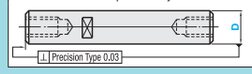
Shafts

Both Ends Tapped with Wrench Flats / Both Ends Tapped with Cross-Drilled Hole

High Precision Linear Shafts when high precision assembly is needed
Features: Perpendicularity ⊥ 0.03



P.191

■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see P.191.
■For Shafts w/o Wrench Flats or Cross-Drilled Hole, see P.119.

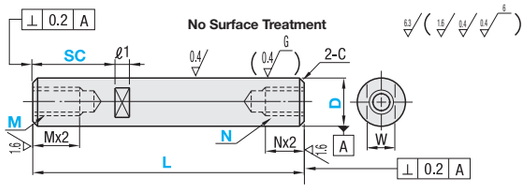
RoHS10

- Annealing may lower hardness at wrench flats, cross-drilled hole and shaft end machined areas (effective thread length + approx. 10mm). P.112
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation.
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.111
- Features of LTBC Plating P.128

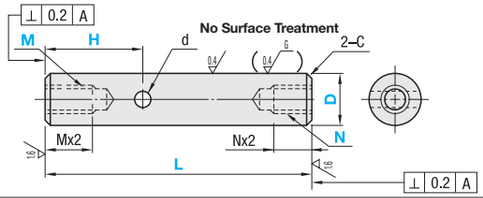
Type: With Wrench Flats D Tol. g6	With Wrench Flats D Tol. h5	With Wrench Flats D Tol. f8	With Cross-Drilled Hole D Tol. g6	With Cross-Drilled Hole D Tol. f8	Material	Hardness	Surface Treatment
SFJZ	SFUZ	-	SFHZ	-	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112	-
SSFJZ	SSFUZ	-	SSFHZ	-	EN 1.4125 Equiv.		
PSFJZ	PSFUZ	-	PSFHZ	-	EN 1.3505 Equiv.		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5μ or More
PSSFJZ	PSSFUZ	-	PSSFHZ	-	EN 1.4125 Equiv.	EN 1.3505 Equiv. 58HRC~ EN 1.4125 Equiv. 56HRC~	
RSFJZ	-	-	RSFHZ	-	EN 1.3505 Equiv.		LTBC Plating
-	-	PSFGZ	-	PSGHZ	EN 1.1191 Equiv.	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μ or More
-	-	PSSFGZ	-	-	EN 1.4301 Equiv.		

D	D Tol. g6	D Tol. h5	D Tol. f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
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			

With Wrench Flats



With Cross-Drilled Hole
(8≤D≤30,L≤500)



Part Number Type	D	L specified in 1mm Increment	M (Coarse), N (Coarse) Selection	Wrench Flats Dimensions SC	W	ℓ1	Cross-Drilled Hole Dimensions H	d	C
(With Wrench Flats) (D Tolerance g6) SFJZ SSFJZ PSFJZ PSSFJZ RSFJZ (D≤30,L≤500) (D Tolerance f8) PSFGZ PSSFGZ; (D Tolerance h5) SFUZ SSFUZ PSFUZ PSSFUZ; (With Cross-Drilled Hole 8≤D≤30, L≤500) (D Tolerance g6) SFHZ SSFHZ PSFHZ PSSFHZ RSFHZ (D Tolerance f8) PSGHZ	6	20~600	3	SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.112	5	8	-	-	0.5 or Less
	8	20~800	3 4 5		7		H=1mm Increment L≥H+d/2+Nx2.5+6 H=Mx2.5+d/2+6	3	
	10	20~800	3 4 5 6		8				
	12	20~1000	4 5 6 8		10	10			
	13	25~1000	4 5 6 8		11				
	15	25~1000	4 5 6 8 10		13			4	
	16	30~1200	4 5 6 8 10		14				
	18	30~1200	4 5 6 8 10 12		16			6	
	20	30~1200	4 5 6 8 10 12		17				
	25	35~1200	4 5 6 8 10 12 16		22			7	1.0 or Less
	30	35~1500	6 8 10 12 16 20		27	15			
	35	35~1500	8 10 12 16 20 24		30		-	-	
	40	50~1500	10 12 16 20 24 30		36	20			
	50	65~1500	12 16 20 24 30		41				

L requires Mx2+Nx2≤L. When Mx2.5+4+Nx2.5+4≥L, tap pilot holes may go through.

