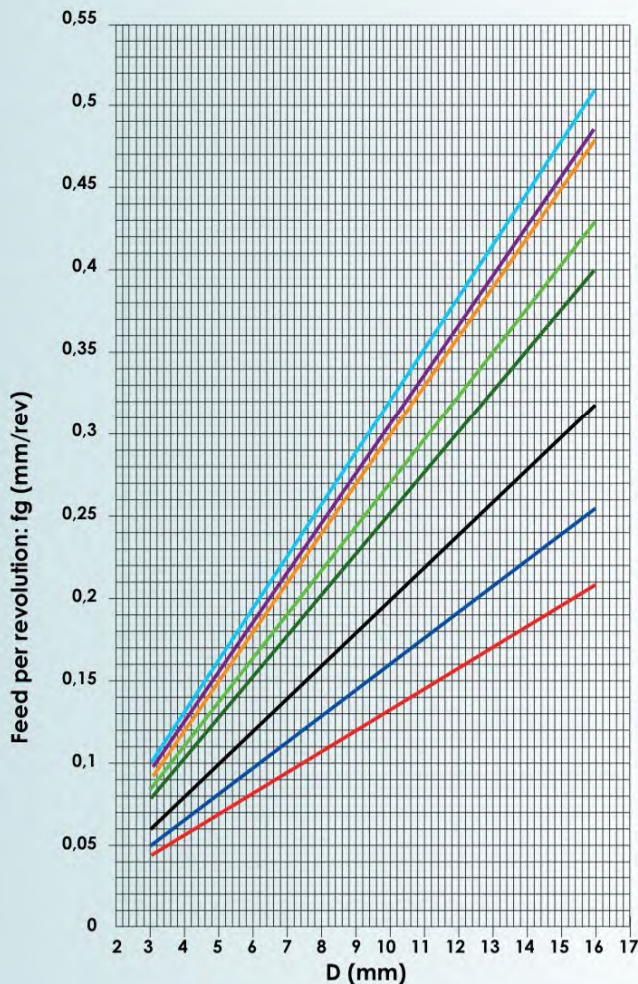


X-PLUS	D1 m7	D2 h6	L2	L4	L1	X-PLUS	D1 m7	D2 h6	L2	L4	L1
XPS3T0300	3.00	6.00	20.00	36.00	62.00	XPS3T0920	9.20	10.00	47.00	40.00	89.00
XPS3T0310	3.10	6.00	20.00	36.00	62.00	XPS3T0930	9.30	10.00	47.00	40.00	89.00
XPS3T0320	3.20	6.00	20.00	36.00	62.00	XPS3T0940	9.40	10.00	47.00	40.00	89.00
XPS3T0330	3.30	6.00	20.00	36.00	62.00	XPS3T0950	9.50	10.00	47.00	40.00	89.00
XPS3T0340	3.40	6.00	20.00	36.00	62.00	XPS3T0960	9.60	10.00	47.00	40.00	89.00
XPS3T0350	3.50	6.00	20.00	36.00	62.00	XPS3T0970	9.70	10.00	47.00	40.00	89.00
XPS3T0360	3.60	6.00	20.00	36.00	62.00	XPS3T0980	9.80	10.00	47.00	40.00	89.00
XPS3T0370	3.70	6.00	20.00	36.00	62.00	XPS3T0990	9.90	10.00	47.00	40.00	89.00
XPS3T0380	3.80	6.00	24.00	36.00	62.00	XPS3T1000	10.00	10.00	47.00	40.00	89.00
XPS3T0390	3.90	6.00	24.00	36.00	66.00	XPS3T1010	10.10	12.00	55.00	45.00	102.00
XPS3T0400	4.00	6.00	24.00	36.00	66.00	XPS3T1020	10.20	12.00	55.00	45.00	102.00
XPS3T0410	4.10	6.00	24.00	36.00	66.00	XPS3T1030	10.30	12.00	55.00	45.00	102.00
XPS3T0420	4.20	6.00	24.00	36.00	66.00	XPS3T1040	10.40	12.00	55.00	45.00	102.00
XPS3T0430	4.30	6.00	24.00	36.00	66.00	XPS3T1050	10.50	12.00	55.00	45.00	102.00
XPS3T0440	4.40	6.00	24.00	36.00	66.00	XPS3T1060	10.60	12.00	55.00	45.00	102.00
XPS3T0450	4.50	6.00	24.00	36.00	66.00	XPS3T1070	10.70	12.00	55.00	45.00	102.00
XPS3T0460	4.60	6.00	24.00	36.00	66.00	XPS3T1080	10.80	12.00	55.00	45.00	102.00
XPS3T0470	4.70	6.00	24.00	36.00	66.00	XPS3T1090	10.90	12.00	55.00	45.00	102.00
XPS3T0480	4.80	6.00	28.00	36.00	66.00	XPS3T1100	11.00	12.00	55.00	45.00	102.00
XPS3T0490	4.90	6.00	28.00	36.00	66.00	XPS3T1110	11.10	12.00	55.00	45.00	102.00
XPS3T0500	5.00	6.00	28.00	36.00	66.00	XPS3T1120	11.20	12.00	55.00	45.00	102.00
XPS3T0510	5.10	6.00	28.00	36.00	66.00	XPS3T1130	11.30	12.00	55.00	45.00	102.00
XPS3T0520	5.20	6.00	28.00	36.00	66.00	XPS3T1140	11.40	12.00	55.00	45.00	102.00
XPS3T0530	5.30	6.00	28.00	36.00	66.00	XPS3T1150	11.50	12.00	55.00	45.00	102.00
XPS3T0540	5.40	6.00	28.00	36.00	66.00	XPS3T1160	11.60	12.00	55.00	45.00	102.00
XPS3T0550	5.50	6.00	28.00	36.00	66.00	XPS3T1170	11.70	12.00	55.00	45.00	102.00
XPS3T0560	5.60	6.00	28.00	36.00	66.00	XPS3T1180	11.80	12.00	55.00	45.00	102.00
XPS3T0570	5.70	6.00	28.00	36.00	66.00	XPS3T1190	11.90	12.00	55.00	45.00	102.00
XPS3T0580	5.80	6.00	28.00	36.00	66.00	XPS3T1200	12.00	12.00	55.00	45.00	102.00
XPS3T0590	5.90	6.00	28.00	36.00	66.00	XPS3T1230	12.30	14.00	60.00	45.00	107.00
XPS3T0600	6.00	6.00	28.00	36.00	66.00	XPS3T1240	12.40	14.00	60.00	45.00	107.00
XPS3T0610	6.10	8.00	41.00	36.00	79.00	XPS3T1250	12.50	14.00	60.00	45.00	107.00
XPS3T0620	6.20	8.00	41.00	36.00	79.00	XPS3T1260	12.60	14.00	60.00	45.00	107.00
XPS3T0630	6.30	8.00	41.00	36.00	79.00	XPS3T1270	12.70	14.00	60.00	45.00	107.00
XPS3T0640	6.40	8.00	41.00	36.00	79.00	XPS3T1280	12.80	14.00	60.00	45.00	107.00
XPS3T0650	6.50	8.00	41.00	36.00	79.00	XPS3T1290	12.90	14.00	60.00	45.00	107.00
XPS3T0660	6.60	8.00	41.00	36.00	79.00	XPS3T1300	13.00	14.00	60.00	45.00	107.00
XPS3T0670	6.70	8.00	41.00	36.00	79.00	XPS3T1310	13.10	14.00	60.00	45.00	107.00
XPS3T0680	6.80	8.00	41.00	36.00	79.00	XPS3T1320	13.20	14.00	60.00	45.00	107.00
XPS3T0690	6.90	8.00	41.00	36.00	79.00	XPS3T1330	13.30	14.00	60.00	45.00	107.00
XPS3T0700	7.00	8.00	41.00	36.00	79.00	XPS3T1340	13.40	14.00	60.00	45.00	107.00
XPS3T0710	7.10	8.00	41.00	36.00	79.00	XPS3T1350	13.50	14.00	60.00	45.00	107.00
XPS3T0720	7.20	8.00	41.00	36.00	79.00	XPS3T1360	13.60	14.00	60.00	45.00	107.00
XPS3T0730	7.30	8.00	41.00	36.00	79.00	XPS3T1370	13.70	14.00	60.00	45.00	107.00
XPS3T0740	7.40	8.00	41.00	36.00	79.00	XPS3T1380	13.80	14.00	60.00	45.00	107.00
XPS3T0750	7.50	8.00	41.00	36.00	79.00	XPS3T1390	13.90	14.00	60.00	45.00	107.00
XPS3T0760	7.60	8.00	41.00	36.00	79.00	XPS3T1400	14.00	14.00	60.00	45.00	107.00
XPS3T0770	7.70	8.00	41.00	36.00	79.00	XPS3T1450	14.50	16.00	65.00	48.00	115.00
XPS3T0780	7.80	8.00	41.00	36.00	79.00	XPS3T1460	14.60	16.00	65.00	48.00	115.00
XPS3T0790	7.90	8.00	41.00	36.00	79.00	XPS3T1470	14.70	16.00	65.00	48.00	115.00
XPS3T0800	8.00	8.00	41.00	36.00	79.00	XPS3T1480	14.80	16.00	65.00	48.00	115.00
XPS3T0810	8.10	10.00	47.00	40.00	89.00	XPS3T1490	14.90	16.00	65.00	48.00	115.00
XPS3T0820	8.20	10.00	47.00	40.00	89.00	XPS3T1500	15.00	16.00	65.00	48.00	115.00
XPS3T0830	8.30	10.00	47.00	40.00	89.00	XPS3T1510	15.10	16.00	65.00	48.00	115.00
XPS3T0840	8.40	10.00	47.00	40.00	89.00	XPS3T1520	15.20	16.00	65.00	48.00	115.00
XPS3T0850	8.50	10.00	47.00	40.00	89.00	XPS3T1530	15.30	16.00	65.00	48.00	115.00
XPS3T0860	8.60	10.00	47.00	40.00	89.00	XPS3T1540	15.40	16.00	65.00	48.00	115.00
XPS3T0870	8.70	10.00	47.00	40.00	89.00	XPS3T1550	15.50	16.00	65.00	48.00	115.00
XPS3T0880	8.80	10.00	47.00	40.00	89.00	XPS3T1560	15.60	16.00	65.00	48.00	115.00
XPS3T0890	8.90	10.00	47.00	40.00	89.00	XPS3T1570	15.70	16.00	65.00	48.00	115.00
XPS3T0900	9.00	10.00	47.00	40.00	89.00	XPS3T1580	15.80	16.00	65.00	48.00	115.00
XPS3T0910	9.10	10.00	47.00	40.00	89.00	XPS3T1590	15.90	16.00	65.00	48.00	115.00
						XPS3T1600	16.00	16.00	65.00	48.00	115.00



GEOMETRICAL HIGHLIGHTS :

- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.

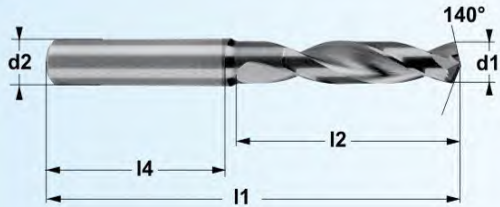


- Alu alloys Si <6%**
Vc 250 m/min
- Spheroidal cast iron**
Vc 190 m/min
- Brass**
Vc 220 m/min
- < 800 N/mm²**
Vc 145 m/min
- < 1000 N/mm²**
Vc 110 m/min
- < 1300 N/mm²**
Vc 75 m/min
- 12% Cr & Stainless Steel**
Vc 55 m/min
- < 1500 N/mm²**
Vc 45 m/m



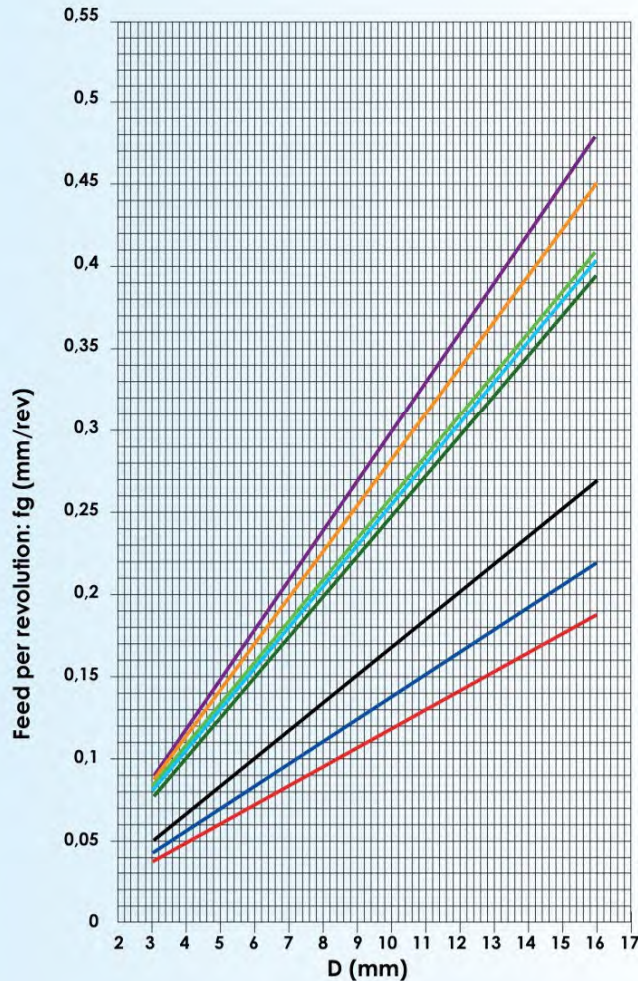
X-PLUS	D1 m7	D2 h6	L2	L4	L1
XPLST0300	3.00	6.00	28.00	36.00	66.00
XPLST0310	3.10	6.00	28.00	36.00	66.00
XPLST0320	3.20	6.00	28.00	36.00	66.00
XPLST0330	3.30	6.00	28.00	36.00	66.00
XPLST0340	3.40	6.00	28.00	36.00	66.00
XPLST0350	3.50	6.00	28.00	36.00	66.00
XPLST0360	3.60	6.00	28.00	36.00	66.00
XPLST0370	3.70	6.00	28.00	36.00	66.00
XPLST0380	3.80	6.00	28.00	36.00	74.00
XPLST0390	3.90	6.00	36.00	36.00	74.00
XPLST0400	4.00	6.00	36.00	36.00	74.00
XPLST0410	4.10	6.00	36.00	36.00	74.00
XPLST0420	4.20	6.00	36.00	36.00	74.00
XPLST0430	4.30	6.00	36.00	36.00	74.00
XPLST0440	4.40	6.00	36.00	36.00	74.00
XPLST0450	4.50	6.00	36.00	36.00	74.00
XPLST0460	4.60	6.00	36.00	36.00	74.00
XPLST0470	4.70	6.00	36.00	36.00	74.00
XPLST0480	4.80	6.00	44.00	36.00	82.00
XPLST0490	4.90	6.00	44.00	36.00	82.00
XPLST0500	5.00	6.00	44.00	36.00	82.00
XPLST0510	5.10	6.00	44.00	36.00	82.00
XPLST0520	5.20	6.00	44.00	36.00	82.00
XPLST0530	5.30	6.00	44.00	36.00	82.00
XPLST0540	5.40	6.00	44.00	36.00	82.00
XPLST0550	5.50	6.00	44.00	36.00	82.00
XPLST0560	5.60	6.00	44.00	36.00	82.00
XPLST0570	5.70	6.00	44.00	36.00	82.00
XPLST0580	5.80	6.00	44.00	36.00	82.00
XPLST0590	5.90	6.00	44.00	36.00	82.00
XPLST0600	6.00	6.00	44.00	36.00	82.00
XPLST0610	6.10	8.00	53.00	36.00	91.00
XPLST0620	6.20	8.00	53.00	36.00	91.00
XPLST0630	6.30	8.00	53.00	36.00	91.00
XPLST0640	6.40	8.00	53.00	36.00	91.00
XPLST0650	6.50	8.00	53.00	36.00	91.00
XPLST0660	6.60	8.00	53.00	36.00	91.00
XPLST0670	6.70	8.00	53.00	36.00	91.00
XPLST0680	6.80	8.00	53.00	36.00	91.00
XPLST0690	6.90	8.00	53.00	36.00	91.00
XPLST0700	7.00	8.00	53.00	36.00	91.00
XPLST0710	7.10	8.00	53.00	36.00	91.00
XPLST0720	7.20	8.00	53.00	36.00	91.00
XPLST0730	7.30	8.00	53.00	36.00	91.00
XPLST0740	7.40	8.00	53.00	36.00	91.00
XPLST0750	7.50	8.00	53.00	36.00	91.00
XPLST0760	7.60	8.00	53.00	36.00	91.00
XPLST0770	7.70	8.00	53.00	36.00	91.00
XPLST0780	7.80	8.00	53.00	36.00	91.00
XPLST0790	7.90	8.00	53.00	36.00	91.00
XPLST0800	8.00	8.00	53.00	36.00	91.00
XPLST0810	8.10	10.00	61.00	40.00	103.00
XPLST0820	8.20	10.00	61.00	40.00	103.00
XPLST0830	8.30	10.00	61.00	40.00	103.00
XPLST0840	8.40	10.00	61.00	40.00	103.00
XPLST0850	8.50	10.00	61.00	40.00	103.00
XPLST0860	8.60	10.00	61.00	40.00	103.00
XPLST0870	8.70	10.00	61.00	40.00	103.00
XPLST0880	8.80	10.00	61.00	40.00	103.00
XPLST0890	8.90	10.00	61.00	40.00	103.00
XPLST0900	9.00	10.00	61.00	40.00	103.00
XPLST0910	9.10	10.00	61.00	40.00	103.00

