Standard 4 Flute and Multiple Flute Carbide

Side Milling (Fractional)

Hardness	<20 HRC		20-30 HRC		–		–		30-40 HRC		40-50 HRC	
Work Material	Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Cast Iron		Aluminum		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-150 SFM		80-115 SFM		100-150 SFM		330-400 SFM		80-100 SFM		50 SFM	
Depth of Cut	ae=1.5D ar=0.1D											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.030	15,905	3.7	12,405	2.5	15,905	6.9	25,000	15.5	11,450	1.1	6,360	0.6
3/64	10,180	4.3	7,940	3.3	10,180	7.0	25,000	19.7	7,330	1.8	4,070	0.7
1/16	7,635	4.8	5,955	3.7	7,635	7.7	22,290	26.1	5,495	2.0	3,055	0.8
5/64	6,105	5.2	4,765	3.9	6,105	11.9	17,830	27.6	4,395	2.2	2,445	0.8
1/8	3,815	7.0	2,975	5.6	3,815	13.3	11,145	22.1	2,750	2.2	1,525	1.3
5/32	3,055	8.3	2,380	6.0	3,055	14.2	8,915	24.6	2,200	2.3	1,220	1.4
3/16	2,545	10.0	1,985	6.3	2,545	15.0	7,430	26.0	1,830	2.4	1,020	1.5
1/4	1,910	8.9	1,490	5.9	1,910	13.4	5,575	23.2	1,375	2.1	765	1.3
5/16	1,525	9.3	1,190	6.0	1,525	14.0	4,460	25.9	1,100	2.3	610	1.4
3/8	1,270	11.1	990	6.3	1,270	15.7	3,715	27.3	915	2.4	510	1.5
1/2	955	9.9	745	5.9	955	14.0	2,785	27.1	685	2.1	380	1.3
5/8	765	11.7	595	7.0	765	17.6	2,230	29.0	550	2.3	305	1.4
3/4	635	12.3	495	7.8	635	18.5	1,860	30.1	460	2.4	255	1.5
1	475	11.7	375	7.0	475	17.6	1,395	25.7	345	1.8	190	1.1

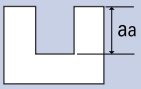
1. Reduce speeds & feeds 20-30% for Series 464.
2. Reduce speeds & feeds 40-50% for Series 484.
3. Slotting is not recommended for Series 484.
4. Increase speeds & feeds 20-30 % for Series 404 TiN.
5. Column for Hardened Steels (40-50 HRC), is for Series 404 TiN only.

Side Milling (Metric)

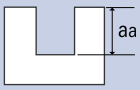
Hardness	<20 HRC		20-30 HRC		–		–		30-40 HRC		40-50 HRC	
Work Material	Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Cast Iron		Aluminum		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-150 SFM		80-115 SFM		100-150 SFM		330-400 SFM		80-100 SFM		50 SFM	
Depth of Cut	ae=1.5D ar=0.1D											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.8	15,150	3.6	11,815	2.3	15,150	6.5	25,000	15.5	10,905	1.1	6,060	0.6
1.0	12,120	5.2	9,450	4.0	12,120	8.4	25,000	19.7	8,725	2.1	4,845	0.8
1.5	8,080	5.1	6,300	4.0	8,080	8.2	23,590	27.6	5,815	2.1	3,230	0.8
2.0	6,060	5.2	4,725	4.0	6,060	11.8	17,695	27.4	4,365	2.1	2,425	0.8
3.0	4,040	7.4	3,150	5.9	4,040	14.1	11,795	23.4	2,910	2.3	1,615	1.4
4.0	3,030	8.2	2,365	6.0	3,030	14.1	8,845	24.4	2,180	2.3	1,210	1.4
5.0	2,425	9.5	1,890	6.0	2,425	14.3	7,075	24.7	1,745	2.3	970	1.4
6.0	2,020	9.4	1,575	6.2	2,020	14.2	5,900	24.5	1,455	2.3	810	1.4
8.0	1,515	9.3	1,180	6.0	1,515	13.9	4,425	25.7	1,090	2.3	605	1.4
10.0	1,210	10.5	945	6.0	1,210	15.0	3,540	26.0	875	2.3	485	1.4
12.0	1,010	10.4	790	6.2	1,010	14.8	2,950	28.8	725	2.2	405	1.4
16.0	755	11.6	590	6.9	755	17.3	2,210	28.8	545	2.3	305	1.4
20.0	605	11.7	475	7.4	605	17.6	1,770	28.6	435	2.3	240	1.4
25.0	485	11.9	380	7.0	485	17.9	1,415	26.0	350	1.8	195	1.1

1. Reduce speeds & feeds 20-30% for Series 464.
2. Reduce speeds & feeds 40-50% for Series 484.
3. Slotting is not recommended for Series 484.
4. Increase speeds & feeds 20-30 % for Series 404 TiN.
5. Column for Hardened Steels (40-50 HRC), is for Series 404 TiN only.

