

PRODUCT NEWS

PN-E-009

NEW

DIJET

Hard-**One** Series

DH Coated Solid carbide end mill series for high hardened die steel up to 70HRC.

SERIES EXPANSION

SFSB

- Solid carbide ball nose end mill
- Size range: $\phi 1$ - $\phi 12$ mm dia.

SFSR

- Solid carbide radius end mill
- Size range: $\phi 2$ - $\phi 12$ mm dia.



DIJET GmbH

www.dijet.de

Hard-One Ball SFSB type

- For high hardened die steel up to 70HRC
- 2 flutes / Helix angle 30°
- For shrink fit holder



■ Tolerance (mm)

R of ball nose	Tolerance of R
R0.5~R6	±0.005

Fig.1 ($\phi D_c < \phi D_s$)

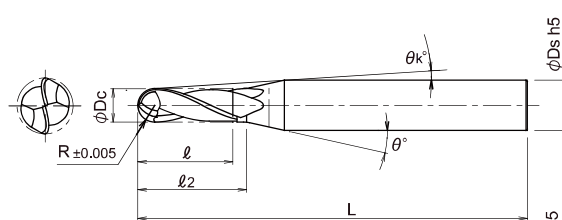
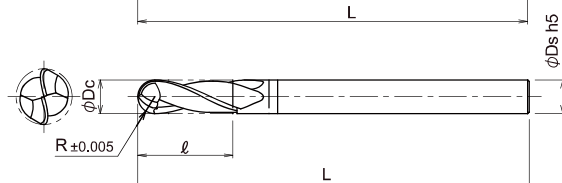


Fig.2 ($\phi D_c = \phi D_s$)



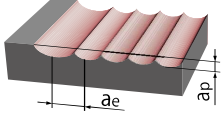
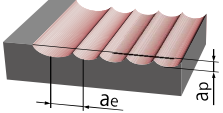
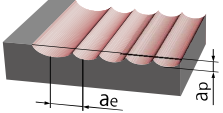
Cat. No.	Stock	Grade	Dimensions (mm)								Fig.
			R	ϕD_c	ℓ	ℓ_2	L	ϕD_s	θ	θ_k	
SFSB2010	●	DH110	0.5	1	1	1.5	40	4	12°	10.49°	1
SFSB2010-S6	●		0.5	1	1	1.5	40	6	12°	11.04°	1
SFSB2020	●		1	2	2	2.5	40	4	10°	7.86°	1
SFSB2020-S6	●		1	2	2	2.5	40	6	10°	8.8°	1
SFSB2030	●		1.5	3	3	4	40	4	10°	5.29°	1
SFSB2030-S6	●		1.5	3	3	4	40	6	10°	7.69°	1
SFSB2040	●		2	4	4	—	40	4	—	—	2
SFSB2040-S6	●		2	4	4	5	40	6	8°	5.59°	1
SFSB2050	●		2.5	5	5	6	50	6	5°	2.79°	1
SFSB2060	●		3	6	6	—	50	6	—	—	2
SFSB2080	●		4	8	8	—	60	8	—	—	2
SFSB2100	●		5	10	10	—	60	10	—	—	2
SFSB2120	●		6	12	12	—	60	12	—	—	2

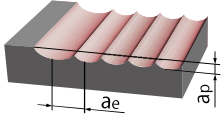
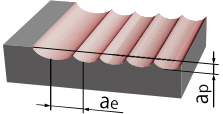
● : Standard stock items

