

# PREMIUM HSS MILL SPEED & FEED CHARTS

## 2-Flute - Finish - Slotting

Material Hardness	Carbon Steels Alloy Steels Cast Iron <300 Bhn		Alloy Steels Tool Steels 300-430 Bhn		Stainless Steels		Hardened Steels 430-550 Bhn		Hardened Steels 550-710 Bhn	
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/16	11560	7.50	7560	4.70	6300	3.55	5040	1.40	—	—
1/8	8920	8.25	5560	5.50	4620	4.70	3360	1.55	1900	1.55
3/16	6300	12.60	3780	7.50	3160	6.30	2320	1.95	1260	1.55
1/4	5560	13.80	3360	8.65	2840	7.10	2000	2.15	1100	1.55
5/16	4200	14.95	2520	7.85	2100	7.10	1680	2.95	840	1.55
3/8	3260	13.00	2000	6.30	1680	6.30	1360	2.35	680	1.40
1/2	2740	11.00	1680	5.10	1360	5.10	1160	2.15	560	1.40
5/8	2200	8.65	1360	4.30	1060	4.30	900	1.55	440	0.80
3/4	1680	6.70	1060	3.15	840	3.15	680	1.20	320	0.80
1	1360	5.10	840	2.75	680	2.35	540	0.80	260	0.60

(Up to 1/8:0.2D)

## 2-Flute - Finish Long - Slotting

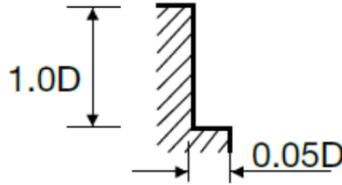
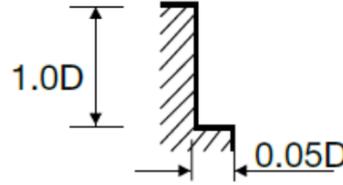
Material Hardness	Carbon Steels Alloy Steels Cast Iron 300 Bhn		Alloy Steels Tool Steels 300-430 Bhn		Stainless Steels 430-550 Bhn	
	Diameter	RPM	IPM	RPM	IPM	RPM
1/8	4410	7.8	3570	2.4	2200	1.2
3/16	3050	4.1	2420	3.3	1580	1.6
1/4	2630	4.9	2100	4.1	1370	2.0
5/16	2000	5.3	1580	4.1	1050	2.0
3/8	1680	5.3	1370	4.1	840	2.0
1/2	1370	4.1	1160	3.7	700	1.6
5/8	1160	3.7	890	3.0	560	1.4
3/4	840	2.8	680	2.0	420	1.0
1	610	2.0	540	1.6	330	0.7

(Up to 1/8:0.4D)

# PREMIUM HSS MILL SPEED & FEED CHARTS

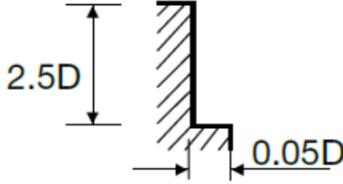
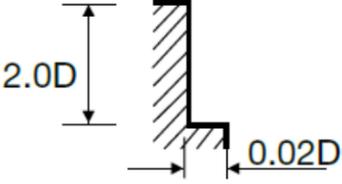
## 4-Flute - Finish - Side Cutting

Material Hardness	Carbon Steels Alloy Steels Cast Iron <300 Bhn		Alloy Steels Tool Steels 300-430 Bhn		Stainless Steels		Hardened Steels 430-550 Bhn		Hardened Steels 550-710 Bhn	
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/16	11560	11.00	7560	6.70	6300	5.50	5040	1.95	—	—
1/8	8920	12.60	5560	7.85	4620	6.70	3360	2.35	1900	2.35
3/16	6300	23.60	3780	14.15	3160	11.80	2320	2.75	1260	2.35
1/4	5560	26.00	3360	16.15	2840	13.00	2000	3.15	1100	2.35
5/16	4200	27.95	2520	14.95	2100	13.80	1680	4.30	840	2.35
3/8	3260	24.00	2000	11.80	1680	11.80	1360	3.55	680	1.95
1/2	2740	20.50	1680	9.85	1360	9.45	1160	3.15	560	1.95
5/8	2200	16.15	1360	7.85	1060	7.85	900	2.35	440	1.20
3/4	1680	12.60	1060	6.30	840	5.90	680	1.55	320	1.20
1	1360	9.85	840	5.10	680	4.70	540	1.20	260	0.80

