

GUHRING

The Tool Company

Micro-Precision Drills

*Updated to include drill
running parameters*



Small diameter drill offering:

- **High speed cobalt**
- **NEW: Coolant fed carbide**
- **Solid carbide**
- **NEW: Fractional sizes**

NEW



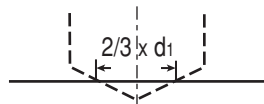
Series #6408

NEW

Micro-precision 8xD, coolant fed
135° 4-facet ground-hone point,
DK 460 UF carbide, reinforced shank
TiAIN coated **A**

Shank tolerance: h6
Cut dia. tolerance: h7

Diameter			Shank dia	O.A.L.	F.L.	
dec	fract	wire/let				
0.0551		54	1.400	4.000	52.00	15.00
0.0571			1.450	4.000	52.00	16.00
0.0591			1.500	4.000	52.00	17.00
0.0610			1.550	4.000	52.00	17.00
0.0626	1/16		1.590	4.000	52.00	18.00
0.0630			1.600	4.000	52.00	18.00
0.0650			1.650	4.000	52.00	18.00
0.0669		51	1.700	4.000	56.00	19.00
0.0689			1.750	4.000	56.00	19.00
0.0709			1.800	4.000	56.00	20.00
0.0728		49	1.850	4.000	56.00	20.00
0.0748			1.900	4.000	56.00	21.00
0.0768			1.950	4.000	56.00	21.00
0.0779	5/64		1.980	4.000	56.00	22.00
0.0787			2.000	4.000	56.00	22.00
0.0807			2.050	4.000	56.00	23.00
0.0827			2.100	4.000	62.00	23.00
0.0846			2.150	4.000	62.00	24.00
0.0866			2.200	4.000	62.00	24.00
0.0886			2.250	4.000	62.00	25.00
0.0906			2.300	4.000	62.00	25.00
0.0925			2.350	4.000	62.00	26.00
0.0937	3/32		2.380	4.000	62.00	26.00
0.0945			2.400	4.000	62.00	26.00
0.0965			2.450	4.000	62.00	27.00
0.0984			2.500	4.000	62.00	28.00
0.1004			2.550	4.000	62.00	28.00
0.1024			2.600	4.000	66.00	29.00
0.1043			2.650	4.000	66.00	29.00
0.1063			2.700	4.000	66.00	30.00
0.1083			2.750	4.000	66.00	30.00
0.1094	7/64		2.780	4.000	66.00	31.00
0.1102			2.800	4.000	66.00	31.00
0.1122			2.850	4.000	66.00	31.00
0.1142			2.900	4.000	66.00	32.00
0.1161		32	2.950	4.000	66.00	32.00
0.1181			3.000	4.000	66.00	33.00



Spot Drilling

In order to achieve full performance with Series 6408 solid carbide micro-precision drills at 8xD drilling depth, we recommend spot drilling.

The ExclusiveLine Series 6400 solid carbide micro-precision drill (up to 4xD) can be applied for this purpose. The spot drill diameter should be approximately $\frac{2}{3}x D$.



Series #6412

NEW

Micro-precision 15xD, coolant fed
135° 4-facet ground-hone point,
DK 460 UF carbide, reinforced shank
TiAIN coated tip **A**

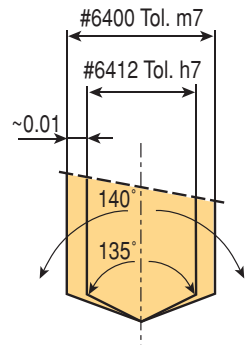
Shank tolerance: h6
Cut dia. tolerance: h7

