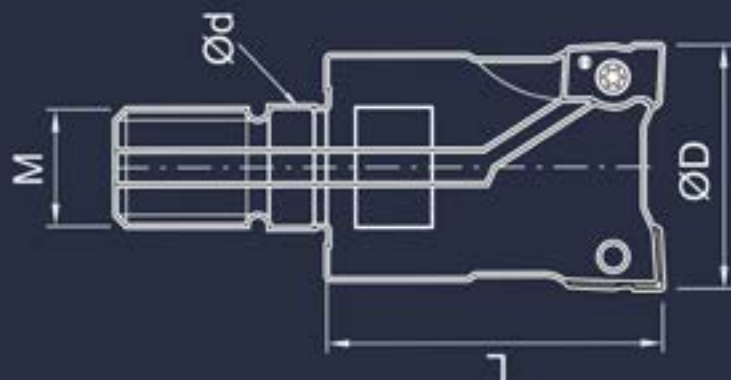
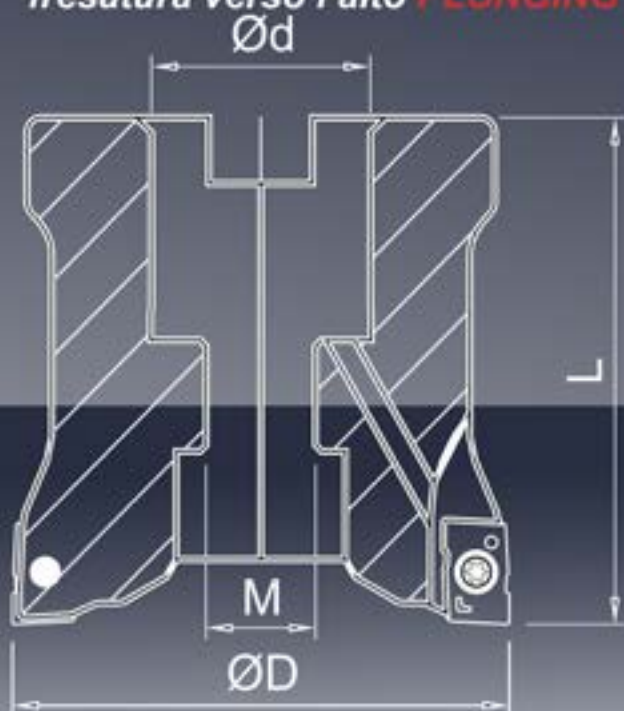
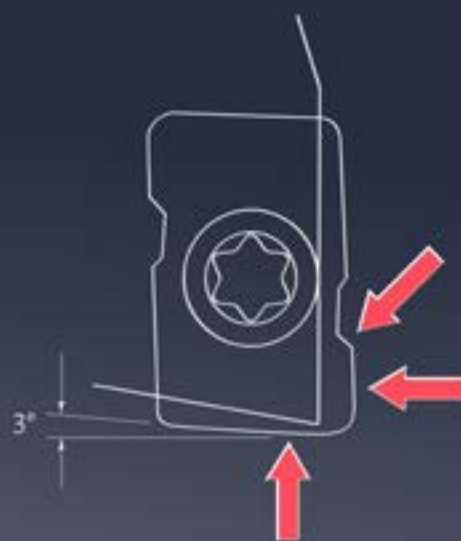
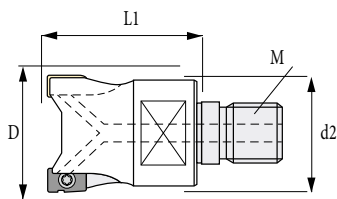


MP FINISHING SERIES



- Nuova micrograna e rivestimento : per una durata fino a **3 volte superiore**
- Inserto scaricato : elimina la vibrazioni anche in lavorazioni profonde
- Alto grado di **precisione H**: garantisce un'ottimo grado di finitura
- Inserto **multifunzione** : torico - raschiante selezionabile e fresatura verso l'alto **PLUNGING UP**





90°

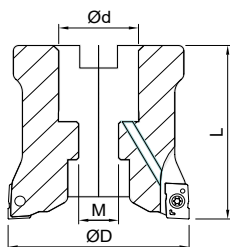
Testina filettata spallamento retto 90° per inserto APHW 0603.....