X-PLUS	D1 m7	D2 h6	L2	L4	L1
XPLST0920	9.20	10.00	61.00	40.00	103.00
XPLST0930	9.30	10.00	61.00	40.00	103.00
XPLST0940	9.40	10.00	61.00	40.00	103.00
XPLST0950	9.50	10.00	61.00	40.00	103.00
XPLST0960	9.60	10.00	61.00	40.00	103.00
XPLST0970	9.70	10.00	61.00	40.00	103.00
XPLST0980	9.80	10.00	61.00	40.00	103.00
XPLST0990	9.90	10.00	61.00	40.00	103.00
XPLST1000	10.00	10.00	61.00	40.00	103.00
XPLST1010	10.10	12.00	71.00	45.00	118.00
XPLST1020	10.20	12.00	71.00	45.00	118.00
XPLST1030	10.30	12.00	71.00	45.00	118.00
XPLST1040	10.40	12.00	71.00	45.00	118.00
XPLST1050	10.50	12.00	71.00	45.00	118.00
XPLST1060	10.60	12.00	71.00	45.00	118.00
XPLST1070	10.70	12.00	71.00	45.00	118.00
XPLST1080	10.80	12.00	71.00	45.00	118.00
XPLST1090	10.90	12.00	71.00	45.00	118.00
XPLST1100	11.00	12.00	71.00	45.00	118.00
XPLST1110	11.10	12.00	71.00	45.00	118.00
XPLST1120	11.20	12.00	71.00	45.00	118.00
XPLST1130	11.30	12.00	71.00	45.00	118.00
XPLST1140	11.40	12.00	71.00	45.00	118.00
XPLST1150	11.50	12.00	71.00	45.00	118.00
XPLST1160	11.60	12.00	71.00	45.00	118.00
XPLST1170	11.70	12.00	71.00	45.00	118.00
XPLST1180	11.80	12.00	71.00	45.00	118.00
XPLST1190	11.90	12.00	71.00	45.00	118.00
XPLST1200	12.00	12.00	71.00	45.00	118.00
XPLST1230	12.30	14.00	77.00	45.00	124.00
XPLST1240	12.40	14.00	77.00	45.00	124.00
XPLST1250	12.50	14.00	77.00	45.00	124.00
XPLST1260	12.60	14.00	77.00	45.00	124.00
XPLST1270	12.70	14.00	77.00	45.00	124.00
XPLST1280	12.80	14.00	77.00	45.00	124.00
XPLST1290	12.90	14.00	77.00	45.00	124.00
XPLST1300	13.00	14.00	77.00	45.00	124.00
XPLST1310	13.10	14.00	77.00	45.00	124.00
XPLST1320	13.20	14.00	77.00	45.00	124.00
XPLST1330	13.30	14.00	77.00	45.00	124.00
XPLST1340	13.40	14.00	77.00	45.00	124.00
XPLST1350	13.50	14.00	77.00	45.00	124.00
XPLST1360	13.60	14.00	77.00	45.00	124.00
XPLST1370	13.70	14.00	77.00	45.00	124.00
XPLST1380	13.80	14.00	77.00	45.00	124.00
XPLST1390	13.90	14.00	77.00	45.00	124.00
XPLST1400	14.00	14.00	77.00	45.00	124.00
XPLST1450	14.50	16.00	83.00	48.00	133.00
XPLST1460	14.60	16.00	83.00	48.00	133.00
XPLST1470	14.70	16.00	83.00	48.00	133.00
XPLST1480	14.80	16.00	83.00	48.00	133.00
XPLST1490	14.90	16.00	83.00	48.00	133.00
XPLST1500	15.00	16.00	83.00	48.00	133.00
XPLST1510	15.10	16.00	83.00	48.00	133.00
XPLST1520	15.20	16.00	83.00	48.00	133.00
XPLST1530	15.30	16.00	83.00	48.00	133.00
XPLST1540	15.40	16.00	83.00	48.00	133.00
XPLST1550	15.50	16.00	83.00	48.00	133.00
XPLST1560	15.60	16.00	83.00	48.00	133.00
XPLST1570	15.70	16.00	83.00	48.00	133.00
XPLST1580	15.80	16.00	83.00	48.00	133.00
XPLST1590	15.90	16.00	83.00	48.00	133.00
XPLST1600	16.00	16.00	83.00	48.00	133.00



GEOMETRICAL HIGHLIGHTS :

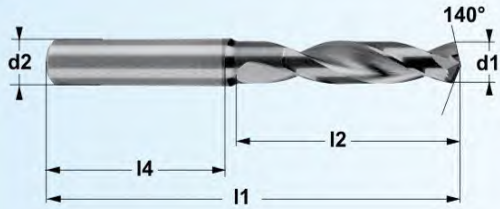
- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.



- Spheroidal cast iron**
Vc 186 m/min
- Brass**
Vc 240 m/min
- < 800 N/mm²**
Vc 132 m/min
- Alu alloys Si <6%**
Vc 276 m/min
- < 1000 N/mm²**
Vc 108 m/min
- < 1300 N/mm²**
Vc 66 m/min
- 12% Cr & Stainless Steel**
Vc 54 m/min
- < 1500 N/mm²**
Vc 48 m/m

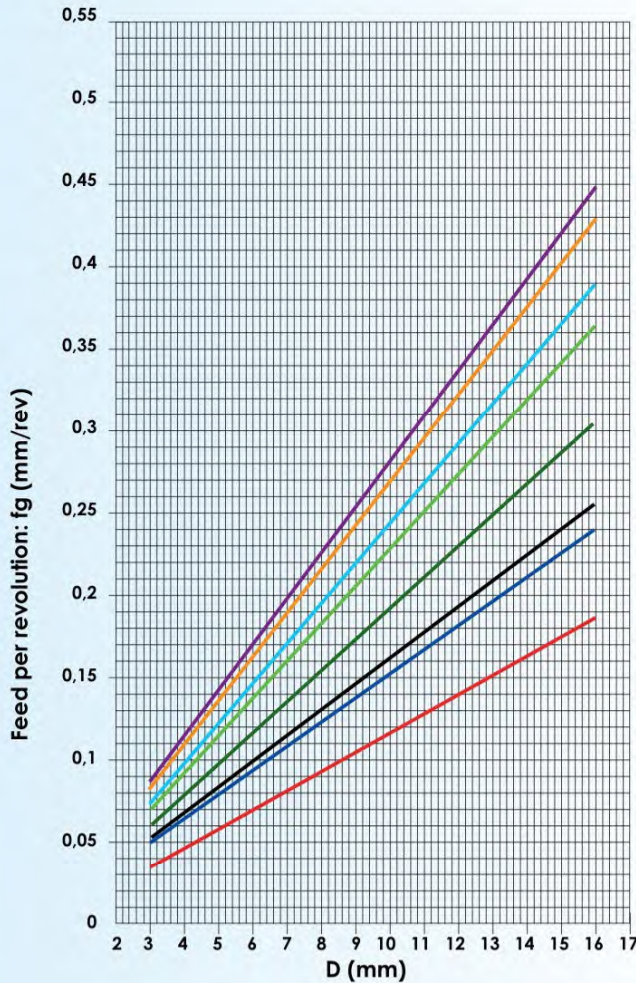


X Plus	D1 m7	D2 h6	L2	L4	L1	X Plus	D1 m7	D2 h6	L2	L4	L1
MGS3N0300	3.00	6.00	20.00	36.00	62.00	MGS3N1080	10.80	12.00	55.00	45.00	102.00
MGS3N0310	3.10	6.00	20.00	36.00	62.00	MGS3N1090	10.90	12.00	55.00	45.00	102.00
MGS3N0320	3.20	6.00	20.00	36.00	62.00	MGS3N1100	11.00	12.00	55.00	45.00	102.00
MGS3N0330	3.30	6.00	20.00	36.00	62.00	MGS3N1110	11.10	12.00	55.00	45.00	102.00
MGS3N0340	3.40	6.00	20.00	36.00	62.00	MGS3N1120	11.20	12.00	55.00	45.00	102.00
MGS3N0350	3.50	6.00	20.00	36.00	62.00	MGS3N1130	11.30	12.00	55.00	45.00	102.00
MGS3N0360	3.60	6.00	20.00	36.00	62.00	MGS3N1140	11.40	12.00	55.00	45.00	102.00
MGS3N0370	3.70	6.00	20.00	36.00	62.00	MGS3N1150	11.50	12.00	55.00	45.00	102.00
MGS3N0380	3.80	6.00	24.00	36.00	66.00	MGS3N1160	11.60	12.00	55.00	45.00	102.00
MGS3N0390	3.90	6.00	24.00	36.00	66.00	MGS3N1170	11.70	12.00	55.00	45.00	102.00
MGS3N0400	4.00	6.00	24.00	36.00	66.00	MGS3N1180	11.80	12.00	55.00	45.00	102.00
MGS3N0410	4.10	6.00	24.00	36.00	66.00	MGS3N1190	11.90	12.00	55.00	45.00	102.00
MGS3N0420	4.20	6.00	24.00	36.00	66.00	MGS3N1200	12.00	12.00	55.00	45.00	102.00
MGS3N0430	4.30	6.00	24.00	36.00	66.00	MGS3N1230	12.30	14.00	60.00	45.00	107.00
MGS3N0440	4.40	6.00	24.00	36.00	66.00	MGS3N1240	12.40	14.00	60.00	45.00	107.00
MGS3N0450	4.50	6.00	24.00	36.00	66.00	MGS3N1250	12.50	14.00	60.00	45.00	107.00
MGS3N0460	4.60	6.00	24.00	36.00	66.00	MGS3N1260	12.60	14.00	60.00	45.00	107.00
MGS3N0470	4.70	6.00	24.00	36.00	66.00	MGS3N1270	12.70	14.00	60.00	45.00	107.00
MGS3N0480	4.80	6.00	28.00	36.00	66.00	MGS3N1280	12.80	14.00	60.00	45.00	107.00
MGS3N0490	4.90	6.00	28.00	36.00	66.00	MGS3N1290	12.90	14.00	60.00	45.00	107.00
MGS3N0500	5.00	6.00	28.00	36.00	66.00	MGS3N1300	13.00	14.00	60.00	45.00	107.00
MGS3N0510	5.10	6.00	28.00	36.00	66.00	MGS3N1310	13.10	14.00	60.00	45.00	107.00
MGS3N0520	5.20	6.00	28.00	36.00	66.00	MGS3N1320	13.20	14.00	60.00	45.00	107.00
MGS3N0530	5.30	6.00	28.00	36.00	66.00	MGS3N1330	13.30	14.00	60.00	45.00	107.00
MGS3N0540	5.40	6.00	28.00	36.00	66.00	MGS3N1340	13.40	14.00	60.00	45.00	107.00
MGS3N0550	5.50	6.00	28.00	36.00	66.00	MGS3N1350	13.50	14.00	60.00	45.00	107.00
MGS3N0560	5.60	6.00	28.00	36.00	66.00	MGS3N1360	13.60	14.00	60.00	45.00	107.00
MGS3N0570	5.70	6.00	28.00	36.00	66.00	MGS3N1370	13.70	14.00	60.00	45.00	107.00
MGS3N0580	5.80	6.00	28.00	36.00	66.00	MGS3N1380	13.80	14.00	60.00	45.00	107.00
MGS3N0590	5.90	6.00	28.00	36.00	66.00	MGS3N1390	13.90	14.00	60.00	45.00	107.00
MGS3N0600	6.00	6.00	28.00	36.00	66.00	MGS3N1400	14.00	14.00	60.00	45.00	107.00
MGS3N0610	6.10	8.00	41.00	36.00	79.00	MGS3N1450	14.50	16.00	65.00	48.00	115.00
MGS3N0620	6.20	8.00	41.00	36.00	79.00	MGS3N1460	14.60	16.00	65.00	48.00	115.00
MGS3N0630	6.30	8.00	41.00	36.00	79.00	MGS3N1470	14.70	16.00	65.00	48.00	115.00
MGS3N0640	6.40	8.00	41.00	36.00	79.00	MGS3N1480	14.80	16.00	65.00	48.00	115.00
MGS3N0650	6.50	8.00	41.00	36.00	79.00	MGS3N1490	14.90	16.00	65.00	48.00	115.00
MGS3N0660	6.60	8.00	41.00	36.00	79.00	MGS3N1500	15.00	16.00	65.00	48.00	115.00
MGS3N0670	6.70	8.00	41.00	36.00	79.00	MGS3N1510	15.10	16.00	65.00	48.00	115.00
MGS3N0680	6.80	8.00	41.00	36.00	79.00	MGS3N1520	15.20	16.00	65.00	48.00	115.00
MGS3N0690	6.90	8.00	41.00	36.00	79.00	MGS3N1530	15.30	16.00	65.00	48.00	115.00
MGS3N0700	7.00	8.00	41.00	36.00	79.00	MGS3N1540	15.40	16.00	65.00	48.00	115.00
MGS3N0710	7.10	8.00	41.00	36.00	79.00	MGS3N1550	15.50	16.00	65.00	48.00	115.00
MGS3N0720	7.20	8.00	41.00	36.00	79.00	MGS3N1560	15.60	16.00	65.00	48.00	115.00
MGS3N0730	7.30	8.00	41.00	36.00	79.00	MGS3N1570	15.70	16.00	65.00	48.00	115.00
MGS3N0740	7.40	8.00	41.00	36.00	79.00	MGS3N1580	15.80	16.00	65.00	48.00	115.00
MGS3N0750	7.50	8.00	41.00	36.00	79.00	MGS3N1590	15.90	16.00	65.00	48.00	115.00
MGS3N0760	7.60	8.00	41.00	36.00	79.00	MGS3N1600	16.00	16.00	65.00	48.00	115.00
MGS3N0770	7.70	8.00	41.00	36.00	79.00	MGS3N1650	16.50	18.00	73.00	48.00	123.00
MGS3N0780	7.80	8.00	41.00	36.00	79.00	MGS3N1660	16.60	18.00	73.00	48.00	123.00
MGS3N0790	7.90	8.00	41.00	36.00	79.00	MGS3N1670	16.70	18.00	73.00	48.00	123.00
MGS3N0800	8.00	8.00	41.00	36.00	79.00	MGS3N1680	16.80	18.00	73.00	48.00	123.00
MGS3N0810	8.10	10.00	47.00	40.00	89.00	MGS3N1690	16.90	18.00	73.00	48.00	123.00
MGS3N0820	8.20	10.00	47.00	40.00	89.00	MGS3N1700	17.00	18.00	73.00	48.00	123.00
MGS3N0830	8.30	10.00	47.00	40.00	89.00	MGS3N1710	17.10	18.00	73.00	48.00	123.00
MGS3N0840	8.40	10.00	47.00	40.00	89.00	MGS3N1720	17.20	18.00	73.00	48.00	123.00
MGS3N0850	8.50	10.00	47.00	40.00	89.00	MGS3N1730	17.30	18.00	73.00	48.00	123.00
MGS3N0860	8.60	10.00	47.00	40.00	89.00	MGS3N1740	17.40	18.00	73.00	48.00	123.00
MGS3N0870	8.70	10.00	47.00	40.00	89.00	MGS3N1750	17.50	18.00	73.00	48.00	123.00
MGS3N0880	8.80	10.00	47.00	40.00	89.00	MGS3N1760	17.60	18.00	73.00	48.00	123.00
MGS3N0890	8.90	10.00	47.00	40.00	89.00	MGS3N1770	17.70	18.00	73.00	48.00	123.00
MGS3N0900	9.00	10.00	47.00	40.00	89.00	MGS3N1780	17.80	18.00	73.00	48.00	123.00
MGS3N0910	9.10	10.00	47.00	40.00	89.00	MGS3N1790	17.90	18.00	73.00	48.00	123.00
MGS3N0920	9.20	10.00	47.00	40.00	89.00	MGS3N1800	18.00	18.00	73.00	48.00	123.00
MGS3N0930	9.30	10.00	47.00	40.00	89.00	MGS3N1850	18.50	20.00	79.00	50.00	131.00
MGS3N0940	9.40	10.00	47.00	40.00	89.00	MGS3N1860	18.60	20.00	79.00	50.00	131.00
MGS3N0950	9.50	10.00	47.00	40.00	89.00	MGS3N1870	18.70	20.00	79.00	50.00	131.00
MGS3N0960	9.60	10.00	47.00	40.00	89.00	MGS3N1880	18.80	20.00	79.00	50.00	131.00
MGS3N0970	9.70	10.00	47.00	40.00	89.00	MGS3N1890	18.90	20.00	79.00	50.00	131.00
MGS3N0980	9.80	10.00	47.00	40.00	89.00	MGS3N1900	19.00	20.00	79.00	50.00	131.00
MGS3N0990	9.90	10.00	47.00	40.00	89.00	MGS3N1910	19.10	20.00	79.00	50.00	131.00
MGS3N1000	10.00	10.00	47.00	40.00	89.00	MGS3N1920	19.20	20.00	79.00	50.00	131.00
MGS3N1010	10.10	12.00	55.00	45.00	102.00	MGS3N1930	19.30	20.00	79.00	50.00	131.00
MGS3N1020	10.20	12.00	55.00	45.00	102.00	MGS3N1940	19.40	20.00	79.00	50.00	131.00
MGS3N1030	10.30	12.00	55.00	45.00	102.00	MGS3N1950	19.50	20.00	79.00	50.00	131.00
MGS3N1040	10.40	12.00	55.00	45.00	102.00	MGS3N1960	19.60	20.00	79.00	50.00	131.00
MGS3N1050	10.50	12.00	55.00	45.00	102.00	MGS3N1970	19.70	20.00	79.00	50.00	131.00
MGS3N1060	10.60	12.00	55.00	45.00	102.00	MGS3N1980	19.80	20.00	79.00	50.00	131.00
MGS3N1070	10.70	12.00	55.00	45.00	102.00	MGS3N2000	20.00	20.00	79.00	50.00	131.00



