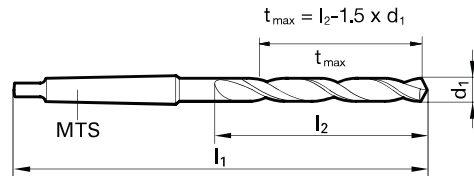


Tool material **HSCO**

Surface

- P** Steel ● web thinning ≥ Ø 3.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance
 - M** Stainless steel ○
 - K** Cast iron ● alloyed/unalloyed steels and castings over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat S treatable and case hardened steels
 - N** Aluminum ○
 - S** Titanium alloys
 - H** Hardened steel
- =Optimal
○=Limited



Speeds and feeds information on pg. 492

Diameter (d ₁)			Shank Size	l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm					
0.1181		3.00	MTS 1	114.00	28.50	33.00	9003450030000
0.1575		4.00	MTS 1	124.00	37.00	43.00	9003450040000
0.1969		5.00	MTS 1	133.00	44.50	52.00	9003450050000
0.2047		5.20	MTS 1	133.00	44.20	52.00	9003450052000
0.2165		5.50	MTS 1	138.00	48.75	57.00	9003450055000
0.2362		6.00	MTS 1	138.00	48.00	57.00	9003450060000
0.2441		6.20	MTS 1	144.00	53.70	63.00	9003450062000
0.2500	1/4	E 6.35	MTS 1	144.00	53.48	63.00	9003450063500
0.2559		6.50	MTS 1	144.00	53.25	63.00	9003450065000
0.2657	17/64	H 6.75	MTS 1	150.00	58.88	69.00	9003450067500
0.2756		7.00	MTS 1	150.00	58.50	69.00	9003450070000
0.3125	5/16	7.94	MTS 1	156.00	63.09	75.00	9003450079400
0.3425		8.70	MTS 1	162.00	67.95	81.00	9003450087000
0.3701		9.40	MTS 1	162.00	66.90	81.00	9003450094000
0.3750	3/8	9.52	MTS 1	168.00	72.72	87.00	9003450095200
0.3906	25/64	9.92	MTS 1	168.00	72.12	87.00	9003450099200
0.3937		10.00	MTS 1	168.00	72.00	87.00	9003450100000
0.3976		10.10	MTS 1	168.00	71.85	87.00	9003450101000
0.4016		10.20	MTS 1	168.00	71.70	87.00	9003450102000
0.4035		10.25	MTS 1	168.00	71.63	87.00	9003450102500
0.4055		10.30	MTS 1	168.00	71.55	87.00	9003450103000
0.4063	13/32	10.32	MTS 1	168.00	71.52	87.00	9003450103200
0.4134		10.50	MTS 1	168.00	71.25	87.00	9003450105000
0.4220	27/64	10.72	MTS 1	175.00	77.92	94.00	9003450107200
0.4232		10.75	MTS 1	175.00	77.88	94.00	9003450107500
0.4252		10.80	MTS 1	175.00	77.80	94.00	9003450108000
0.4331		11.00	MTS 1	175.00	77.50	94.00	9003450110000
0.4374	7/16	11.11	MTS 1	175.00	77.34	94.00	9003450111100
0.4409		11.20	MTS 1	175.00	77.20	94.00	9003450112000
0.4429		11.25	MTS 1	175.00	77.13	94.00	9003450112500
0.4528		11.50	MTS 1	175.00	76.75	94.00	9003450115000
0.4606		11.70	MTS 1	175.00	76.45	94.00	9003450117000
0.4626		11.75	MTS 1	175.00	76.38	94.00	9003450117500
0.4646		11.80	MTS 1	175.00	76.30	94.00	9003450118000
0.4689	15/32	11.91	MTS 1	182.00	83.14	101.00	9003450119100
0.4724		12.00	MTS 1	182.00	83.00	101.00	9003450120000
0.4764		12.10	MTS 1	182.00	82.85	101.00	9003450121000
0.4803		12.20	MTS 1	182.00	82.70	101.00	9003450122000
0.4823		12.25	MTS 1	182.00	82.63	101.00	9003450122500
0.4843	31/64	12.30	MTS 1	182.00	82.55	101.00	9003450123000
0.4921		12.50	MTS 1	182.00	82.25	101.00	9003450125000
0.5000	1/2	12.70	MTS 1	182.00	81.95	101.00	9003450127000