Diameter				Shank dia	O.A.L.	F.L.
dec	fract	wire/let	mm			
0.0551		54	1.400	4.000	62.00	25.00
0.0591			1.500	4.000	62.00	27.00
0.0626	1/16		1.590	4.000	62.00	29.00
0.0630			1.600	4.000	62.00	29.00
0.0669		51	1.700	4.000	70.00	31.00
0.0709			1.800	4.000	70.00	32.00
0.0748			1.900	4.000	70.00	34.00
0.0779	5/64		1.980	4.000	70.00	36.00
0.0787			2.000	4.000	70.00	36.00
0.0827			2.100	4.000	78.00	38.00
0.0866			2.200	4.000	78.00	40.00
0.0906			2.300	4.000	78.00	42.00
0.0937	3/32		2.380	4.000	78.00	44.00
0.0945			2.400	4.000	78.00	44.00
0.0984			2.500	4.000	78.00	45.00
0.1024			2.600	4.000	87.00	47.00
0.1063			2.700	4.000	87.00	48.00
0.1094	7/64		2.780	4.000	87.00	50.00
0.1102			2.800	4.000	87.00	50.00
0.1142			2.900	4.000	87.00	52.00
0.1181			3.000	4.000	87.00	54.00

Pilot drilling

For applications using Series 6412 solid carbide micro-precision drills to drilling depths of 15xD we recommend a pilot hole 1xD up to 2xD depth.

For this pilot hole, the Series 6400 solid carbide micro-precision drill (4xD) is optimally suited. Its 140° point angle and its m7 diameter tolerance are perfectly adapted.





Red indicates NEW size offered!



Series #6400

Micro-precision 4xD,
140° 4-facet ground-hone point,
DK 460 UF carbide, reinforced shank
Super-A™ coated **A**

Shank tolerance: h6
Cut dia. tolerance: m7

Diameter				Shank dia	O.A.L.	F.L.
dec	fract	wire/let	mm	mm	mm	mm
0.0315			0.800	3.000	47.00	4.80
0.0335			0.850	3.000	47.00	5.10
0.0354			0.900	3.000	47.00	5.40
0.0374			0.950	3.000	47.00	5.70
0.0394			1.000	3.000	47.00	6.00
0.0413			1.050	3.000	47.00	6.30
0.0433			1.100	3.000	47.00	6.60
0.0453			1.150	3.000	47.00	6.90
0.0472			1.200	3.000	47.00	7.20
0.0492			1.250	3.000	47.00	7.50
0.0512			1.300	3.000	47.00	7.80
0.0531			1.350	3.000	47.00	8.10
0.0551		54	1.400	3.000	47.00	8.40
0.0571			1.450	3.000	47.00	8.70
0.0591			1.500	3.000	47.00	9.00
0.0610			1.550	3.000	47.00	9.30
0.0626	1/16		1.590	3.000	47.00	9.60
0.0630			1.600	3.000	47.00	9.60
0.0650			1.650	3.000	47.00	9.90
0.0669		51	1.700	3.000	47.00	10.20
0.0689			1.750	3.000	47.00	10.50
0.0709			1.800	3.000	52.00	10.80
0.0728		49	1.850	3.000	52.00	11.10
0.0748			1.900	3.000	52.00	11.40
0.0768			1.950	3.000	52.00	11.70
0.0779	5/64		1.980	4.000	59.00	12.00
0.0787			2.000	4.000	59.00	12.00
0.0807			2.050	4.000	59.00	12.30
0.0827			2.100	4.000	59.00	12.60
0.0846			2.150	4.000	59.00	12.90
0.0866			2.200	4.000	59.00	13.20
0.0886			2.250	4.000	59.00	13.50
0.0906			2.300	4.000	59.00	13.80
0.0925			2.350	4.000	59.00	14.10
0.0937	3/32		2.380	4.000	59.00	14.40
0.0945			2.400	4.000	59.00	14.40
0.0965			2.450	4.000	59.00	14.70
0.0984			2.500	4.000	59.00	15.00
0.1004			2.550	4.000	59.00	15.30
0.1024			2.600	4.000	59.00	15.60
0.1043			2.650	4.000	59.00	15.90
0.1063			2.700	4.000	59.00	16.20
0.1083			2.750	4.000	59.00	16.50
0.1094	7/64		2.780	4.000	59.00	16.80
0.1102			2.800	4.000	59.00	16.80
0.1122			2.850	4.000	59.00	17.10
0.1142			2.900	4.000	59.00	17.40
0.1161		32	2.950	4.000	59.00	17.70
0.1181			3.000	4.000	59.00	18.00



