Cutting data recommendations for spotting drills

Feed and cutting speed

Tritan-Spot-Drill-Steel | SCD670

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]		Cutting speed v_c [m/min]				Feed f [mm] for drill diameter					
						Internal cooling	External cooling	MQL	Air	4.00	5.50	7.50	10.50	14.50	20.00
P	P1	P1.1	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 700		**175**	**160**	**160**		0.09	0.10	0.11	0.13	0.14	0.15
		P1.2	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 1,200		**160**	**130**	**130**		0.11	0.12	0.14	0.16	0.17	0.18
	P2	P2.1	Nitrided, case hardened and heat-treated steels, alloy	< 900		**170**	**145**	**145**		0.10	0.12	0.13	0.15	0.16	0.17
		P2.2	Nitrided, case hardened and heat-treated steels, alloy	< 1,400		**120**	**100**	**100**		0.08	0.09	0.11	0.12	0.13	0.14
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800		**110**	**95**	**95**		0.09	0.11	0.12	0.13	0.15	0.16
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000		**90**	**85**	**85**		0.08	0.09	0.10	0.11	0.12	0.13
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500		**90**	**70**	**75**		0.06	0.07	0.08	0.08	0.09	0.10
	P5	P5.1	Cast steel			**110**	**95**	**95**		0.10	0.12	0.13	0.15	0.16	0.17
M	M1	M1.1	Stainless steels, austenitic	< 700		**70**	**45**	**45**		0.06	0.07	0.08	0.09	0.10	0.10
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000											
	M2	M2.1	Stainless/heat-resistant cast steel, austenitic	< 700		**75**	**50**	**50**		0.06	0.07	0.08	0.09	0.10	0.10
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000											
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300		**245**	**175**	**175**	**175**	0.17	0.19	0.22	0.25	0.27	0.30
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500		**225**	**140**	**170**	**170**	0.16	0.18	0.20	0.23	0.25	0.27
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800		**170**	**130**	**130**		0.14	0.15	0.18	0.20	0.22	0.23
		K2.3	Cast iron with spheroidal graphite, GJS	> 800		**100**	**70**	**85**		0.09	0.10	0.12	0.13	0.14	0.15
	K3	K3.1	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	< 500		**155**	**135**	**135**		0.15	0.17	0.19	0.21	0.23	0.25
		K3.2	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	> 500		**135**	**120**	**120**		0.12	0.13	0.15	0.17	0.19	0.20
N	N1	N1.1	Aluminium, non-alloy and alloy < 3 % Si			**300**	**200**	**250**		0.11	0.12	0.13	0.15	0.17	0.18
		N1.2	Aluminium, alloy ≤ 7 % Si			**250**	**180**	**200**		0.14	0.15	0.18	0.20	0.22	0.23
		N1.3	Aluminium, alloy > 7-12 % Si			**220**	**150**	**180**		0.14	0.15	0.18	0.20	0.22	0.23
		N1.4	Aluminium, alloy > 12 % Si			**180**	**120**	**150**		0.14	0.15	0.18	0.20	0.22	0.23
	N2	N2.1	Copper, non-alloy and low-alloy	< 300		**140**	**100**			0.11	0.12	0.13	0.15	0.17	0.18
		N2.2	Copper, alloy	> 300		**120**	**90**			0.14	0.15	0.18	0.20	0.22	0.23
		N2.3	Brass, bronze, gunmetal	< 1,200		**200**	**160**	**160**	**120**	0.17	0.19	0.22	0.25	0.27	0.30
	N4	N4.1	Plastic, thermoplastics				**60**		**50**	0.09	0.10	0.12	0.13	0.14	0.15
		N4.2	Plastic, thermosets				**65**		**40**	0.07	0.08	0.09	0.11	0.12	0.12
		N4.3	Plastic, foams						**400**	0.07	0.08	0.09	0.11	0.12	0.12
S	S1	S1.1	Titanium, titanium alloys	< 400		**40**	**25**			0.062	0.069	0.078	0.088	0.097	0.104
	S2	S2.1	Titanium, titanium alloys	< 1,200		**30**	**20**			0.053	0.059	0.067	0.075	0.083	0.089
		S2.2	Titanium, titanium alloys	> 1,200		**25**	**15**			0.044	0.050	0.056	0.063	0.069	0.074
	S3	S3.1	Nickel, unalloyed and alloyed	< 900		**20**	**15**			0.035	0.040	0.045	0.050	0.055	0.059
		S3.2	Nickel, unalloyed and alloyed	> 900		**15**	**10**			0.044	0.050	0.056	0.063	0.069	0.074
	S4	S4.1	High-temperature super alloy Ni, Co and Fe-based			**15**	**10**			0.035	0.040	0.045	0.050	0.055	0.059
	S5	S5.1	Tungsten and molybdenum alloys			**15**	**10**			0.035	0.040	0.045	0.050	0.055	0.059
H	H1	H1.1	Hardened steel/cast steel	< 44		**80**	**80**	**80**		0.078	0.087	0.098	0.109	0.120	0.128
		H1.2	Hardened steel/cast steel	< 55		**30**	**30**	**30**		0.053	0.059	0.067	0.075	0.083	0.089

* MAPAL machining groups
** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

The specified cutting values are guide values.
The optimum data for the respective machining task should be determined during the test or machining.