

RECOMMENDED CUTTING CONDITIONS FOR TURNING

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Work Material		Recommended Cutting Conditions and Grades				Breaker	When Recommended Conditions are Insufficient					
		Depth of Cut (mm)	Feed (mm/rev)	Coolant	Recommended Cutting Speed and Grades				Problem/Condition	Countermeasure		
					100		200	300			400	
Mild Steel Carbon Steel Alloy Steel	≤ 160 HB	Light Cutting	≤ 1.0	≤ 0.3	Dry	NX3035 290 (235 - 335)				SY	<ul style="list-style-type: none"> ● Long chips when finishing. ● Rapid wear occurrence in high speed cutting. ● Easy to fracture during interrupted cutting. ● Continuous cutting. FY Breaker UE6020 MS Breaker UE6020 Wet cutting is possible.	
		Medium Cutting	1 - 6	0.4 (0.2 - 0.6)	Dry	UE6110 350 (260 - 440)				MS	<ul style="list-style-type: none"> ● Easy to fracture during interrupted cutting. ● Poor finished surface. ● Continuous cutting. UE6020 or MH or MA Breaker NX3035 Wet cutting is possible.	
		Semi-Heavy Cutting	4 - 9	0.6 (0.5 - 0.8)	Dry	UE6110 350 (260 - 440)				MH	<ul style="list-style-type: none"> ● Easy to fracture. ● Continuous cutting. UE6020 or GH Breaker Wet cutting is possible.	
	160 - 280 HB	Light Cutting	≤ 1.0	≤ 0.3	Dry	UE6110 280 (210 - 355)				SH	<ul style="list-style-type: none"> ● Long chips when finishing. ● Rapid wear occurrence when high speed cutting. ● Easy to fracture during interrupted cutting. ● Continuous cutting. ● High feed cutting (f ≥ 0.3) FH Breaker UE6005 UE6020 or MV Breaker Wet cutting is possible. SW Breaker	
		Medium Cutting	1 - 6	0.4 (0.2 - 0.6)	Dry	UE6110 260 (190 - 325)				MV	<ul style="list-style-type: none"> ● Rapid wear occurrence when high speed cutting. ● Easy to fracture during interrupted cutting. ● Long chips. ● High feed cutting (f ≥ 0.4) ● Continuous cutting. UE6005 UE6020 or MH Breaker SH Breaker GH Breaker or MW Breaker Wet cutting is possible.	
		Semi-Heavy Cutting	4 - 9	0.6 (0.5 - 0.8)	Dry	UE6110 250 (180 - 310)				GH	<ul style="list-style-type: none"> ● Rapid wear occurrence and short tool life. ● Easy to fracture. UE6005 UE6020	
	280 - 350 HB	Light Cutting	≤ 1.0	≤ 0.3	Water Soluble Oil	UE6110 180 (120 - 230)				SH	<ul style="list-style-type: none"> ● Rapid wear occurrence when high speed cutting. ● Easy to fracture. ● Long chips. ● Interrupted cutting. UE6005 UE6020 FH Breaker Dry cutting	
		Medium Cutting	1 - 4	0.3 (0.2 - 0.4)	Water Soluble Oil	UE6110 170 (120 - 210)				MH	<ul style="list-style-type: none"> ● Easy to fracture. ● Interrupted cutting. UE6020 or GH Breaker Dry cutting	
	Austenitic Stainless Steel	≤ 200 HB	Light Cutting	1.0 ≤	0.2 ≤	Water Soluble Oil	U5735 140 (95 - 185)				SH	<ul style="list-style-type: none"> ● Long chips. ● Easy to fracture. ● Poor finished surface FH Breaker U5735 MS Breaker NX3035 (ap ≤ 0.5)
		Medium Cutting	1 - 4	0.3 (0.2 - 0.4)	Water Soluble Oil	U5735 120 (85 - 155)				MS	<ul style="list-style-type: none"> ● Rapid wear occurrence and short tool life. ● Easy to fracture. ● Long chips. US7020 or lower cutting speed. MA Breaker MA Breaker	
High Manganese Steel	≤ 200HB	1 - 4	0.2 (0.1 - 0.4)	Dry	UE6110 170 (120 - 210)				MS	<ul style="list-style-type: none"> ● Easy to fracture. ● Interrupted cutting. UE6020 UE6020		
Pure Titanium	≤ 200HB	0.5 - 1.5	0.15 (0.1 - 0.2)	Water Soluble Oil	RT9010 100 (80 - 120)				MJ	<ul style="list-style-type: none"> ● Rapid wear occurrence and short tool life. ● Easy to fracture. ● Interrupted cutting. RT9005 TF15 or GJ Breaker Use cutting oil.		
Titanium Alloy	≤ 350HB	0.5 - 1.5	0.15 (0.1 - 0.2)	Water Soluble Oil	RT9010 70 (40 - 90)				MJ	<ul style="list-style-type: none"> ● Rapid wear occurrence and short tool life. ● Easy to fracture. ● Interrupted cutting. RT9005 TF15 or GJ Breaker Use cutting oil.		