Diameter (d ₁)			Shank Size	l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm					
0.5020		12.75	MTS 1	182.00	81.88	101.00	9003450127500
0.5039		12.80	MTS 1	182.00	81.80	101.00	9003450128000
0.5118		13.00	MTS 1	182.00	81.50	101.00	9003450130000
0.5157	33/64	13.10	MTS 1	182.00	81.35	101.00	9003450131000
0.5197		13.20	MTS 1	182.00	81.20	101.00	9003450132000
0.5217		13.25	MTS 1	189.00	88.13	108.00	9003450132500
0.5311	17/32	13.49	MTS 1	189.00	87.77	108.00	9003450134900
0.5315		13.50	MTS 1	189.00	87.75	108.00	9003450135000
0.5354		13.60	MTS 1	189.00	87.60	108.00	9003450136000
0.5394		13.70	MTS 1	189.00	87.45	108.00	9003450137000
0.5413		13.75	MTS 1	189.00	87.38	108.00	9003450137500
0.5433		13.80	MTS 1	189.00	87.30	108.00	9003450138000
0.5469	35/64	13.89	MTS 1	189.00	87.17	108.00	9003450138900
0.5512		14.00	MTS 1	189.00	87.00	108.00	9003450140000
0.5551		14.10	MTS 2	212.00	92.85	114.00	9003450141000
0.5591		14.20	MTS 2	212.00	92.70	114.00	9003450142000
0.5610		14.25	MTS 2	212.00	92.63	114.00	9003450142500
0.5626	9/16	14.29	MTS 2	212.00	92.57	114.00	9003450142900
0.5709		14.50	MTS 2	212.00	92.25	114.00	9003450145000
0.5780	37/64	14.68	MTS 2	212.00	91.98	114.00	9003450146800
0.5807		14.75	MTS 2	212.00	91.88	114.00	9003450147500
0.5906		15.00	MTS 2	212.00	91.50	114.00	9003450150000
0.5937	19/32	15.08	MTS 2	218.00	97.38	120.00	9003450150800
0.5984		15.20	MTS 2	218.00	97.20	120.00	9003450152000
0.6004		15.25	MTS 2	218.00	97.13	120.00	9003450152500
0.6102		15.50	MTS 2	218.00	96.75	120.00	9003450155000
0.6201		15.75	MTS 2	218.00	96.38	120.00	9003450157500
0.6250	5/8	15.87	MTS 2	218.00	96.20	120.00	9003450158700
0.6260		15.90	MTS 2	218.00	96.15	120.00	9003450159000
0.6299		16.00	MTS 2	218.00	96.00	120.00	9003450160000
0.6398		16.25	MTS 2	223.00	100.63	125.00	9003450162500
0.6406	41/64	16.27	MTS 2	223.00	100.60	125.00	9003450162700
0.6457		16.40	MTS 2	223.00	100.40	125.00	9003450164000
0.6496		16.50	MTS 2	223.00	100.25	125.00	9003450165000
0.6563	21/32	16.67	MTS 2	223.00	100.00	125.00	9003450166700
0.6594		16.75	MTS 2	223.00	99.88	125.00	9003450167500
0.6693		17.00	MTS 2	223.00	99.50	125.00	9003450170000
0.6720	43/64	17.07	MTS 2	228.00	104.40	130.00	9003450170700
0.6791		17.25	MTS 2	228.00	104.13	130.00	9003450172500
0.6874	11/16	17.46	MTS 2	228.00	103.81	130.00	9003450174600
0.6890		17.50	MTS 2	228.00	103.75	130.00	9003450175000
0.6988		17.75	MTS 2	228.00	103.38	130.00	9003450177500

Morse Taper Length

Diameter (d ₁)			Shank Size	l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm					
0.7031	45/64	17.86	MTS 2	228.00	103.21	130.00	9003450178600
0.7087		18.00	MTS 2	228.00	103.00	130.00	9003450180000
0.7185		18.25	MTS 2	233.00	107.63	135.00	9003450182500
0.7189	23/32	18.26	MTS 2	233.00	107.61	135.00	9003450182600
0.7283		18.50	MTS 2	233.00	107.25	135.00	9003450185000
0.7343	47/64	18.65	MTS 2	233.00	107.03	135.00	9003450186500
0.7382		18.75	MTS 2	233.00	106.88	135.00	9003450187500
0.7480		19.00	MTS 2	233.00	106.50	135.00	9003450190000
0.7500	3/4	19.05	MTS 2	238.00	111.43	140.00	9003450190500
0.7579		19.25	MTS 2	238.00	111.13	140.00	9003450192500
0.7657	49/64	19.45	MTS 2	238.00	110.83	140.00	9003450194500
0.7677		19.50	MTS 2	238.00	110.75	140.00	9003450195000
0.7776		19.75	MTS 2	238.00	110.38	140.00	9003450197500
0.7811	25/32	19.84	MTS 2	238.00	110.24	140.00	9003450198400
0.7874		20.00	MTS 2	238.00	110.00	140.00	9003450200000
0.7972		20.25	MTS 2	243.00	114.63	145.00	9003450202500
0.8071		20.50	MTS 2	243.00	114.25	145.00	9003450205000
0.8126	13/16	20.64	MTS 2	243.00	114.04	145.00	9003450206400
0.8169		20.75	MTS 2	243.00	113.88	145.00	9003450207500

