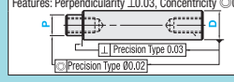
Shafts

One End Stepped, Both Ends Tapped / One End Stepped, One End Tapped

High Precision Linear Shafts when high precision assembly is needed
Features: Perpendicularity ⊥0.03, Concentricity ◎0.02


P.197

■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see P.197.
■For One End Stepped, Both Ends Tapped with Wrench Flats, see P.135.

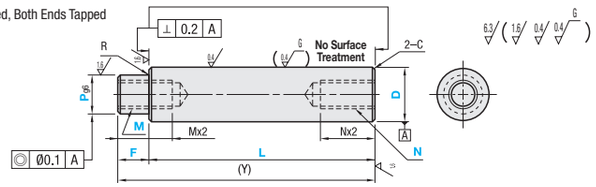
RoHS 10

- Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm). P.112
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.111
- Features of LTBC Plating P.128

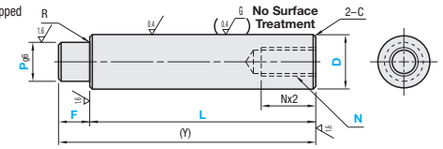
Type						M Material	H Hardness	S Surface Treatment
One End Stepped, Both Ends Tapped			One End Stepped, One End Tapped					
D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. h5	D Tol. f8			
SFAA	SFUE	-	SFNA	SFEU	-	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112	-
SSFAA	SSFUE	-	SSFNA	SSFEU	-	EN 1.4037 Equiv.	EN 1.3505 Equiv. 58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5μ or More ~
PSFAA	PSFUE	-	PSFNA	PSFEU	-	EN 1.3505 Equiv.		
PSSFAA	PSSFUE	-	PSSFNA	PSSFEU	-	EN 1.4037 Equiv.	EN 1.4037 Equiv. 56HRC~	LTBC Plating
RSFAA	-	-	RSFNA	-	-	EN 1.3505 Equiv.		
-	-	PSFGA	-	-	PSNGA	EN 1.1191 Equiv.	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μ or More ~
-	-	PSSFGA	-	-	PSSNGA	EN 1.4301 Equiv.		

D	D Tol. g6	D Tol. h5	D Tol. f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12			
13	-0.006 -0.017	0 -0.008	-0.016 -0.043
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

One End Stepped, Both Ends Tapped



One End Stepped, One End Tapped



Part Number Type	D	1mm Increment L	F	P	M (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C
One End Stepped, Both Ends Tapped (D Tolerance g6) (D Tolerance h5) SFAA SSFAA PSFAA PSSFAA RSFAA (D≤30, L≤500) (D Tolerance f8) PSFGA PSSFGA	8	25~798		6	3	3 4 5	800	0.3 or Less	0.5 or Less
	10	25~798		6~ 8	3 4 5	3 4 5 6	800		
	12	25~998		6~10	3 4 5 6	4 5 6 8	1000		
	13	25~998		6~11	3 4 5 6 8	4 5 6 8	1000		
	15	25~998		6~13	3 4 5 6 8 10	4 5 6 8 10	1000		
	16	25~1198		6~14	3 4 5 6 8 10	4 5 6 8 10	1200		
	18	25~1198	2≤F≤Px4	8~16	4 5 6 8 10 12	4 5 6 8 10 12	1200		
	20	25~1198		8~17	4 5 6 8 10 12	4 5 6 8 10 12	1200		
	25	25~1198		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	1200		
	30	25~1498		9~27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	1500	0.5 or Less	1.0 or Less
	35	25~1498		9~32	5 6 8 10 12 16 20 24	8 10 12 16 20 24	1500		
	40	25~1498		11~37	6 8 10 12 16 20 24 30	10 12 16 20 24 30	1500		
	50	25~1498		11~47	6 8 10 12 16 20 24 30	12 16 20 24 30	1500		

P dimensions require M+3≤P. When D-P≤4, stepped section chamfer C is 0.2 or less. For One End Stepped One End Tapped Type, L dimensions require Nx3≤L.
When Mx2.5+4+Nx2.5+4≥(Y), tap pilot holes may go through. When Mx2+Nx2≥(Y), effective depth of larger diameter tap has priority.