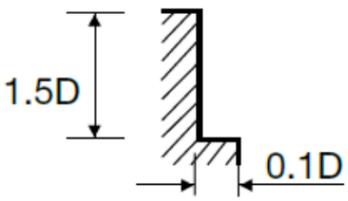
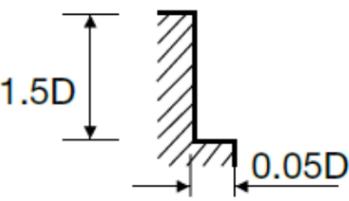
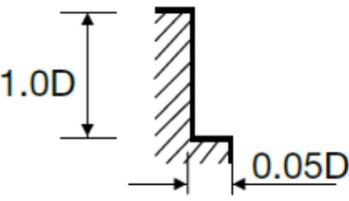
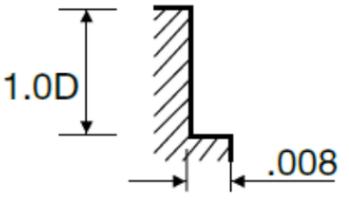
## 4-Flute - Long - Side Cutting

Material Hardness	Carbon Steels Alloy Steels Cast Iron 300 Bhn		Alloy Steels Tool Steels 300-430 Bhn		Hardened Steels 430-550 Bhn		Hardened Steels 550-710 Bhn	
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/8	4410	4.5	3570	3.9	2200	2.2	1890	1.2
3/16	3050	7.1	2420	5.5	1580	2.8	1260	1.6
1/4	2630	8.5	2100	7.1	1370	3.5	1160	2.0
5/16	2000	9.1	1580	7.1	1050	3.5	840	2.0
3/8	1680	9.1	1370	7.1	840	3.5	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	560	1.6
5/8	1160	6.3	890	4.9	560	2.4	440	1.4
3/4	840	4.5	680	3.5	420	1.8	340	1.0
1	670	4.5	540	3.5	340	1.8	270	1.0

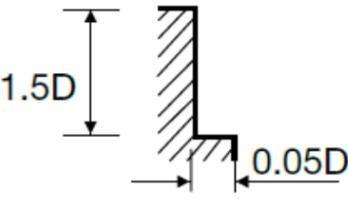
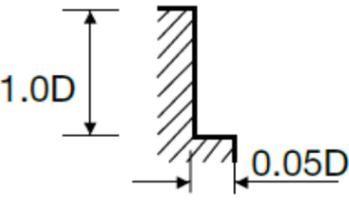
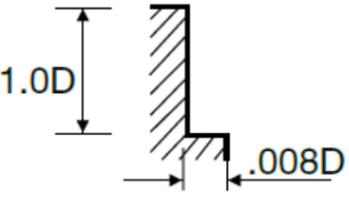
# PREMIUM HSS MILL SPEED & FEED CHARTS

## 6- & 8-Flute - 45° Helix - Long - Side Cutting

Material Hardness	Carbon Steels Alloy Steels Cast Iron <285 Bhn		Alloy Steels Tool Steels 285-495 Bhn		Hardened Steels 495-500 Bhn		Hardened Steels 550-710 Bhn	
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/4	5560	79.00	3880	54.00	1580	8.25	1100	5.10
5/16	4200	79.00	2940	54.00	1160	8.25	840	5.10
3/8	3360	79.00	2320	54.00	1000	8.25	680	5.10
1/2	2840	66.00	2000	46.00	840	7.10	560	4.35
5/8	2100	50.00	1480	35.00	640	5.10	420	2.75
3/4	1680	40.00	1160	27.00	500	4.35	320	2.35
1	1260	25.00	870	17.50	375	3.00	240	1.54
								

