



List HP434

Side Milling (Fractional)

Hardness	-		<20 HRC		20-30 HRC		30-38 HRC		38-45 HRC		45-55 HRC		55-60 HRC															
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels															
Cutting Speed	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM															
Depth of Cut	<table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D ≤ 1/8</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>1/8 < D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table>											Dia	aa	ar	D ≤ 1/8	1.5D	0.05D	1/8 < D	1.5D	0.10D					$aa=1D$ $ar=0.02D$			
	Dia	aa	ar																									
D ≤ 1/8	1.5D	0.05D																										
1/8 < D	1.5D	0.10D																										
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	Speed RPM	Feed in/min														
1/8	11,910	28.0	10,075	23.7	8,245	16.0	6,720	5.6	5,800	5.5	3,665	3.3	2,445	2.3														
3/16	7,940	33.1	6,720	28.2	5,495	18.0	4,480	6.5	3,870	5.6	2,445	3.6	1,630	2.1														
1/4	5,955	29.0	5,040	28.6	4,120	19.5	3,360	6.9	2,900	5.8	1,830	3.4	1,220	1.9														
5/16	4,765	33.2	4,030	28.0	3,300	19.6	2,685	7.0	2,320	6.0	1,465	3.4	975	1.7														
3/8	3,970	33.3	3,360	27.8	2,750	19.5	2,240	6.9	1,935	6.0	1,220	3.9	815	1.7														
1/2	2,975	32.3	2,520	27.6	2,060	19.4	1,680	7.0	1,450	5.9	915	2.7	610	1.3														
5/8	2,380	31.7	2,015	26.4	1,650	19.8	1,345	6.2	1,160	5.2	735	2.3	490	0.9														
3/4	1,985	30.7	1,680	26.1	1,375	16.0	1,120	5.1	965	4.5	610	1.8	405	1.0														
1	1,490	23.4	1,260	19.8	1,030	13.7	840	3.9	725	3.4	460	1.5	305	0.7														

For Slotting, reduce feeds 20% to 50%.

List HP434

Side Milling (Metric)

Hardness	-		<20 HRC		20-30 HRC		30-38 HRC		38-45 HRC		45-55 HRC		55-60 HRC															
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels															
Cutting Speed	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM															
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	Dia	aa	ar																									
D ≤ 3	1.5D	0.05D																										
3 < D	1.5D	0.10D																										
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	Speed RPM	Feed in/min														
3	12,605	29.7	10,665	25.1	8,725	17.0	7,110	5.9	6,140	5.8	3,880	3.6	2,585	2.4														
4	9,450	29.4	8,000	24.8	6,545	14.5	5,330	6.5	4,605	5.5	2,910	3.6	1,940	2.3														
5	7,560	34.7	6,400	30.2	5,235	20.2	4,265	6.8	3,685	5.9	2,325	3.7	1,550	2.1														
6	6,300	30.7	5,330	30.2	4,365	20.6	3,555	7.2	3,070	6.2	1,940	3.6	1,295	2.0														
8	4,725	32.9	4,000	27.8	3,270	19.4	2,665	6.9	2,300	6.0	1,455	3.4	970	1.7														
10	3,780	34.5	3,200	28.8	2,620	20.2	2,135	7.2	1,840	6.2	1,165	4.1	775	1.7														
12	3,150	34.3	2,665	29.3	2,180	20.5	1,775	7.4	1,535	6.2	970	2.9	645	1.4														

For Slotting, reduce feeds 20% to 50%.





List HP432, HP434: (Continued)

High Speed Light Milling (Fractional)

Hardness	<20 HRC		20-30 HRC		30-38 HRC		38-45 HRC		45-55 HRC																											
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels																											
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM																											
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D≤5/16	1.5D	0.01D																																		
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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																										
1/8	25,000	49.3	25,000	49.6	25,000	49.0	14,960	25.6	7,940	14.4																										
3/16	25,000	104.5	23,410	80.6	16,690	53.8	9,975	28.3	5,295	17.1																										
1/4	20,000	96.5	17,555	84.1	12,520	59.0	7,480	30.6	3,970	16.4																										
5/16	16,000	98.7	14,045	85.1	10,015	57.5	5,985	31.0	3,175	16.6																										
3/8	13,335	98.6	11,705	83.8	8,345	56.7	4,985	31.0	2,645	16.5																										
1/2	10,000	95.4	8,780	81.4	6,260	55.6	3,740	30.2	1,985	16.0																										
5/8	8,000	88.6	7,025	77.1	5,010	53.7	2,990	28.4	1,590	15.0																										
3/4	6,665	85.6	5,850	74.2	4,175	51.5	2,495	27.3	1,325	14.5																										
1	5,000	66.4	4,390	58.2	3,130	41.0	1,870	21.9	990	11.0																										

Reduce feeds 50% for Series HP432 High speed Light Milling.

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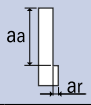
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List HP432, HP434: (Continued)

High Speed Light Milling (Metric)

Hardness	<20 HRC		20-30 HRC		30-38 HRC		38-45 HRC		45-55 HRC																					
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels																					
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	Dia	aa	ar																											
D≤8	1.5D	0.01D																												
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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																				
3	25,000	46.8	25,000	47.2	25,000	46.4	15,835	25.9	8,400	14.1																				
4	25,000	65.6	25,000	65.4	19,875	53.1	11,875	27.1	6,300	16.4																				
5	25,000	96.7	22,300	84.0	15,900	55.1	9,500	29.4	5,040	17.7																				
6	21,165	97.2	18,580	85.0	13,250	60.2	7,915	31.2	4,200	16.5																				
8	15,875	98.8	13,935	85.3	9,935	57.3	5,940	31.2	3,150	16.7																				
10	12,700	100.0	11,150	83.8	7,950	57.1	4,750	31.5	2,520	16.7																				
12	10,585	97.2	9,290	83.0	6,625	57.3	3,960	31.2	2,100	16.1																				

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