Hard-One Ball

Recommended cutting conditions for SFSB type

■ for roughing & semi-finishing

Work materials		Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Hardened die steel (1.2344, 1.2379) 42~52HRC	
Type of machining		 $a_p \leq 0.1 D_c$ $a_e \leq 0.3 D_c$		 $a_p \leq 0.1 D_c$ $a_e \leq 0.3 D_c$		 $a_p \leq 0.1 D_c$ (MAX 0.5mm) $a_e \leq 0.3 D_c$	
Tool dia.		Spindle speed n (min ⁻¹)	Cutting speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Cutting speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Cutting speed V_f (mm/min)
R (mm)	ϕD_c (mm)						
0.5	1	31,800	1,590	31,800	1,590	30,200	1,210
1	2	23,900	1,910	23,900	1,910	22,300	1,560
1.5	3	19,100	2,480	19,100	2,290	18,000	1,800
2	4	14,300	2,290	14,300	2,150	13,500	1,620
2.5	5	11,500	2,190	11,500	2,070	10,800	1,620
3	6	9,500	2,090	9,500	1,900	9,000	1,620
4	8	7,200	1,940	7,200	1,800	6,800	1,500
5	10	5,700	1,820	5,700	1,710	5,400	1,460
6	12	4,800	1,540	4,800	1,440	4,500	1,220

Work materials		Hardened die steel (1.2344, 1.2379) 55~62HRC		Hardened die steel (1.3343) 63~70HRC	
Type of machining		 $a_p \leq 0.05 D_c$ (MAX 0.3mm) $a_e \leq 0.15 D_c$		 $a_p \leq 0.05 D_c$ (MAX 0.3mm) $a_e \leq 0.15 D_c$	
Tool dia.		Spindle speed n (min ⁻¹)	Cutting speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Cutting speed V_f (mm/min)
R (mm)	ϕD_c (mm)				
0.5	1	28,600	1,140	27,100	810
1	2	19,100	1,150	17,500	700
1.5	3	17,000	1,360	14,900	890
2	4	12,700	1,270	11,100	890
2.5	5	10,200	1,220	8,900	890
3	6	8,500	1,280	7,400	890
4	8	6,400	1,280	5,600	840
5	10	5,100	1,280	4,500	900
6	12	4,200	1,050	3,700	740

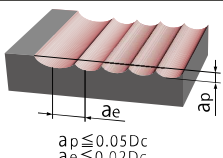
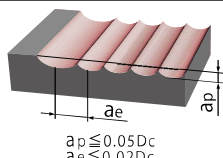
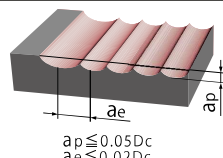
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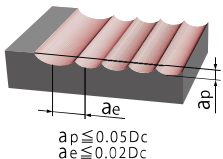
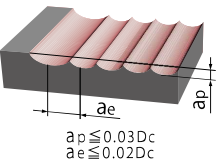
1. Above cutting conditions are for general guidance. In case of inclined angle 15° or more, reduce 70% of the above data.
2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.

Hard-One Ball

Recommended cutting conditions for SFSB type

■ for finishing

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Hardened die steel (1.2344, 1.2379) 42~52HRC	
Type of machining						
Tool dia.	Spindle speed n (min ⁻¹)		Spindle speed n (min ⁻¹)		Spindle speed n (min ⁻¹)	
	R (mm)	φ D _c (mm)	Cutting speed V _f (mm/min)	Cutting speed V _f (mm/min)	Cutting speed V _f (mm/min)	Cutting speed V _f (mm/min)
0.5	1		38,200	3,440	38,200	3,440
1	2		27,100	3,250	27,100	3,250
1.5	3		21,200	3,390	21,200	3,180
2	4		15,900	3,340	15,900	3,180
2.5	5		12,700	2,670	12,700	2,540
3	6		10,600	2,860	10,600	2,650
4	8		8,000	2,560	8,000	2,400
5	10		6,400	2,370	6,400	2,240
6	12		5,300	1,960	5,300	1,860

Work materials	Hardened die steel (1.2344, 1.2379) 55~62HRC		Hardened die steel (1.3343) 63~70HRC	
Type of machining				
Tool dia.	Spindle speed n (min ⁻¹)		Spindle speed n (min ⁻¹)	
	R (mm)	φ D _c (mm)	Cutting speed V _f (mm/min)	Cutting speed V _f (mm/min)
0.5	1		31,800	1,590
1	2		22,300	2,010
1.5	3		19,100	2,290
2	4		14,300	2,150
2.5	5		11,500	2,070
3	6		9,500	1,900
4	8		7,200	1,800
5	10		5,700	1,710
6	12		4,800	1,440

1. Above cutting conditions are for general guidance. In case of inclined angle 15° or more, reduce 70% of the above data.
2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.

