

			D2/CR 0.5				D3/CR 0.8			
			Standard	High Feed	Max. Feed	Finish/2D/3D	Standard	High Feed	Max. Feed	Finish/2D/3D
I	Cast Iron Carbon Steels Alloy Steels HB150~250	V_c (m/min)	75	170	250	250	75	170	250	250
		n (min ⁻¹)	12,000	27,000	39,800	39,800	8,000	18,000	26,500	26,500
		f_z (mm)	0.112	0.112	0.134	0.024	0.189	0.189	0.227	0.040
		V_f (mm/min)	5,380	12,100	21,400	3,820	6,050	13,610	24,040	4,290
		a_p (mm)	0.1	0.05	0.04	0.1-0.25	0.16	0.08	0.06	0.1-0.25
	a_e (mm)		1		0.1-0.25		1.4		0.1-0.25	
II	Tool Steels HRC25~35	V_c (m/min)	70	170	250	250	70	170	250	250
		n (min ⁻¹)	11,100	27,100	39,800	39,800	7,400	18,000	26,500	26,500
		f_z (mm)	0.102	0.102	0.123	0.024	0.173	0.173	0.208	0.040
		V_f (mm/min)	4,550	11,100	19,610	3,820	5,110	12,440	22,040	4,290
		a_p (mm)	0.1	0.05	0.04	0.1-0.25	0.16	0.08	0.06	0.1-0.25
	a_e (mm)		1		0.1-0.25		1.4		0.1-0.25	
III	Pre-Hardened Steels HRC35~45	V_c (m/min)	65	160	240	200	65	160	240	200
		n (min ⁻¹)	10,300	25,500	38,200	31,800	6,900	17,000	25,500	21,200
		f_z (mm)	0.080	0.080	0.096	0.024	0.135	0.135	0.162	0.040
		V_f (mm/min)	3,300	8,160	14,670	3,050	3,730	9,180	16,520	3,430
		a_p (mm)	0.1	0.05	0.04	0.1-0.25	0.16	0.08	0.06	0.1-0.25
	a_e (mm)		1		0.1-0.25		1.4		0.1-0.25	
IV	Hardened Steels HRC45~55	V_c (m/min)	50	140	210	200	50	140	210	200
		n (min ⁻¹)	8,000	22,300	33,400	31,800	5,300	14,900	22,300	21,200
		f_z (mm)	0.080	0.080	0.096	0.022	0.135	0.135	0.162	0.036
		V_f (mm/min)	2,560	7,140	12,830	2,750	2,860	8,050	14,450	3,090
		a_p (mm)	0.07	0.04	0.03	0.05-0.2	0.11	0.06	0.05	0.05-0.2
	a_e (mm)		1		0.05-0.2		1.4		0.05-0.2	
V	Hardened Steels HRC55~65	V_c (m/min)	50	90	135	160	50	90	135	160
		n (min ⁻¹)	8,000	14,300	21,500	25,500	5,300	9,500	14,300	17,000
		f_z (mm)	0.032	0.032	0.038	0.019	0.054	0.054	0.065	0.032
		V_f (mm/min)	1,020	1,830	3,300	1,960	1,140	2,050	3,710	2,200
		a_p (mm)	0.05	0.03	0.025	0.05-0.2	0.08	0.05	0.04	0.05-0.2
	a_e (mm)		1		0.05-0.2		1.4		0.05-0.2	