GEOMETRICAL HIGHLIGHTS :

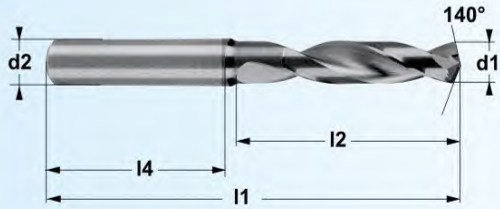
- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.



- Spheroidal cast iron**
Vc 186 m/min
- Brass**
Vc 240 m/min
- < 800 N/mm²**
Vc 132 m/min
- Alu alloys Si <6%**
Vc 276 m/min
- < 1000 N/mm²**
Vc 108 m/min
- < 1300 N/mm²**
Vc 66 m/min
- 12% Cr & Stainless Steel**
Vc 54 m/min
- < 1500 N/mm²**
Vc 48 m/m

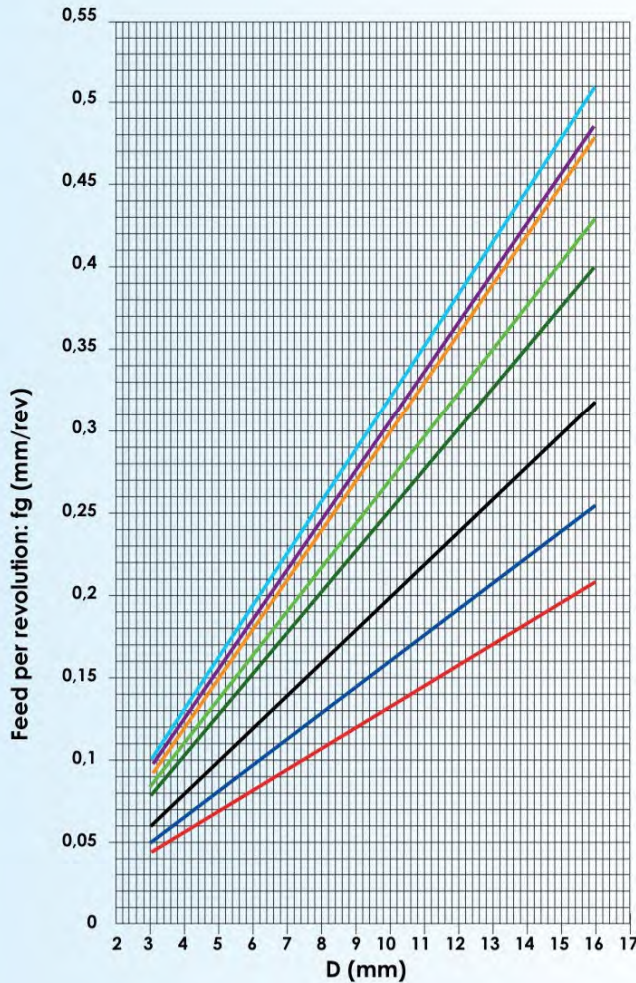
DIN L/D 5
XTREME MEGA
POINT ANGLE 140°
HELIX ANGLE 30°
SHANK
ROTATION RH

MEGA	D1 m7	D2 h6	L2	L4	L1	MEGA	D1 m7	D2 h6	L2	L4	L1
MGLS N0300	3.00	6.00	28.00	36.00	66.00	MGLS N1080	10.80	12.00	71.00	45.00	118.00
MGLS N0310	3.10	6.00	28.00	36.00	66.00	MGLS N1090	10.90	12.00	71.00	45.00	118.00
MGLS N0320	3.20	6.00	28.00	36.00	66.00	MGLS N1100	11.00	12.00	71.00	45.00	118.00
MGLS N0330	3.30	6.00	28.00	36.00	66.00	MGLS N1110	11.10	12.00	71.00	45.00	118.00
MGLS N0340	3.40	6.00	28.00	36.00	66.00	MGLS N1120	11.20	12.00	71.00	45.00	118.00
MGLS N0350	3.50	6.00	28.00	36.00	66.00	MGLS N1130	11.30	12.00	71.00	45.00	118.00
MGLS N0360	3.60	6.00	28.00	36.00	66.00	MGLS N1140	11.40	12.00	71.00	45.00	118.00
MGLS N0370	3.70	6.00	28.00	36.00	66.00	MGLS N1150	11.50	12.00	71.00	45.00	118.00
MGLS N0380	3.80	6.00	36.00	36.00	74.00	MGLS N1160	11.60	12.00	71.00	45.00	118.00
MGLS N0390	3.90	6.00	36.00	36.00	74.00	MGLS N1170	11.70	12.00	71.00	45.00	118.00
MGLS N0400	4.00	6.00	36.00	36.00	74.00	MGLS N1180	11.80	12.00	71.00	45.00	118.00
MGLS N0410	4.10	6.00	36.00	36.00	74.00	MGLS N1190	11.90	12.00	71.00	45.00	118.00
MGLS N0420	4.20	6.00	36.00	36.00	74.00	MGLS N1200	12.00	12.00	71.00	45.00	118.00
MGLS N0430	4.30	6.00	36.00	36.00	74.00	MGLS N1230	12.30	14.00	77.00	45.00	124.00
MGLS N0440	4.40	6.00	36.00	36.00	74.00	MGLS N1240	12.40	14.00	77.00	45.00	124.00
MGLS N0450	4.50	6.00	36.00	36.00	74.00	MGLS N1250	12.50	14.00	77.00	45.00	124.00
MGLS N0460	4.60	6.00	36.00	36.00	74.00	MGLS N1260	12.60	14.00	77.00	45.00	124.00
MGLS N0470	4.70	6.00	36.00	36.00	74.00	MGLS N1270	12.70	14.00	77.00	45.00	124.00
MGLS N0480	4.80	6.00	44.00	36.00	82.00	MGLS N1280	12.80	14.00	77.00	45.00	124.00
MGLS N0490	4.90	6.00	44.00	36.00	82.00	MGLS N1290	12.90	14.00	77.00	45.00	124.00
MGLS N0500	5.00	6.00	44.00	36.00	82.00	MGLS N1300	13.00	14.00	77.00	45.00	124.00
MGLS N0510	5.10	6.00	44.00	36.00	82.00	MGLS N1310	13.10	14.00	77.00	45.00	124.00
MGLS N0520	5.20	6.00	44.00	36.00	82.00	MGLS N1320	13.20	14.00	77.00	45.00	124.00
MGLS N0530	5.30	6.00	44.00	36.00	82.00	MGLS N1330	13.30	14.00	77.00	45.00	124.00
MGLS N0540	5.40	6.00	44.00	36.00	82.00	MGLS N1340	13.40	14.00	77.00	45.00	124.00
MGLS N0550	5.50	6.00	44.00	36.00	82.00	MGLS N1350	13.50	14.00	77.00	45.00	124.00
MGLS N0560	5.60	6.00	44.00	36.00	82.00	MGLS N1360	13.60	14.00	77.00	45.00	124.00
MGLS N0570	5.70	6.00	44.00	36.00	82.00	MGLS N1370	13.70	14.00	77.00	45.00	124.00
MGLS N0580	5.80	6.00	44.00	36.00	82.00	MGLS N1380	13.80	14.00	77.00	45.00	124.00
MGLS N0590	5.90	6.00	44.00	36.00	82.00	MGLS N1390	13.90	14.00	77.00	45.00	124.00
MGLS N0600	6.00	6.00	44.00	36.00	82.00	MGLS N1400	14.00	14.00	77.00	45.00	124.00
MGLS N0610	6.10	8.00	53.00	36.00	91.00	MGLS N1450	14.50	16.00	83.00	48.00	133.00
MGLS N0620	6.20	8.00	53.00	36.00	91.00	MGLS N1460	14.60	16.00	83.00	48.00	133.00
MGLS N0630	6.30	8.00	53.00	36.00	91.00	MGLS N1470	14.70	16.00	83.00	48.00	133.00
MGLS N0640	6.40	8.00	53.00	36.00	91.00	MGLS N1480	14.80	16.00	83.00	48.00	133.00
MGLS N0650	6.50	8.00	53.00	36.00	91.00	MGLS N1490	14.90	16.00	83.00	48.00	133.00
MGLS N0660	6.60	8.00	53.00	36.00	91.00	MGLS N1500	15.00	16.00	83.00	48.00	133.00
MGLS N0670	6.70	8.00	53.00	36.00	91.00	MGLS N1510	15.10	16.00	83.00	48.00	133.00
MGLS N0680	6.80	8.00	53.00	36.00	91.00	MGLS N1520	15.20	16.00	83.00	48.00	133.00
MGLS N0690	6.90	8.00	53.00	36.00	91.00	MGLS N1530	15.30	16.00	83.00	48.00	133.00
MGLS N0700	7.00	8.00	53.00	36.00	91.00	MGLS N1540	15.40	16.00	83.00	48.00	133.00
MGLS N0710	7.10	8.00	53.00	36.00	91.00	MGLS N1550	15.50	16.00	83.00	48.00	133.00
MGLS N0720	7.20	8.00	53.00	36.00	91.00	MGLS N1560	15.60	16.00	83.00	48.00	133.00
MGLS N0730	7.30	8.00	53.00	36.00	91.00	MGLS N1570	15.70	16.00	83.00	48.00	133.00
MGLS N0740	7.40	8.00	53.00	36.00	91.00	MGLS N1580	15.80	16.00	83.00	48.00	133.00
MGLS N0750	7.50	8.00	53.00	36.00	91.00	MGLS N1590	15.90	16.00	83.00	48.00	133.00
MGLS N0760	7.60	8.00	53.00	36.00	91.00	MGLS N1600	16.00	16.00	83.00	48.00	133.00
MGLS N0770	7.70	8.00	53.00	36.00	91.00	MGLS N1650	16.50	18.00	93.00	48.00	143.00
MGLS N0780	7.80	8.00	53.00	36.00	91.00	MGLS N1660	16.60	18.00	93.00	48.00	143.00
MGLS N0790	7.90	8.00	53.00	36.00	91.00	MGLS N1670	16.70	18.00	93.00	48.00	143.00
MGLS N0800	8.00	8.00	53.00	36.00	91.00	MGLS N1680	16.80	18.00	93.00	48.00	143.00
MGLS N0810	8.10	10.00	61.00	40.00	103.00	MGLS N1690	16.90	18.00	93.00	48.00	143.00
MGLS N0820	8.20	10.00	61.00	40.00	103.00	MGLS N1700	17.00	18.00	93.00	48.00	143.00
MGLS N0830	8.30	10.00	61.00	40.00	103.00	MGLS N1710	17.10	18.00	93.00	48.00	143.00
MGLS N0840	8.40	10.00	61.00	40.00	103.00	MGLS N1720	17.20	18.00	93.00	48.00	143.00
MGLS N0850	8.50	10.00	61.00	40.00	103.00	MGLS N1730	17.30	18.00	93.00	48.00	143.00
MGLS N0860	8.60	10.00	61.00	40.00	103.00	MGLS N1740	17.40	18.00	93.00	48.00	143.00
MGLS N0870	8.70	10.00	61.00	40.00	103.00	MGLS N1750	17.50	18.00	93.00	48.00	143.00
MGLS N0880	8.80	10.00	61.00	40.00	103.00	MGLS N1760	17.60	18.00	93.00	48.00	143.00
MGLS N0890	8.90	10.00	61.00	40.00	103.00	MGLS N1770	17.70	18.00	93.00	48.00	143.00
MGLS N0900	9.00	10.00	61.00	40.00	103.00	MGLS N1780	17.80	18.00	93.00	48.00	143.00
MGLS N0910	9.10	10.00	61.00	40.00	103.00	MGLS N1790	17.90	18.00	93.00	48.00	143.00
MGLS N0920	9.20	10.00	61.00	40.00	103.00	MGLS N1800	18.00	18.00	93.00	48.00	143.00
MGLS N0930	9.30	10.00	61.00	40.00	103.00	MGLS N1850	18.50	20.00	101.00	50.00	153.00
MGLS N0940	9.40	10.00	61.00	40.00	103.00	MGLS N1860	18.60	20.00	101.00	50.00	153.00
MGLS N0950	9.50	10.00	61.00	40.00	103.00	MGLS N1870	18.70	20.00	101.00	50.00	153.00
MGLS N0960	9.60	10.00	61.00	40.00	103.00	MGLS N1880	18.80	20.00	101.00	50.00	153.00
MGLS N0970	9.70	10.00	61.00	40.00	103.00	MGLS N1890	18.90	20.00	101.00	50.00	153.00
MGLS N0980	9.80	10.00	61.00	40.00	103.00	MGLS N1900	19.00	20.00	101.00	50.00	153.00
MGLS N0990	9.90	10.00	61.00	40.00	103.00	MGLS N1910	19.10	20.00	101.00	50.00	153.00
MGLS N1000	10.00	10.00	61.00	40.00	103.00	MGLS N1920	19.20	20.00	101.00	50.00	153.00
MGLS N1010	10.10	12.00	71.00	45.00	118.00	MGLS N1930	19.30	20.00	101.00	50.00	153.00
MGLS N1020	10.20	12.00	71.00	45.00	118.00	MGLS N1940	19.40	20.00	101.00	50.00	153.00
MGLS N1030	10.30	12.00	71.00	45.00	118.00	MGLS N1950	19.50	20.00	101.00	50.00	153.00
MGLS N1040	10.40	12.00	71.00	45.00	118.00	MGLS N1960	19.60	20.00	101.00	50.00	153.00
MGLS N1050	10.50	12.00	71.00	45.00	118.00	MGLS N1970	19.70	20.00	101.00	50.00	153.00
MGLS N1060	10.60	12.00	71.00	45.00	118.00	MGLS N1980	19.80	20.00	101.00	50.00	153.00
MGLS N1070	10.70	12.00	71.00	45.00	118.00	MGLS N2000	20.00	20.00	101.00	50.00	153.00



GEOMETRICAL HIGHLIGHTS :

- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.