Series #6401

Micro-precision 7xD,
140° 4-facet ground-hone point,
DK 460 UF carbide, reinforced shank
Super-A™ coated **A**

Shank tolerance: h6
Cut dia. tolerance: m7

Diameter				Shank dia	O.A.L.	F.L.
dec	fract	wire/let	mm	mm	mm	mm
0.0315			0.800	3.000	47.00	6.40
0.0335			0.850	3.000	47.00	6.80
0.0354			0.900	3.000	47.00	7.20
0.0374			0.950	3.000	47.00	7.60
0.0394			1.000	3.000	47.00	8.00
0.0413			1.050	3.000	47.00	8.40
0.0433			1.100	3.000	47.00	8.80
0.0453			1.150	3.000	47.00	9.20
0.0472			1.200	3.000	52.00	10.80
0.0492			1.250	3.000	52.00	11.30
0.0512			1.300	3.000	52.00	11.70
0.0531			1.350	3.000	52.00	12.20
0.0551		54	1.400	3.000	52.00	12.60
0.0571			1.450	3.000	52.00	13.10
0.0591			1.500	3.000	52.00	13.50
0.0610			1.550	3.000	52.00	14.00
0.0626	1/16		1.590	3.000	52.00	14.40
0.0630			1.600	3.000	52.00	14.40
0.0650			1.650	3.000	52.00	14.90
0.0669		51	1.700	3.000	52.00	15.30
0.0689			1.750	3.000	52.00	15.80
0.0709			1.800	3.000	52.00	16.20
0.0728		49	1.850	3.000	52.00	16.70
0.0748			1.900	3.000	52.00	17.10
0.0768			1.950	3.000	52.00	17.60
0.0779	5/64		1.980	4.000	63.00	18.00
0.0787			2.000	4.000	63.00	18.00
0.0807			2.050	4.000	63.00	18.50
0.0827			2.100	4.000	63.00	18.90
0.0846			2.150	4.000	63.00	19.40
0.0866			2.200	4.000	63.00	19.80
0.0886			2.250	4.000	63.00	20.30
0.0906			2.300	4.000	63.00	20.70
0.0925			2.350	4.000	63.00	21.20
0.0937	3/32		2.380	4.000	63.00	21.60
0.0945			2.400	4.000	63.00	21.60
0.0965			2.450	4.000	63.00	22.10
0.0984			2.500	4.000	63.00	22.50
0.1004			2.550	4.000	63.00	23.00
0.1024			2.600	4.000	67.00	23.40
0.1043			2.650	4.000	67.00	23.90
0.1063			2.700	4.000	67.00	24.30
0.1083			2.750	4.000	67.00	24.80
0.1094	7/64		2.780	4.000	67.00	25.20
0.1102			2.800	4.000	67.00	25.20
0.1122			2.850	4.000	67.00	25.70
0.1142			2.900	4.000	67.00	26.10
0.1161		32	2.950	4.000	67.00	26.60
0.1181			3.000	4.000	67.00	27.00

EXCLUSIVE LINE drills are made of DK 460 UF (K40) carbide, an ultra-fine grain carbide developed in-house by GUHRING specifically for drilling applications. Our proprietary version of TiAlN and our exclusive Super-A™ (AlTiN) coatings increase tool surface hardness to over 100 Rc while providing unbeatable heat resistance.

Multiple diameters in the Exclusive Line share common shank sizes for ease of toolholding. Exclusive Line micro drills also feature a precision-ground hone. Much more precise and consistent than a brushed hone, a ground hone delivers much higher repeatability and extended tool life.

Guhring offers high-performance carbide drills in diameters over 3.0 mm in multiple styles and geometries. Please see Guhring's High-Performance Carbide Drill catalog, and consider the RT 100 family of carbide drills.

