Standard cutting conditions

ISO	Workpiece materials	Hardness HB	Selection criteria	Recommended grade	Chip-breaker	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Low carbon steels (1015 etc.)	< 200	First choice	**AH3135**	**MJ**	350 - 800	0.004 - 0.024
		< 200	First choice	**AH725**	**MJ**	350 - 800	0.004 - 0.024
		< 200	Priority on wear resistance	**T3130**	**MJ**	390 - 800	0.004 - 0.024
		< 200	Priority on surface quality	**NS740**	**MJ**	350 - 800	0.004 - 0.020
		< 200	Low cutting force	**AH3135**	**ML**	350 - 800	0.004 - 0.020
	High carbon steels (1045 etc.)	200 - 300	First choice	**AH3135**	**MJ**	350 - 750	0.004 - 0.020
		200 - 300	First choice	**AH725**	**MJ**	350 - 750	0.004 - 0.020
		200 - 300	Priority on wear resistance	**T3130**	**MJ**	390 - 800	0.004 - 0.020
		200 - 300	Priority on surface quality	**NS740**	**MJ**	350 - 800	0.004 - 0.016
		200 - 300	Low cutting force	**AH3135**	**ML**	350 - 800	0.004 - 0.016
	Alloyed steels (4140 etc.)	150 - 300	First choice	**AH3135**	**MJ**	350 - 750	0.004 - 0.020
		150 - 300	First choice	**AH725**	**MJ**	350 - 750	0.004 - 0.020
		150 - 300	Priority on wear resistance	**T3130**	**MJ**	390 - 800	0.004 - 0.020
		150 - 300	Priority on surface quality	**NS740**	**MJ**	350 - 800	0.004 - 0.016
		150 - 300	Low cutting force	**AH3135**	**ML**	350 - 750	0.004 - 0.016
	Tool steels (D2 etc.)	< 300	First choice	**AH3135**	**MJ**	350 - 750	0.004 - 0.020
		< 300	First choice	**AH725**	**MJ**	350 - 750	0.004 - 0.020
		< 300	Priority on wear resistance	**T3130**	**MJ**	350 - 750	0.004 - 0.020
		< 300	Low cutting force	**AH3135**	**ML**	350 - 750	0.004 - 0.016
M	Stainless steels (S30400 etc.)	-	First choice	**AH3135**	**MJ**	300 - 600	0.004 - 0.018
		-	Priority on fracture resistance	**AH725**	**MJ**	300 - 600	0.004 - 0.018
		-	Priority on fracture resistance	**AH3135**	**ML**	300 - 600	0.004 - 0.016
K	Gray cast irons (No.250B, No.300B etc.)	-	First choice	**AH120**	**MJ**	450 - 800	0.004 - 0.024
		-	Priority on wear resistance	**T1115**	**MJ**	490 - 920	0.004 - 0.024
	Ductile cast irons (60-40-18 etc.)	-	First choice	**AH120**	**MJ**	350 - 650	0.004 - 0.024
		-	Priority on wear resistance	**T1115**	**MJ**	390 - 720	0.004 - 0.024
N	Aluminum alloys (Si < 13%)	-	First choice	**TH10**	**AJ**	1600 - 5000	0.004 - 0.020
	Aluminum alloys (Si ≥ 13%)	-	First choice	**TH10**	**AJ**	490 - 1600	0.004 - 0.020
S	Titanium alloy Ti-6Al-4V etc.	-	First choice	**AH3135**	**ML**	98 - 197	0.004 - 0.016
	Heat-resistance alloy Inconel 718 etc.	-	First choice	**AH725**	**ML**	66 - 164	0.002 - 0.004

· Remove excessive chip accumulation with an air blast.
· To avoid build up edge on the cutting edges (aluminum machining), use a water soluble coolant.
· When cutting an interrupted surface or a casting skin, the feed (*fz*) should be reduced below the recommended value shown in the above table.
· Cutting conditions are limited by 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.