WHNSB-TH | Cutting Conditions for NSB 3D | 5D | 8D

3 - 5 - 8 x D

Cutting Conditions for NSB 3D ~ 8D				Tool Diameter					
Work material	**Coolant**	**Cutting Speed V_c (m/min)**		**2**	**2.25**	**2.5**	**2.75**	**3**	
Structural steel –180HB ST37 - ST52	Water or Oil	90(70~150)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.12)	0.09 (0.07~0.14)	0.10 (0.08~0.15)	0.11 (0.08~0.17)	0.12 (0.09~0.18)	
	Mist oil	90(70~130)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.12)	0.09 (0.07~0.14)	0.10 (0.08~0.15)	0.11 (0.08~0.17)	0.12 (0.09~0.18)	
Carbon steel –220HB 1.1730, 1.1191	Water or Oil	90(70~150)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.12)	0.09 (0.07~0.14)	0.10 (0.08~0.15)	0.11 (0.08~0.17)	0.12 (0.09~0.18)	
	Mist oil	90(70~130)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.12)	0.09 (0.07~0.14)	0.10 (0.08~0.15)	0.11 (0.08~0.17)	0.12 (0.09~0.18)	
Alloy steel –30HRC 1.3505, 1.7131,1.7225	Water or Oil	80(60~140)	n (min^{-1})	12.740	11.320	10.200	9.260	8.500	
			f (mm/rev)	0.07 (0.05~0.10)	0.08 (0.06~0.113)	0.09 (0.06~0.125)	0.10 (0.07~0.138)	0.11 (0.08~0.15)	
	Mist oil	80(60~120)	n (min^{-1})	12.740	11.320	10.200	9.260	8.500	
			f (mm/rev)	0.07 (0.05~0.10)	0.08 (0.06~0.113)	0.09 (0.06~0.125)	0.10 (0.07~0.138)	0.11 (0.08~0.15)	
Stainless steel 1.4301, 1.4401, 1.4542	Water or Oil	70(50~100)	n (min^{-1})	11.140	9.900	8.910	8.100	7.420	
			f (mm/rev)	0.05 (0.04~0.07)	0.06 (0.05~0.08)	0.06 (0.05~0.09)	0.07 (0.06~0.10)	0.08 (0.06~0.11)	
Titanium alloy	Water or Oil	60(50~100)	n (min^{-1})	9.540	8.480	7.630	6.940	6.360	
			f (mm/rev)	0.04 (0.03~0.06)	0.045 (0.035~0.068)	0.05 (0.038~0.075)	0.055 (0.041~0.083)	0.06 (0.045~0.09)	
Prehardened steel < –40HRC 1.2343, 1.2344	Water or Oil	70(50~100)	n (min^{-1})	11.140	9.900	8.910	8.100	7.420	
			f (mm/rev)	0.05 (0.04~0.06)	0.06 (0.05~0.068)	0.06 (0.05~0.075)	0.07 (0.06~0.083)	0.08 (0.06~0.09)	
	Mist oil	60(50~100)	n (min^{-1})	9.540	8.480	7.630	6.940	6.360	
			f (mm/rev)	0.05 (0.04~0.06)	0.06 (0.05~0.068)	0.06 (0.05~0.075)	0.07 (0.06~0.083)	0.08 (0.06~0.09)	
Hardened Steel ~ 50HRC 1.2343, 1.2344, 1.2367	Water or Oil	30(20~40)	n (min^{-1})	4770	4240	3820	3470	3180	
			f (mm/rev)	0.03 (0.02~0.04)	0.034 (0.023~0.045)	0.038 (0.025~0.05)	0.041 (0.028~0.055)	0.045 (0.03~0.06)	
	Mist oil	20(10~30)	n (min^{-1})	3180	2820	2540	2310	2120	
			f (mm/rev)	0.03 (0.02~0.04)	0.034 (0.023~0.045)	0.038 (0.025~0.05)	0.041 (0.028~0.055)	0.045 (0.03~0.06)	
Ductile iron EN-JS1072, EN-JS1102 GGG-40, GGG-70	Water or Oil	90(70~150)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)	0.12 (0.09~0.21)	
	Mist oil	90(70~130)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)	0.12 (0.09~0.21)	
Cast iron EN-JL1040, EN-JL1060 (GG-25, GG-35)	Water or Oil	90(70~150)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)	0.12 (0.09~0.21)	
	Mist oil	90(70~130)	n (min^{-1})	14.320	12.730	11.460	10.420	9.550	
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)	0.12 (0.09~0.21)	
Inconel 718, Heatproof steel 2.4668	Water or Oil	20(15 ~ 30)	n (min^{-1})	3.180,00	2.820,00	2.540,00	2.320,00	2.120,00	
			f (mm/rev)	0.03 (0.02~0.04)	0.034 (0.023~0.045)	0.038 (0.025~0.05)	0.041 (0.028~0.055)	0.045 (0.03~0.06)	