			D4/CR 1.0				D5/CR 1.2			
			Standard	High Feed	Max. Feed	Finish/2D/3D	Standard	High Feed	Max. Feed	Finish/2D/3D
I	Cast Iron Carbon Steels Alloy Steels HB150~250	V_c (m/min)	75	170	250	250	75	170	250	250
		n (min ⁻¹)	6,000	13,500	19,900	19,900	4,800	10,800	15,900	15,900
		f_z (mm)	0.266	0.266	0.319	0.057	0.332	0.332	0.399	0.071
		V_f (mm/min)	6,380	14,360	25,410	4,540	6,380	14,360	25,380	4,530
		a_p (mm)	0.2	0.1	0.08	0.1-0.25	0.24	0.12	0.09	0.1-0.25
	a_e (mm)		2		0.1-0.25		2.5		0.1-0.25	
II	Tool Steels HRC25~35	V_c (m/min)	70	170	250	250	70	170	250	250
		n (min ⁻¹)	5,600	13,500	19,900	19,900	4,500	10,800	15,900	15,900
		f_z (mm)	0.243	0.243	0.293	0.057	0.304	0.304	0.366	0.071
		V_f (mm/min)	5,450	13,130	23,290	4,540	5,470	13,130	23,260	4,530
		a_p (mm)	0.2	0.1	0.08	0.1-0.25	0.24	0.12	0.09	0.1-0.25
	a_e (mm)		2		0.1-0.25		2.5		0.1-0.25	
III	Pre-Hardened Steels HRC35~45	V_c (m/min)	65	160	240	200	65	160	240	200
		n (min ⁻¹)	5,200	12,700	19,100	15,900	4,100	10,200	15,300	12,700
		f_z (mm)	0.190	0.190	0.228	0.057	0.238	0.238	0.285	0.071
		V_f (mm/min)	3,950	9,650	17,420	3,630	3,900	9,690	17,440	3,620
		a_p (mm)	0.2	0.1	0.08	0.1-0.25	0.24	0.12	0.09	0.1-0.25
	a_e (mm)		2		0.1-0.25		2.5		0.1-0.25	
IV	Hardened Steels HRC45~55	V_c (m/min)	50	140	210	200	50	140	210	200
		n (min ⁻¹)	4,000	11,100	16,700	15,900	3,200	8,900	13,400	12,700
		f_z (mm)	0.190	0.190	0.228	0.051	0.238	0.238	0.285	0.064
		V_f (mm/min)	3,040	8,440	15,230	3,260	3,040	8,460	15,280	3,260
		a_p (mm)	0.14	0.08	0.06	0.05-0.2	0.17	0.1	0.07	0.05-0.2
	a_e (mm)		2		0.05-0.2		2.5		0.05-0.2	
V	Hardened Steels HRC55~65	V_c (m/min)	50	90	135	160	50	90	135	160
		n (min ⁻¹)	4,000	7,200	10,700	12,700	3,200	5,700	8,600	10,200
		f_z (mm)	0.076	0.076	0.091	0.046	0.095	0.095	0.114	0.057
		V_f (mm/min)	1,220	2,190	3,900	2,320	1,220	2,170	3,920	2,330
		a_p (mm)	0.1	0.06	0.05	0.05-0.2	0.12	0.07	0.06	0.05-0.2
	a_e (mm)		2		0.05-0.2		2.5		0.05-0.2	

NOTE

- Use the machine and chucking with the highest rigidity and accuracy as possible, especially for Maximum Feed Conditions!
- These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

- Alternative calculation method for Finishing: $a_e = (D/2) - R$.
For example: HGOF-4100-20TH; $a_e = (10/2) - 2$; $a_e = 3$
- For D2 & D3 we recommend cutting conditions of Standard & High Feed table.
- We recommend to enter the material with a rampangle or helixangle of 0.5° (max. 1°)

Note: For finishing and precise tool definition for the CAM system please download DXF data (QuickFinder), or contact your local Hitachi Tool staff for more details.

			D6/CR 1.5				D8/CR 2.0			
			Standard	High Feed	Max. Feed	Finish/2D/3D	Standard	High Feed	Max. Feed	Finish/2D/3D
I	Cast Iron Carbon Steels Alloy Steels HB150~250	V_c (m/min)	75	170	250	250	75	170	250	250
		n (min ⁻¹)	4,000	9,000	13,300	13,300	3,000	6,800	9,900	9,900
		f_z (mm)	0.420	0.420	0.504	0.090	0.560	0.560	0.672	0.120
		V_f (mm/min)	6,720	15,120	26,810	4,790	6,720	15,230	26,610	4,750
		a_p (mm)	0.3	0.15	0.12	0.2-0.5	0.4	0.2	0.16	0.2-0.5
		a_e (mm)		3		4		0.2-0.5		
II	Tool Steels HRC25~35	V_c (m/min)	70	170	250	250	70	170	250	250
		n (min ⁻¹)	3,700	9,000	13,300	13,300	2,800	6,800	9,900	9,900
		f_z (mm)	0.384	0.384	0.462	0.090	0.512	0.512	0.616	0.120
		V_f (mm/min)	5,680	13,820	24,580	4,790	5,730	13,930	24,390	4,750
		a_p (mm)	0.3	0.15	0.12	0.2-0.5	0.4	0.2	0.16	0.2-0.5
		a_e (mm)		3		4		0.2-0.5		
III	Pre-Hardened Steels HRC35~45	V_c (m/min)	65	160	240	200	65	160	240	200
		n (min ⁻¹)	3,400	8,500	12,700	10,600	2,600	6,400	9,500	8,000
		f_z (mm)	0.300	0.300	0.360	0.090	0.400	0.400	0.480	0.120
		V_f (mm/min)	4,080	10,200	18,290	3,820	4,160	10,240	18,240	3,840
		a_p (mm)	0.3	0.15	0.12	0.2-0.5	0.4	0.2	0.16	0.2-0.5
		a_e (mm)		3		4		0.2-0.5		
IV	Hardened Steels HRC45~55	V_c (m/min)	50	140	210	200	50	140	210	200
		n (min ⁻¹)	2,700	7,400	11,100	10,600	2,000	5,600	8,400	8,000
		f_z (mm)	0.300	0.300	0.360	0.081	0.400	0.400	0.480	0.108
		V_f (mm/min)	3,240	8,880	15,980	3,430	3,200	8,960	16,130	3,460
		a_p (mm)	0.21	0.12	0.09	0.1-0.4	0.28	0.16	0.12	0.1-0.4
		a_e (mm)		3		4		0.1-0.4		
V	Hardened Steels HRC55~65	V_c (m/min)	50	90	135	160	50	90	135	160
		n (min ⁻¹)	2,700	4,800	7,200	8,500	2,000	3,600	5,400	6,400
		f_z (mm)	0.120	0.120	0.144	0.072	0.160	0.160	0.192	0.096
		V_f (mm/min)	1,300	2,300	4,150	2,450	1,280	2,300	4,150	2,460
		a_p (mm)	0.15	0.09	0.08	0.1-0.4	0.2	0.12	0.1	0.1-0.4
		a_e (mm)		3		4		0.1-0.4		