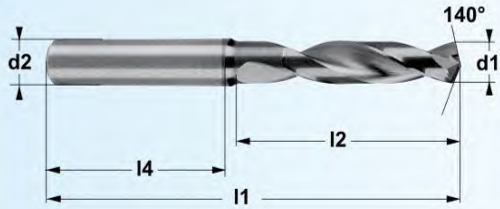


- Alu alloys Si <6%
Vc 300 m/min
- Spheroidal cast iron
Vc 228 m/min
- Brass
Vc 264 m/min
- < 800 N/mm²
Vc 174 m/min
- < 1000 N/mm²
Vc 132 m/min
- < 1300 N/mm²
Vc 90 m/min
- 12% Cr & Stainless Steel
Vc 66 m/min
- < 1500 N/mm²
Vc 54 m/m



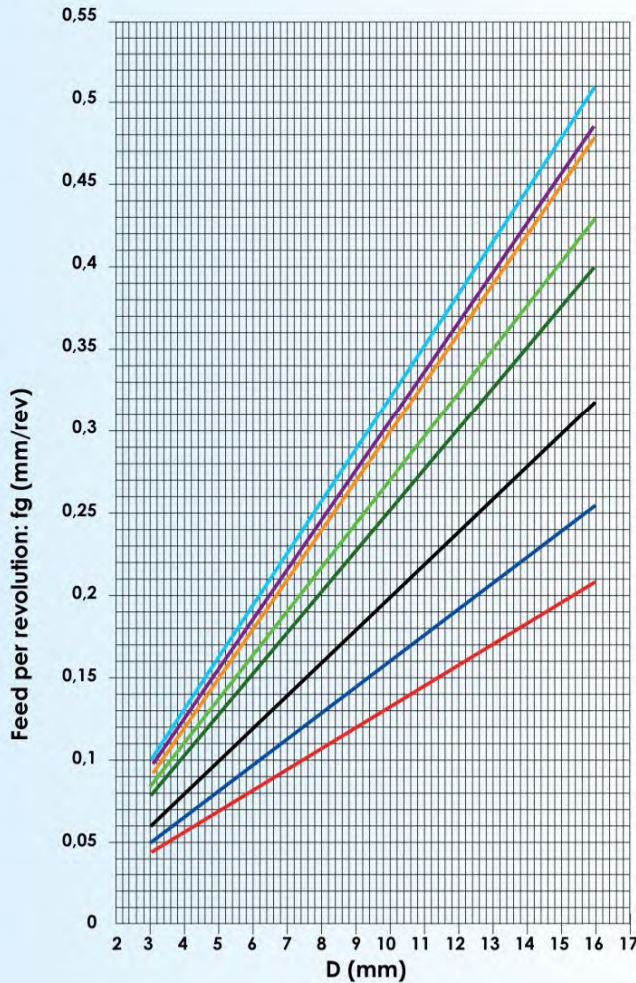
MEGA	D1 m7	D2 h6	L2	L4	L1
MGS3T0300	3.00	6.00	20.00	36.00	62.00
MGS3T0310	3.10	6.00	20.00	36.00	62.00
MGS3T0320	3.20	6.00	20.00	36.00	62.00
MGS3T0330	3.30	6.00	20.00	36.00	62.00
MGS3T0340	3.40	6.00	20.00	36.00	62.00
MGS3T0350	3.50	6.00	20.00	36.00	62.00
MGS3T0360	3.60	6.00	20.00	36.00	62.00
MGS3T0370	3.70	6.00	20.00	36.00	62.00
MGS3T0380	3.80	6.00	24.00	36.00	66.00
MGS3T0390	3.90	6.00	24.00	36.00	66.00
MGS3T0400	4.00	6.00	24.00	36.00	66.00
MGS3T0410	4.10	6.00	24.00	36.00	66.00
MGS3T0420	4.20	6.00	24.00	36.00	66.00
MGS3T0430	4.30	6.00	24.00	36.00	66.00
MGS3T0440	4.40	6.00	24.00	36.00	66.00
MGS3T0450	4.50	6.00	24.00	36.00	66.00
MGS3T0460	4.60	6.00	24.00	36.00	66.00
MGS3T0470	4.70	6.00	24.00	36.00	66.00
MGS3T0480	4.80	6.00	28.00	36.00	66.00
MGS3T0490	4.90	6.00	28.00	36.00	66.00
MGS3T0500	5.00	6.00	28.00	36.00	66.00
MGS3T0510	5.10	6.00	28.00	36.00	66.00
MGS3T0520	5.20	6.00	28.00	36.00	66.00
MGS3T0530	5.30	6.00	28.00	36.00	66.00
MGS3T0540	5.40	6.00	28.00	36.00	66.00
MGS3T0550	5.50	6.00	28.00	36.00	66.00
MGS3T0560	5.60	6.00	28.00	36.00	66.00
MGS3T0570	5.70	6.00	28.00	36.00	66.00
MGS3T0580	5.80	6.00	28.00	36.00	66.00
MGS3T0590	5.90	6.00	28.00	36.00	66.00
MGS3T0600	6.00	6.00	28.00	36.00	66.00
MGS3T0610	6.10	8.00	41.00	36.00	79.00
MGS3T0620	6.20	8.00	41.00	36.00	79.00
MGS3T0630	6.30	8.00	41.00	36.00	79.00
MGS3T0640	6.40	8.00	41.00	36.00	79.00
MGS3T0650	6.50	8.00	41.00	36.00	79.00
MGS3T0660	6.60	8.00	41.00	36.00	79.00
MGS3T0670	6.70	8.00	41.00	36.00	79.00
MGS3T0680	6.80	8.00	41.00	36.00	79.00
MGS3T0690	6.90	8.00	41.00	36.00	79.00
MGS3T0700	7.00	8.00	41.00	36.00	79.00
MGS3T0710	7.10	8.00	41.00	36.00	79.00
MGS3T0720	7.20	8.00	41.00	36.00	79.00
MGS3T0730	7.30	8.00	41.00	36.00	79.00
MGS3T0740	7.40	8.00	41.00	36.00	79.00
MGS3T0750	7.50	8.00	41.00	36.00	79.00
MGS3T0760	7.60	8.00	41.00	36.00	79.00
MGS3T0770	7.70	8.00	41.00	36.00	79.00
MGS3T0780	7.80	8.00	41.00	36.00	79.00
MGS3T0790	7.90	8.00	41.00	36.00	79.00
MGS3T0800	8.00	8.00	41.00	36.00	79.00
MGS3T0810	8.10	10.00	47.00	40.00	89.00
MGS3T0820	8.20	10.00	47.00	40.00	89.00
MGS3T0830	8.30	10.00	47.00	40.00	89.00
MGS3T0840	8.40	10.00	47.00	40.00	89.00
MGS3T0850	8.50	10.00	47.00	40.00	89.00
MGS3T0860	8.60	10.00	47.00	40.00	89.00
MGS3T0870	8.70	10.00	47.00	40.00	89.00
MGS3T0880	8.80	10.00	47.00	40.00	89.00
MGS3T0890	8.90	10.00	47.00	40.00	89.00
MGS3T0900	9.00	10.00	47.00	40.00	89.00
MGS3T0910	9.10	10.00	47.00	40.00	89.00

MEGA	D1 m7	D2 h6	L2	L4	L1
MGS3T0920	9.20	10.00	47.00	40.00	89.00
MGS3T0930	9.30	10.00	47.00	40.00	89.00
MGS3T0940	9.40	10.00	47.00	40.00	89.00
MGS3T0950	9.50	10.00	47.00	40.00	89.00
MGS3T0960	9.60	10.00	47.00	40.00	89.00
MGS3T0970	9.70	10.00	47.00	40.00	89.00
MGS3T0980	9.80	10.00	47.00	40.00	89.00
MGS3T0990	9.90	10.00	47.00	40.00	89.00
MGS3T1000	10.00	10.00	47.00	40.00	89.00
MGS3T1010	10.10	12.00	55.00	45.00	102.00
MGS3T1020	10.20	12.00	55.00	45.00	102.00
MGS3T1030	10.30	12.00	55.00	45.00	102.00
MGS3T1040	10.40	12.00	55.00	45.00	102.00
MGS3T1050	10.50	12.00	55.00	45.00	102.00
MGS3T1060	10.60	12.00	55.00	45.00	102.00
MGS3T1070	10.70	12.00	55.00	45.00	102.00
MGS3T1080	10.80	12.00	55.00	45.00	102.00
MGS3T1090	10.90	12.00	55.00	45.00	102.00
MGS3T1100	11.00	12.00	55.00	45.00	102.00
MGS3T1110	11.10	12.00	55.00	45.00	102.00
MGS3T1120	11.20	12.00	55.00	45.00	102.00
MGS3T1130	11.30	12.00	55.00	45.00	102.00
MGS3T1140	11.40	12.00	55.00	45.00	102.00
MGS3T1150	11.50	12.00	55.00	45.00	102.00
MGS3T1160	11.60	12.00	55.00	45.00	102.00
MGS3T1170	11.70	12.00	55.00	45.00	102.00
MGS3T1180	11.80	12.00	55.00	45.00	102.00
MGS3T1190	11.90	12.00	55.00	45.00	102.00
MGS3T1200	12.00	12.00	55.00	45.00	102.00
MGS3T1230	12.30	14.00	60.00	45.00	107.00
MGS3T1240	12.40	14.00	60.00	45.00	107.00
MGS3T1250	12.50	14.00	60.00	45.00	107.00
MGS3T1260	12.60	14.00	60.00	45.00	107.00
MGS3T1270	12.70	14.00	60.00	45.00	107.00
MGS3T1280	12.80	14.00	60.00	45.00	107.00
MGS3T1290	12.90	14.00	60.00	45.00	107.00
MGS3T1300	13.00	14.00	60.00	45.00	107.00
MGS3T1310	13.10	14.00	60.00	45.00	107.00
MGS3T1320	13.20	14.00	60.00	45.00	107.00
MGS3T1330	13.30	14.00	60.00	45.00	107.00
MGS3T1340	13.40	14.00	60.00	45.00	107.00
MGS3T1350	13.50	14.00	60.00	45.00	107.00
MGS3T1360	13.60	14.00	60.00	45.00	107.00
MGS3T1370	13.70	14.00	60.00	45.00	107.00
MGS3T1380	13.80	14.00	60.00	45.00	107.00
MGS3T1390	13.90	14.00	60.00	45.00	107.00
MGS3T1400	14.00	14.00	60.00	45.00	107.00
MGS3T1450	14.50	16.00	65.00	48.00	115.00
MGS3T1460	14.60	16.00	65.00	48.00	115.00
MGS3T1470	14.70	16.00	65.00	48.00	115.00
MGS3T1480	14.80	16.00	65.00	48.00	115.00
MGS3T1490	14.90	16.00	65.00	48.00	115.00
MGS3T1500	15.00	16.00	65.00	48.00	115.00
MGS3T1510	15.10	16.00	65.00	48.00	115.00
MGS3T1520	15.20	16.00	65.00	48.00	115.00
MGS3T1530	15.30	16.00	65.00	48.00	115.00
MGS3T1540	15.40	16.00	65.00	48.00	115.00
MGS3T1550	15.50	16.00	65.00	48.00	115.00
MGS3T1560	15.60	16.00	65.00	48.00	115.00
MGS3T1570	15.70	16.00	65.00	48.00	115.00
MGS3T1580	15.80	16.00	65.00	48.00	115.00
MGS3T1590	15.90	16.00	65.00	48.00	115.00
MGS3T1600	16.00	16.00	65.00	48.00	115.00



GEOMETRICAL HIGHLIGHTS :

- 140° Face Sharpening.
- Round face gash for an even distribution of the cutting forces.
- Low friction surface finishing.
- Formed flutes for an effective chip evacuation
- Exclusive Edge Honning.



- Alu alloys Si <6%
Vc 300 m/min
- Spheroidal cast iron
Vc 228 m/min
- Brass
Vc 264 m/min
- < 800 N/mm²
Vc 174 m/min
- < 1000 N/mm²
Vc 132 m/min
- < 1300 N/mm²
Vc 90 m/min
- 12% Cr & Stainless Steel
Vc 66 m/min
- < 1500 N/mm²
Vc 54 m/m



MEGA	D1 m7	D2 h6	L2	L4	L1
MGLST0300	3.00	6.00	28.00	36.00	66.00
MGLST0310	3.10	6.00	28.00	36.00	66.00
MGLST0320	3.20	6.00	28.00	36.00	66.00
MGLST0330	3.30	6.00	28.00	36.00	66.00
MGLST0340	3.40	6.00	28.00	36.00	66.00
MGLST0350	3.50	6.00	28.00	36.00	66.00
MGLST0360	3.60	6.00	28.00	36.00	66.00
MGLST0370	3.70	6.00	28.00	36.00	66.00
MGLST0380	3.80	6.00	36.00	36.00	74.00
MGLST0390	3.90	6.00	36.00	36.00	74.00
MGLST0400	4.00	6.00	36.00	36.00	74.00
MGLST0410	4.10	6.00	36.00	36.00	74.00
MGLST0420	4.20	6.00	36.00	36.00	74.00
MGLST0430	4.30	6.00	36.00	36.00	74.00
MGLST0440	4.40	6.00	36.00	36.00	74.00
MGLST0450	4.50	6.00	36.00	36.00	74.00
MGLST0460	4.60	6.00	36.00	36.00	74.00
MGLST0470	4.70	6.00	36.00	36.00	74.00
MGLST0480	4.80	6.00	44.00	36.00	82.00
MGLST0490	4.90	6.00	44.00	36.00	82.00
MGLST0500	5.00	6.00	44.00	36.00	82.00
MGLST0510	5.10	6.00	44.00	36.00	82.00
MGLST0520	5.20	6.00	44.00	36.00	82.00
MGLST0530	5.30	6.00	44.00	36.00	82.00
MGLST0540	5.40	6.00	44.00	36.00	82.00
MGLST0550	5.50	6.00	44.00	36.00	82.00
MGLST0560	5.60	6.00	44.00	36.00	82.00
MGLST0570	5.70	6.00	44.00	36.00	82.00
MGLST0580	5.80	6.00	44.00	36.00	82.00
MGLST0590	5.90	6.00	44.00	36.00	82.00
MGLST0600	6.00	6.00	44.00	36.00	82.00
MGLST0610	6.10	8.00	53.00	36.00	91.00
MGLST0620	6.20	8.00	53.00	36.00	91.00
MGLST0630	6.30	8.00	53.00	36.00	91.00
MGLST0640	6.40	8.00	53.00	36.00	91.00
MGLST0650	6.50	8.00	53.00	36.00	91.00
MGLST0660	6.60	8.00	53.00	36.00	91.00
MGLST0670	6.70	8.00	53.00	36.00	91.00
MGLST0680	6.80	8.00	53.00	36.00	91.00
MGLST0690	6.90	8.00	53.00	36.00	91.00
MGLST0700	7.00	8.00	53.00	36.00	91.00
MGLST0710	7.10	8.00	53.00	36.00	91.00
MGLST0720	7.20	8.00	53.00	36.00	91.00
MGLST0730	7.30	8.00	53.00	36.00	91.00
MGLST0740	7.40	8.00	53.00	36.00	91.00
MGLST0750	7.50	8.00	53.00	36.00	91.00
MGLST0760	7.60	8.00	53.00	36.00	91.00
MGLST0770	7.70	8.00	53.00	36.00	91.00
MGLST0780	7.80	8.00	53.00	36.00	91.00
MGLST0790	7.90	8.00	53.00	36.00	91.00
MGLST0800	8.00	8.00	53.00	36.00	91.00
MGLST0810	8.10	10.00	61.00	40.00	103.00
MGLST0820	8.20	10.00	61.00	40.00	103.00
MGLST0830	8.30	10.00	61.00	40.00	103.00
MGLST0840	8.40	10.00	61.00	40.00	103.00
MGLST0850	8.50	10.00	61.00	40.00	103.00
MGLST0860	8.60	10.00	61.00	40.00	103.00
MGLST0870	8.70	10.00	61.00	40.00	103.00
MGLST0880	8.80	10.00	61.00	40.00	103.00
MGLST0890	8.90	10.00	61.00	40.00	103.00
MGLST0900	9.00	10.00	61.00	40.00	103.00
MGLST0910	9.10	10.00	61.00	40.00	103.00