RPM = Revolutions per minute  
Feed = inch/minute

## 6- & 8-Flute - 45° Helix - Long - Side Cutting (High Speed Cutting)

Material Hardness	Carbon Steels Tool Steels <495 Bhn		Hardened Steels 495-550 Bhn		Hardened Steels >550 Bhn	
	Diameter	RPM	IPM	RPM	IPM	IPM
1/4	16800	240.00	8400	120.00	4200	58.00
5/16	12600	240.00	6300	120.00	3160	58.00
3/8	9980	235.00	5040	120.00	2520	58.00
1/2	8400	199.00	4200	100.00	2100	50.00
5/8	6300	149.00	3160	75.00	1580	37.00
3/4	5040	120.00	2520	58.00	1260	30.00
1	3790	75.00	1890	38.00	950	19.00
						

# PREMIUM HSS MILL SPEED & FEED CHARTS

## 2-Flute - Ball Nose - Long

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <285 Bhn		Alloy Steels Heat-Resistant Steels 285-430 Bhn		Hardened Steels 430-710 Bhn		
	Diameter	RPM	IPM	RPM	IPM	IPM	
	R1/64 × 1/32	15760	9.80	12720	7.80	5800	3.50
	R1/32 × 1/16	15760	13.80	12140	10.60	5320	4.70
	R3/64 × 3/32	14400	29.50	10700	19.30	4680	5.90
	R1/16 × 1/8	13100	26.70	10000	18.10	4520	5.90
	R3/32 × 3/16	9140	32.30	7300	22.80	3680	7.10
	R1/8 × 1/4	7780	33.00	6300	24.80	3160	7.50
	R5/32 × 5/16	5260	37.50	4420	26.00	2100	7.50
	R3/16 × 3/8	4620	40.10	3780	28.00	1780	7.50
	R1/4 × 1/2	3780	35.40	2940	26.00	1360	7.50
	R5/16 × 5/8	2740	36.20	2320	26.00	1160	7.50
	R3/8 × 3/4	2100	33.00	1900	25.00	840	7.50

**Ae:** D1/32~D1/4 = .008 inch  
D5/16~D3/4 = .012 inch  
**Ap:** 0.2 × D

**Ae:** D1/32~D1/4 = .008 inch  
D5/16~D3/4 = .012 inch  
**Ap:** 0.1 × D

### (High Speed Cutting)

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <430 Bhn		Hardened Steels 430-710 Bhn		
	Diameter	RPM	IPM	IPM	
	R1/64 × 1/32	25000	25.60	25000	15.70
	R1/32 × 1/16	23000	27.50	23000	16.90
	R3/64 × 3/32	21000	34.60	19000	19.30
	R1/16 × 1/8	21000	39.40	17000	20.50
	R3/32 × 3/16	21000	70.90	12000	23.60
	R1/8 × 1/4	21000	90.90	10500	24.80
	R5/32 × 5/16	15760	111.80	7880	29.10
	R3/16 × 3/8	13660	120.00	6300	33.00
	R1/4 × 1/2	10500	103.50	5260	33.00
	R5/16 × 5/8	8200	103.50	3780	28.00
	R3/8 × 3/4	6300	99.00	2940	20.80

**Ae:** D1/32~D1/4 = .008 inch  
D5/16~D3/4 = .012 inch  
**Ap:** 0.05 × D

# PREMIUM HSS MILL SPEED & FEED CHARTS

## 2-Flute - Ball Nose - Long

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <285 Bhn		Alloy Steels Heat-Resistant Steels 285-430 Bhn		Hardened Steels 430-710 Bhn		
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM
	R1/64 × 1/32	15760	9.80	12720	7.80	5800	3.50
	R1/32 × 1/16	15760	13.80	12140	10.60	5320	4.70
	R3/64 × 3/32	14400	29.50	10700	19.30	4680	5.90
	R1/16 × 1/8	13100	26.70	10000	18.10	4520	5.90
	R3/32 × 3/16	9140	32.30	7300	22.80	3680	7.10
	R1/8 × 1/4	7780	33.00	6300	24.80	3160	7.50
	R5/32 × 5/16	5260	37.50	4420	26.00	2100	7.50
	R3/16 × 3/8	4620	40.10	3780	28.00	1780	7.50
	R1/4 × 1/2	3780	35.40	2940	26.00	1360	7.50
	R5/16 × 5/8	2740	36.20	2320	26.00	1160	7.50
	R3/8 × 3/4	2100	33.00	1900	25.00	840	7.50