Diameter (d ₁)			Shank Size	l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm					
0.8268		21.00	MTS 2	243.00	113.50	145.00	9003450210000
0.8366		21.25	MTS 2	248.00	118.13	150.00	9003450212500
0.8465		21.50	MTS 2	248.00	117.75	150.00	9003450215000
0.8563		21.75	MTS 2	248.00	117.38	150.00	9003450217500
0.8661		22.00	MTS 2	248.00	117.00	150.00	9003450220000
0.8748	7/8	22.22	MTS 2	248.00	116.67	150.00	9003450222200
0.8760		22.25	MTS 2	248.00	116.63	150.00	9003450222500
0.8858		22.50	MTS 2	253.00	121.25	155.00	9003450225000
0.9055		23.00	MTS 2	253.00	120.50	155.00	9003450230000
0.9063	29/32	23.02	MTS 2	253.00	120.47	155.00	9003450230200
0.9252		23.50	MTS 3	276.00	119.75	155.00	9003450235000
0.9370		23.80	MTS 3	281.00	124.30	160.00	9003450238000
0.9374	15/16	23.81	MTS 3	281.00	124.29	160.00	9003450238100
0.9449		24.00	MTS 3	281.00	124.00	160.00	9003450240000
0.9547		24.25	MTS 3	281.00	123.63	160.00	9003450242500
0.9646		24.50	MTS 3	281.00	123.25	160.00	9003450245000
0.9843	63/64	25.00	MTS 3	281.00	122.50	160.00	9003450250000
0.9941		25.25	MTS 3	286.00	127.13	165.00	9003450252500
1.0000	1.0000	25.40	MTS 3	286.00	126.90	165.00	9003450254000

Morse Taper Length

Series # 345

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	150											
Free-cutting steels	32	301											
Unalloyed heat-treatable steels	25	255	90			0,0065	0,0080	0,0100	0,0100	0,0110	0,0125		
Alloyed heat-treatable steels	32	301	45			0,0065	0,0080	0,0100	0,0100	0,0110	0,0125		
Unalloyed case hardened steels	32	301	55			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Alloyed case hardened steels	43	402	45			0,0040	0,0050	0,0065	0,0065	0,0070	0,0080		
Nitriding steels	25	255	55			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Tool steels	32	301	35			0,0040	0,0050	0,0065	0,0065	0,0070	0,0080		
High speed steels	43	402	30			0,0040	0,0050	0,0065	0,0065	0,0070	0,0080		
Spring steels	38	354	25			0,0030	0,0040	0,0050	0,0050	0,0055	0,0065		
Hardened steels	48	460											
Stainless steels, sulphured austenitic	28	273	45			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Stainless steels, martensitic	36	337	30			0,0040	0,0050	0,0065	0,0065	0,0070	0,0080		
Cast iron	23	242	115			0,0080	0,0100	0,0125	0,0125	0,0140	0,0160		
Spheroidal graphite iron and malleable cast iron	38	354	90			0,0080	0,0100	0,0125	0,0125	0,0140	0,0160		
Chilled cast iron	23	242	95			0,0080	0,0100	0,0125	0,0125	0,0140	0,0160		
New cast materials GGV	38	354	25			0,0040	0,0050	0,0065	0,0065	0,0070	0,0080		
New cast materials ADI	20	220											
Special alloys	32	301											
Ti and Ti-alloys	43	402											
Aluminium and Al-alloys	54	549											
Al wrought alloys	25	255											
Al cast alloys ≤ 10 % Si	43	402											
Al cast alloys ≤ 24 % Si	180	180											
Magnesium alloys	-	120											
Copper, low-alloyed	-	150	115			0,0065	0,0080	0,0100	0,0100	0,0110	0,0125		
Brass, short-chipping	-	180											
Brass, long-chipping	-	180	145			0,0065	0,0080	0,0100	0,0100	0,0110	0,0125		
Bronze, short-chipping	-	180	115			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Bronze, long-chipping	25	255	95			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Duroplastics	25	255	90			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Thermoplastics	32	301	70			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Reinforced plastics - Kevlar			55			0,0050	0,0065	0,0080	0,0080	0,0090	0,0100		
Reinforced plastics - GFK / CFK													