HRC
≥65

Body screw Milling cutters 90° for insert APHW 0603.....



codice	M	D	L1	d2	Z	insert	screw	torx
16MP2308	08	16	23	12,7	2	APHW 06.....	S25 E	TX 08
20MP3010	10	20	30	17,7	3			
25MP3512	12	25	35	20,7	4			
32MP3516	16	32	35	28,7	5			
35MP4316	16	35	43	28,7	5			
42MP4316	16	42	43	28,7	6			



Fresa spallamento retto 90° per inserto APHW 0603.....



Shoulder Milling cutters 90° for insert APHW 0603.....



codice	D	Z	D1	L	insert	screw	torx
42MP 06 06	42	6	16	40	APHW 06.....	S 25 E	TX 08
50MP 06 07	50	7	22	50	APHW 06.....		
52MP 06 07	52	7	22	50	APHW 06.....		
52MP 06 07 27	52	7	27	50	APHW 06.....		
63MP 06 08	63	8	27	50	APHW 06.....		
66MP 06 08	66	8	27	50	APHW 06.....		

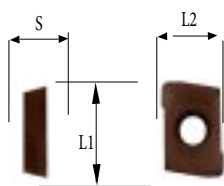


HRC
≥55

Metodi di applicazione

Applicable insert

	Roughing	Light Interruption	Interruption	Finishing	★
P					★
M					★
K	●	●			★
N					
S					★
H					★

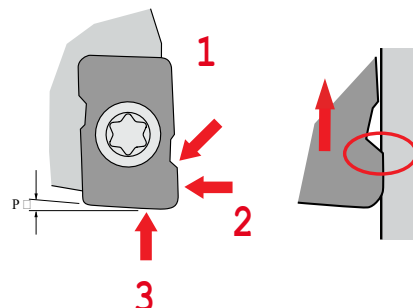


insert code-dimension	L1	L2	S	radius	FH	quality	Fig.
APHW 06 03 04	8,80	6,35	3,20	0,4	-	030 - 029	1
APHW 06 03 08	8,80	6,35	3,20	0,8	-	030 - 029	1
APHW 06 03 04FH		6,35	3,20	0,4	0,5	030 - 029	2
APHW 06 03 08FH		6,35	3,20	0,8	1,5	030 - 029	2

Fig. 1



Fig. 2



1. Tagliante per lavorazioni di finitura alternata.
Utilizzo del bordo tagliante per lavorazioni di finitura assiale con direzione alternata.
2. Tagliante periferico
Utilizzato come tagliante periferico durante lavorazioni di contornatura.
3. Inserto per lavorazione dei piani
Utilizzato per finitura di piani. Utilizzato come tagliante alternato per finitura verticale.
4. Inserto con affilatura supplementare:
Per aumentare l'avanzamento
5. Inserto senza affilatura supplementare:
Per lavorazioni di piani, adatto per lavorazioni con lunghe sporgenze ($L/D = 5$ volte o superiore) o in situazioni di bassa rigidità nella direzione dell'asse principale. Per le lavorazioni di finitura in verticale sono raccomandati gli inserti senza affilatura supplementare

