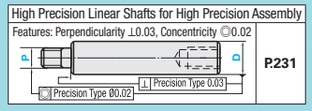
Shafts

One End Threaded One End Tapped

High Precision Linear Shafts for High Precision Assembly
Features: Perpendicularity ⊥0.03, Concentricity ◎0.02



P.231

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

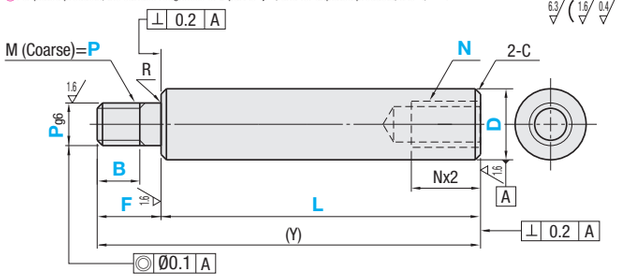
For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see P.231. For Shafts with Wrench Flats / Cross-Drilled Hole, see P.171.

- Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm). 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. g6	D Tol. h5	D Tol. f8			
SFAD	SFUD	-	SUJ2	Effective Hardened Depth of Induction Hardening P.142	-
SSFAD	SSFUD	-	SUS440C Equivalent		
PSFAD	PSFUD	-	SUJ2	SUJ2 58HRC~	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 5μ or More
PSSFAD	PSSFUD	-	SUS440C Equivalent	SUS440C Equivalent 56HRC~	
RSFAD	-	-	SUJ2		Low Temp. Black Chrome Plating
-	-	PSFGD	S45C Equivalent	-	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 10μ or More
-	-	PSSFGD	SUS304		

For plated products, the surface roughness of D part is 0.4/; and for unplated products, it is 0.4/ G.

6.3/ (1.6/ 0.4/ 0.4/ G)



D	D Tol. g6	D Tol. h5	D Tol. f8
4	-0.004 -0.012	0 -0.005	-
5			
6			-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			

Part Number Type	D	1mm Increments L	F	B	P (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C
(D Tol. g6) SFAD SSFAD PSFAD PSSFAD RSFAD (D≤30 L≤500) (D Tol. h5) SFUD SSFUD PSFUD PSSFUD	4	25~ 298	2≤F≤P×5	(When P≤6) B≤F-2	3 4	2	300	0.2 or Less	0.2 or Less
	5	25~ 398			3 4 5	2.6 3	400		
	6	25~ 798			3 4 5 6	3	600	0.3 or Less	0.5 or Less
	8	25~ 998			3 4 5 6 8	3 4 5	800		
	10	25~ 998			4 5 6 8 10	3 4 5 6	800		
	12	25~1198		(When P=8, 10) B≤F-3	5 6 8 10 12	4 5 6 8	1000		
	13	25~1198			5 6 8 10 12	4 5 6 8	1000		
	15	25~1198		(When P≥12) B≤F-5	5 6 8 10 12	4 5 6 8 10	1000		
	16	25~1198			5 6 8 10 12 16	4 5 6 8 10	1200		
	18	25~1198			5 6 8 10 12 16	4 5 6 8 10 12	1200		
(D Tol. f8) PSFGD PSSFGD	20	25~1198		(W/o Threads) B=0	6 8 10 12 16 20	4 5 6 8 10 12	1200		1.0 or Less
	25	25~1198			8 10 12 16 20 24	4 5 6 8 10 12 16	1200		
	30	25~1498			8 10 12 16 20 24 30	6 8 10 12 16 20	1500		
	35	25~1498		B≥Pitchx3	10 12 16 20 24 30	8 10 12 16 20 24	1500	0.5 or Less	
	40	40~1498			12 16 20 24 30	10 12 16 20 24 30	1500		
	50	50~1498			16 20 24 30	12 16 20 24 30	1500		

Coarse Thread Dimensions M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

- Full length L requires Nx2.5+4≤L.
- When D=P, specify F=B as B dimensions. However, L and F dimensions have manufacturing priority and B dimension of the product will be F-(Pitchx2).

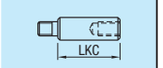
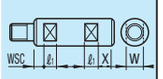
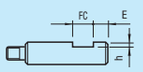
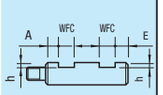
Ordering Example

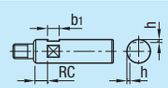
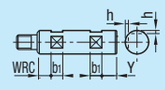
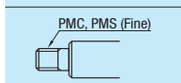
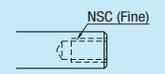
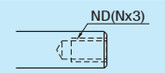
Part Number	-	L	-	F	-	B	-	P	-	N
SFAD20	-	277	-	F25	-	B12	-	P10	-	N12

Alterations

Part Number	-	L	-	F	-	B	-	P(PMC, PMS)	-	N(NSC, ND)	-	(LKC, WSC ··· etc.)
SFAD30	-	250	-	F40	-	B30	-	P10	-	N10	-	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
	WSC	Wrench Flats at Two Locations Ordering Code WSC12-X8 Application Notes Applicable to D=6 or more WSC, X=1mm Increment WSC+X+ℓ1×2<L WSC(X)≥0 Orientation between two set screw flats is not coplanar. D W ℓ1: 6 5 8; 8 7 8; 10 8 8; 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
	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. D h: 4~ 5 0.5; 6~18 1; 20~40 2; 50 3
	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. D h: 4~ 5 0.5; 6~18 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.
	PMC PMS	Change to Fine Thread Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMS)
	NSC	Change to Fine Tapped Thread Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable to D=12 or more
	ND	Change the effective length of tapped part to Nx3. Ordering Code ND6 (N is changed to ND) Application Notes Only applicable to D=10~30 and N=6~20 One End Tapped: NDx3.5+7≤L

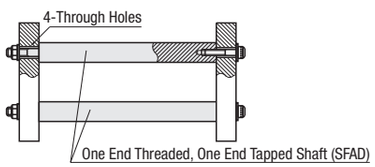
For details, see Shaft Alteration Overview. P.143

- 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. P.144
- Alterations may lower hardness. See P.142.

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
SFAD SFUD	4							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6																	-	-	-	-	-	-	-	-	-
	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
SSFAD SSFUD	4							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6																	-	-	-	-	-	-	-	-	-
	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
PSFAD PSFUD	4							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6																	-	-	-	-	-	-	-	-	-
	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
PSSFAD PSSFUD	4							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6																	-	-	-	-	-	-	-	-	-
	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									

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

Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAD	4						-	-
	5							-
	6							
	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
PSFGD	6					-	-	-	-
	8						-	-	-
	10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								
PSSFGD	6					-	-	-	-
	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								

Example