Hard-One Radius

Hard-One Radius SFSR type

- For high hardened die steel up to 70HRC
- 4 flutes / Helix angle 50°-52°
- For shrink fit holder

NEW



Fig.1 ($\phi D_c < \phi D_s$)

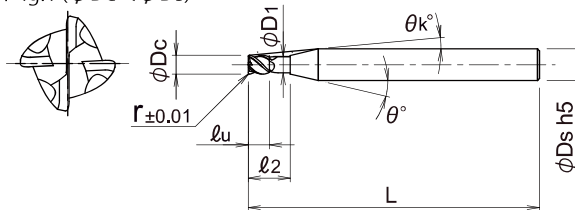
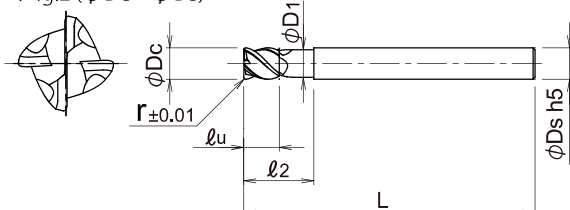


Fig.2 ($\phi D_c = \phi D_s$)



Cat. No.	Stock	Grade	Dimensions (mm)									Fig.
			r	ϕ Dc	ℓu	ℓ2	L	ϕ D1	ϕ Ds	θ	θk	
SFSR4020S04-R05	●	DH110	0.5	2	2	4	40	1.9	4	20°	9.1°	1
SFSR4020S06-R05	●		0.5	2	2	4	40	1.9	6	20°	12.6°	1
SFSR4030S04-R08	●		0.8	3	3	6	40	2.9	4	20°	4.4°	1
SFSR4030S06-R08	●		0.8	3	3	6	40	2.9	6	20°	9.2°	1
SFSR4040S04-R10	●		1.0	4	4	8	40	3.8	4	-	-	2
SFSR4040S06-R10	●		1.0	4	4	8	40	3.8	6	20°	5.9°	1
SFSR4050S06-R12	●		1.2	5	5	10	50	4.8	6	20°	2.9°	1
SFSR4060S06-R10	●		1.0	6	6	12	50	5.8	6	-	-	2
SFSR4060S06-R15	●		1.5	6	6	12	50	5.8	6	-	-	2
SFSR4080S08-R10	●		1.0	8	8	16	60	7.8	8	-	-	2
SFSR4080S08-R20	●		2.0	8	8	16	60	7.8	8	-	-	2
SFSR4100S10-R20	●		2.0	10	10	20	60	9.8	10	-	-	2
SFSR4100S10-R30	●		3.0	10	10	20	60	9.8	10	-	-	2
SFSR4120S12-R20	●		2.0	12	12	24	60	11.8	12	-	-	2
SFSR4120S12-R30	●		3.0	12	12	24	60	11.8	12	-	-	2

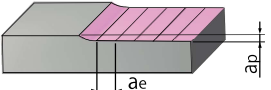
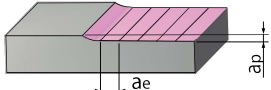
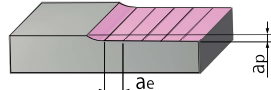
● : Standard stock items.

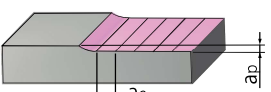
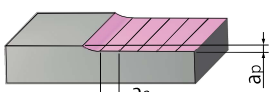
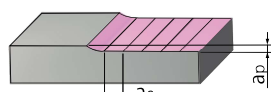


Hard-One Radius

Recommended cutting conditions for SFSR type (face milling)