Series #660 (continued)

dec	Diameter		mm	Shank dia mm	O.A.L. mm	F.L. mm
	fract	wire/let				
0.0311	1/32	68	0.790	1.000	25.00	5.30
0.0315			0.800	1.500	25.00	5.30
0.0319		67	0.810	1.500	25.00	5.30
0.0323			0.820	1.500	25.00	5.30
0.0327			0.830	1.500	25.00	5.30
0.0331		66	0.840	1.500	25.00	5.30
0.0335			0.850	1.500	25.00	5.30
0.0339			0.860	1.500	25.00	6.00
0.0343			0.870	1.500	25.00	6.00
0.0346			0.880	1.500	25.00	6.00
0.0354			0.900	1.500	25.00	6.00
0.0358		64	0.910	1.500	25.00	6.00
0.0370		63	0.940	1.500	25.00	6.00
0.0374			0.950	1.500	25.00	6.00
0.0382		62	0.970	1.500	25.00	6.80
0.0386			0.980	1.500	25.00	6.80
0.0394			1.000	1.500	25.00	6.80
0.0402		60	1.020	1.500	25.00	6.80
0.0409		59	1.040	1.500	25.00	6.80
0.0413			1.050	1.500	25.00	6.80
0.0421		58	1.070	1.500	25.00	7.60
0.0425			1.080	1.500	25.00	7.60
0.0433			1.100	1.500	25.00	7.60
0.0453			1.150	1.500	25.00	7.60
0.0465		56	1.180	1.500	25.00	7.60
0.0469		3/64	1.190	1.500	25.00	8.50
0.0472			1.200	1.500	25.00	8.50
0.0492			1.250	1.500	25.00	8.50
0.0512			1.300	1.500	25.00	8.50
0.0531			1.350	1.500	25.00	9.50
0.0547			1.390	1.500	25.00	9.50
0.0551		54	1.400	1.500	25.00	9.50
0.0559			1.420	1.500	25.00	9.50
0.0571			1.450	1.500	25.00	9.50
0.0591			1.500	2.000	30.00	9.50
0.0709			1.800	2.000	30.00	11.80



Options for Non-Rigid Setups: GUHRING High Performance HSCO Micro Drills

Where setup rigidity is an issue, GUHRING offers three series of HSCO micro-precision drills in diameters from 0.050-1.920 mm (0.0020-0.0756 in.), both right hand and left hand cut, and in bright finish and TiN coated.

GUHRING micro-precision HSCO drills are manufactured on custom-designed machines, delivering the industry's tightest tolerances (+0.000/-0.004 mm). These drills are made from M35 high speed cobalt steel, a grade commonly used for cutting tools in Europe that has a lower cobalt content (4.50-5.00%) than its U.S. counterpart M42 (7.50-8.50%). As such M35 is slightly lower in hardness (64.7-67.4 Rc for M35 versus 68.5 Rc for M42), but higher in toughness.

Series #303

Micro-precision 4xD, 118° point,
M35 cobalt, reinforced shank
bright finish ○ LEFT HAND HELIX