Slotting (Fractional)

Hardness	<20 HRC		20-30 HRC		–		–		30-40 HRC		40-50 HRC	
Work Material	Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Cast Iron		Aluminum		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-130 SFM		65-100 SFM		100-150 SFM		330 SFM		65-82 SFM		43 SFM	
Depth of Cut					Dia / aa: D<1/32 → 0.2D; 1/32<D<5/64 → 0.3D; 5/64<D → 0.5D							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.030	14,630	3.7	10,495	1.8	15,905	6.9	25,000	6.9	9,350	0.9	5,470	0.4
3/64	9,365	3.1	6,720	1.5	10,180	5.7	25,000	8.7	5,985	0.7	3,500	0.3
1/16	7,025	4.0	5,040	1.6	7,635	6.3	20,155	10.5	4,490	1.0	2,625	0.5
5/64	5,620	4.9	4,030	2.7	6,105	7.1	16,120	16.6	3,590	1.5	2,100	0.8
1/8	3,510	4.5	2,520	3.4	3,815	7.1	10,075	14.8	2,245	1.5	1,315	0.7
5/32	2,810	4.9	2,015	3.6	3,055	7.7	8,060	16.6	1,795	1.5	1,050	0.8
3/16	2,340	5.1	1,680	3.6	2,545	8.1	6,720	17.6	1,495	1.6	875	0.8
1/4	1,755	4.6	1,260	3.4	1,910	8.9	5,040	15.7	1,120	1.5	655	0.7
5/16	1,405	4.8	1,010	3.6	1,525	11.0	4,030	16.6	900	1.5	525	0.8
3/8	1,170	5.1	840	3.6	1,270	11.8	3,360	17.6	750	1.6	440	0.8
1/2	880	4.6	630	3.3	955	10.5	2,520	15.7	560	1.4	330	0.7
5/8	700	4.8	505	3.7	765	11.1	2,015	16.6	450	1.8	265	0.6
3/4	585	5.1	420	3.9	635	11.6	1,680	17.3	375	1.9	220	0.6
1	440	4.8	315	3.7	475	11.0	1,260	16.6	280	1.8	165	0.3

Slotting (Metric)

Hardness	<20 HRC		20-30 HRC		–		–		30-40 HRC		40-50 HRC	
Work Material	Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Cast Iron		Aluminum		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-130 SFM		65-100 SFM		100-150 SFM		330 SFM		65-82 SFM		43 SFM	
Depth of Cut					Dia / aa: D<0.8 → 0.2D; 0.8<D<2 → 0.3D; 2<D → 0.5D							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.8	13,935	3.4	10,000	1.7	15,150	6.5	25,000	6.9	8,905	0.9	5,210	0.3
1.0	11,150	3.7	8,000	1.8	12,120	6.8	25,000	8.7	7,125	0.8	4,170	0.3
1.5	7,435	4.3	5,330	1.6	8,080	6.7	21,330	11.1	4,750	1.0	2,780	0.5
2.0	5,575	4.9	4,000	2.7	6,060	7.1	15,995	16.5	3,565	1.5	2,085	0.8
3.0	3,715	4.8	2,665	3.6	4,040	7.5	10,665	15.7	2,375	1.5	1,390	0.8
4.0	2,785	4.9	2,000	3.6	3,030	7.6	8,000	16.5	1,780	1.5	1,040	0.8
5.0	2,230	4.9	1,600	3.5	2,425	7.7	6,400	16.8	1,425	1.5	835	0.8
6.0	1,860	4.8	1,335	3.6	2,020	9.4	5,330	16.6	1,190	1.5	695	0.8
8.0	1,395	4.8	1,000	3.6	1,515	10.9	4,000	16.5	890	1.5	520	0.8
10.0	1,115	4.9	800	3.5	1,210	11.2	3,200	16.8	715	1.5	415	0.7
12.0	930	4.8	665	3.5	1,010	11.1	2,665	16.6	595	1.4	345	0.7
16.0	695	4.8	500	3.7	755	10.9	2,000	16.5	445	1.8	260	0.6
20.0	555	4.9	400	3.8	605	11.1	1,600	16.5	355	1.7	210	0.5
25.0	445	4.9	320	3.8	485	11.3	1,280	16.9	285	1.8	165	0.4