Work Material	Recommended grade	Tool dia. Dc	φ 16 (2 Flutes)					φ 20 (3 Flutes)					φ 25 (4 Flutes)					
			Overhang ratio	<3Dc		Modular Carbide Shank			<3Dc		Modular Carbide Shank			<3Dc		Modular Carbide Shank		
				General purpose	High-speed cutting	3Dc 5Dc	5Dc 7Dc	>7Dc	General purpose	High-speed cutting	3Dc 5Dc	5Dc 7Dc	>7Dc	General purpose	High-speed cutting	3Dc 5Dc	5Dc 7Dc	>7Dc
Mild Steels (200HB or less)	030	n (min ⁻¹)	7,970	15,930	11,950	7,970	7,970	6,370	12,740	9,560	6,370	6,370	5,100	10,200	7,650	5,100	5,100	
		Vc (m/min)	400	800	600	400	400	400	800	600	400	400	400	800	600	400	400	
		Vf (mm/min)	1,600	4,780	3,590	1,920	1,600	1,920	5,740	4,310	2,300	1,920	2,040	6,120	4,590	2,450	2,040	
		fz (mm/t)	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Steels Alloy Steels (30HRC or less)	030	n (min ⁻¹)	5,980	11,950	7,970	7,970	5,980	4,780	9,560	6,370	6,370	4,780	3,830	7,650	5,100	5,100	3,830	
		Vc (m/min)	300	600	400	400	300	300	600	400	400	300	300	600	400	400	300	
		Vf (mm/min)	1,200	3,590	2,400	1,920	1,200	1,440	4,310	2,870	2,300	1,440	1,540	4,590	3,060	2,450	1,540	
		fz (mm/t)	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Steels Alloy Steels (30~45HRC)	030	n (min ⁻¹)	3,990	9,960	6,970	5,980	5,980	3,190	7,970	5,580	4,780	4,780	2,550	6,370	4,460	3,830	3,830	
		Vc (m/min)	200	500	350	300	300	200	500	350	300	300	200	500	350	300	300	
		Vf (mm/min)	800	2,400	1,680	1,200	960	960	2,870	2,010	1,440	1,150	1,020	3,060	2,150	1,540	1,230	
		fz (mm/t)	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Stainless Steels SUS	030	n (min ⁻¹)	5,980	11,950	7,970	7,970	5,980	4,780	9,560	6,370	6,370	4,780	3,830	7,650	5,100	5,100	3,830	
		Vc (m/min)	300	600	400	400	300	300	600	400	400	300	300	600	400	400	300	
		Vf (mm/min)	1,200	3,590	2,400	1,920	1,200	1,440	4,310	2,870	2,300	1,440	1,540	4,590	3,060	2,450	1,540	
		fz (mm/t)	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cast Iron FC FCD	030	n (min ⁻¹)	5,980	11,950	9,960	7,970	7,970	4,780	9,560	7,970	6,370	6,370	3,830	7,650	6,370	5,100	5,100	
		Vc (m/min)	300	600	500	400	400	300	600	500	400	400	300	600	500	400	400	
		Vf (mm/min)	1,200	3,590	2,990	1,920	1,600	1,440	4,310	3,590	2,300	1,920	1,540	4,590	3,830	2,450	2,040	
		fz (mm/t)	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aluminum Alloy	029	n (min ⁻¹)	11,950	23,890	15,930	11,950	11,950	9,560	19,110	12,740	9,560	9,560	7,650	15,290	10,200	7,650	7,650	
		Vc (m/min)	600	1,200	800	600	600	600	1,200	800	600	600	600	1,200	800	600	600	
		Vf (mm/min)	2,390	7,170	4,780	2,870	2,390	2,870	8,600	5,740	3,450	2,870	3,060	9,180	6,120	3,680	3,060	
		fz (mm/t)	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
		ap (mm)	2	2	2	1.5	1	2	2	2	1.5	1	2	2	2	1.5	1	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Titanium Alloy Ti-6Al-4V (wet condition)	030	n (min ⁻¹)	1,200	1,800	1,600	1,200	1,200	960	1,440	1,280	960	960	770	1,150	1,020	770	770	
		Vc (m/min)	60	90	80	60	60	60	90	80	60	60	60	90	80	60	60	
		Vf (mm/min)	240	440	390	240	200	290	520	470	290	240	310	560	490	310	250	
		fz (mm/t)	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hardened Steels 45~55HRC	030	n (min ⁻¹)	2,990	4,980	3,590	2,990	2,990	2,390	3,990	2,870	2,390	2,390	1,920	3,190	2,300	1,920	1,920	
		Vc (m/min)	150	250	180	150	150	150	250	180	150	150	150	250	180	150	150	
		Vf (mm/min)	600	1,000	720	480	480	720	1,200	870	580	580	770	1,280	920	620	620	
		fz (mm/t)	0.1	0.1	0.1	0.08	0.08	0.1	0.1	0.1	0.08	0.08	0.1	0.1	0.1	0.08	0.08	
		ap (mm)	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hardened Steels 55~62HRC	030	n (min ⁻¹)	2,590	3,990	3,190	2,590	2,590	2,080	3,190	2,550	2,080	2,080	1,660	2,550	2,040	1,660	1,660	
		Vc (m/min)	130	200	160	130	130	130	200	160	130	130	130	200	160	130	130	
		Vf (mm/min)	520	800	640	420	260	630	960	770	500	320	670	1,020	820	540	340	
		fz (mm/t)	0.1	0.1	0.1	0.08	0.05	0.1	0.1	0.1	0.08	0.05	0.1	0.1	0.1	0.08	0.05	
		ap (mm)	1.5	1.5	1	0.7	0.5	1.5	1.5	1	0.7	0.5	1.5	1.5	1	0.7	0.5	
		ae (mm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum fz (mm/t)			<0.35					<0.35					<0.35					
Maximum ap (mm)			<2.8					<2.8					<2.8					