■ for roughing

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Stainless steel (1.4350)	
Type of machining	 $a_p \leq 0.3 \text{ mm } (\phi 2 \neq 0.15 \text{ mm})$ $a_e \leq 0.33 D_c$		 $a_p \leq 0.3 \text{ mm } (\phi 2 \neq 0.15 \text{ mm})$ $a_e \leq 0.33 D_c$		 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.33 D_c$	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	24,000	7,000	24,000	7,000	25,000	2,500
3	17,000	7,000	17,000	7,000	17,000	3,000
4	13,000	8,000	13,000	8,000	13,000	3,500
5	10,000	9,000	10,000	9,000	10,500	4,000
6	8,500	10,000	8,500	10,000	8,600	4,200
8	6,500	10,000	6,500	10,000	6,500	4,200
10	5,200	10,000	5,200	10,000	4,500	4,200
12	4,300	10,000	4,300	10,000	3,000	4,200

Work materials	Hardened die steel (1.2344, 1.2379) 42~52HRC		Hardened die steel (1.2344, 1.2379) 55~62HRC		High speed tool steel (1.3343) 63~70HRC	
Type of machining	 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.33 D_c$		 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.33 D_c$		 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.33 D_c$	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	16,000	2,300	9,000	1,700	3,000	600
3	12,500	3,000	7,300	1,900	3,000	750
4	11,000	3,500	6,500	2,100	3,000	1,000
5	9,500	4,800	6,200	2,300	3,000	1,200
6	8,000	5,500	6,000	2,500	3,200	1,400
8	6,000	6,000	4,300	2,300	2,500	1,500
10	4,800	6,000	3,300	2,500	2,000	1,600
12	4,000	7,500	2,500	2,500	1,500	1,700

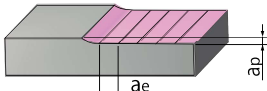
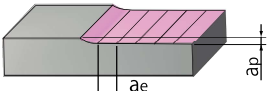
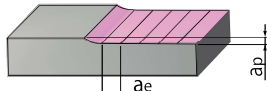
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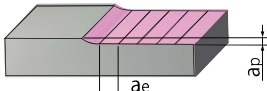
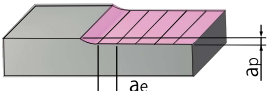
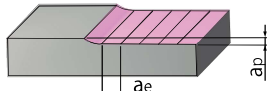
1. Above cutting conditions are for general guidance.
2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.
4. Recommend to use down cutting with air blow or mist coolant.
5. Recommend using coolant on stainless steel.
6. It is important for grasping the shank to defend and keep proper grasping length in case of using shrink fit holder.

Hard-One Radius

Recommended cutting conditions for SFSR type (face milling)

■ for finishing

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Stainless steel (1.4350)	
Type of machining	 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.1 D_c$		 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.1 D_c$		 $a_p \leq 0.15 \text{ mm}$ $a_e \leq 0.1 D_c$	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	30,000	2,000	30,000	2,000	30,000	2,000
3	20,000	2,000	20,000	2,000	20,000	2,000
4	15,000	2,000	15,000	2,000	15,000	2,000
5	12,000	2,000	12,000	2,000	12,000	2,000
6	10,000	2,000	10,000	2,000	10,000	2,000
8	7,500	2,000	7,500	2,000	7,500	2,000
10	6,000	1,900	6,000	1,900	5,000	1,500
12	5,000	1,800	5,000	1,800	3,000	1,000

Work materials	Hardened die steel (1.2344, 1.2379) 42~52HRC		Hardened die steel (1.2344, 1.2379) 55~62HRC		High speed tool steel (1.3343) 63~70HRC	
Type of machining	 $a_p \leq 0.1 \text{ mm}$ $a_e \leq 0.1 D_c$		 $a_p \leq 0.1 \text{ mm}$ $a_e \leq 0.1 D_c$		 $a_p \leq 0.05 \text{ mm}$ $a_e \leq 0.1 D_c$	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	20,000	1,300	13,000	900	9,000	400
3	14,000	1,100	9,000	700	6,000	350
4	11,000	950	7,000	550	4,700	300
5	9,500	900	5,700	550	3,800	300
6	8,000	800	4,700	450	3,200	250
8	6,000	700	3,500	400	2,500	250
10	5,000	650	2,800	350	2,000	200
12	4,000	650	2,400	350	1,600	200