WHNSB-TH | Cutting Conditions for NSB 3 D | 5 D | 8 D

	Tool Diameter									
	4	5	6	7	8	9	10	11	12	13
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.24)	0.20 (0.15~0.3)	0.24 (0.18~0.36)	0.26 (0.19~0.40)	0.28 (0.20~0.44)	0.30 (0.23~0.47)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.24)	0.20 (0.15~0.3)	0.24 (0.18~0.36)	0.26 (0.19~0.40)	0.28 (0.20~0.44)	0.30 (0.23~0.47)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.33 (0.27~0.5)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.24)	0.20 (0.15~0.3)	0.24 (0.18~0.36)	0.26 (0.19~0.40)	0.28 (0.20~0.44)	0.30 (0.23~0.47)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.24)	0.20 (0.15~0.3)	0.24 (0.18~0.36)	0.26 (0.19~0.40)	0.28 (0.20~0.44)	0.30 (0.23~0.47)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	6.370	5.100	4.250	3.640	3.200	2.830	2.550	2.320	2.130	1.960
	0.14 (0.1~0.20)	0.18 (0.13~0.25)	0.21 (0.15~0.30)	0.22 (0.15~0.329)	0.24 (0.16~0.36)	0.25 (0.18~0.378)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)
	6.370	5.100	4.250	3.640	3.200	2.830	2.550	2.320	2.130	1.960
	0.14 (0.1~0.20)	0.18 (0.13~0.25)	0.21 (0.15~0.30)	0.22 (0.15~0.329)	0.24 (0.16~0.36)	0.25 (0.18~0.378)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)
	5.570	4.450	3.710	3.180	2.780	2.470	2.220	2.020	1.850	1.710
	0.10 (0.08~0.14)	0.13 (0.10~0.18)	0.15 (0.12~0.21)	0.18 (0.14~0.25)	0.20 (0.16~0.28)	0.23 (0.18~0.32)	0.25 (0.20~0.35)	0.22 (0.19~0.36)	0.24 (0.21~0.39)	0.26 (0.23~0.42)
	4.770	3.810	3.180	2.720	2.380	2.120	1.900	1.730	1.590	1.460
	0.08 (0.06~0.12)	0.1 (0.075~0.15)	0.12 (0.09~0.18)	0.14 (0.11~0.21)	0.16 (0.12~0.24)	0.18 (0.14~0.27)	0.20 (0.15~0.30)	0.2 (0.15~0.30)	0.21 (0.15~0.33)	0.23 (0.16~0.36)
