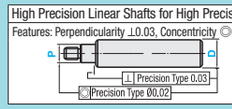
Shafts

One End Stepped and Threaded / Both Ends Stepped and Threaded

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



P.235

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.235.

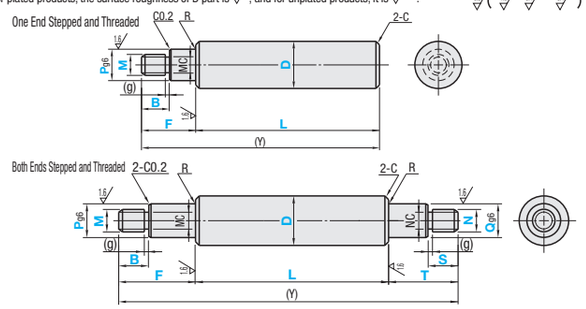
RoHS

- 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: One End Stepped and Threaded D Tol. g6	One End Stepped and Threaded D Tol. h5	One End Stepped and Threaded D Tol. f8	Both Ends Stepped and Threaded D Tol. g6	Both Ends Stepped and Threaded D Tol. h5	Both Ends Stepped and Threaded D Tol. f8	M Material	H Hardness	S Surface Treatment
SFAF	SFUF	-	SFAX	SFUX	-	SUJ2	Effective Hardened Depth of Induction Hardening P.142 SUJ2 58HRC~ SUS440C Equivalent 56HRC~	-
SSFAF	SSFUF	-	SSFAX	SSFUX	-	SUS440C Equivalent		Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 5μ or More ~
PSFAF	PSFUF	-	PSFAX	PSFUX	-	SUJ2		
PSSFAF	PSSFUF	-	PSSFAX	PSSFUX	-	SUS440C Equivalent		Low Temp. Black Chrome Plating
RSFAF	-	-	RSFAX	-	-	SUJ2		
-	-	PSFGF	-	-	PSFGX	S45C Equivalent	-	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 10μ or More ~
-	-	PSSFGF	-	-	PSSFGX	SUS304		

D	D Tol. g6	D Tol. h5	D Tol. f8
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			

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



Part Number Type	D	L	F, T	B, S	P, Q	M (Coarse), N (Coarse) Selection	(Y) Max.	R	C
One End Stepped and Threaded (D Tol. g6) SFAF / SSFAF / PSFAF / PSSFAF / RSFAF (D≤30, L≤500) (D Tol. f8) PSFGF / PSSFGF; Both Ends Stepped and Threaded (D Tol. g6) SFAX / SSFAX / PSFAX / PSSFAX / RSFAX (D≤30, L≤500) (D Tol. f8) PSFGX / PSSFGX	8	25~ 990	10≤F≤Px5 10≤T≤Qx5	Pitchx3+(g)≤B≤Mx3 Pitchx3+(g)≤S≤Nx3	M<P<D N<Q<D	6	800	0.3 or Less	0.5 or Less
	10	25~ 990				6 8	800		
	12	25~1190				6 8 10	1000		
	13	25~1190				6 8 10	1000		
	15	25~1190				6 8 10 12	1000		
	16	25~1190				6 8 10 12	1200		
	18	25~1190				6 8 10 12 16	1200		
	20	25~1190				6 8 10 12 16	1200		
	25	25~1190				8 10 12 16 20	1200		1.0 or Less
	30	25~1490				8 10 12 16 20 24	1500		
	35	25~1480	20≤F≤Px5 20≤T≤Qx5			10 12 16 20 24 30	1500	0.5 or Less	
	40	25~1480				12 16 20 24 30	1500		
	50	25~1480				16 20 24 30	1500		

* For RSFAF and RSFAX, L≤500 and Ymax≤800.

Coarse Thread Undercut Dimensions M N	Pitch	MC NC	(g)
6	1.0	4.4	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

F-B(T-S)≥2 is required.