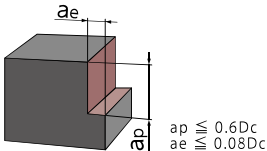
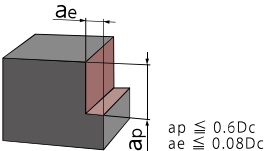
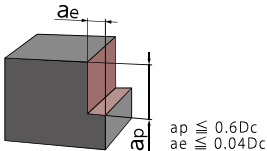
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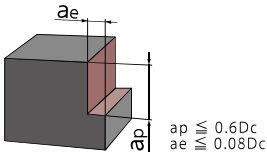
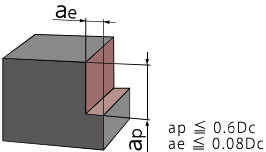
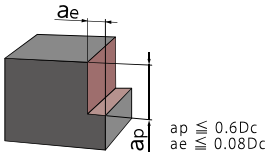
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2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.
4. Recommend to use down cutting with air blow or mist coolant.
5. Recommend using coolant on stainless steel.
6. It is important for grasping the shank to defend and keep proper grasping length in case of using shrink fit holder.

Hard-One Radius

Recommended cutting conditions for SFSR type (shoulder milling)

■ for roughing

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Stainless steel (1.4350)	
Type of machining	 <p>$a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$</p>		 <p>$a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$</p>		 <p>$a_p \leq 0.6D_c$ $a_e \leq 0.04D_c$</p>	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	24,000	950	24,000	950	3,200	2,500
3	24,000	1,300	24,000	1,300	2,700	2,200
4	18,000	1,800	18,000	1,800	2,300	2,000
5	15,000	2,000	15,000	2,000	2,000	1,900
6	12,000	2,200	12,000	2,200	1,800	1,800
8	10,000	2,200	10,000	2,200	1,300	1,300
10	8,000	2,200	8,000	2,200	1,000	1,000
12	6,500	1,900	6,500	1,900	800	800

Work materials	Hardened die steel (1.2344, 1.2379) 42~52HRC		Hardened die steel (1.2344, 1.2379) 55~62HRC		High speed tool steel (1.3343) 63~70HRC	
Type of machining	 <p>$a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$</p>		 <p>$a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$</p>		 <p>$a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$</p>	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	13,000	1,000	12,000	1,000	6,400	600
3	13,000	1,300	11,000	1,200	6,000	600
4	11,000	1,500	9,000	1,200	5,100	550
5	9,000	1,600	7,200	1,200	4,200	550
6	7,500	1,800	6,000	1,200	3,500	650
8	5,500	2,200	4,500	1,200	2,500	650
10	4,500	2,500	3,600	1,400	2,000	600
12	3,800	3,000	3,000	1,400	1,700	600

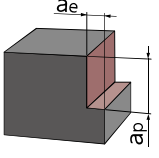
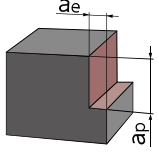
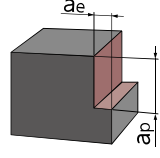
■ Attention

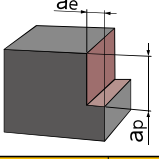
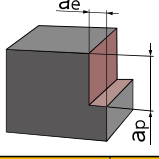
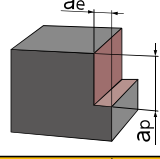
1. Above cutting conditions are for general guidance.
2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.
4. Recommend to use down cutting with air blow or mist coolant.
5. Using coolant on stainless steel.
6. It is important for grasping the shank to defend and keep proper grasping length in case of using shrink fit holder.

