

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Hardness HB	Selection criteria	Recommended grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Low carbon steels (S15C, etc.)	200 - 300 HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.4
		200 - 300 HB	Low cutting force	AH3135	ML	100 - 250	0.1 - 0.3
		200 - 300 HB	Priority on wear resistance	T3225	MJ	200 - 350	0.1 - 0.3
		200 - 300 HB	Priority on surface quality	NS740	MJ	100 - 250	0.1 - 0.3
	High carbon steels, alloyed steels (S55C, SCM440, etc.)	150 - 300 HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.35
		150 - 300 HB	Low cutting force	AH3135	ML	100 - 250	0.1 - 0.3
		150 - 300 HB	Priority on wear resistance	T3225	MJ	180 - 300	0.1 - 0.3
		150 - 300 HB	Priority on surface quality	NS740	MJ	100 - 250	0.1 - 0.3
	Prehardened steel (NAK80, PX5, etc.)	30 - 40 HRC	First choice	AH3135	MJ	100 - 200	0.1 - 0.3
		30 - 40 HRC	Low cutting force	AH3135	ML	100 - 200	0.1 - 0.25
		30 - 40 HRC	Priority on wear resistance	T3225	MJ	150 - 250	0.1 - 0.25
M	Stainless steel (SUS304 / X5CrNi18-9, etc.)	- 200 HB	First choice	AH3135	ML	100 - 200	0.1 - 0.3
		- 200 HB	Priority on fracture resistance	AH3135	MJ	100 - 200	0.1 - 0.35
		- 200 HB	Priority on wear resistance	T3225	MJ	100 - 250	0.1 - 0.3
K	Ductile cast iron (FCD400 / GGG40, etc.)	150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.35
		150 - 250 HB	Priority on fracture resistance	AH120	MJ	100 - 250	0.1 - 0.4
	Ductile cast iron (FCD400 / GGG40, etc.)	150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.35
		150 - 250 HB	Priority on fracture resistance	AH120	MJ	80 - 200	0.1 - 0.4
N	Aluminium alloys (Si < 13%)	-	First choice	TH10	AJ	500 - 1500	0.1 - 0.5
	Aluminium alloys (Si ≥ 13%)	-	First choice	TH10	AJ	150 - 500	0.1 - 0.5
S	Titanium alloys Ti-6Al-4V, etc.	- 40 HRC	First choice	AH3135	ML	30 - 60	0.1 - 0.3
		- 40 HRC	Priority on fracture resistance	AH3135	MJ	30 - 60	0.1 - 0.3
	Heat-resistance alloys Inconel 718, etc.	- 40 HRC	First choice	AH725	MJ	10 - 40	0.04 - 0.1

- Remove excessive chip with an air blast to prevent chip jamming.
- Use water-soluble coolant to avoid built-up edge in case extreme welding occurs on cutting edges. (ex. aluminium machining).
- For the operation with depth of cut which varies (ex. casting skin) and machining of workpiece materials with interrupted surface, the feed (fz) should be set to the lower recommended value shown in the above table.

- Cutting conditions may be limited depending on machine power, workpiece rigidity, and spindle output. When the cutting width, depth or overhang length is large, set Vc and fz to the lower recommended values and check the machine power and vibration.