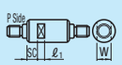
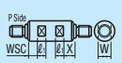
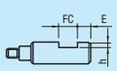
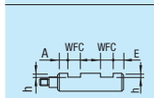
Ordering Example

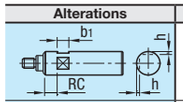
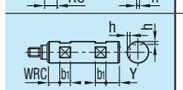
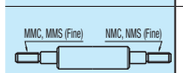
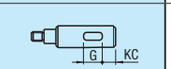
Part Number	-	L	-	F	-	B	-	P	-	M	-	T	-	S	-	Q	-	N
SFAX20	-	400	-	F30	-	B20	-	P10	-	M8	-	T20	-	S15	-	Q10	-	N8

Alterations

Part Number	-	L	-	F	-	B	-	P	-	M(MMC, MMS)	-	T	-	S	-	Q	-	N(NMC, NMS)	-	(LKC~etc.)
SFAX30	-	300	-	F40	-	B30	-	P20	-	M16	-	T50	-	S30	-	Q16	-	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
	SC	Wrench Flats at One Location Ordering Code SC5 SC = 1mm Increment SC+ℓ1≤L SC≥0 Not available in combination with WSC. D / W / ℓ1: 8 / 7 / 8; 10 / 8; 12 / 10; 13 / 11; 15 / 13; 16 / 14; 18 / 16; 20 / 17; 25 / 22; 30 / 27; 35 / 30; 40 / 36; 50 / 41
	WSC	Wrench Flats at Two Locations Ordering Code WSC12-X8 WSC, X=1mm Increment WSC+X+ℓ1x2<L WSC(X)≥0 Orientation between wrench flats is not coplanar. Not available in combination with SC. Not applicable to One End Stepped and Threaded. W: 10; 15; 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. Not applicable to Both Ends Stepped and Threaded. D / h: 8~18 / 1; 20~40 / 2; 50 / 3
	WFC	Set Screw Flats at Two Locations Ordering Code WFC10-A8-E20 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. Not applicable to Both Ends Stepped and Threaded. 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.
	MMC MMS NMC NMS	Change to Fine Thread Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) NMC14 (N is changed to NMC) NMS14 (N is changed to NMS)
	KC	Keyway is added at one location. Ordering Code KC10-G10 Application Notes Only applicable to D=12, 16, 20, 25 and 30. Not applicable to Both Ends Stepped and Threaded.

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.
Alterations may lower hardness. See P.142.

Undercut Dimensions for Fine Threads (1)

MMC NMC	Pitch	MC NC	(g)
6	0.75	4.8	2
8	1.0	6.4	
10		8.4	
12		10.4	
15		13.4	
17		15.4	
20		18.4	
25	1.5	22.7	3
30		27.7	

Undercut Dimensions for Fine Threads (2)

MMS NMS	Pitch	MC NC	(g)
10	1.25	8	3
12	1.5	9.7	
14		11.7	
18		15.7	

Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1480
SFAF / SFUF	8											-	-
	10											-	-
	12												-
	13												-
	15												-
	16												-
	18												-
	20												-
	25												-
	30												
	35												
	40												
	50												
SSFAF / SSFUF	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	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1480
SFAX / SFUX	8											-	-
	10											-	-
	12												-
	13												-
	15												-
	16												-
	18												-
	20												-
	25												-
	30												
	35												
	40												
	50												
SSFAX / SSFUX	8											-	-
	10											-	-
	12												-
	13												-
	15												-
	16												-
	18												-
	20												-
	25												-
	30												
	35												
	40												
	50												

Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1480
PSFAF / PSFUF	8											-	-
	10											-	-
	12												-
	13												-
	15												-
	16												-
	18												-
	20												-
	25												-
	30												
	35												
	40												
	50												
PSSFAF / PSSFUF	8											-	-
	10											-	-
	12												-
	13												-
	15												-
	16												-
	18												-
	20												-
	25												-
	30												
	35												
	40												
	50												

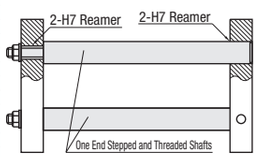
Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1480
PSFAX / PSFUX	8											-	-
	10											-	-
	12												-
	13												-
	15												-
	16												-
	18												-
	20												-
	25												-
	30												
	35												
	40												
	50												
PSSFAX / PSSFUX	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 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1490
PSFGF	8						-	-	-
	10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								
PSSFGF	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 ~ 1490
PSFGX	8						-	-	-
	10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								
PSSFGX	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								

ex Example



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

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