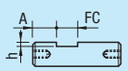
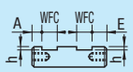
Ordering Example

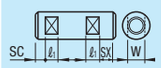
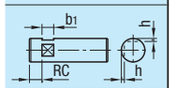
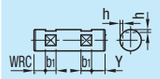
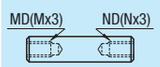
Part Number	L	M	N	SC	H
SFJZ10	200	M5	N5	SC10	
SSFHZ20	500	M6	N10		H20

Alterations

Part Number	L	M (MSC, MD)	N (NSC, ND)	SC	H	(LKC…etc.)
SFJZ30	500	M8	N10	SC10		LKC

Alteration Details P.113

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code LKC 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
	FC	Set Screw Flat at One Location Ordering Code FC10-A8 FC, A=1mm Increment FC≤3xD When 1.5xD<FC, FC≤L/2 A=0 or A≥2 Not available in combination with WFC. D / h: 6~18 / 1; 20~40 / 2; 50 / 3
	WFC	Set Screw Flats at Two Locations Ordering Code WFC8-A8-E2 WFC,A,E=1mm Increment WFC≤3xD When 1.5xD<WFC, 2WFC≤L/2 A(E)=0 or A(E)≥2 Two set screw flats cannot be machined coplanar. Not available in combination with FC. D / h: 6~18 / 1; 20~40 / 2; 50 / 3

Alterations	Code	Spec.
	SX	Second Set of Wrench Flats Ordering Code SX15 Application Notes Only applicable to Shafts with Wrench Flats. SX=1mm Increment SC+SX+ℓ1x2<L SX≥0 Orientation between two set screw flats is not coplanar. D / W / ℓ1: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 10; 12 / 10 / 10; 13 / 11 / 10; 15 / 13 / 10; 16 / 14 / 10; 18 / 16 / 10; 20 / 17 / 10; 25 / 22 / 15; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20
	MSC NSC	Change to Fine Tapped Thread Ordering Code MSC14 (M is changed to MSC) NSC14 (N is changed to NSC) Application Notes Applicable to D=12 or more
	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. For details, see Shaft Alteration Overview. P.113
	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.
	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 Both Ends Tapped: MDx3.5+4+NDx3.5+4≥L

- 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.
- The distance between wrench flats and cross-drilled holes should be greater than 2mm for alterations.
- 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 ~ 1500
SFJZ SFUZ SFHZ	6													-	-	-	-	-	-	-	-	-	-	-	-	-
	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
	13																					-	-	-	-	-
	15																					-	-	-	-	-
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	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50	-																								
SSFJZ SSFUZ SSFHZ	6													-	-	-	-	-	-	-	-	-	-	-	-	-
	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
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	50	-																								
PSFJZ PSFUZ PSFHZ	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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	10																	-	-	-	-	-	-	-	-	-
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PSSFJZ PSSFUZ PSSFHZ	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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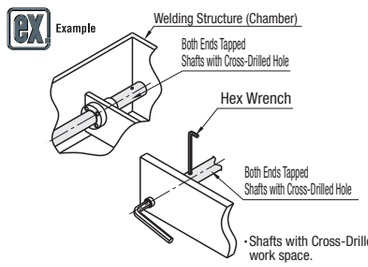
	50	-																								

Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFJZ RSFHZ	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							



• Shafts with Cross-Drilled Hole are suitable for narrow work space.

Part Number Type	D	Unit Price Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFGZ PSGHZ	6					-	-	-	-
	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 ~ 1500
PSSFGZ	6					-	-	-	-
	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								