Series # 381

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		.5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm	
Common structural steels	-	150	115	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Free-cutting steels	32	301	100	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Unalloyed heat-treatable steels	25	255	115	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Alloyed heat-treatable steels	32	301	115	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Unalloyed case hardened steels	20	220	100	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Alloyed case hardened steels	25	255	80	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Nitriding steels	32	301	70	0,0003	0,0005	0,0013	0,0016	0,0020	0,0025	0,0025	0,0031	0,0039	
Tool steels	32	301	55	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
High speed steels	43	402	35	0,0003	0,0005	0,0013	0,0016	0,0020	0,0025	0,0025	0,0031	0,0039	
Spring steels	38	354	25	0,0002	0,0003	0,0010	0,0013	0,0016	0,0020	0,0020	0,0025	0,0031	
Hardened steels	48	460											
Stainless steels, sulphured austenitic	28	273	50	0,0003	0,0005	0,0013	0,0016	0,0020	0,0025	0,0025	0,0031	0,0039	
Stainless steels, martensitic	36	337	35	0,0003	0,0005	0,0013	0,0016	0,0020	0,0025	0,0025	0,0031	0,0039	
Cast iron	46	435	25	0,0003	0,0005	0,0013	0,0016	0,0020	0,0025	0,0025	0,0031	0,0039	
Spheroidal graphite iron and malleable cast iron	23	242	80	0,0005	0,0007	0,0025	0,0031	0,0039	0,0049	0,0049	0,0063	0,0079	
Chilled cast iron	38	354	80	0,0004	0,0006	0,0020	0,0025	0,0031	0,0039	0,0039	0,0049	0,0063	
New cast materials GGV	23	242	100	0,0005	0,0007	0,0025	0,0031	0,0039	0,0049	0,0049	0,0063	0,0079	
New cast materials ADI	38	354	80	0,0004	0,0006	0,0020	0,0025	0,0031	0,0039	0,0039	0,0049	0,0063	
Special alloys	20	220											
Ti and Ti-alloys	32	301											
Aluminium and Al-alloys	43	402											
Al wrought alloys	54	549	20	0,0002	0,0002	0,0008	0,0010	0,0013	0,0016	0,0016	0,0020	0,0025	
Al cast alloys ≤ 10 % Si	25	255	20	0,0002	0,0003	0,0010	0,0013	0,0016	0,0020	0,0020	0,0025	0,0031	
Al cast alloys ≤ 24 % Si	43	402	15	0,0002	0,0003	0,0010	0,0013	0,0016	0,0020	0,0020	0,0025	0,0031	
Magnesium alloys	-	120	260	0,0006	0,0008	0,0031	0,0039	0,0049	0,0063	0,0063	0,0079	0,0098	
Copper, low-alloyed	-	150	260	0,0006	0,0008	0,0031	0,0039	0,0049	0,0063	0,0063	0,0079	0,0098	
Brass, short-chipping	-	180	165	0,0005	0,0007	0,0025	0,0031	0,0039	0,0049	0,0049	0,0063	0,0079	
Brass, long-chipping	-	180	165	0,0005	0,0007	0,0025	0,0031	0,0039	0,0049	0,0049	0,0063	0,0079	
Bronze, short-chipping	-	180	230	0,0005	0,0007	0,0025	0,0031	0,0039	0,0049	0,0049	0,0063	0,0079	
Bronze, long-chipping	-	180	195	0,0004	0,0006	0,0020	0,0025	0,0031	0,0039	0,0039	0,0049	0,0063	
Duroplastics	-	120	230	0,0005	0,0007	0,0025	0,0031	0,0039	0,0049	0,0049	0,0063	0,0079	
Thermoplastics	-	150	195	0,0004	0,0006	0,0020	0,0025	0,0031	0,0039	0,0039	0,0049	0,0063	
Reinforced plastics - Kevlar	-	180	230	0,0004	0,0006	0,0020	0,0025	0,0031	0,0039	0,0039	0,0049	0,0063	
Reinforced plastics - GFK / CFK	-	180	150	0,0004	0,0006	0,0020	0,0025	0,0031	0,0039	0,0039	0,0049	0,0063	
Duroplastics	-	180	115	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Thermoplastics	-	180	115	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Reinforced plastics - Kevlar	25	255	65	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	
Reinforced plastics - GFK / CFK	32	301	60	0,0003	0,0006	0,0016	0,0020	0,0025	0,0031	0,0031	0,0039	0,0049	