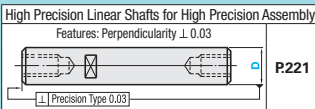


Shafts

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



P221

For High Precision Linear Shafts with high perpendicular precision of the shaft end ($\perp 0.03$), see **P221**. For Shafts w/o Wrench Flats or Cross-Drilled Hole, see **P147**.

RoHS 10

Annealing may lower hardness at wrench flats, cross-drilled hole and shaft end machined areas (effective thread length + approx. 10mm). **P142**

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 **P141**

Features of Low Temp. Black Chrome Plating **P156**

Type		Material	Hardness	Surface Treatment
With Wrench Flats	With Cross-Drilled Hole			
D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. f8
SFJZ	SFUZ	SFHZ	SUJ2	-
SSFJZ	SSFUZ	SSFHZ	SUS440C Equivalent	Effective Hardened Depth of Induction Hardening P142
PSFJZ	PSFUZ	PSFHZ	SUJ2	Hard Chrome Plating - Plating Thickness: 5μ or More
PSSFJZ	PSSFUZ	PSSFHZ	SUS440C Equivalent	Low Temp. Black Chrome Plating
RSFJZ	RSFUZ	RSFHZ	SUJ2	Hard Chrome Plating - Plating Thickness: 10μ or More
-	PSFGZ	PSGHZ	S45C Equivalent	-
-	PSSFGZ	-	SUS304	-

For plated products, the surface roughness of D part is $\sqrt{0.4}$ and for unplated products, it is $\sqrt{0.6}$.

With Wrench Flats

With Cross-Drilled Hole ($8 \leq D \leq 30, L \leq 500$)

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

Part Number	Type	D	L specified in 1mm Increments	M (Coarse), N (Coarse) Selection	Wrench Flats Dimensions	Cross-Drilled Hole Dimensions	C
(With Wrench Flats)	(D Tol. g6)	6	20~ 800	3	SC	5	0.5 or Less
(D Tol. h5)	SFUZ	8	20~1000	3 4 5	7	8	3
(D Tol. g6)	SFHZ	10	20~1000	3 4 5 6	8	10	4
(D Tol. h5)	SSFUZ	12	20~1200	4 5 6 8	11	13	6
(D Tol. g6)	SSFHZ	13	25~1200	4 5 6 8	13	15	7
(D Tol. h5)	PSFUZ	15	25~1200	4 5 6 8 10	14	16	15
(D Tol. g6)	PSFHZ	16	30~1200	4 5 6 8 10	16	18	20
(D Tol. h5)	PSSFUZ	18	30~1200	4 5 6 8 10 12	17	20	25
(D Tol. g6)	PSSFHZ	20	30~1200	4 5 6 8 10 12	22	25	30
(D Tol. h5)	RSFUZ	25	35~1200	4 5 6 8 10 12 16	27	30	35
(D Tol. g6)	RSFHZ	30	35~1500	6 8 10 12 16 20	30	35	40
(D Tol. h5)	PSFGZ	35	35~1500	8 10 12 16 20 24	36	40	50
(D Tol. g6)	PSSFGZ	40	50~1500	10 12 16 20 24 30	41	50	
(D Tol. h5)		50	65~1500	12 16 20 24 30			

8≤D≤30 and L≤500 are applicable for Shafts with Cross-Drilled Hole.

L requires Mx2+Nx2≤L. When Mx2.5+4+Nx2.5+4≥L, tap pilot holes may go through and the effective length of the smaller tap part may be shortened.

Ordering Example: Part Number - L - M - N - SC - H
SFJZ10 - 200 - M5 - N5 - SC10 - H20

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

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 D≤30:FC≤5xD D≥35:FC≥3xD FC≤L/2 A=0 or A≥2 Not available in combination with WFC.
	WFC	Set Screw Flats at Two Locations (Ordering Code) WFC8-A8-E2 WFC, A, E = 1mm Increment D≤30:WFC≤5xD D≥35:WFC≥3xD A(E)=0 or A(E)≥2 Orientation between set screw flats is not coplanar. Not available in combination with FC.

Please see Shaft Alteration Overview for details if provided. **P143**

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 **P142**.

Alterations	Code	Spec.
	SX	Second Set of Wrench Flats (Ordering Code) SX15 (Application Notes) Only applicable to Shafts with Wrench Flats. SC=1mm Increment SC+SC+L1x2<L SX≥0 Orientation between two set screw flats is not coplanar.
	MSC	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.
	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	Change the effective tap depth to M(N)x3. (Ordering Code) MD6/N06 (M is changed to MD, N is changed to ND) (Application Notes) Only applicable to D=10~30 and M(N)=6~20 Both Ends Tapped: MDx3.5+4-NDx3.5+4≤L

Alteration Details **P143**

Part Number		Unit Price																			
Type	D	Min. L	L51	L101	L151	L201	L251	L301	L351	L401	L451	L501	L551	L601	L651	L701	L751	L801	L851	L901	L951
SFJZ	6																				
	8																				
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
SSFJZ	6																				
	8																				
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
PSFJZ	6																				
	8																				
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
PSSFJZ	6																				
	8																				
	10																				
	12																				
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	18																				
	20																				
	25																				

For D tolerance h5, add the relevant surcharge to the prices above.

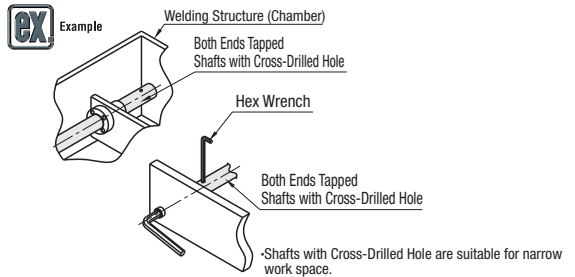
For Shafts with Cross-Drilled Hole, subtract the relevant charge from the prices above.

Part Number		Unit Price						
Type	D	Min. L	L51	L101	L151	L201	L251	L301
RSFJZ	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							

For Shafts with Cross-Drilled Hole, subtract the relevant charge from the prices above.

Part Number		Unit Price						
Type	D	Min. L	L101	L201	L401	L601	L1001	L1201
PSFGZ	6							
	8							
	10							
	12, 13							
	15, 16							
	18, 20							
	25							
	30							
	35							
	40							

For Shafts with Cross-Drilled Hole, subtract the relevant charge from the prices above.



Part Number		Unit Price						
Type	D	Min. L	L101	L201	L401	L601	L801	L1001
PSSFGZ	6							
	8							
	10							
	12, 13							
	15, 16							
	18, 20							
	25							
	30							
	35							
	40							