Cutting Conditions



φ 32 (5 Flutes)					φ 40 (6 Flutes)					φ 50 (7 Flutes)					φ 63 (8 Flutes)					Work Material
<3Dc		Modular Carbide Shank			<3Dc		Modular Carbide Shank			<3Dc		3Dc	5Dc	>7Dc	<3Dc		3Dc	5Dc	>7Dc	
General purpose	High-speed cutting	3Dc	5Dc	>7Dc	General purpose	High-speed cutting	3Dc	5Dc	>7Dc	General purpose	High-speed cutting	3Dc	5Dc	>7Dc	General purpose	High-speed cutting	3Dc	5Dc	>7Dc	
3,990	7,970	5,980	3,990	3,990	3,190	6,370	4,780	3,190	3,190	2,550	5,100	3,830	2,550	2,550	2,030	4,050	3,040	2,030	2,030	Mild Steels (200HB or less)
400	800	600	400	400	400	800	600	400	400	400	800	600	400	400	400	800	600	400	400	
2,000	5,980	4,490	2,400	2,000	1,920	5,740	4,310	2,300	1,920	1,790	5,360	4,030	2,150	1,790	1,630	4,860	3,650	1,950	1,630	
0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
2,990	5,980	3,990	3,990	2,990	2,390	4,780	3,190	3,190	2,390	1,920	3,830	2,550	2,550	1,920	1,520	3,040	2,030	2,030	1,520	Carbon Steels Alloy Steels (30HRC or less)
300	600	400	400	300	300	600	400	400	300	300	600	400	400	300	300	600	400	400	300	
1,500	4,490	3,000	2,400	1,500	1,440	4,310	2,880	2,300	1,440	1,350	4,030	2,680	2,150	1,350	1,220	3,650	2,440	1,950	1,220	
0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
2,000	4,980	3,490	2,990	2,990	1,600	3,990	2,790	2,390	2,390	1,280	3,190	2,230	1,920	1,920	1,020	2,530	1,770	1,520	1,520	Carbon Steels Alloy Steels (30 ~45HRC)
200	500	350	300	300	200	500	350	300	300	200	500	350	300	300	200	500	350	300	300	
1,000	2,990	2,100	1,500	1,200	960	2,880	2,010	1,440	1,150	900	2,680	1,880	1,350	1,080	820	2,430	1,700	1,220	980	
0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
2,990	5,980	3,990	3,990	2,990	2,390	4,780	3,190	3,190	2,390	1,920	3,830	2,550	2,550	1,920	1,520	3,040	2,030	2,030	1,520	Stainless Steels SUS
300	600	400	400	300	300	600	400	400	300	300	600	400	400	300	300	600	400	400	300	
1,500	4,490	3,000	2,400	1,500	1,440	4,310	2,880	2,300	1,440	1,350	4,030	2,680	2,150	1,350	1,220	3,650	2,440	1,950	1,220	
0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
2,990	5,980	4,980	3,990	3,990	2,390	4,780	3,990	3,190	3,190	1,920	3,830	3,190	2,550	2,550	1,520	3,040	2,530	2,030	2,030	Cast Iron FC FCD
300	600	500	400	400	300	600	500	400	400	300	600	500	400	400	300	600	500	400	400	