MEGA	D1 m7	D2 h6	L2	L4	L1
MGLST0920	9.20	10.00	61.00	40.00	103.00
MGLST0930	9.30	10.00	61.00	40.00	103.00
MGLST0940	9.40	10.00	61.00	40.00	103.00
MGLST0950	9.50	10.00	61.00	40.00	103.00
MGLST0960	9.60	10.00	61.00	40.00	103.00
MGLST0970	9.70	10.00	61.00	40.00	103.00
MGLST0980	9.80	10.00	61.00	40.00	103.00
MGLST0990	9.90	10.00	61.00	40.00	103.00
MGLST1000	10.00	10.00	61.00	40.00	103.00
MGLST1010	10.10	12.00	71.00	45.00	118.00
MGLST1020	10.20	12.00	71.00	45.00	118.00
MGLST1030	10.30	12.00	71.00	45.00	118.00
MGLST1040	10.40	12.00	71.00	45.00	118.00
MGLST1050	10.50	12.00	71.00	45.00	118.00
MGLST1060	10.60	12.00	71.00	45.00	118.00
MGLST1070	10.70	12.00	71.00	45.00	118.00
MGLST1080	10.80	12.00	71.00	45.00	118.00
MGLST1090	10.90	12.00	71.00	45.00	118.00
MGLST1100	11.00	12.00	71.00	45.00	118.00
MGLST1110	11.10	12.00	71.00	45.00	118.00
MGLST1120	11.20	12.00	71.00	45.00	118.00
MGLST1130	11.30	12.00	71.00	45.00	118.00
MGLST1140	11.40	12.00	71.00	45.00	118.00
MGLST1150	11.50	12.00	71.00	45.00	118.00
MGLST1160	11.60	12.00	71.00	45.00	118.00
MGLST1170	11.70	12.00	71.00	45.00	118.00
MGLST1180	11.80	12.00	71.00	45.00	118.00
MGLST1190	11.90	12.00	71.00	45.00	118.00
MGLST1200	12.00	12.00	71.00	45.00	118.00
MGLST1230	12.30	14.00	77.00	45.00	124.00
MGLST1240	12.40	14.00	77.00	45.00	124.00
MGLST1250	12.50	14.00	77.00	45.00	124.00
MGLST1260	12.60	14.00	77.00	45.00	124.00
MGLST1270	12.70	14.00	77.00	45.00	124.00
MGLST1280	12.80	14.00	77.00	45.00	124.00
MGLST1290	12.90	14.00	77.00	45.00	124.00
MGLST1300	13.00	14.00	77.00	45.00	124.00
MGLST1310	13.10	14.00	77.00	45.00	124.00
MGLST1320	13.20	14.00	77.00	45.00	124.00
MGLST1330	13.30	14.00	77.00	45.00	124.00
MGLST1340	13.40	14.00	77.00	45.00	124.00
MGLST1350	13.50	14.00	77.00	45.00	124.00
MGLST1360	13.60	14.00	77.00	45.00	124.00
MGLST1370	13.70	14.00	77.00	45.00	124.00
MGLST1380	13.80	14.00	77.00	45.00	124.00
MGLST1390	13.90	14.00	77.00	45.00	124.00
MGLST1400	14.00	14.00	77.00	45.00	124.00
MGLST1450	14.50	16.00	83.00	48.00	133.00
MGLST1460	14.60	16.00	83.00	48.00	133.00
MGLST1470	14.70	16.00	83.00	48.00	133.00
MGLST1480	14.80	16.00	83.00	48.00	133.00
MGLST1490	14.90	16.00	83.00	48.00	133.00
MGLST1500	15.00	16.00	83.00	48.00	133.00
MGLST1510	15.10	16.00	83.00	48.00	133.00
MGLST1520	15.20	16.00	83.00	48.00	133.00
MGLST1530	15.30	16.00	83.00	48.00	133.00
MGLST1540	15.40	16.00	83.00	48.00	133.00
MGLST1550	15.50	16.00	83.00	48.00	133.00
MGLST1560	15.60	16.00	83.00	48.00	133.00
MGLST1570	15.70	16.00	83.00	48.00	133.00
MGLST1580	15.80	16.00	83.00	48.00	133.00
MGLST1590	15.90	16.00	83.00	48.00	133.00
MGLST1600	16.00	16.00	83.00	48.00	133.00

SOLID CARBIDE ENDMILL SHORT LENGTH

Solid Carbide 2-Flute End Mill



DIA	TOLERANCE
$\phi < 1$	-0 -0.015
$1 < \phi < 3$	-0 -0.02
$3 < \phi < 12$	-0 -0.25
$12 < \phi$	-0 -0.03

Solid Carbide 4-Flute End Mill



DIA	TOLERANCE
$\phi < 1$	-0 -0.015
$1 < \phi < 3$	-0 -0.02
$3 < \phi < 12$	-0 -0.25
$12 < \phi$	-0 -0.03

Cutting Condition / Square End Mills

Reference		Slottting / Finishing															
		ENDMILL 2 Flute & 4 Flute $A_p = 0.1 \times d$ $A_e = 1.0 \times d$ fz feed (mm/tooth) by diameter V_c (m/min)															
		3	4	5	6	8	10	12	16	3	4	5	6	8	10	12	16
P	Rm < 850	120	0.011	0.016	0.021	0.025	0.030	0.040	0.047	0.056							
	Rm < 1100	105	0.011	0.014	0.019	0.024	0.028	0.036	0.043	0.052							
	Rm < 1300	80	0.009	0.013	0.017	0.021	0.025	0.033	0.039	0.047							
M	Stainless Steels	55	0.009	0.013	0.017	0.024	0.024	0.031	0.037	0.045							
K	Cast Iron	112	0.011	0.016	0.021	0.030	0.030	0.040	0.047	0.056							
N	Copper	140	0.011	0.016	0.021	0.030	0.030	0.040	0.047	0.056							
S	Titanium alloys	44	0.009	0.013	0.017	0.024	0.024	0.031	0.037	0.045							
	Inconel 718	23	0.009	0.013	0.017	0.024	0.024	0.031	0.037	0.045							

Cutting Condition / Square End Mills

Reference		Side milling / Roughing															
		ENDMILL 2 Flute & 4 Flute $A_p = 0.02 \times d$ $A_e = 1.0 \times d$ fz feed (mm/tooth) by diameter V_c (m/min)															
		3	4	5	6	8	10	12	16	3	4	5	6	8	10	12	16
P	Rm < 850	140	0.013	0.018	0.024	0.029	0.035	0.045	0.054	0.065							
	Rm < 1100	125	0.012	0.017	0.022	0.027	0.032	0.042	0.049	0.059							
	Rm < 1300	92	0.011	0.015	0.020	0.024	0.028	0.037	0.045	0.054							
H	HRC < 52	57	0.008	0.012	0.016	0.019	0.023	0.030	0.035	0.042							
M	Stainless Steels	65	0.011	0.014	0.018	0.023	0.027	0.036	0.042	0.051							
K	Cast Iron	130	0.013	0.018	0.024	0.029	0.035	0.045	0.054	0.065							
N	Copper	165	0.013	0.018	0.024	0.029	0.035	0.045	0.054	0.065							
S	Titanium alloys	53	0.011	0.014	0.018	0.023	0.027	0.036	0.042	0.051							
	Inconel 718	28	0.011	0.014	0.018	0.023	0.027	0.036	0.042	0.051							

Reference		Side milling / Pre-Finishing															
		ENDMILL 2 Flute & 4 Flute $A_p = 1.0 \times d$ $A_e = 0.2 \times d$ fz feed (mm/tooth) by diameter V_c (m/min)															
		3	4	5	6	8	10	12	16	3	4	5	6	8	10	12	16
P	Rm < 850	130	0.011	0.015	0.020	0.024	0.029	0.038	0.046	0.055							
	Rm < 1100	115	0.010	0.014	0.018	0.023	0.027	0.035	0.042	0.050							
	Rm < 1300	88	0.009	0.013	0.017	0.021	0.024	0.032	0.038	0.046							
M	Stainless Steels	72	0.008	0.012	0.016	0.020	0.023	0.030	0.036	0.043							
K	Cast Iron	145	0.011	0.015	0.020	0.024	0.029	0.038	0.046	0.055							
N	Copper	180	0.011	0.015	0.020	0.024	0.029	0.038	0.046	0.055							
S	Titanium alloys	92	0.008	0.012	0.016	0.020	0.023	0.030	0.036	0.043							
	Inconel 718	33	0.008	0.012	0.016	0.020	0.023	0.030	0.036	0.043							

Reference		Side milling / Finishing															
		ENDMILL 2 Flute & 4 Flute $A_p = 1.0 \times d$ $A_e = 0.2 \times d$ fz feed (mm/tooth) by diameter V_c (m/min)															
		3	4	5	6	8	10	12	16	3	4	5	6	8	10	12	16
P	Rm < 850	150	0.014	0.019	0.025	0.030	0.036	0.047	0.056	0.068							
	Rm < 1100	130	0.012	0.017	0.023	0.028	0.033	0.043	0.052	0.062							
	Rm < 1300	88	0.011	0.016	0.021	0.025	0.030	0.040	0.047	0.056							
M	Stainless Steels	84	0.011	0.015	0.020	0.024	0.029	0.037	0.045	0.054							
K	Cast Iron	165	0.014	0.019	0.025	0.030	0.036	0.047	0.056	0.068							
N	Copper	210	0.014	0.019	0.025	0.030	0.036	0.047	0.056	0.068							
S	Titanium alloys	110	0.011	0.015	0.020	0.024	0.029	0.037	0.045	0.054							
	Inconel 718	40	0.011	0.015	0.020	0.024	0.029	0.037	0.045	0.054							

Reference		Slottting / Pre-Finishing															
		ENDMILL 2 Flute & 4 Flute $A_p = 1.0 \times d$ $A_e = 0.2 \times d$ fz feed (mm/tooth) by diameter V_c (m/min)															
		3	4	5	6	8	10	12	16	3	4	5	6	8	10	12	16
P	Rm < 850	150	0.021	0.029	0.037	0.046	0.054	0.071	0.085	0.102							
	Rm < 1100	150	0.019	0.027	0.034	0.042	0.050	0.065	0.078	0.093							
	Rm < 1300	150	0.017	0.024	0.031	0.038	0.045	0.059	0.071	0.084							
H	HRC < 52	85	0.013	0.019	0.024	0.030	0.035	0.046	0.055	0.066							
M	Stainless Steels	88	0.016	0.023	0.030	0.036	0.043	0.056	0.067	0.081							
K	Cast Iron	165	0.021	0.029	0.037	0.046	0.054	0.071	0.085	0.102							
N	Copper	210	0.021	0.029	0.037	0.046	0.054	0.071	0.085	0.102							
S	Titanium alloys	128	0.016	0.023	0.030	0.036	0.043	0.056	0.067	0.081							
	Inconel 718	46	0.016	0.023	0.030	0.036	0.043	0.056	0.067	0.081							

SOLID CARBIDE END MILLS - SHORT LENGTH					
EDP No. EM	EM	Dia (mm)	Shank Dia (mm)	Flute Length (mm)	OAL (mm)
EM352	EM354	3	3	10	39
EM452	EM454	4	4	14	50
EM552	EM554	5	5	16	50
EM652	EM654	6	6	19	63
EM752	EM754	7	7	19	63
EM852	EM854	8	8	20	63
EM952	EM954	9	9	20	70
EM1052	EM1054	10	10	25	75
EM1152	EM1154	11	11	25	75
EM1252	EM1254	12	12	25	75
EM1452	EM1454	14	14	30	90
EM1652	EM1654	16	16	32	90
EM1852	EM1854	18	18.0	35	100
EM2052	EM2054	20	20	38	100
EM2252	EM2254	22	22.0	38	100
EM2552	EM2554	25	25.0	38	100

SOLID CARBIDE BALLNOSE SHORT LENGTH

Solid Carbide 2-Flute Ball End Mill



DIA	TOLERANCE
R	± 0.01

Solid Carbide 4-Flute Ball End Mill



DIA	TOLERANCE
R	± 0.01

Cutting Condition / Ballnose End Mills

U		Z-Leveling / Pre-Finishing												
		BALLNOSE 2 Flute & 4 Flute												
		P			H		M		K					
		Rm < 850	Rm < 1100	Rm < 1300	HRC < 52									
Ap		0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	
Ae		0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	
Vc		230	200	180	115	102	192							
d	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf
R1.5	17200	2060	14900	1639	13900	1357	11700	1076	7600	720	14300	1710		
R2.0	12800	2060	11200	1653	10400	1349	8800	1085	5600	720	10600	1710		
R2.5	11700	2340	10200	1866	9500	1645	8000	1193	5100	810	9700	1842		
R3.0	9800	2440	8500	1950	7900	1716	6700	1250	4300	850	8100	2025		
R4.0	7300	2192	6300	1744	5900	1540	5000	1130	3200	760	6100	1819		
R5.0	5900	1998	5100	1590	4700	1392	4000	1024	2600	690	4900	1658		
R6.0	4900	1913	4200	1509	3900	1338	3300	964	2200	660	4100	1588		

U		Copy-Milling / Finishing											
		BALLNOSE 2 Flute & 4 Flute											
		P			H		M		K				
		Rm < 850	Rm < 1100	Rm < 1300	HRC < 52								
Ap		0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d	0.02 x d
Ae		0.02 x d	0.02 x d	0									

SOLID CARBIDE ENDMILL LONG LENGTH

Solid Carbide 2-Flute End Mill



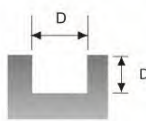
DIA	TOLERANCE
$\phi < 1$	$-0 - -0.015$
$1 < \phi < 3$	$-0 - -0.02$
$3 < \phi < 12$	$-0 - -0.25$
$12 < \phi$	$-0 - -0.63$

Solid Carbide 4-Flute End Mill

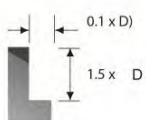


DIA	TOLERANCE
$\phi < 1$	$-0 - -0.015$
$1 < \phi < 3$	$-0 - -0.02$
$3 < \phi < 12$	$-0 - -0.25$
$12 < \phi$	$-0 - -0.63$

ENDMILL 2 Flute Cutting Data												
Material	Aluminium		Cast Iron		Medium Carbon steels Mild Steel		Prehardened Stainless, Die & Alloy Steel		Prehardened Stainless, Die & Alloy Steel		(50-60HRC) Hardened Steels	
	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
DIA	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
0.3	98000	180	32000	100	30000	35	22000	18	21000	13	17000	7
0.5	62000	200	23000	125	19000	40	13000	20	12000	15	9500	8
0.8	40000	200	16000	125	14000	65	8000	25	8000	15	6000	8
1	32000	200	14000	140	13000	75	7500	30	7000	15	4800	8
1.5	22000	200	10000	150	8500	90	6500	35	5000	20	3200	11
2	16000	300	7000	160	6300	100	5000	60	4000	30	2400	16
3	12000	300	5000	160	4300	100	3200	80	2600	30	1600	16
4	8000	300	4000	160	3200	100	2400	80	2000	30	1200	16
5	6500	300	3000	200	2500	100	2000	80	1600	30	1000	16
6	5300	300	2500	235	2200	100	1600	80	1300	30	800	16
8	4000	300	2000	235	1600	100	1200	80	1000	30	600	16
10	3200	300	1500	235	1300	100	1000	80	800	30	500	16
12	2700	300	1200	235	1100	100	800	80	700	30	400	16
16	2000	300	900	235	800	100	700	85	500	38	300	12
20	1600	300	700	235	600	100	500	85	400	38	300	10
25	1300	300	600	235	500	100	400	85	300	37	200	8



ENDMILL 4 Flute Cutting Data												
Material	Aluminium		Cast Iron		Medium Carbon steels Mild Steel		Prehardened Stainless, Die & Alloy Steel		Prehardened Stainless, Die & Alloy Steel		(50-60HRC) Hardened Steels	
	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
DIA	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
1	32000	450	14000	175	11000	85	8000	60	8000	35	4800	14
1.5	22000	450	10000	175	7500	85	5300	60	5500	35	3200	14
2	16000	450	7000	250	5500	85	4000	60	4000	35	2400	14
3	12000	450	5000	300	4500	150	3500	120	3100	45	1600	25
4	10000	475	3500	300	3500	175	2700	120	2300	45	1200	25
5	7500	475	2800	300	2800	200	2100	125	1900	45	1000	25
6	6300	475	2500	300	2400	200	1700	125	1600	45	800	25
8	5000	500	1800	300	1800	200	1300	125	1200	45	600	25
10	4000	500	1400	315	1400	225	1000	125	1000	45	500	25
12	3000	560	1200	315	1200	225	900	125	800	45	400	25
16	2300	560	900	375	900	250	700	140	600	45	300	25
20	1900	560	700	375	700	250	500	150	500	45	300	25
25	1500	500	600	375	600	250	400	140	400	35	200	20



