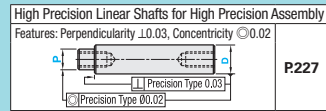


Shafts

One End Stepped, Both Ends Tapped with Wrench Flats



P.227

For High Precision Linear Shafts with high perpendicular precision of the shaft end ($\perp 0.03$), see P.227. For Shafts with Wrench Flats, see P.161.

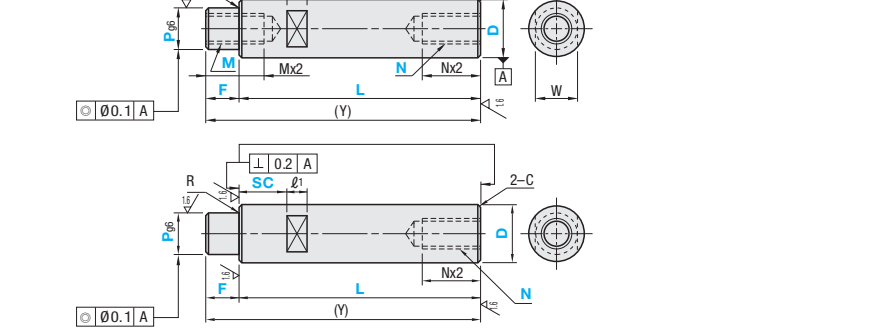
For products uncovered by the e-Catalog Standards, see P.131.



RoHS10

- Annealing required for wrench flats machining and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.142
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.141
- Features of Low Temp. Black Chrome Plating P.156

Type				Material	Hardness	Surface Treatment	D Tol.			
One End Stepped, Both Ends Tapped	D Tol. g6	D Tol. h5	D Tol. f8				D Tol. g6	g6	h5	f8
SFPPA	SFUP	-	SFNNA	SUJ2 Equivalent	Effective Hardened Depth of Induction Hardening P.142	Hard Chrome Plating - Plating Hardness: HV750 - Plating Thickness: 5µ or More - Low Temp. Black Chrome Plating	8	-0.005	0	-0.013
SSFPA	SSFUP	-	SSFNNA	SUS440C or 13Cr stainless			12	-0.014	-0.006	-0.035
PSFPA	PSFUP	-	PSFNNA	SUJ2 Equivalent			13	-0.006	0	-0.016
PSSFPA	PSSFUP	-	PSSFNNA	SUS440C or 13Cr stainless			15	-0.017	-0.008	-0.043
RSFPA	-	-	-	SUJ2 Equivalent	16	-	-	-		
-	-	PFPGA	-	S45C Equivalent	-	-	-	-		
-	-	PSFPGA	-	SUS304	-	-	-	-		
20	-0.007	0	-0.020	-	-	-	-	-		
25	-0.020	0	-0.009	-0.053	-	-	-	-		
30	-0.009	0	-0.025	-0.064	-	-	-	-		
35	-0.025	0	-0.011	-	-	-	-	-		
40	-	-	-	-	-	-	-	-		
50	-	-	-	-	-	-	-	-		



Part Number	Type	1mm Increments				M (Coarse) Selection	N (Coarse) Selection	Wrench Flats Dimensions			R	C
		D	L	F	P			SC	W	ℓ1		
• One End Stepped, Both Ends Tapped (D Tol. g6)	Tapped	8	25~ 998	6	3	3 4 5	3 4 5	7	8	800	0.5 or Less	
• One End Stepped, One End Threaded Tapped (D Tol. h5)	Tapped	10	25~ 998	6~ 8	3 4 5	3 4 5 6	3 4 5 6 8	8	8	800		
SFPPA	SFUP	12	25~1198	6~10	3 4 5 6	4 5 6 8	4 5 6 8	10	10	1000		
SSFPA	SSFUP	13	25~1198	6~11	3 4 5 6 8	4 5 6 8	4 5 6 8	11	10	1000		
PSFPA	PSFUP	15	25~1198	6~13	3 4 5 6 8 10	4 5 6 8 10	4 5 6 8 10	13	10	1000		
PSSFPA	PSSFUP	16	25~1198	6~14	3 4 5 6 8 10	4 5 6 8 10	4 5 6 8 10	14	10	1200		
RSFPA	-	18	25~1198	8~16	4 5 6 8 10 12	4 5 6 8 10 12	4 5 6 8 10 12	16	10	1200		
(D≤30, L≤500)		20	25~1198	8~17	4 5 6 8 10 12	4 5 6 8 10 12	4 5 6 8 10 12	17	10	1200		
PFPGA	-	25	25~1198	8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	4 5 6 8 10 12 16	22	10	1200		
PSFPGA	-	30	25~1498	9~27	5 6 8 10 12 16 20 24	6 8 10 12 16 20 24	6 8 10 12 16 20 24	27	15	1500		
• One End Stepped, One End Threaded Tapped (D Tol. g6)	Threaded	35	25~1498	9~32	5 6 8 10 12 16 20 24	8 10 12 16 20 24	8 10 12 16 20 24	30	15	1500		
SFNNA	-	40	25~1498	11~37	6 8 10 12 16 20 24 30	10 12 16 20 24 30	10 12 16 20 24 30	36	20	1500		
SSFNNA	-	50	25~1498	11~47	6 8 10 12 16 20 24 30	12 16 20 24 30	12 16 20 24 30	41	20	1500		
PSSFNNA	-											
PSSFNNA	-											

P dimensions require M+3sP. When Mx2.5+4+Nx2.5+4≥(Y), tap pilot holes may go through. When Mx2+Nx2≥(Y), the effective depth of larger diameter tap has priority.

Ordering Example

Part Number - L - F - P - M - N - SC

SFPPA20 - 400 - F25 - P16 - M10 - N10 - SC10

SSFPA20 - 400 - F25 - P16 - M10 - N10 - SC10

Alterations

Part Number - L - F - P - M(MD) - N(NSC, ND) - SC - (LKC, NSC...etc.)

SFPPA30 - 400 - F25 - P16 - M10 - N10 - SC10 - LKC

Alteration Details P.143

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
	SX	Second Set of Wrench Flats Ordering Code SX15 SX=1mm Increment SC+SX+ℓ1x2<L SX≥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 D≤30:FC≤5xD, D≥35:FC≤3xD 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 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.

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 MD(N)ND (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
	LFC	Set Screw Flat at Step Parts Ordering Code LFC10-A0 Application Notes LFC+A≤F D-M(N)≥1

Please see Shaft Alteration Overview for details if provided. P.143
When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.
Alterations may lower hardness. See P.142.

Part Number	Type	D	Unit Price																											
			Min. L	L51	L101	L151	L201	L251	L301	L351	L401	L451	L501	L551	L601	L651	L701	L751	L801	L851	L901	L951	L1001	L1101	L1201	L1301	L1401			
SFPPA SFUP SFNNA		8	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400	1498			
		10																												
		12																												
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For D tolerance h5, add the relevant surcharge to the prices above. For One End Stepped One End Tapped Shafts, subtract the relevant charge from the prices above.

Part Number	Type	D	Unit Price							
			Min. L	L51	L101	L151	L201	L301	L401	
RSFPA		8	100	200	400	600	800	1000	1200	1498
		10								
		12								
		13								
		15								
		16								
		18								
		20								
		25								
		30								

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