	5.570	4.450	3.710	3.180	2.780	2.470	2.220	2.020	1.850	1.710
	0.10 (0.08~0.12)	0.13 (0.10~0.15)	0.15 (0.12~0.18)	0.18 (0.14~0.21)	0.20 (0.16~0.24)	0.23 (0.18~0.27)	0.25 (0.20~0.30)	0.22 (0.19~0.30)	0.24 (0.21~0.33)	0.26 (0.23~0.36)
	4.770	3.810	3.180	2.720	2.380	2.120	1.900	1.730	1.590	1.460
	0.10 (0.08~0.12)	0.13 (0.10~0.15)	0.15 (0.12~0.18)	0.18 (0.14~0.21)	0.20 (0.16~0.24)	0.23 (0.18~0.27)	0.25 (0.20~0.30)	0.22 (0.19~0.30)	0.24 (0.21~0.33)	0.26 (0.23~0.36)
	2380	1910	1590	1360	1190	1060	950	860	790	730
	0.06 (0.04~0.08)	0.075 (0.05~0.10)	0.09 (0.06~0.12)	0.105 (0.07~0.14)	0.12 (0.08~0.16)	0.135 (0.09~0.18)	0.15 (0.10~0.20)	0.15 (0.10~0.20)	0.15 (0.10~0.20)	0.163 (0.13~0.23)
	1590	1270	1060	900	790	700	630	580	530	490
	0.06 (0.04~0.08)	0.075 (0.05~0.10)	0.09 (0.06~0.12)	0.105 (0.07~0.14)	0.12 (0.08~0.16)	0.135 (0.09~0.18)	0.15 (0.10~0.20)	0.15 (0.10~0.20)	0.15 (0.10~0.20)	0.163 (0.13~0.23)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)	0.40 (0.33~0.66)	0.42 (0.36~0.72)	0.46 (0.39~0.78)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)	0.40 (0.33~0.66)	0.42 (0.36~0.72)	0.46 (0.39~0.78)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)	0.40 (0.33~0.66)	0.42 (0.36~0.72)	0.46 (0.39~0.78)
	7.160	5.730	4.770	4.100	3.580	3.180	2.860	2.600	2.380	2.200
	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)	0.40 (0.33~0.66)	0.42 (0.36~0.72)	0.46 (0.39~0.78)
	1.590,00	1.270,00	1.060,00	900,00	790,00	700,00	630,00	570,00	530,00	490,00
	0.06 (0.04~0.08)	0.075 (0.05~0.10)	0.09 (0.06~0.12)	0.105 (0.07~0.14)	0.12 (0.08~0.16)	0.12 (0.08~0.16)	0.125 (0.075~0.175)	0.138 (0.083~0.193)	0.15 (0.09~0.21)	0.163 (0.098~0.23)