SOLID CARBIDE END MILLS - LONG LENGTH					
EDP No	Dia (mm)	Shank Dia (mm)	Flute Length (mm)	OAL (mm)	
EM3L2	EM3L4	3	3	25	75
EM4L2	EM4L4	4	4	25	75
EM5L2	EM5L4	5	5	28	75
EM6L2	EM6L4	6	6	28	75
EM8L2	EM8L4	8	8	29	75
EM10L2	EM10L4	10	10	45	100
EM12L2	EM12L4	12	12	51	100
EM12LL2	EM12LL4	12	12	75	150
EM14L2	EM14L4	14	14	75	150
EM16L2	EM16L4	16	16	75	150
EM18L2	EM18L4	18	18	75	150
EM20L2	EM20L4	20	20	75	150



SOLID CARBIDE BALLNOSE LONG LENGTH

Solid Carbide 2-Flute Ball End Mill



DIA	TOLERANCE
R	± 0.01

Solid Carbide 2-Flute Ball End Mill



DIA	TOLERANCE
R	± 0.01

Cutting Condition / Ballnose End Mills

U	Z-Leveling / Pre-Finishing BALLNOSE 2 Flute & 4 Flute											
	P			H		M		K				
Ap	0.02 x d			0.02 x d		0.02 x d		0.02 x d				
Ae	0.02 x d			0.02 x d		0.02 x d		0.02 x d				
Vc	230			200		180		115				
d	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf		
R1.5	17200	2060	14900	1639	13900	1357	11700	1076	7600	720	14300	1710
R2.0	12800	2060	11200	1653	10400	1349	8800	1085	5600	720	10600	1710
R2.5	11700	2340	10200	1866	9500	1645	8000	1193	5100	810	9700	1942
R3.0	9800	2440	8500	1950	7900	1716	6700	1250	4300	850	8100	2025
R4.0	7300	2192	6300	1744	5900	1540	5000	1130	3200	760	6100	1819
R5.0	5900	1998	5100	1590	4700	1392	4000	1024	2600	690	4900	1658
R6.0	4900	1913	4200	1509	3900	1338	3300	964	2200	660	4100	1588

U	Copy-Milling / Finishing BALLNOSE 2 Flute & 4 Flute											
	P			H		M		K				
Ap	0.02 x d			0.02 x d		0.02 x d		0.02 x d				
Ae	0.02 x d			0.02 x d		0.02 x d		0.02 x d				
Vc	230			200		180		115				
d	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf		
R1.5	24500	2100	21000	1690	19000	1410	12200	740	10800	730	20300	1740
R2.0	18400	2610	15600	2060	14200	1770	9100	910	8100	910	15300	2170
R2.5	14600	2310	12600	1840	11400	1570	7400	810	6400	800	12100	1920
R3.0	12200	2100	10600	1670	9500	1430	6200	740	5400	730	10100	1740
R4.0	9100	1830	7800	1450	7100	1240	4600	650	4000	640	7600	1520
R5.0	7400	1620	6300	1280	5700	1100	3700	560	3300	560	6100	1340
R6.0	6200	1560	5300	1250	4700	1060	3000	550	2700	550	5100	1310

Remark : For long series, Cutting condition reduce accordingly by 50%.

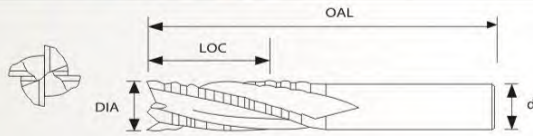
SOLID CARBIDE BALL NOSE - LONG LENGTH					
EDP No	Dia (mm)	Shank Dia (mm)	Flute Length (mm)	OAL (mm)	
BN3L2	BN3L4	3	3	25	75
BN4L2	BN4L4	4	4	25	75
BN5L2	BN5L4	5	5	28	75
BN6L2	BN6L4	6	6	28	75
BN8L2	BN8L4	8	8	29	75
BN10L2	BN10L4	10	10	45	100
BN12L2	BN12L4	12	12	51	100
BN12LL2	BN12LL4	12	12	75	150
BN14L2	BN14L4	14	14	75	150
BN16L2	BN16L4	16	16	75	150
BN18L2	BN18L4	18	18	75	150
BN20L2	BN20L4	20	20	75	150



SOLID CARBIDE ROUGHING ENDMILL



DIA	TOLERANCE
$\phi < 1$	-0 - -0.015
$1 < \phi < 3$	-0 - -0.02
$1 < \phi < 12$	-0 - -0.25
$12 < \phi$	-0 - -0.03



Steel <800 N/mm ²				Steel <1000 N/mm ²				Steel <1300 N/mm ²											
1.00 D		2.00 D		1.00 D		2.00 D		1.00 D		2.00 D									
m/min	Vc	F	n	m/min	Vc	F	n	m/min	Vc	F	n								
D	z	fz	F	n	fz	F	n	fz	F	n	fz	F	n						
mm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm				
3	3	0.016	730	15300	0.017	940	18400	0.016	600	12400	0.017	760	14900	0.013	360	9500	0.013	450	11500
4	3	0.021	720	11500	0.023	950	13800	0.021	590	9300	0.023	770	11100	0.016	340	7200	0.017	440	8600
5	3	0.028	770	9200	0.031	1020	11000	0.028	620	7400	0.031	830	8900	0.021	360	5700	0.023	480	6900
6	4	0.024	730	7600	0.026	960	9200	0.024	600	6200	0.026	770	7400	0.018	350	4800	0.020	460	5700
8	4	0.032	730	5700	0.035	970	6900	0.032	600	4700	0.035	780	5600	0.024	350	3600	0.026	450	4300
10	4	0.035	640	4600	0.040	880	5500	0.035	520	3700	0.040	720	4500	0.026	300	2900	0.030	410	3400
12	4	0.044	670	3800	0.048	880	4600	0.044	550	3100	0.048	710	3700	0.033	320	2400	0.036	420	2900
14	4	0.048	630	3300	0.052	810	3900	0.048	520	2700	0.052	670	3200	0.036	290	2000	0.039	390	2500
16	4	0.052	600	2900	0.057	780	3400	0.052	480	2300	0.057	640	2800	0.039	280	1800	0.043	360	2100
20	4	0.059	540	2300	0.065	730	2800	0.059	450	1900	0.065	570	2200	0.044	250	1400	0.049	330	1700

12% Cr				Inox Ferritico				Inox Austenitico											
1.00 D		2.00 D		1.00 D		2.00 D		1.00 D		2.00 D									
m/min	Vc	F	n	m/min	Vc	F	n	m/min	Vc	F	n								
D	z	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> </td></td></td>	n	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> </td></td>	n	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> </td>	n	fz	F <td>n</td>	n						
mm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm				
3	3	0.012	170	4800	0.013	220	5700	0.010	180	6400	0.013	290	7400	0.009	140	5300	0.013	250	6400
4	3	0.016	170	3600	0.017	220	4300	0.012	170	4800	0.017	290	5600	0.012	140	4000	0.017	240	4800
5	3	0.021	180	2900	0.023	230	3400	0.016	180	3800	0.023	310	4500	0.016	150	3200	0.023	260	3800
6	4	0.018	170	2400	0.020	230	2900	0.014	170	3200	0.020	300	3700	0.014	150	2700	0.020	260	3200
8	4	0.024	170	1800	0.026	220	2100	0.018	170	2400	0.026	290	2800	0.018	140	2000	0.026	250	2400
10	4	0.026	150	1400	0.030	200	1700	0.020	150	1900	0.030	260	2200	0.020	130	1600	0.030	230	1900
12	4	0.033	160	1200	0.036	200	1400	0.025	160	1600	0.036	270	1900	0.025	130	1300	0.036	230	1600
14	4	0.036	140	1000	0.039	190	1200	0.027	150	1400	0.039	250	1600	0.027	120	1100	0.039	220	1400
16	4	0.039	140	900	0.043	190	1100	0.029	140	1200	0.043	240	1400	0.029	120	1000	0.043	210	1200
20	4	0.044	120	700	0.049	180	900	0.033	130	1000	0.049	220	1100	0.033	110	800	0.049	200	1000

Titanio				PH / Duplex									
1.00 D		2.00 D		1.00 D		2.00 D							
m/min	Vc	F	n	m/min	Vc	F	n						
D	z	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> </td>	n	fz	F <td>n</td>	n						
mm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm				
3	3	0.009	110	4200	0.009	140	5300	0.009	110	4200	0.009	140	5300
4	3	0.012	110	3200	0.012	140	4000	0.012	110	3200	0.012	140	4000
5	3	0.016	120	2500	0.016	150	3200	0.016	120	2500	0.016	150	3200
6	4	0.014	110	2100	0.014	150	2700	0.014	110	2100	0.014	150	2700
8	4	0.018	120	1600	0.018	140	2000	0.018	120	1600	0.018	140	2000
10	4	0.020	100	1300	0.020	130	1600	0.020	100	1300	0.020	130	1600
12	4	0.025	110	1100	0.025	130	1300	0.025	110	1100	0.025	130	1300
14	4	0.027	100	900	0.027	120	1100	0.027	100	900	0.027	120	1100
16	4	0.029	90	800	0.029	120	1000	0.029	90	800	0.029	120	1000
20	4	0.033	80	600	0.033	110	800	0.033	80	600	0.033	110	800

SOLID CARBIDE ROUGHING END MILLS					
EDP No	Dia	Shank Dia	Flute Length	OAL	
EM_24	EM_26	(mm)	(mm)	(mm)	
		h8	h6		
RHEM354	RHEM356	3	6	6	57
RHEM454	RHEM456	4	6	8	57
RHEM554	RHEM556	5	6	10	57
RHEM654	RHEM656	6	6	9	57
RHEM6L4	RHEM6L6	6	6	15	57
RHEM854	RHEM856	8	8	12	63
RHEM8L4	RHEM8L6	8	8	20	63
RHEM1054	RHEM1056	10	10	15	72
RHEM10L4	RHEM10L6	10	10	25	72
RHEM1254	RHEM1256	12	12	18	83
RHEM12L4	RHEM12L6	12	12	30	83
RHEM1454	RHEM1456	14	14	35	92
RHEM1654	RHEM1656	16	16	40	104
RHEM16L4	RHEM16L6	16	16	40	104
RHEM2054	RHEM2056	20	20	40	104
RHEM20L4	RHEM20L6	20	20	60	134

Roughing end mills with chip breaker

- MG Co10
- Z3 Z4 Z6
- Silmax Norm
- λ 38° λ 40°
- 45°

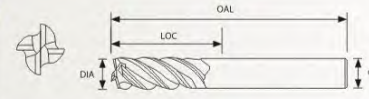
Roughing end mills with chip breaker

- MG Co10
- Z3 Z4
- Silmax Norm
- λ 38° λ 40°
- 45°

SOLID CARBIDE VHT ENDMILL SERIES



DIA	TOLERANCE
$\phi < 1$	-0 - -0.015
$1 < \phi < 3$	-0 - -0.02
$1 < \phi < 12$	-0 - -0.25
$12 < \phi$	-0 - -0.03



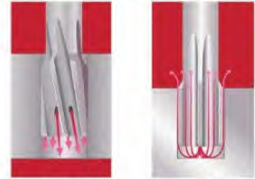
Eliche differenziate $\lambda \neq \lambda^1$
Unequal helix $\lambda \neq \lambda^1$



Steel <800 N/mm ²						Steel <1000 N/mm ²													
0.50 D		1.00 D		0.10 D		0.25 D		0.50 D		1.00 D									
m/min	Vc	F	n	m/min	Vc	F	n	m/min	Vc	F	n								
D	z	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> </td></td></td>	n	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> </td></td>	n	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> </td>	n	fz	F <td>n</td>	n						
mm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm				
4	0	0.012	530	11100	0.010	450	11100	0.020	1110	13900	0.020	1020	12700	0.012	440	9200	0.010	380	9200
5	0	0.020	710	8900	0.017	610	8900	0.027	1200	11100	0.027	1100	10200	0.020	580	7300	0.017	500	7300
6	0	0.029	860	7400	0.025	730	7400	0.035	1300	9300	0.035	1190	8500	0.029	710	6100	0.025	600	6100
8	0	0.041	920	5600	0.035	780	5600	0.049	1370	7000	0.049	1250	6400	0.041	750	4600	0.035	640	4600
9	0	0.045	900	5000	0.038	770	5000	0.054	1340	6200	0.054	1230	5700	0.045	740	4100	0.038	630	4100
10	0	0.050	900	4500	0.043	770	4500	0.060	1340	5600	0.060	1220	5100	0.050	740	3700	0.043	630	3700
12	0	0.057	840	3700	0.048	720	3700	0.070	1290	4600	0.070	1180	4200	0.057	710	3100	0.048	600	3100
14	0	0.058	740	3200	0.049	630	3200	0.075	1080	4000	0.075	1080	3600	0.058	600	2600	0.049	510	2600
16	0	0.060	670	2800	0.051	570	2800	0.080	1120	3500	0.080	1020	3200	0.060	550	2300	0.051	470	2300
20	0	0.065	570	2200	0.055	490	2200	0.085	950	2800	0.085	850	2500	0.065	470	1800	0.055	400	1800

Steel <1000 N/mm ²						Steel <1300 N/mm ²									
0.10 D		0.25 D		1.00 D		0.50 D		0.10 D		0.25 D					
m/min	Vc	F	n	m/min	Vc	F	n	m/min	Vc	F	n				
D	z	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> </td></td></td>	n	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> <td>fz</td> <td>F <td>n</td> </td></td>	n	fz	F <td>n</td> <td>fz</td> <td>F <td>n</td> </td>	n	fz	F <td>n</td>	n		
mm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm	mm/z	mm/min	rpm
4	0	0.020	890												

HIGH PERFORMANCE SOLID CARBIDE REAMER



Through Hole

Blind Hole

A central channel supplies coolant to the flutes even for very deep holes, resulting in long tool life and good chip removal. Different versions are available for blind holes and through holes.

Application Material Groups

■ Excellent for Application

● Good for Application

Example

30 = Peripheral speed in metres/minute +/- 10% ; D = Feed range

Material Group	Ø mm								
	1,5	2	3	5	8	10	12	16	20
A	0,045	0,055	0,078	0,100	0,150	0,170	0,185	0,220	0,250
B	0,055	0,072	0,110	0,150	0,180	0,210	0,240	0,280	0,310
C	0,065	0,085	0,135	0,185	0,220	0,260	0,285	0,335	0,390
D	0,080	0,110	0,160	0,200	0,270	0,320	0,360	0,410	0,470
E	0,100	0,140	0,180	0,250	0,350	0,390	0,430	0,500	0,530
F	0,140	0,180	0,260	0,350	0,440	0,500	0,550	0,630	0,700

mm/REV ± 15%

HIGH PERFORMANCE SOLID CARBIDE REAMER						
EDP No	D1	D2 h6	L2	L3	L1	Z
RM0397	3.97	6.00	12.00	39.00	75.00	4
RM0398	3.98	6.00	12.00	39.00	75.00	4
RM0399	3.99	6.00	12.00	39.00	75.00	4
RM0400	4.00	6.00	12.00	39.00	75.00	4
RM0401	4.01	6.00	12.00	39.00	75.00	4
RM0402	4.02	6.00	12.00	39.00	75.00	4
RM0403	4.03	6.00	12.00	39.00	75.00	4
RM0450	4.50	6.00	12.00	39.00	75.00	4
RM0497	4.97	6.00	12.00	39.00	75.00	4
RM0498	4.98	6.00	12.00	39.00	75.00	4
RM0499	4.99	6.00	12.00	39.00	75.00	4
RM0500	5.00	6.00	12.00	39.00	75.00	4
RM0501	5.01	6.00	12.00	39.00	75.00	4
RM0502	5.02	6.00	12.00	39.00	75.00	4
RM0503	5.03	6.00	12.00	39.00	75.00	4
RM0550	5.50	6.00	12.00	39.00	75.00	4
RM0597	5.97	6.00	12.00	39.00	75.00	4
RM0598	5.98	6.00	12.00	39.00	75.00	4
RM0599	5.99	6.00	12.00	39.00	75.00	4
RM0600	6.00	6.00	12.00	39.00	75.00	4
RM0601	6.01	6.00	12.00	39.00	75.00	4
RM0602	6.02	6.00	12.00	39.00	75.00	4
RM0603	6.03	6.00	12.00	39.00	75.00	4
RM0650	6.50	8.00	16.00	64.00	100.00	4
RM0700	7.00	8.00	16.00	64.00	100.00	4
RM0750	7.50	8.00	16.00	64.00	100.00	4
RM0797	7.97	8.00	16.00	64.00	100.00	4
RM0798	7.98	8.00	16.00	64.00	100.00	4
RM0799	7.99	8.00	16.00	64.00	100.00	4