1,500	4,490	3,740	2,400	2,000	1,440	4,310	3,600	2,300	1,920	1,350	4,030	3,350	2,150	1,790	1,220	3,650	3,040	1,950	1,630	
0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
5,980	11,950	7,970	5,980	5,980	4,780	9,560	6,370	4,780	4,780	3,830	9,560	6,370	3,830	3,830	3,040	7,590	5,060	3,040	3,040	Aluminum Alloy
600	1,200	800	600	600	600	1,200	800	600	600	600	1,500	1,000	600	600	600	1,500	1,000	600	600	
2,990	8,970	5,980	3,590	2,990	2,870	8,610	5,740	3,450	2,870	2,690	10,040	6,690	3,220	2,690	2,440	9,110	6,080	2,920	2,440	
0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	0.1	0.15	0.15	0.12	0.1	
2	2	2	1.5	1	2	2	2	1.5	1	2	2	2	1.5	1	2	2	2	1.5	1	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
600	900	800	600	600	480	720	640	480	480	390	580	510	390	390	310	460	410	310	310	Titanium Alloy Ti -6Al -4V (wet condition)
60	90	80	60	60	60	90	80	60	60	60	90	80	60	60	60	90	80	60	60	
300	540	480	300	240	290	520	470	290	240	280	490	430	280	220	250	450	400	250	200	
0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	0.1	0.12	0.12	0.1	0.08	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1	0.7	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
1,500	2,490	1,800	1,500	1,500	1,200	2,000	1,440	1,200	1,200	960	1,600	1,150	960	960	760	1,270	910	760	760	Hardened Steels 45 ~55HRC
150	250	180	150	150	150	250	180	150	150	150	250	180	150	150	150	250	180	150	150	
750	1,250	900	600	600	720	1,200	870	580	580	680	1,120	810	540	540	610	1,020	730	490	490	
0.1	0.1	0.1	0.08	0.08	0.1	0.1	0.1	0.08	0.08	0.1	0.1	0.1	0.08	0.08	0.1	0.1	0.1	0.08	0.08	
2	2	1.5	1	0.7	2	2	1.5	1	0.7	2	2	1.5	1.2	1	2	2	1.5	1.2	1	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
1,300	2,000	1,600	1,300	1,300	1,040	1,600	1,280	1,040	1,040	830	1,280	1,020	830	830	660	1,020	810	660	660	Hardened Steels 55 ~62HRC
130	200	160	130	130	130	200	160	130	130	130	200	160	130	130	130	200	160	130	130	
650	1,000	800	520	330	630	960	770	500	320	590	900	720	470	300	530	820	650	370	270	
0.1	0.1	0.1	0.08	0.05	0.1	0.1	0.1	0.08	0.05	0.1	0.1	0.1	0.08	0.05	0.1	0.1	0.1	0.07	0.05	
1.5	1.5	1	0.7	0.5	1.5	1.5	1	0.7	0.5	1.5	1.5	1.5	1	0.7	1.5	1.5	1.5	1.2	1	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
<0.35					<0.35					<0.35					<0.35					
<2.8					<2.8					<2.8					<2.8					

MP FINISHING SERIES