**Ae:** D1/32~D1/4 = .008 inch  
 D5/16~D3/4 = .012 inch  
**Ap:** 0.2 × D

**Ae:** D1/32~D1/4 = .008 inch  
 D5/16~D3/4 = .012 inch  
**Ap:** 0.1 × D

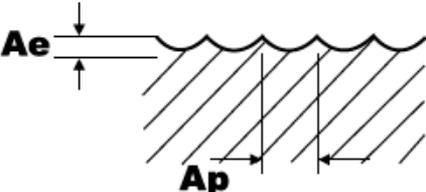
### (High Speed Cutting)

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <430 Bhn		Hardened Steels 430-710 Bhn		
	Diameter	RPM	IPM	RPM	IPM
	R1/64 × 1/32	25000	25.60	25000	15.70
	R1/32 × 1/16	23000	27.50	23000	16.90
	R3/64 × 3/32	21000	34.60	19000	19.30
	R1/16 × 1/8	21000	39.40	17000	20.50
	R3/32 × 3/16	21000	70.90	12000	23.60
	R1/8 × 1/4	21000	90.90	10500	24.80
	R5/32 × 5/16	15760	111.80	7880	29.10
	R3/16 × 3/8	13660	120.00	6300	33.00
	R1/4 × 1/2	10500	103.50	5260	33.00
	R5/16 × 5/8	8200	103.50	3780	28.00
	R3/8 × 3/4	6300	99.00	2940	20.80

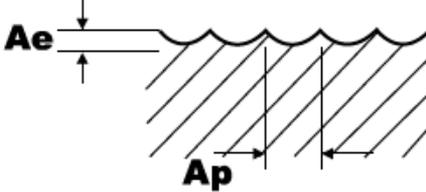
**Ae:** D1/32~D1/4 = .008 inch  
 D5/16~D3/4 = .012 inch  
**Ap:** 0.05 × D

# PREMIUM HSS MILL SPEED & FEED CHARTS

## 4-Flute - Ball Nose - Long

Material Hardness	Carbon Steels Alloy Steels Cast Iron <285 Bhn		Alloy Steels Tool Steels 285-430 Bhn		Hardened Steels 430-710 Bhn		
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM
	R1/16 × 1/8	13100	40.10	10000	27.00	4520	8.85
	R3/32 × 3/16	9140	48.50	7300	34.00	3680	10.50
	R1/8 × 1/4	7780	49.50	6300	37.00	3160	11.25
	R5/32 × 5/16	5260	56.00	4420	39.00	2100	11.25
	R3/16 × 3/8	4620	60.00	3780	42.00	1780	11.25
	R1/4 × 1/2	3780	53.00	2940	39.00	1360	11.25
	R5/16 × 5/8	2740	54.50	2320	38.50	1160	11.25
	<p><b>Ae:</b> D1/8~D1/4 = .008 inch D5/16~D5/8 = .012 inch <b>Ap:</b> 0.2×D</p>				<p><b>Ae:</b> D1/8~D1/4 = .008 inch D5/16~D5/8 = .012 inch <b>Ap:</b> 0.1×D</p>		

(High Speed Cutting)