Shank tolerance: h8
Cut dia. tol. + 0 / -0.004

dec	Diameter		mm	Shank dia mm	O.A.L. mm	F.L. mm
	fract	wire/let				
0.0051			0.130	1.000	25.00	0.80
0.0055			0.140	1.000	25.00	0.80
0.0059		97	0.150	1.000	25.00	0.80
0.0063		96	0.160	1.000	25.00	1.10
0.0067		95	0.170	1.000	25.00	1.10
0.0071		94	0.180	1.000	25.00	1.10
0.0073			0.185	1.000	25.00	1.10
0.0075		93	0.190	1.000	25.00	1.10
0.0077			0.195	1.000	25.00	1.50
0.0079		92	0.200	1.000	25.00	1.50
0.0083		91	0.210	1.000	25.00	1.50
0.0085			0.215	1.000	25.00	1.50
0.0087			0.220	1.000	25.00	1.50
0.0089			0.225	1.000	25.00	1.50
0.0091		89	0.230	1.000	25.00	1.50
0.0094		88	0.240	1.000	25.00	1.50
0.0096			0.245	1.000	25.00	1.90
0.0098		87	0.250	1.000	25.00	1.90
0.0100			0.255	1.000	25.00	1.90
0.0102			0.260	1.000	25.00	1.90
0.0104			0.265	1.000	25.00	1.90
0.0106		86	0.270	1.000	25.00	1.90
0.0110		85	0.280	1.000	25.00	1.90
0.0114		84	0.290	1.000	25.00	1.90
0.0116			0.295	1.000	25.00	1.90
0.0118			0.300	1.000	25.00	1.90
0.0122		83	0.310	1.000	25.00	2.40
0.0126		82	0.320	1.000	25.00	2.40
0.0130		81	0.330	1.000	25.00	2.40
0.0134		80	0.340	1.000	25.00	2.40
0.0138			0.350	1.000	25.00	2.40
0.0142			0.360	1.000	25.00	2.40
0.0146		79	0.370	1.000	25.00	2.40
0.0150			0.380	1.000	25.00	2.40
0.0154			0.390	1.000	25.00	3.00
0.0157		1/64	0.400	1.000	25.00	3.00
0.0161		78	0.410	1.000	25.00	3.00
0.0165			0.420	1.000	25.00	3.00
0.0169			0.430	1.000	25.00	3.00
0.0173			0.440	1.000	25.00	3.00
0.0177			0.450	1.000	25.00	3.00
0.0181		77	0.460	1.000	25.00	3.00
0.0185			0.470	1.000	25.00	3.00
0.0189			0.480	1.000	25.00	3.00
0.0193			0.490	1.000	25.00	3.40
0.0197			0.500	1.000	25.00	3.40
0.0201		76	0.510	1.000	25.00	3.40
0.0205			0.520	1.000	25.00	3.40
0.0207			0.525	1.000	25.00	3.40
0.0209		75	0.530	1.000	25.00	3.40
0.0211			0.535	1.000	25.00	3.90
0.0213			0.540	1.000	25.00	3.90
0.0215			0.545	1.000	25.00	3.90
0.0217			0.550	1.000	25.00	3.90
0.0219			0.555	1.000	25.00	3.90
0.0220			0.560	1.000	25.00	3.90
0.0222			0.565	1.000	25.00	3.90
0.0224		74	0.570	1.000	25.00	3.90
0.0228			0.580	1.000	25.00	3.90
0.0232			0.590	1.000	25.00	3.90
0.0236			0.600	1.000	25.00	3.90
0.0240		73	0.610	1.000	25.00	4.20
0.0244			0.620	1.000	25.00	4.20
0.0248			0.630	1.000	25.00	4.20
0.0252		72	0.640	1.000	25.00	4.20
0.0256			0.650	1.000	25.00	4.20
0.0260		71	0.660	1.000	25.00	4.20

Series #303 (continued)

Diameter			Shank dia	O.A.L.	F.L.	
dec	fract	wire/let	mm	mm	mm	
0.0264			0.670	1.000	25.00	4.20
0.0266			0.675	1.000	25.00	4.80
0.0268			0.680	1.000	25.00	4.80
0.0272			0.690	1.000	25.00	4.80
0.0276			0.700	1.000	25.00	4.80
0.0280		70	0.710	1.000	25.00	4.80
0.0283			0.720	1.000	25.00	4.80
0.0287			0.730	1.000	25.00	4.80
0.0291		69	0.740	1.000	25.00	4.80
0.0295			0.750	1.000	25.00	4.80
0.0299			0.760	1.000	25.00	5.30
0.0303			0.770	1.000	25.00	5.30
0.0307			0.780	1.000	25.00	5.30
0.0311	1/32	68	0.790	1.000	25.00	5.30
0.0315			0.800	1.500	25.00	5.30
0.0319		67	0.810	1.500	25.00	5.30
0.0323			0.820	1.500	25.00	5.30
0.0327			0.830	1.500	25.00	5.30
0.0331		66	0.840	1.500	25.00	5.30
0.0335			0.850	1.500	25.00	5.30
0.0339			0.860	1.500	25.00	6.00
0.0343			0.870	1.500	25.00	6.00
0.0346			0.880	1.500	25.00	6.00
0.0350		65	0.890	1.500	25.00	6.00
0.0354			0.900	1.500	25.00	6.00
0.0358		64	0.910	1.500	25.00	6.00
0.0360			0.915	1.500	25.00	6.00
0.0362			0.920	1.500	25.00	6.00
0.0366			0.930	1.500	25.00	6.00
0.0368			0.935	1.500	25.00	6.00
0.0370		63	0.940	1.500	25.00	6.00
0.0374			0.950	1.500	25.00	6.00
0.0378			0.960	1.500	25.00	6.80