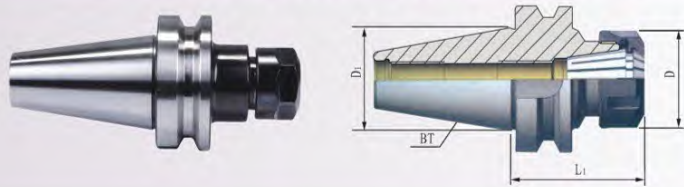
HIGH PERFORMANCE SOLID CARBIDE REAMER						
EDP No	D1	D2 h6	L2	L3	L1	Z
RM0802	8.02	8.00	16.00	64.00	100.00	4
RM0803	8.03	8.00	16.00	64.00	100.00	4
RM0850	8.50	10.00	20.00	80.00	120.00	4
RM0900	9.00	10.00	20.00	80.00	120.00	4
RM0950	9.50	10.00	20.00	80.00	120.00	4
RM0997	9.97	10.00	20.00	80.00	120.00	4
RM0998	9.98	10.00	20.00	80.00	120.00	4
RM0999	9.99	10.00	20.00	80.00	120.00	4
RM1000	10.00	10.00	20.00	80.00	120.00	4
RM1001	10.01	10.00	20.00	80.00	120.00	4
RM1002	10.02	10.00	20.00	80.00	120.00	4
RM1003	10.03	10.00	20.00	80.00	120.00	4
RM1050	10.50	12.00	20.00	75.00	120.00	4
RM1100	11.00	12.00	20.00	75.00	120.00	4
RM1150	11.50	12.00	20.00	75.00	120.00	4
RM1197	11.97	12.00	20.00	75.00	120.00	4
RM1198	11.98	12.00	20.00	75.00	120.00	4
RM1199	11.99	12.00	20.00	75.00	120.00	4
RM1200	12.00	12.00	20.00	75.00	120.00	4
RM1201	12.01	12.00	20.00	75.00	120.00	4
RM1202	12.02	12.00	20.00	75.00	120.00	4
RM1203	12.03	12.00	20.00	75.00	120.00	4
RM1300	13.00	14.00	22.00	85.00	130.00	4
RM1400	14.00	14.00	22.00	85.00	130.00	4
RM1500	15.00	16.00	22.00	82.00	130.00	4
RM1600	16.00	16.00	25.00	102.00	150.00	4
RM1700	17.00	18.00	25.00	102.00	150.00	4
RM1800	18.00	18.00	25.00	102.00	150.00	4
RM1900	19.00	20.00	25.00	100.00	150.00	4

Xtreme Tooling

(An ISO 9001 : 2008 Certified Company)



ER COLLET ADAPTORS



MODEL	D	D1	L1	CLAMPING RANGE
BT40ER16-70	32	44.45	70	0.5 - 10
BT40ER16-100	32	44.45	100	0.5 - 10
BT40ER20-70	35	44.45	70	0.5 - 10
BT40ER20-100	35	44.45	100	0.5 - 10
BT40ER25-70	42	44.45	70	0.5 - 10
BT40ER25-100	42	44.45	100	0.5 - 10
BT40ER32-70	50	44.45	70	0.5 - 10
BT40ER32-100	50	44.45	100	0.5 - 10
BT40ER40-70	63	44.45	70	0.5 - 10
BT40ER40-100	63	44.45	100	0.5 - 10

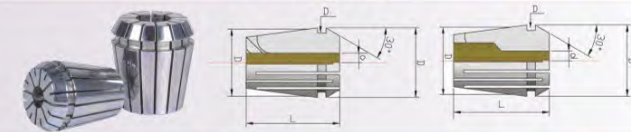
STRAIGHT SHANK COLLET CHUCK



MODEL	ER	C	L1
C16 - ER16 - 70	16	16	70
C16 - ER16 - 100	16	16	100
C20 - ER16 - 70	16	20	70
C20 - ER16 - 100	16	20	100
C20 - ER20 - 70	20	20	70
C20 - ER20 - 100	20	20	100
C20 - ER25 - 70	25	20	70
C20 - ER25 - 100	25	20	100
C25 - ER16 - 100	16	25	100
C25 - ER20 - 100	20	25	100
C25 - ER25 - 100	25	25	100
C25 - ER32 - 100	32	25	100
C32 - ER25 - 100	25	32	100
C32 - ER32 - 100	32	32	100
C32 - ER40 - 100	40	32	100
C40 - ER32 - 100	32	40	100
C40 - ER40 - 100	40	40	100

ER COLLET

DIN 6499B



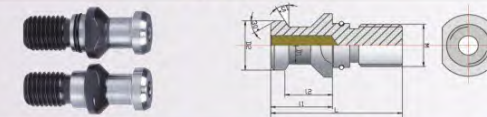
MODEL	d	D	D1	D2	L
ER16	2.5 - 10.0	16	17	13.8	27.5
ER20	2.5 - 13.0	20	21	17.4	31.5
ER25	2.5 - 16.0	25	26	22	34
ER32	2.5 - 20.0	32	33	29.2	40
ER40	3.0 - 25.0	40	41	36.2	46

ER CLAMPING NUT



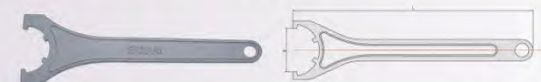
MODEL	D	d1	L
ER16-UM	32	26	17
ER20-UM	35	29	19
ER25-UM	42	36	20
ER32-UM	50	44	22.5
ER40-UM	63	57	25.5

SK PULL STUD



MODEL	D1	D2	M	L	L1
SK-30A	9	13	M12	44	24
SK-40A	14	19	M16	54	26
SK-50A	21	28	M24	74	34

SK PULL STUD



MODEL	B	L	CLAMPING NUT
ER16-UM	26	180	ER16-UM
ER20-UM	30	190	ER20-UM
ER25-UM	37	210	ER25-UM
ER32-UM	46.5	250	ER32-UM
ER40-UM	58	290	ER40-UM

DRILL TROUBLESHOOTING GUIDE

DRILL GUIDANCE



Built-up-edge

- CAUSE**
1. Cutting Speed too low and edge temperature too high
 2. Neg. land to large
 3. No coating
 4. Percentage of oil in the cutting fluid too low

SOLUTION

1. Increase cutting speed or use external cutting fluid
2. Sharper cutting edge.
3. Coating on the edge
4. Increase the percentage of oil in the cutting fluid



Chipping on the edge corner

1. Unstable fixturing
2. TIR to large
3. Intermittent cutting
4. Insufficient cutting fluid (Thermal cracking)
5. Unstable tool holding

1. Check fixture
2. Check radial run - out
3. Decrease the feed
4. Check cutting fluid supply
5. Check the toolholder



Large wear on the cutting edge

1. Cutting speed too high
2. Feed too low
3. Grade too soft
4. Lack of cutting fluid

1. Decrease the cutting speed
2. Increase the feed
3. Change to harder Grade
4. Check for proper cutting fluid supply



Chipping on the cutting edge

1. unstable Conditions
2. maximum allowed wear exceeded
3. Grade too hard

1. Check the set - up
2. Replace drill sooner
3. Change to softer grade



Wear on the circular lands

1. TIR too large
2. Cutting fluid too weak
3. Cutting speed too high
4. Abrasive material

1. Check the radial run - out
2. Use neat oil or stronger emulsion
3. Decrease cutting speed
4. Change to harder grade



Wear on the chisel edge

1. Cutting speed to low
2. Feed too high
3. Chisel edge too small

1. Increase cutting speed
2. Decrease feed
3. Check dimensions



Wear due to plastic deformation

1. Cutting speed or/and feed too high
2. Not enough cutting fluid supply
3. Unsuitable drill / grade

1. Decrease the cutting speed or / and feed
2. Increase cutting fluid pressure
3. Use a harder grade



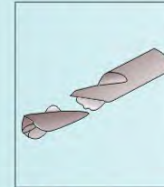
Thermal cracks (notches)

1. Inconsistent cutting fluid

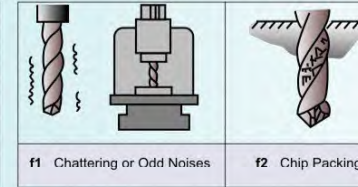
1. Check cutting fluid supply
2. Fill cutting fluid tank

DRILL TROUBLESHOOTING GUIDE

E Breakage



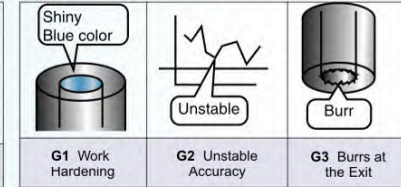
F Trouble During Operation



f1 Chattering or Odd Noises

f2 Chip Packing

G Trouble With Hole Accuracy



G1 Work Hardening

G2 Unstable Accuracy

G3 Burrs at the Exit

• MACHINE A, B, C, E, F1

Is there any excessive vibration or odd noise during operation?

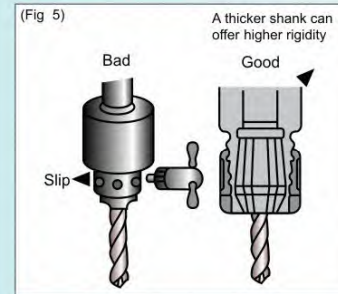
• CHUCKING OF DRILL A, B, C, E, F1

Is the rigidity of the drill chuck enough? (Fig 5)

Is there any dust or scratches inside the drill chuck? (Fig 6)

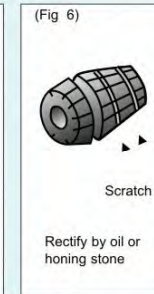
Is the run out of the drill too great when it is held in the drill chuck? (Fig 7)

The drill point should be within 0.001" maximum of the center of the work piece (when the work rotates) (Fig 8)



(Fig 5)

A thicker shank can offer higher rigidity



(Fig 6)

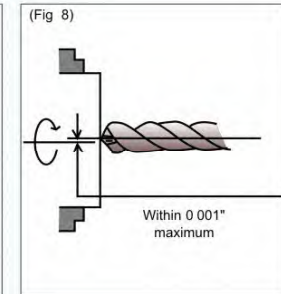
Scratch

Rectify by oil or honing stone



(Fig 7)

Run out within 0.001"

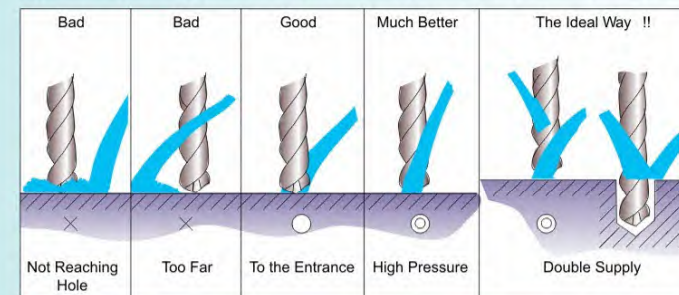


(Fig 8)

Within 0.001" maximum

• CUTTING FLUID A, C, E, G1

Make sure cutting fluid is supplied adequately to the entrance of drill hole



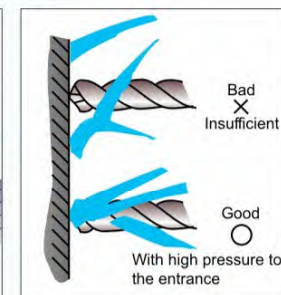
Not Reaching Hole

Too Far

To the Entrance

High Pressure

Double Supply



Bad X Insufficient

Good O

With high pressure to the entrance

DRILL TERMINOLOGY AND CUTTING CHARACTERISTICS

■ DRILLING CHIPS

Types of Chips	Shape	Features and Ease of Raking
Conical Spiral		Fan-shaped chips cut by the cutting edge are curved by the flute. Chips of this type are produced when the feeding rate of ductile material is small. If the chip breaks after several turns, the chip raking performance is satisfactory.
Long Pitch		The generated chip comes out without coiling. It will easily coil around the drill.
Fan		This is a chip broken by the restraint caused by the drill flute and the wall of a drilled hole. It is generated when the feed rate is high.
Segment		A conical spiral chip that is broken before the chip grows into the long-pitch shape by the restraint caused by the wall of the drilled hole due to the insufficiency of ductility. Excellent chip disposal and chip discharge.
Zigzag		A chip that is buckled and folded because of the shape of flute and the characteristics of the material. It easily causes chip packing at the flute.
Needle		Chips broken by vibration or broken when brittle material is curled with a small radius. The raking performance is satisfactory, but these chips can pack closely creating.

DRILL DIAMETERS FOR PREPARED HOLES

Metric Coarse Screw Thread			Metric Fine Screw Thread			Metric Fine Screw Thread		
	Nominal	Carbide		Nominal	Carbide Drill ϕ		Nominal	Carbide Drill ϕ
M1	x0.25	0.75	M1	X0.2	0.8	M14	X1.5	12.7
M1.1	X0.25	0.85	M1.1	X0.2	0.9	M14	X1.0	13.1
M1.2	x0.25	0.95	M1.2	X0.2	1	M15	X1.5	13.7
M1.4	X0.3	1.10	M1.4	X0.2	1.2	M15	X1.0	14.1
M1.6	X0.35	1.30	M1.6	X0.2	1.4	M16	X1.5	14.7
M1.7	X0.35	1.40	M1.8	X0.2	1.6	M16	X1.0	15.1
M1.8	X0.35	1.50	M2	X0.25	1.75	M17	X1.5	15.7
M2	X0.4	1.65	M2.2	X0.25	2	M17	X1.0	16.1
M2.2	X0.45	1.80	M2.5	X0.35	2.2	M18	X2.0	16.3
M2.3	X0.4	1.95	M3	X0.35	2.7	M18	X1.5	16.7
M2.5	X0.45	2.15	M3.5	X0.35	3.2	M18	X1.0	17.1
M2.6	X0.45	2.20	M4	X0.5	3.55	M20	X2.0	18.3
M3	X0.5	2.55	M4.5	X0.5	4.05	M20	X1.5	18.7
M3.5	X0.6	2.95	M5	X0.5	4.55	M20	X1.0	19.1
M4	X0.7	3.40	M5.5	X0.5	5.05			
M4.5	X0.75	3.90	M6	X0.75	5.35			
M5	X0.8	4.30	M7	X0.75	6.35			
M6	X1.0	5.10	M8	X1.0	7.1			
M7	X1.0	6.10	M8	X0.75	7.35			
M8	X1.25	6.90	M9	X1.0	8.1			
M9	X1.25	7.90	M9	X0.75	8.35			
M10	X1.5	8.70	M10	X1.25	8.9			
M11	X1.5	9.70	M10	X1.0	9.1			
M12	X1.75	10.50	M10	X0.75	9.35			
M14	X2.0	12.20	M11	X1.0	10.1			
M16	X2.0	14.20	M11	X0.75	10.3			
M18	X2.5	15.70	M12	X1.5	10.7			
M20	X2.5	17.70	M12	X1.25	10.9			
M22	X2.5	19.70	M12	X1.0	11.1			

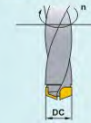
FORMULAE FOR DRILLING

■ CUTTING SPEED (vc)

$$vc = \frac{\pi \cdot DC \cdot n}{1000} \text{ (m/min)}$$

vc (m/min) : Cutting Speed
 π (3.14) : Pi
 DC (mm) : Drill Diameter
 n (min⁻¹) : Main Axis Spindle Speed

*Divide by 1,000 to change to m from mm.



(Problem) What is the cutting speed when main axis spindle speed is 1350min⁻¹ and drill diameter is 12mm ?

(Answer) Substitute $\pi=3.14$, DC=12, n=1350 into the formula

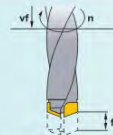
$$vc = \frac{\pi \cdot DC \cdot n}{1000} = \frac{3.14 \times 12 \times 1350}{1000} = 50.9 \text{ m/min}$$

The cutting speed is 50.9m/min.

■ FEED OF THE MAIN SPINDLE (vf)

$$vf = f \cdot n \text{ (mm/min)}$$

vf (mm/min) : Feed Speed of the Main Spindle (Z axis)
 f (mm/rev) : Feed per Revolution
 n (min⁻¹) : Main Axis Spindle Speed



(Problem) What is the spindle feed (vf) when the feed per revolution is 0.2mm/rev and main axis spindle speed is 1350min⁻¹ ?