Hard-One Radius

Recommended cutting conditions for SFSR type (shoulder milling)

■ for finishing

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Stainless steel (1.4350)	
Type of machining	 $a_p \leq 0.3 \text{ mm}$ $a_e \leq 0.1 \text{ mm}$		 $a_p \leq 0.3 \text{ mm}$ $a_e \leq 0.1 \text{ mm}$		 $a_p \leq 0.3 \text{ mm}$ $a_e \leq 0.1 \text{ mm}$	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	40,000	4,500	40,000	4,500	40,000	7,500
3	29,000	4,000	29,000	4,000	28,000	5,500
4	22,000	4,000	22,000	4,000	21,000	4,500
5	18,000	4,000	18,000	4,000	17,000	4,000
6	15,000	3,700	15,000	3,700	14,000	3,500
8	11,000	2,800	11,000	2,800	11,000	3,000
10	8,900	2,600	8,900	2,600	9,000	2,600
12	7,400	2,300	7,400	2,300	7,500	2,200

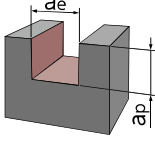
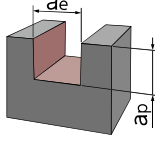
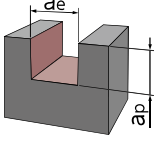
Work materials	Hardened die steel (1.2344, 1.2379) 42~52HRC		Hardened die steel (1.2344, 1.2379) 55~62HRC		High speed tool steel (1.3343) 63~70HRC	
Type of machining	 $a_p \leq 0.3 \text{ mm}$ $a_e \leq 0.1 \text{ mm}$		 $a_p \leq 0.2 \text{ mm}$ $a_e \leq 0.1 \text{ mm}$		 $a_p \leq 0.1 \text{ mm}$ $a_e \leq 0.1 \text{ mm}$	
Tool dia. ϕD_c (mm)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)	Spindle speed n (min ⁻¹)	Feed speed V_f (mm/min)
2	40,000	2,500	30,000	2,000	23,000	550
3	26,500	2,000	20,000	1,500	15,000	450
4	20,000	1,800	15,000	1,200	12,000	400
5	16,000	1,500	12,000	1,100	9,500	380
6	13,500	1,300	10,000	900	8,000	350
8	10,000	1,000	7,500	700	6,000	280
10	8,000	800	6,000	600	5,000	280
12	6,500	700	5,000	500	4,000	280

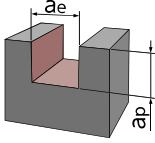
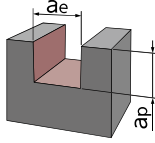
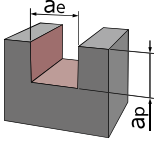
■ Attention

1. Above cutting conditions are for general guidance.
2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.
4. Recommend to use down cutting with air blow or mist coolant.
5. Using coolant on stainless steel.
6. It is important for grasping the shank to defend and keep proper grasping length in case of using shrink fit holder.

Hard-One Radius

Recommended cutting conditions for SFSR type (slotting)

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Stainless steel (1.4350)	
Type of machining	 $ap \leq 0.3Dc$ $ae = Dc$		 $ap \leq 0.3Dc$ $ae = Dc$		 $ap \leq 0.25Dc$ $ae = Dc$	
Tool dia. ϕDc (mm)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)
2	11,000	650	11,000	650	2,500	190
3	9,500	750	9,500	750	2,300	180
4	8,500	800	8,500	800	2,000	170
5	7,600	1,000	7,600	1,000	1,800	160
6	6,600	1,100	6,600	1,100	1,500	150
8	5,000	1,200	5,000	1,200	1,100	130
10	4,000	1,200	4,000	1,200	850	130
12	3,300	1,300	3,300	1,300	700	130