Diameter			Shank dia	O.A.L.	F.L.	
dec	fract	wire/let	mm	mm	mm	
0.0382		62	0.970	1.500	25.00	6.80
0.0386			0.980	1.500	25.00	6.80
0.0390		61	0.990	1.500	25.00	6.80
0.0394			1.000	1.500	25.00	6.80
0.0396			1.005	1.500	25.00	6.80
0.0398			1.010	1.500	25.00	6.80
0.0402		60	1.020	1.500	25.00	6.80
0.0406			1.030	1.500	25.00	6.80
0.0409		59	1.040	1.500	25.00	6.80
0.0413			1.050	1.500	25.00	6.80
0.0417			1.060	1.500	25.00	6.80
0.0421		58	1.070	1.500	25.00	7.60
0.0425			1.080	1.500	25.00	7.60
0.0429		57	1.090	1.500	25.00	7.60
0.0433			1.100	1.500	25.00	7.60
0.0437			1.110	1.500	25.00	7.60
0.0441			1.120	1.500	25.00	7.60
0.0453			1.150	1.500	25.00	7.60
0.0461			1.170	1.500	25.00	7.60
0.0465		56	1.180	1.500	25.00	7.60
0.0469	3/64		1.190	1.500	25.00	8.50
0.0472			1.200	1.500	25.00	8.50
0.0480			1.220	1.500	25.00	8.50
0.0492			1.250	1.500	25.00	8.50
0.0500			1.270	1.500	25.00	8.50
0.0508			1.290	1.500	25.00	8.50
0.0512			1.300	1.500	25.00	8.50
0.0520		55	1.320	1.500	25.00	8.50
0.0524			1.330	1.500	25.00	9.50
0.0531			1.350	1.500	25.00	9.50
0.0535			1.360	1.500	25.00	9.50
0.0551		54	1.400	1.500	25.00	9.50
0.0728		49	1.850	2.000	30.00	11.80