			D10/CR 2.0				D12/CR 2.0			
			Standard	High Feed	Max. Feed	Finish/2D/3D	Standard	High Feed	Max. Feed	Finish/2D/3D
I	Cast Iron Carbon Steels Alloy Steels HB150~250	V_c (m/min)	75	170	250	250	75	170	250	250
		n (min ⁻¹)	2,400	5,400	8,000	8,000	2,000	4,500	6,600	6,600
		f_z (mm)	0.700	0.700	0.840	0.150	0.798	0.798	0.958	0.171
		V_f (mm/min)	6,720	15,120	26,880	4,800	6,380	14,360	25,280	4,510
		a_p (mm)	0.4	0.2	0.16	0.2-0.5	0.4	0.2	0.16	0.2-0.5
		a_e (mm)		5		6		0.2-0.5		
II	Tool Steels HRC25~35	V_c (m/min)	70	170	250	250	70	170	250	250
		n (min ⁻¹)	2,200	5,400	8,000	8,000	1,900	4,500	6,600	6,600
		f_z (mm)	0.640	0.640	0.770	0.150	0.729	0.729	0.878	0.171
		V_f (mm/min)	5,630	13,820	24,640	4,800	5,540	13,130	23,170	4,510
		a_p (mm)	0.4	0.2	0.16	0.2-0.5	0.4	0.2	0.16	0.2-0.5
		a_e (mm)		5		6		0.2-0.5		
III	Pre-Hardened Steels HRC35~45	V_c (m/min)	65	170	240	200	65	160	240	200
		n (min ⁻¹)	2,100	5,100	7,600	6,400	1,700	4,200	6,400	5,300
		f_z (mm)	0.500	0.500	0.600	0.150	0.571	0.570	0.684	0.171
		V_f (mm/min)	4,200	10,200	18,240	3,840	3,880	9,580	17,510	3,630
		a_p (mm)	0.4	0.2	0.16	0.2-0.5	0.4	0.2	0.16	0.2-0.5
		a_e (mm)		5		6		0.2-0.5		
IV	Hardened Steels HRC45~55	V_c (m/min)	50	140	210	200	50	140	210	200
		n (min ⁻¹)	1,600	4,500	6,700	6,400	1,300	3,700	5,600	5,300
		f_z (mm)	0.500	0.500	0.600	0.135	0.569	0.570	0.684	0.154
		V_f (mm/min)	3,200	9,000	16,080	3,460	2,960	8,440	15,320	3,260
		a_p (mm)	0.28	0.16	0.12	0.1-0.4	0.28	0.16	0.12	0.1-0.4
		a_e (mm)		5		6		0.1-0.4		
V	Hardened Steels HRC55~65	V_c (m/min)	50	90	135	160	50	90	135	160
		n (min ⁻¹)	1,600	2,900	4,300	5,100	1,300	2,400	3,600	4,200
		f_z (mm)	0.200	0.200	0.240	0.120	0.229	0.228	0.274	0.137
		V_f (mm/min)	1,280	2,320	4,130	2,450	1,190	2,190	3,940	2,300
		a_p (mm)	0.2	0.12	0.1	0.1-0.4	0.2	0.12	0.1	0.1-0.4
		a_e (mm)		5		6		0.1-0.4		

BEMERKUNG

1. Nutzen Sie die Maschine und Werkzeugspannung mit der höchstmöglichen Präzision und Stabilität, insbesondere bei maximalem Vorschub!
2. Die in der Tabelle angegebenen Schnittbedingungen stellen eine allgemeine Empfehlung dar. Die Werte sollten immer an die jeweilige Bearbeitung, deren Form und die verwendete Maschine angepasst werden.
3. Sollte die Ihnen verfügbare Drehzahl niedriger als der in der Tabelle angegebene Wert sein, sollte der Vorschub im gleichen Verhältnis reduziert werden.

4. Alternative Berechnungsmethode für Feinschichten: $a_e = (D/2) - R$.
Beispiel: HGOF-4100-20TH; $a_e = (10/2) - 2$; $a_e = 3$
5. Für D2 & D3 empfehlen wir die Schnittwerte der Standard & High Feed Tabelle.
6. Wir empfehlen Ihnen, mit einem Rampenwinkel oder einem Helixwinkel von 0,5° (max. 1°) in das Material zu fahren.

Achtung: Bitte laden Sie sich für die Schichtbearbeitung und die präzise Definition der Werkzeuge die DXF Daten herunter (QuickFinder) oder wenden Sie sich an Ihren Hitachi Anwendungstechniker.