

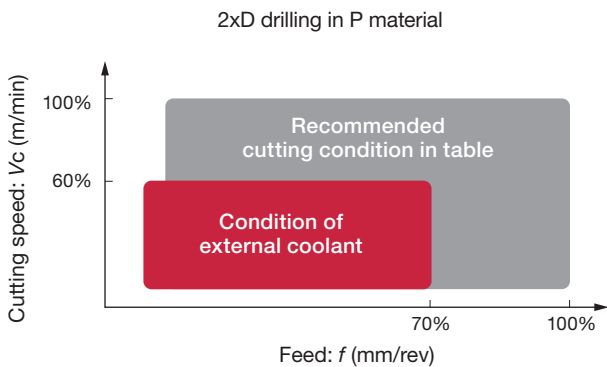
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed Vc (m/min)	Feed: f (mm/rev)									
			Tool diameter: DC (mm)									
			ø4 - 4.4	ø4.5 - 4.9	ø5 - 5.9	ø6 - 7.9	ø8 - 9.9	ø10 - ø11.9	ø12 - ø13.9	ø14 - ø15.9	ø16 - ø19.9	ø20 - ø25.9
P	Low carbon steels (C < 0.3) SS400, SM490, S25C, etc. C15E4, E275A, E355D, etc.	80 - 140	0.04 - 0.07	0.04 - 0.08	0.07 - 0.13	0.09 - 0.13	0.12 - 0.25	0.15 - 0.28	0.18 - 0.3	0.20 - 0.35	0.25 - 0.45	0.25 - 0.45
	High carbon steels (C > 0.3) S45C, S55C, etc. C45, C55, etc.	70 - 120	0.04 - 0.07	0.04 - 0.08	0.07 - 0.13	0.09 - 0.13	0.12 - 0.25	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45	0.25 - 0.45
	Low alloy steels SCM415, etc. 18CrMo4, etc.	70 - 120	0.04 - 0.06	0.05 - 0.08	0.07 - 0.13	0.08 - 0.13	0.11 - 0.25	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4	0.25 - 0.45
	Alloy steels SCM440, SCR420, etc. 42CrMo4, 20Cr4, etc.	40 - 90	0.04 - 0.07	0.05 - 0.08	0.07 - 0.13	0.08 - 0.13	0.11 - 0.25	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4	0.25 - 0.45
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-2, etc.	30 - 70	-	-	0.04 - 0.08	0.08 - 0.1	0.1 - 0.15	0.12 - 0.18	0.14 - 0.2	0.16 - 0.24	0.16 - 0.26	0.18 - 0.3
K	Grey cast irons FC250, etc. GG25, etc.	80 - 180	0.04 - 0.08	0.04 - 0.08	0.1 - 0.15	0.12 - 0.18	0.15 - 0.3	0.20 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55	0.35 - 0.6
	Ductile cast irons FCD700, etc. GGG70, etc.	80 - 140	0.04 - 0.08	0.04 - 0.08	0.1 - 0.15	0.12 - 0.18	0.15 - 0.3	0.20 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55	0.35 - 0.6
N	Aluminium alloys ADC12, etc. AlSi11Cu3, etc.	80 - 220	-	-	-	0.1 - 0.2	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.5	0.4 - 0.6	0.5 - 0.75
S	Titanium alloys Ti-6Al-4V, etc.	20 - 50	-	-	-	0.05 - 0.07	0.06 - 0.12	0.08 - 0.15	0.1 - 0.28	0.12 - 0.2	0.14 - 0.22	0.18 - 0.27
	Nickel-based alloys	20 - 50	-	-	-	0.05 - 0.07	0.06 - 0.11	0.08 - 0.13	0.1 - 0.15	0.12 - 0.18	0.12 - 0.22	0.14 - 0.22
H	Hardened steel	20 - 50	-	-	-	0.05 - 0.07	0.06 - 0.12	0.08 - 0.15	0.1 - 0.18	0.12 - 0.2	0.14 - 0.22	0.16 - 0.25

- Cutting conditions in the above table show standard cutting conditions
- Cutting conditions may change due to the rigidity and power of the machine and the workpiece material
- Machined hole diameter may change depending upon the rigidity of the machine tool or cutting conditions

Over 2xD drilling without internal coolant

At without internal coolant environment, external coolant supply is required. The cutting condition is recommended to reduced from listed condition depend on material and hole depth. Over 2xD drill, Step or pecking cycle operation is recommended in order to cooling cutting edge and chip evacuation.



Over 8xD drilling

Drilling operation with over 8xD drilling require stable drill entry. To proof excellent drill entry. DMC head is recommended. Also incase of L/D=8, 12 drilling, the recommended of cutting speed and feeds in between the minimum and medium value listed above at drill entry first few depth. After drill entry, possible to increase feed depend on target productivity.