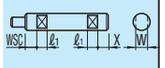
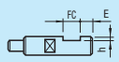
Ordering Example

Part Number	L	F	P	M	N
SFAA20	400	F25	P16	M10	N10
SFUE20	400	F25	P16	M10	N10
SFNA20	400	F25	P15		N10

Alterations

Part Number	L	F	P	M (MD, ND)	N (NSC)	(LKC, WSC⋯etc.)
SFAA30	400	F25	P16	M10	N10	LKC

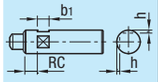
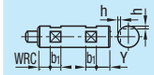
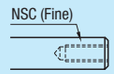
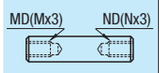
Alteration Details P.113

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code LKC ⊗Not applicable when D-P≤2. L dimensions can be specified in 0.1mm increment for LKC. ? L<200 ⋯→L±0.03 200≤L<500 ⋯→L±0.05 L≥500 ⋯→L±0.1
	WSC	Wrench Flats at Two Locations Ordering Code WSC12-X8 WSC, X=1mm Increment ? WSC+X+ℓ1x2<L ? WSC(X)≥ 0 ⊗Orientation between two set screw flats is not coplanar.
	FC	Set Screw Flat at One Location Ordering Code FC10-E8 FC, E=1mm Increment ? FC≤3xD ? When 1.5xD<FC, FC≤L/2 ? E=0 or E≥2 ⊗Not available in combination with WFC.
	WFC	Set Screw Flats at Two Locations Ordering Code WFC8-A8-E4 WFC, A, E=1mm Increment ? WFC≤3xD ? When 1.5xD<WFC, 2WFC≤L/2 ? A(E)=0 or A(E)≥2 ⊗Orientation between set screw flats is not coplanar. Not available in combination with FC.

D	W	ℓ1	D	W	ℓ1
8	7	8	20	17	10
10	8		25	22	
12	10	10	30	27	15
13	11		35	30	
15	13		40	36	20
16	14		50	41	
18	16				

D	h
8~18	1
20~40	2
50	3

D	h
8~18	1
20~40	2
50	3

Alterations	Code	Spec.
	RC	90-deg. Set Screw Flat at One Location Ordering Code RC10 Application Notes Only applicable to D=10 ~ 30. ⊗Not available in combination with WRC.
	WRC	90-deg. Set Screw Flats at Two Locations Ordering Code WRC10-Y10 Application Notes Only applicable to D=10 ~ 30. ⊗Not available in combination with RC. ⊗Orientation between two set screw flats is not coplanar.
	NSC	Change to Fine Tapped Thread Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable to D=12 or more
	MD ND	Change the effective tap depth to M(N)x3. Ordering Code MD6/ND6 (M is changed to MD, N is changed to ND) Application Notes Only applicable to D=6~30, M(N)=6~20 ? One End Tapped: MDx3.5+4≥L ? Both Ends Tapped: MDx3.5+4+NDx3.5+4≥L

For details, see Shaft Alteration Overview. P.113

? Please see Shaft Alteration Overview for details if provided. P.113
? When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.
? Alterations may lower hardness. See P.112

Part Number Type	D	Unit Price Min. L ⌇ 50	L51 ⌇ 100	L101 ⌇ 150	L151 ⌇ 200	L201 ⌇ 250	L251 ⌇ 300	L301 ⌇ 350	L351 ⌇ 400	L401 ⌇ 450	L451 ⌇ 500	L501 ⌇ 550	L551 ⌇ 600	L601 ⌇ 650	L651 ⌇ 700	L701 ⌇ 750	L751 ⌇ 800	L801 ⌇ 850	L851 ⌇ 900	L901 ⌇ 950	L951 ⌇ 1000	L1001 ⌇ 1100	L1101 ⌇ 1200	L1201 ⌇ 1300	L1301 ⌇ 1400	L1401 ⌇ 1498
SFAA ?SFUE ?SFNA ?SFEU	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
	13																					-	-	-	-	-
	15																					-	-	-	-	-
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	25																							-	-	-
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	35																									
	40																									
	50																									
SSFAA ?SSFUE ?SSFNA ?SSFEU	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
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	50																									
PSFAA ?PSFUE ?PSFNA ?PSFEU	8																	-	-	-	-	-	-	-	-	-
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	40																									
	50																									

• One End Stepped, Both Ends Tapped • One End Stepped, One End Tapped

Part Number Type	D	Unit Price Min. L ⌇ 50	L51 ⌇ 100	L101 ⌇ 150	L151 ⌇ 200	L201 ⌇ 300	L301 ⌇ 400	L401 ⌇ 500
RSFAA ?RSFNA	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	Unit Price Min. L ⌇ 100	L101 ⌇ 200	L201 ⌇ 400	L401 ⌇ 600	L601 ⌇ 800	L801 ⌇ 1000	L1001 ⌇ 1200	L1201 ⌇ 1498
PSFGA ?PSNGA	8						-	-	-
	10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								

Part Number Type	D	Unit Price Min. L ⌇ 100	L101 ⌇ 200	L201 ⌇ 400	L401 ⌇ 600	L601 ⌇ 800	L801 ⌇ 1000	L1001 ⌇ 1200	L1201 ⌇ 1498
PSSFGA ?PSSNGA	8						-	-	-
	10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								