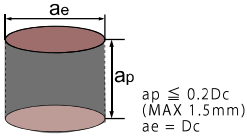
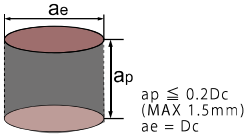
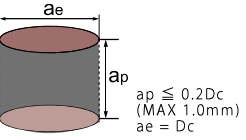
Work materials	Hardened die steel (1.2344, 1.2379) 42~52HRC		Hardened die steel (1.2344, 1.2379) 55~62HRC		High speed tool steel (1.3343) 63~70HRC	
Type of machining	 $ap \leq 0.3Dc$ $ae = Dc$		 $ap \leq 0.3Dc$ $ae = Dc$		 $ap \leq 0.3Dc$ $ae = Dc$	
Tool dia. ϕDc (mm)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)
2	9,000	400	5,500	240	5,500	230
3	8,000	500	5,000	300	4,800	270
4	7,500	550	4,200	350	4,000	320
5	6,800	650	3,900	400	3,800	400
6	5,800	700	3,500	500	3,200	480
8	4,300	750	2,700	550	2,300	450
10	3,400	900	2,200	620	1,800	470
12	2,800	1,000	1,800	700	1,500	530

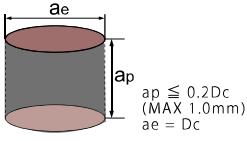
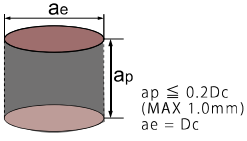
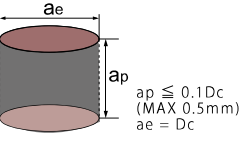
■ Attention

1. Above cutting conditions are for general guidance.
2. The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio.
4. Recommend to use down cutting with air blow or mist coolant.
5. Using coolant on stainless steel.
6. It is important for grasping the shank to defend and keep proper grasping length in case of using shrink fit holder.
7. Recommend to shorten overhung length (2Dc-3Dc).
8. Recommended ramping angle is within 45°.

Hard-One Radius

Recommended cutting conditions for SFSR type (plunging)

Work materials	Carbon steel (1.0540, 1.0535) ~250HB		Hardened die steel (1.2344, 1.2379, 1.2311, P20) ~45HRC		Stainless steel (1.4350)	
Type of machining	 $ap \leq 0.2Dc$ (MAX 1.5mm) $ae = Dc$		 $ap \leq 0.2Dc$ (MAX 1.5mm) $ae = Dc$		 $ap \leq 0.2Dc$ (MAX 1.0mm) $ae = Dc$	
Tool dia. ϕDc (mm)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)
2	11,000	250	11,000	250	8,000	90
3	8,500	320	8,500	320	7,000	100
4	8,000	350	8,000	350	6,000	100
5	6,500	360	6,500	360	5,200	120
6	5,500	350	5,500	350	4,500	120
8	4,200	320	4,200	320	3,200	110
10	3,000	280	3,000	280	2,000	100
12	2,500	250	2,500	250	1,500	90

Work materials	Hardened die steel (1.2344, 1.2379) 42~52HRC		Hardened die steel (1.2344, 1.2379) 55~62HRC		High speed tool steel (1.3343) 63~70HRC	
Type of machining	 $ap \leq 0.2Dc$ (MAX 1.0mm) $ae = Dc$		 $ap \leq 0.2Dc$ (MAX 1.0mm) $ae = Dc$		 $ap \leq 0.1Dc$ (MAX 0.5mm) $ae = Dc$	
Tool dia. ϕDc (mm)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)	Spindle speed n (min ⁻¹)	Feed speed Vf (mm/min)
2	8,000	150	7,000	180	3,000	60
3	6,500	200	5,500	200	3,000	75
4	5,500	220	4,500	230	3,000	100
5	4,500	240	4,000	250	3,000	120
6	3,700	280	3,500	250	3,200	140
8	2,800	250	2,700	230	2,500	150
10	2,200	250	2,200	200	2,000	160
12	1,800	230	2,000	180	1,500	170

■ Attention

- Above cutting conditions are for general guidance.
- The figures to be adjusted according to machining shape, overhung length, purpose and rigidity of machine and work clamping.
- If machine does not have enough spindle speed, reduce the feed speed to the same ratio.
- Recommend to use down cutting with air blow or mist coolant.
- Using coolant on stainless steel.
- It is important for grasping the shank to defend and keep proper grasping length in case of using shrink fit holder.
- In case of helical interpolation, set "Max. helical interpolation depth per tool path revolution" to above Max. ap .

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