Speeds and Feeds Information

EXCLUSIVELINE®

Series # 6408 and 6412

Material group	Hardness	SFM	Feed Rate - IPR					
			0.0315 in. 0.800 mm	0.0394 in. 1.000 mm	0.0591 in. 1.500 mm	0.0787 in. 2.000 mm	0.0984 in. 2.500 mm	0.1181 in. 3.000 mm
Common structural steels	≤100 Bhn >100-260 Bhn	295 - 395 295 - 360	0.0009 0.0009	0.0013 0.0013	0.0020 0.0020	0.0020 0.0028	0.0028 0.0037	0.0047 0.0047
Free-cutting steels	≤24 Rc >24-30 Rc	295 - 395 260 - 330	0.0013 0.0013	0.0017 0.0017	0.0026 0.0026	0.0036 0.0036	0.0047 0.0047	0.0059 0.0059
Unalloyed heat-treatable steels	≤16 Rc 16-24 Rc 24-30 Rc	260 - 360 260 - 360 260 - 330	0.0009 0.0009 0.0009	0.0013 0.0013 0.0013	0.0020 0.0020 0.0020	0.0028 0.0028 0.0028	0.0037 0.0037 0.0037	0.0047 0.0047 0.0047
Alloyed heat-treatable steels	24-30 Rc >30-38 Rc	260 - 328 200 - 260	0.0009 0.0009	0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
Unalloyed case hardened steels	≤230 Bhn	295 - 360	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Alloyed case hardened steels	24-30 Rc >30-38 Rc	230 - 330 200 - 260	0.0009 0.0009	0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
Nitriding steels	≥24-30 Rc >30-38 Rc	200 - 260 165 - 230	0.0006 0.0006	0.0009 0.0009	0.0014 0.0014	0.0020 0.0020	0.0028 0.0028	0.0035 0.0035
Tool steels	≤24 Rc >24-30 Rc	130 - 200 130 - 200	0.0009 0.0009	0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
High speed steels	≥14-30 Rc	130 - 200	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Spring steels	≤330 Bhn	130 - 200	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Stainless steels, sulphured	≤24 Rc	200 - 260	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
austenitic	≤24 Rc	200	0.0003	0.0005	0.0008	0.0013	0.0018	0.0024
martensitic	≤24 Rc	200 - 260	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Hardened steels	≤40-48 Rc >48-60 Rc							
Special alloys	≤38 Rc	80	0.0003	0.0005	0.0008	0.0013	0.0018	0.0024
Cast iron	≤240 Bhn <300 Bhn	< 490 < 460	0.0016 0.0016	0.0024 0.0024	0.0035 0.0035	0.0047 0.0047	0.0059 0.0059	0.0071 0.0071
Spheroidal graphite iron and malleable cast iron	≤240 Bhn <300 Bhn	< 460 < 425	0.0016 0.0016	0.0024 0.0024	0.0035 0.0035	0.0047 0.0047	0.0059 0.0059	0.0071 0.0071
Chilled cast iron	≤350 Bhn							
Ti and Ti-alloys	≤24 Rc >24-38 Rc	115 115	0.0003 0.0003	0.0005 0.0005	0.0008 0.0008	0.0013 0.0013	0.0018 0.0018	0.0024 0.0024
Aluminium and Al-alloys	≤120 Bhn	200 - 260	0.0035	0.0047	0.0071	0.0094	0.0134	0.0142
Al wrought alloys	≤150 Bhn	200 - 260	0.0035	0.0047	0.0071	0.0094	0.0134	0.0142
Al cast alloys ≤ 10 % Si	≤200 Bhn	395 - 490	0.0013	0.0017	0.0026	0.0036	0.0047	0.0059
> 10 % Si	≤200 Bhn	395 - 490	0.0013	0.0017	0.0026	0.0036	0.0047	0.0059
Magnesium alloys	≤150 Bhn							
Copper, low-alloyed	≤120 Bhn							
Brass, short-chipping	≤200 Bhn							
long-chipping	≤200 Bhn							
Bronze, short-chipping	≤200 Bhn							
>200-260 Bhn								
Bronze, long-chipping	≤24 Rc >24-30 Rc							
Duroplastics	-							
Thermoplastics	-							
Reinforced plastics - Kevlar	-							
Reinforced plastics - GFK / CFK	-							

STANDARD & SPECIAL PRODUCT RANGE

• HSS, HSCO & PM Standards •

GU 500 DZ Universal Drills
GT 500 DZ High Performance Drills
GT 100 Parabolic Flute Deep Hole Drills
Coolant-Through GT 100 IC Parabolic Flute Deep Hole Drills
GT 80 Parabolic Flute Deep Hole Drills
Coolant-Through GT 80 IC Parabolic Flute Deep Hole Drills
GT 50 Parabolic Flute Deep Hole Drills
General Purpose Drills
Heavy Duty Drills
Heavy Duty Split Point Drills
Low Helix Drills
High Helix Drills
Micro-Precision Drills
NC Spot Drills
Drill-Countersinks
High Performance HSS-E Taps
High Performance PM HSS-E Taps

• HSS & HSCO Specials •

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Step Drill Reamers
Step Core Drills
Step Core Drill Reamers
Reamers
Step Reamers
Subland Drills
Subland Drill Reamers
Subland Core Drills
Taps

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^{New!} RT 100 R High Penetration Drills
RT 100 T Deep Hole Drills
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Coolant-Through RT 150 GG Straight-Flute High Penetration Drills
Coolant-Through HT/RT 800 WP Interchangeable Insert Drills
GS 200 U/G Three-Flute High Precision Drills
GT 100 Parabolic Flute Deep Hole Drills
Exclusive Line® Small-Diameter Drills
EB 100 Small-Diameter Single-Flute Gun Drills
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NC Spot Drills
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PRO-Line Universal End Mills
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Subland Drill Reamers
Subland Core Drills
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End Mills

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