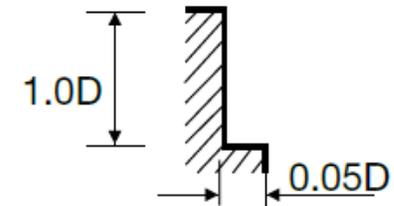
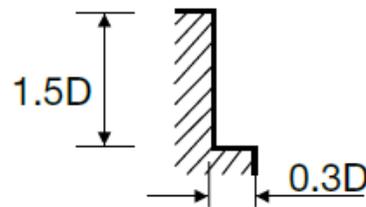
Material Hardness	Carbon Steels Alloy Steels Cast Iron <430 Bhn		Alloy Steels Tool Steels 430-710 Bhn		
	Diameter	RPM	IPM	RPM	IPM
	R1/16 × 1/8	21000	59.00	17000	30.50
	R3/32 × 3/16	21000	106.25	12000	35.50
	R1/8 × 1/4	21000	136.50	10500	37.00
	R5/32 × 5/16	15760	167.50	7880	43.50
	R3/16 × 3/8	13660	180.00	6300	49.50
	R1/4 × 1/2	10500	155.50	5260	49.50
	R5/16 × 5/8	8200	155.50	3780	42.00
	<p><b>Ae:</b> D1/8~D1/4 = .008 inch D5/16~D5/8 = .012 inch <b>Ap:</b> 0.05×D</p>				

RPM = Revolutions per minute  
Feed = Inch/minute

# PREMIUM HSS MILL SPEED & FEED CHARTS

## Multi-Flute Roughing - Side Cutting

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <285 Bhn		Alloy Steels Heat-Resistant Steels 285-365 Bhn		Alloy Steels Heat-Resistant Steels 365-430 Bhn		Hardened Steels 430-550 Bhn		Hardened Steels 550-710 Bhn	
	Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/4	15600	91.35	12400	33.10	8400	22.45	3400	10.25	2400	7.50
5/16	11600	91.35	9200	33.10	6300	22.45	2400	9.50	1800	7.10
3/8	9200	91.35	7600	33.10	5100	22.45	2000	11.40	1300	7.50
1/2	8000	94.50	6000	31.50	4200	22.45	1680	10.25	1200	7.50
5/8	6000	94.50	4800	29.90	3300	20.05	1200	6.30	800	4.35
3/4	5200	91.35	4400	28.35	2700	16.55	1100	5.90	700	3.95
1	4800	85.05	3600	22.05	2400	14.15	1000	5.90	660	3.95

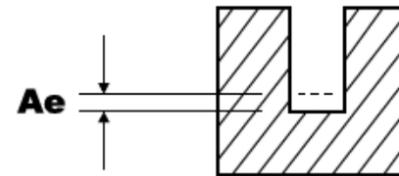


# PREMIUM HSS MILL SPEED & FEED CHARTS

## 2-Flute Finish for Rib Processing

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <285 Bhn			Alloy Steels Heat-Resistant Steels 285-430 Bhn			Hardened Steels 430-550 Bhn		
	Diameter	RPM	IPM	Ae (inch)	RPM	IPM	Ae (inch)	RPM	IPM
1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~8000	2.0~3.9	.0006~.0012
5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~6600	2.0~3.9	.0007~.0014
3/32	9500~12000	7.5~23.6	.0044~.0093	6700~8500	3.7~11.8	.0044~.0093	4300~5300	2.0~3.9	.0009~.0018
1/8	8000~10000	7.5~23.6	.0053~.0106	5500~7000	3.7~11.8	.0053~.0106	3500~4400	2.0~3.9	.0011~.0022

(Depth of cut per one pass)



## 2-Flute Ball Nose for Rib Processing

Material Hardness	Non-Alloyed Steels Alloy Steels Cast Iron <285 Bhn			Alloy Steels Heat-Resistant Steels 285-430 Bhn			Hardened Steels 430-550 Bhn		
	Diameter	RPM	IPM	Ae (inch)	RPM	IPM	Ae (inch)	RPM	IPM
R1/64 × 1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
R.0234 × 3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
R1/32 × 1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~8000	2.0~3.9	.0006~.0012
R.0391 × 5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~6600	2.0~3.9	.0007~.0014
R3/64 × 3/32	9500~12000	7.5~23.6	.0044~.0093	6700~8500	3.7~11.8	.0044~.0093	4300~5300	2.0~3.9	.0009~.0018
R1/16 × 1/8	8000~10000	7.5~23.6	.0053~.0106	5500~7000	3.7~11.8	.0053~.0106	3500~4400	2.0~3.9	.0011~.0022

(Depth of cut per one pass)