(Answer) Substitute f=0.2, n=1350 into the formula

$$vf = f \cdot n = 0.2 \times 1350 = 270 \text{ mm/min}$$

The spindle feed is 270mm/min.

■ DRILLING TIME (Tc)

$$Tc = \frac{ld \cdot i}{n \cdot f}$$

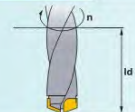
Tc (min) : Drilling Time
 n (min⁻¹) : Spindle Speed
 ld (mm) : Hole Depth
 f (mm/rev) : Feed per Revolution
 i : Number of Holes

(Problem) What is the drilling time required for drilling a 30mm length hole in alloy steel (JIS SCM440) at a cutting speed of 50m/min and a feed 0.15mm/rev ?

(Answer) Spindle Speed $n = \frac{50 \times 1000}{15 \times 3.14} = 1061.57 \text{ min}^{-1}$

$$Tc = \frac{30 \times 1}{1061.57 \times 0.15} = 0.188$$

$$= 0.188 \times 60 \approx 11.3 \text{ sec}$$



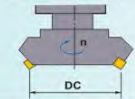
FORMULAE FOR FACE MILLING

■ CUTTING SPEED (vc)

$$vc = \frac{\pi \cdot DC \cdot n}{1000} \text{ (m/min)}$$

vc (m/min) : Cutting Speed
 π (3.14) : Pi
 DC (mm) : Cutter Diameter
 n (min⁻¹) : Main Axis Spindle Speed

*Divide by 1000 to change to m from mm.



(Problem) What is the cutting speed when main axis spindle speed is 350min⁻¹ and the cutter diameter is ϕ 125 ?

(Answer) Substitute $\pi=3.14$, DC=125, n=350 into the formula.

$$vc = \frac{\pi \cdot DC \cdot n}{1000} = \frac{3.14 \times 125 \times 350}{1000} = 137.4 \text{ m/min}$$

The cutting speed is 137.4m/min.

■ FEED PER TOOTH (fz)

$$fz = \frac{vf}{z \cdot n} \text{ (mm/tooth)}$$

fz (mm/tooth) : Feed per Tooth
 vf (mm/min) : Table Feed per Min.
 n (min⁻¹) : Main Axis Spindle Speed (Feed per Revolution $f = z \times fz$)
 z : Insert Number



(Problem) What is the feed per tooth when the main axis spindle speed is 500min⁻¹, number of insert is 10, and table feed is 500mm/min ?

(Answer) Substitute the above figures into the formula.

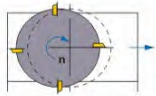
$$fz = \frac{vf}{z \cdot n} = \frac{500}{10 \times 500} = 0.1 \text{ mm/tooth}$$

The answer is 0.1mm/tooth.

■ TABLE FEED (vf)

$$vf = fz \cdot z \cdot n \text{ (mm/min)}$$

vf (mm/min) : Table Feed per Min. **z** : Insert Number
fz (mm/tooth) : Feed per Tooth
n (min⁻¹) : Main Axis Spindle Speed

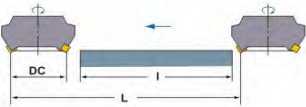


(Problem) What is the table feed when feed per tooth is 0.1mm/tooth, number of insert is 10, and main axis spindle speed is 500min⁻¹?
 (Answer) Substitute the above figures into the formula.
 $vf = fz \times z \times n = 0.1 \times 10 \times 500 = 500 \text{ mm/min}$
 The table feed is 500mm/min.

■ CUTTING TIME (Tc)

$$Tc = \frac{L}{vf} \text{ (min)}$$

Tc (min) : Cutting Time
vf (mm/min) : Table Feed per Min.
L (mm) : Total Table Feed Length (Workpiece Length: (l)+Cutter Diameter : (DC))



(Problem) What is the cutting time required for finishing 100mm width and 300mm length surface of a cast iron (JIS FC200) block when the cutter diameter is $\phi 200$ mm, the number of inserts is 16, the cutting speed is 125m/min, and feed per tooth is 0.25mm. (spindle speed is 200min⁻¹)
 (Answer) Calculate table feed per min $vf = 0.25 \times 16 \times 200 = 800 \text{ mm/min}$
 Calculate total table feed length. $L = 300 + 200 = 500 \text{ mm}$
 Substitute the above answers into the formula.
 $Tc = \frac{500}{800} = 0.625 \text{ (min)}$
 $0.625 \times 60 = 37.5 \text{ (sec)}$. The answer is 37.5 sec.

■ CUTTING POWER (Pc)

$$Pc = \frac{ap \cdot ae \cdot vf \cdot Kc}{60 \times 10^6 \cdot \eta}$$

Pc (kW) : Actual Cutting Power **ap (mm)** : Depth of Cut
ae (mm) : Cutting Width **vf (mm/min)** : Table Feed per Min.
Kc (MPa) : Specific Cutting Force **η** : (Machine Coefficient)

(Problem) What is the cutting power required for milling tool steel at a cutting speed of 80m/min. With depth of cut 2mm, cutting width 80mm, and table feed 280mm/min by $\phi 250$ cutter with 12 inserts. Machine coefficient 80%.
 (Answer) First, calculate the spindle speed in order to obtain feed per tooth.
 $n = \frac{1000vf}{\pi DC} = \frac{1000 \times 80}{\pi \times 250} = 101.91 \text{ min}^{-1}$
 Feed per Tooth $fz = \frac{vf}{z \cdot n} = \frac{280}{12 \times 101.9} = 0.228 \text{ mm/tooth}$
 Substitute the specific cutting force into the formula.
 $Pc = \frac{2 \times 80 \times 280 \times 1800}{60 \times 10^6 \times 0.8} = 1.68 \text{ kW}$

● Kc

Work Material	Tensile Strength (MPa) and Hardness	Specific Cutting Force Kc (MPa)				
		0.1mm/tooth	0.2mm/tooth	0.3mm/tooth	0.4mm/tooth	0.6mm/tooth
Mild Steel	520	2200	1950	1820	1700	1580
Medium Steel	620	1980	1800	1730	1600	1570
Hard Steel	720	2520	2200	2040	1850	1740
Tool Steel	670	1980	1800	1730	1700	1600
Tool Steel	770	2030	1800	1750	1700	1580
Chrome Manganese Steel	770	2300	2000	1880	1750	1660
Chrome Manganese Steel	630	2750	2300	2080	1800	1780
Chrome Molybdenum Steel	730	2540	2250	2140	2000	1800
Chrome Molybdenum Steel	600	2180	2000	1860	1800	1670
Nickel Chrome Molybdenum Steel	940	2000	1800	1680	1600	1500
Nickel Chrome Molybdenum Steel	352HB	2100	1900	1760	1700	1530
Austenitic Stainless Steel	155HB	2030	1970	1900	1770	1710
Cast Iron	520	2800	2500	2320	2200	2040
Hard Cast Iron	46HRC	3000	2700	2500	2400	2200
Meehanite Cast Iron	360	2180	2000	1750	1600	1470
Grey Cast Iron	200HB	1750	1400	1240	1050	970
Brass	500	1150	950	800	700	630
Light Alloy (Al-Mg)	160	580	480	400	350	320
Light Alloy (Al-Si)	200	700	600	490	450	390
Light Alloy (Al-Zn-Mg-Cu)	570	880	840	840	810	720

At XTREME ;

Reconditioning is an ART!!!

There is a big difference between regrinding and reconditioning. Regrinding is just sharpening a cutting edge. "Reconditioning" is repairing the geometry as close as possible to it's original specifications.

Effective reconditioning takes know-how, experience and even the original manufacturer's training & certification. We have and do what it takes - everyday!

Try us and see for yourself. We'll get you more out of the tools you use!

Restore LIKE - NEW Performance , Guaranteed!

High Performance Carbide Drills, End Mills & Special Cutting Tools



RECONDITIONING SERVICES, PVD COATING SERVICES ,TOOL MODIFICATION&GEOMETRY OPTIMIZATION

Reconditioning Services

XTREME Reconditioning Services is a business with its primary purpose being to restore used and worn cutting tools in a way that enables them to provide the same performance and productivity as they were when they were brand new. Typically, companies providing regrinding services do so as a supplement to higher priority things they do. Some are primarily tool & cutter grinders, set up to do small runs of special tools and component parts. Others are cutting tool manufacturers, whose focus and priorities are on manufacturing new tools.

XTREME was built to provide reconditioning services.

Standard Reconditioning- Restores the tool to its original manufactured specifications and includes re-coating the tool with the appropriate PVD coating.

Enhanced Reconditioning -In addition to basic restoration, we modify the geometry to improve the tool's performance within aspecific application. To do this we will need to know the material being machined, the type of operation and the desired improvement (higher metal removal rate, longer tool life, better surface finish). We would then advice the changes we'd recommend before proceeding.

Tool Modification- Adding a corner radius, a shank flat, or neck clearance relief, reworking an end gash, or reducing the cutting diameter or length of cut. This kind of work can be done to new or used tools.

Equipment

- CNC 7 Axis Grinders
- > 1 - Makino Seiki CNJ-2u (1st machine in India)
- > 2-TGT 6 Axis CNC tool grinding machine
- > 2- CNC Cylindrical grinding machine
- > 1-True Tech O.D.Grinder
- > 1 Harig Centerless Grinder
- > 1-Okamoto Surface Grinder

Wheel Dresser (General)

- > Diamond and CBN Grinding
- > Wheel Truing and Dressing Capabilities

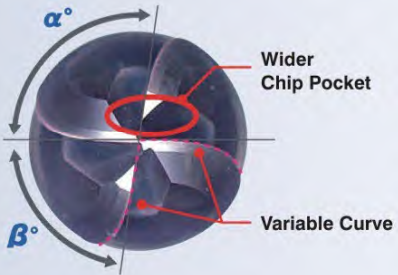
Edge Preperation

- > Proprietary Design Special Honing Technology

Inspection

- > 1-Automised measuring system having magnification 250x

A Four Flute, ball nose solid carbide end mill with variable curve and variable helix technology.



Technical Information :

- Variable curve and variable helix
- Wider flute space
- Length of cut is three times the radius
- Impact Miracle coating and micro grain carbide substrate

Applications to Target :

- Suitable for titanium alloys, high temperature alloys, stainless steels and other gummy materials
- Concave or Convex surfaces
- Profiling or Angled surfaces
- Thin place machining
- Power generation components
- Aerospace

Benefits :

- Variable curve and variable pitch is an anti-vibration design which creates a large footprint of stable machining with difficult materials
- Wider flute space enables excellent chip disposal
- Wider flute space also enables larger depth of cut in relation to conventional end mills
- Short type length of cut enables proficient shoulder or profile milling
- Impact Miracle coating has silicon added to increase it's hardness and oxidation temperature which enables longer tool life.



Conventional Ballnose



New VHT Ballnose



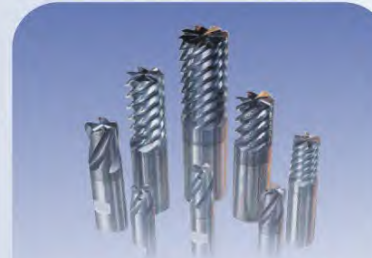
X - STAR

Solid Carbide Super Long Drill For Deep Hole Drilling



X- PLUS

Solid Carbide Drills For Steel & Cast Iron
Solid Carbide Drills For High Efficiency Machining Aluminium Alloys



SOLID CARBIDE ENDMILLS

Prevention Of Vibration With Irregular Helix Flutes Single Phase Nano Crystal Coating Technology For Higher Film Hardness And Heat Resistance



SOLID CARBIDE BALLNOSE

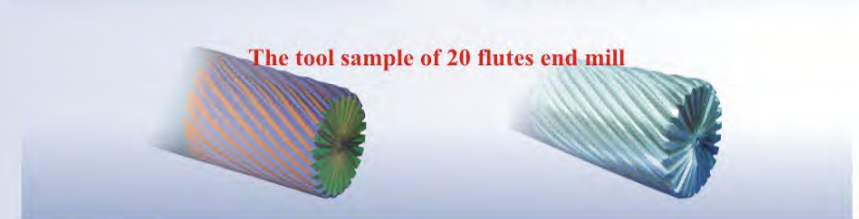
Industry Leader in Ballnose finishing. Helical Geometry for Smooth Surface & reduce heat.



SOLID CARBIDE CENTER DRILLS



TAILOR MADE TOOLS
As Per Customer Request

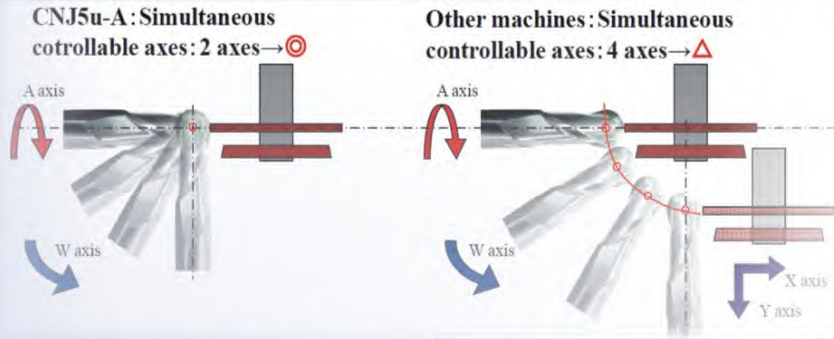


The tool sample of 20 flutes end mill

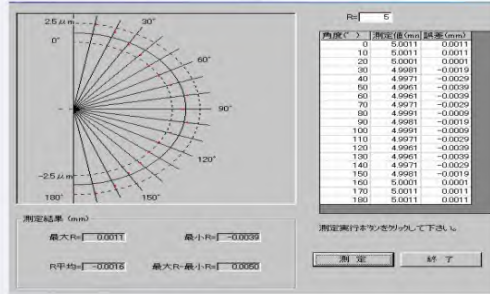
REASON WHY ONLY XTREME

Enhanced ball end mill grinding precision

The center of R is indexed at all times,
even when workpieces with different tool lengths are mixed.



- 10mm Ball End mill 2 flute Radius Accuracy within **5 microns Max.**
- Ground Carbide Rod / Blanks within **h5 tolerance.**



GLOBAL SERVICES



Xtreme Tooling

Manufacturers of Solid Carbide Tools

Plot No. S-83, MIDC, Bhosari, Pune - 411 026

Ph. : 020 - 46780782 Email : sales@xtremetooling.com www.carbidecuttingtools.in

Drill & End Mill Inquiry Form

Customer Name : _____ Date : _____

Address : _____ From : _____

Attn. : _____ By : _____

Contact No. _____ Mail Id : _____ Sample No. : _____

Existing Tool : _____

Type of Machine : _____

Component : _____

Component Material : _____

Component Hardness : _____

Tool Description : _____

Operation : _____

Monthly Production : _____

Drill / EM Dia : _____

Hole Tolerance : min= _____ max= _____

Number of Flute : _____

COOLANT SUPPLY : INT / EXT / DRY

Drilling Depth : _____

Depth of Cut : _____

Holes / Component : _____

Existing Tool Life : _____

Existing RPM : _____

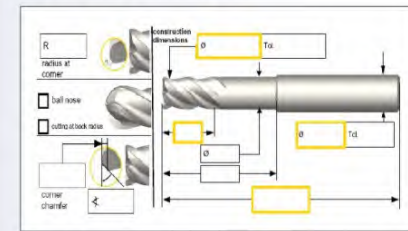
Existing Feed Rate : _____

Existing Drill (Brand) : _____

Cycle Time : _____

REMARKS : _____

ENDMILL / BALLNOSE



FINISHING / ROUGHING

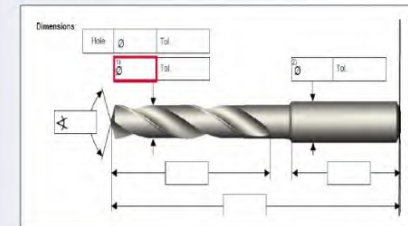
HELIX ANGLE

TC / NON TC

CENTER CUT

APPLICATION

DRILL



FINISHING / ROUGHING

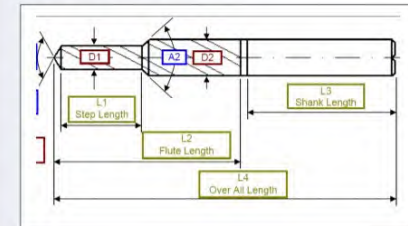
HELIX ANGLE

TC / NON TC

BLIND HOLE

THROUGH HOLE

STEP DRILL



FINISHING / ROUGHING

HELIX ANGLE

TC / NON TC

BLIND HOLE

THROUGH HOLE