WHNSB-TH | Cutting Conditions for NSB 5 D (Large Diameter Cutting Condition)

Large Diameter 5 x D

5D (Large Diameter Cutting Condition)				Tool Diameter				
Work material	Coolant	Cutting Speed V_c (m/min)		14	15	16	17	
Structural steel –180HB ST37 - ST52	Water or Oil	90(70~150)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	
	Mist oil	90(70~130)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	
Carbon steel –220HB 1.1730, 1.1191	Water or Oil	90(70~150)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	
	Mist oil	90(70~130)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)	
Alloy steel –30HRC 1.3505, 1.7131,1.7225	Water or Oil	80(60~140)	n (min^{-1})	1.820	1.700	1.590	1.500	
			f (mm/rev)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	
	Mist oil	80(60~120)	n (min^{-1})	1.820	1.700	1.590	1.500	
			f (mm/rev)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)	
Stainless steel 1.4301, 1.4401, 1.4542	Water or Oil	70(50~100)	n (min^{-1})	1.590	1.490	1.390	1.310	
			f (mm/rev)	0.26 (0.23~0.42)	0.26 (0.23~0.42)	0.26 (0.23~0.42)	0.26 (0.23~0.42)	
Titanium alloy	Water or Oil	60(50~100)	n (min^{-1})	1.360	1.270	1.190	1.120	
			f (mm/rev)	0.23 (0.16~0.36)	0.23 (0.16~0.36)	0.23 (0.16~0.36)	0.23 (0.16~0.36)	
Prehardened steel < –40HRC 1.2343, 1.2344	Water or Oil	70(50~100)	n (min^{-1})	1.590	1.490	1.390	1.310	
			f (mm/rev)	0.26 (0.23~0.36)	0.26 (0.23~0.36)	0.26 (0.23~0.36)	0.26 (0.23~0.36)	
	Mist oil	60(50~100)	n (min^{-1})	1.360	1.270	1.190	1.120	
			f (mm/rev)	0.26 (0.23~0.36)	0.26 (0.23~0.36)	0.26 (0.23~0.36)	0.26 (0.23~0.36)	
Hardened Steel ~ 50HRC 1.2343, 1.2344, 1.2367	Water or Oil	30(20~40)	n (min^{-1})	680	640	600	560	
			f (mm/rev)	0.163 (0.13~0.23)	0.163 (0.13~0.23)	0.163 (0.13~0.23)	0.163 (0.13~0.23)	
	Mist oil	20(10~30)	n (min^{-1})	460	420	400	370	
			f (mm/rev)	0.163 (0.13~0.23)	0.163 (0.13~0.23)	0.163 (0.13~0.23)	0.163 (0.13~0.23)	
Ductile iron EN-JS1072, EN-JS1102 GGG-40, GGG-70	Water or Oil	90(70~150)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	
	Mist oil	90(70~130)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	
Cast iron EN-JL1040, EN-JL1060 (GG-25, GG-35)	Water or Oil	90(70~150)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	
	Mist oil	90(70~130)	n (min^{-1})	2.040	1.910	1.790	1.690	
			f (mm/rev)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)	
Inconel 718, Heatproof steel 2.4668	Water or Oil	20(15 ~ 30)	n (min^{-1})	460	420	400	370	
			f (mm/rev)	0.163 (0.098~0.23)	0.163 (0.098~0.23)	0.163 (0.098~0.23)	0.163 (0.098~0.23)	

WHNSB-TH | Cutting Conditions for NSB 5 D (Large Diameter Cutting Condition)

	Tool Diameter		
	18	19	19.55
	1.590	1.510	1.470
	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	1.590	1.510	1.470
	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	1.590	1.510	1.470
	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	1.590	1.510	1.470
	0.30 (0.25~0.50)	0.30 (0.25~0.50)	0.30 (0.25~0.50)
	1.410	1.340	1.300
	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)
	1.410	1.340	1.300
	0.25 (0.20~0.40)	0.25 (0.20~0.40)	0.25 (0.20~0.40)
	1.240	1.170	1.140
	0.26 (0.23~0.42)	0.26 (0.23~0.42)	0.26 (0.23~0.42)
	1.060	1.010	980
	0.23 (0.16~0.36)	0.23 (0.16~0.36)	0.23 (0.16~0.36)
	1.240	1.170	1.140
	0.26 (0.23~0.36)	0.26 (0.23~0.36)	0.26 (0.23~0.36)
	1.060	1.010	980
	0.26 (0.23~0.36)	0.26 (0.23~0.36)	0.26 (0.23~0.36)
	530	500	490
	0.163 (0.13~0.23)	0.163 (0.13~0.23)	0.163 (0.13~0.23)
	350	340	330
	0.163 (0.13~0.23)	0.163 (0.13~0.23)	0.163 (0.13~0.23)
	1.590	1.510	1.470
	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)
	1.590	1.510	1.470
	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)
	1.590	1.510	1.470
	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)
	1.590	1.510	1.470
	0.46 (0.39~0.78)	0.46 (0.39~0.78)	0.46 (0.39~0.78)
	350	340	330
	0.163 (0.098~0.23)	0.163 (0.098~0.23)	0.163 (0.098~0.23)

WHNSB-TH | Cutting Conditions for NSB 10D | 15D | 20D | 25D | 30D

10 ~ 30 x D

Cutting Conditions for NSB 10D ~ 30D				Tool Diameter			
Work material	Coolant	Cutting Speed V_c (m/min)		2	2.25	2.5	2.75
Structual steel –180HB ST37 - ST52	Water or Oil	90(70~120)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.10)	0.09 (0.07~0.113)	0.10 (0.08~0.125)	0.11 (0.08~0.138)
	Mist oil	90(70~120)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.10)	0.09 (0.07~0.113)	0.10 (0.08~0.125)	0.11 (0.08~0.138)
Carbon steel –220HB 1.1730, 1.1191	Water or Oil	90(70~120)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.12)	0.09 (0.07~0.14)	0.10 (0.08~0.15)	0.11 (0.08~0.17)
	Mist oil	90(70~120)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.12)	0.09 (0.07~0.14)	0.10 (0.08~0.15)	0.11 (0.08~0.17)
Alloy steel –30HRC 1.3505, 1.7131,1.7225	Water or Oil	80(60~100)	n (min^{-1})	12.740	11.320	10.200	9.260
			f (mm/rev)	0.07 (0.05~0.12)	0.08 (0.06~0.14)	0.09 (0.06~0.15)	0.10 (0.07~0.17)
	Mist oil	80(60~100)	n (min^{-1})	12.740	11.320	10.200	9.260
			f (mm/rev)	0.07 (0.05~0.12)	0.08 (0.06~0.14)	0.09 (0.06~0.15)	0.10 (0.07~0.17)
Stainless steel 1.4301, 1.4401, 1.4542	Water or Oil	60(30~100)	n (min^{-1})	9.540	8.480	7.630	6.940
			f (mm/rev)	0.05 (0.04~0.07)	0.06 (0.05~0.08)	0.06 (0.05~0.09)	0.07 (0.06~0.10)
Prehardened steel < -40HRC 1.2343, 1.2344	Water or Oil	40(30~70)	n (min^{-1})	6.360	5.950	5.090	4.630
			f (mm/rev)	0.04 (0.03~0.05)	0.045 (0.038~0.056)	0.05 (0.038~0.063)	0.055 (0.041~0.069)
	Mist oil	30(20~60)	n (min^{-1})	4.770	4.240	3.820	3.470
			f (mm/rev)	0.04 (0.03~0.05)	0.045 (0.038~0.056)	0.05 (0.038~0.063)	0.055 (0.041~0.069)
Hardened Steel ~ 50HRC 1.2343, 1.2344, 1.2367	Water or Oil	15(10~25)	n (min^{-1})	2380	2120	1910	1740
			f (mm/rev)	0.02 (0.015~0.025)	0.023 (0.017~0.028)	0.025 (0.019~0.031)	0.028 (0.021~0.034)
Ductile iron EN-JS1072, EN-JS1102 GGG-40, GGG-70	Water or Oil	90(70~120)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)
	Mist oil	90(70~110)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)
Cast iron EN-JL1040, EN-JL1060 (GG-25, GG-35)	Water or Oil	90(70~120)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)
	Mist oil	90(70~110)	n (min^{-1})	14.320	12.730	11.460	10.420
			f (mm/rev)	0.08 (0.06~0.14)	0.09 (0.068~0.16)	0.10 (0.075~0.175)	0.11 (0.083~0.193)

* In case of over 50HRC work material, we would like to recommend step process by each 1xD.

* Für Materialhärten über 50HRC empfehlen wir den Stufenprozess für jede Erhöhung um 1xD.

* Nel caso il materiale da lavorare superi i 50HRC, raccomandiamo una foratura con step di 1xD.

WHNSB-TH | Cutting Conditions for NSB 10D | 15D | 20D | 25D | 30D

	Tool Diameter							
	3	4	5	6	7	8	9	10
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.15)	0.16 (0.12~0.20)	0.20 (0.15~0.25)	0.24 (0.18~0.30)	0.26 (0.19~0.329)	0.28 (0.20~0.36)	0.30 (0.23~0.378)	0.30 (0.25~0.40)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.15)	0.16 (0.12~0.20)	0.20 (0.15~0.25)	0.24 (0.18~0.30)	0.26 (0.19~0.329)	0.28 (0.20~0.36)	0.30 (0.23~0.378)	0.30 (0.25~0.40)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.18)	0.16 (0.12~0.24)	0.20 (0.15~0.3)	0.24 (0.18~0.36)	0.26 (0.19~0.40)	0.28 (0.20~0.44)	0.30 (0.23~0.47)	0.30 (0.25~0.50)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.18)	0.16 (0.12~0.24)	0.20 (0.15~0.3)	0.24 (0.18~0.36)	0.26 (0.19~0.40)	0.28 (0.20~0.44)	0.30 (0.23~0.47)	0.30 (0.25~0.50)
	8.500	6.370	5.100	4.250	3.640	3.200	2.830	2.550
	0.11 (0.08~0.18)	0.14 (0.1~0.24)	0.18 (0.13~0.30)	0.21 (0.15~0.36)	0.22 (0.15~0.40)	0.24 (0.16~0.44)	0.25 (0.18~0.47)	0.25 (0.20~0.50)
	8.500	6.370	5.100	4.250	3.640	3.200	2.830	2.550
	0.11 (0.08~0.18)	0.14 (0.1~0.24)	0.18 (0.13~0.30)	0.21 (0.15~0.36)	0.22 (0.15~0.40)	0.24 (0.16~0.44)	0.25 (0.18~0.47)	0.25 (0.20~0.50)
	6.360	4.770	3.820	3.180	2.720	2.380	2.120	1.920
	0.08 (0.06~0.11)	0.10 (0.08~0.14)	0.13 (0.10~0.18)	0.15 (0.12~0.21)	0.18 (0.14~0.25)	0.20 (0.16~0.28)	0.23 (0.18~0.32)	0.25 (0.20~0.35)
	4.240	3.180	2.540	2.120	1.810	1.590	1.410	1.270
	0.06 (0.045~0.075)	0.08 (0.06~0.10)	0.10 (0.075~0.125)	0.12 (0.09~0.15)	0.14 (0.105~0.175)	0.16 (0.12~0.20)	0.18 (0.135~0.225)	0.20 (0.15~0.25)
	3.180	2.380	1.910	1.590	1.360	1.190	1.060	950
	0.06 (0.045~0.075)	0.08 (0.06~0.10)	0.10 (0.075~0.125)	0.12 (0.09~0.15)	0.14 (0.105~0.175)	0.16 (0.12~0.20)	0.18 (0.135~0.225)	0.20 (0.15~0.25)
	1590	1190	950	800	680	600	530	480
	0.03 (0.023~0.038)	0.04 (0.03~0.05)	0.05 (0.038~0.063)	0.06 (0.045~0.075)	0.07 (0.053~0.088)	0.08 (0.06~0.01)	0.09 (0.068~0.113)	0.1 (0.075~0.125)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.21)	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.21)	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.21)	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)
	9.550	7.160	5.730	4.770	4.100	3.580	3.180	2.860
	0.12 (0.09~0.21)	0.16 (0.12~0.28)	0.20 (0.15~0.35)	0.24 (0.18~0.42)	0.28 (0.21~0.49)	0.32 (0.24~0.56)	0.36 (0.27~0.63)	0.40 (0.3~0.7)

*** En el caso de materiales de más de 50HRC, recomendamos taladradar en pasos de 1xD (picoteo)**

*** En cas de matières au-delà de 50HRC, nous recommandons des arrêts tous les 1xD.**

*** No caso de aço temperado superior a 50 HRC, nós recomendamos o processo com passos de 1 X D**