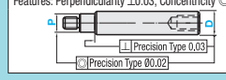
Shafts

One End Stepped and Threaded One End Tapped

High Precision Linear Shafts when high precision assembly is needed
Features: Perpendicularity ⊥0.03, Concentricity ◎0.02


P.235

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

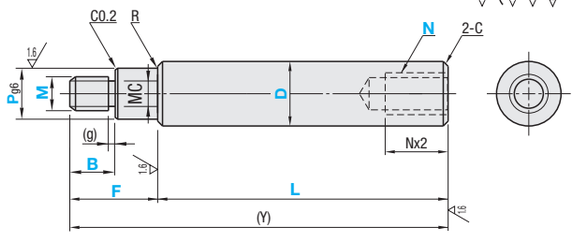
■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see P.235.

- 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: D Tol. g6	Type: D Tol. h5	Type: D Tol. f8	Material	Hardness	Surface Treatment
SFAY	SFUY	-	SUJ2 Equivalent	Effective Hardened Depth of Induction Hardening P.142 SUJ2 Equivalent 58HRC~ SUS440C or 13Cr stainless 56HRC~	-
SSFAY	SSFUY	-	SUS440C or 13Cr stainless		
PSFAY	PSFUY	-	SUJ2 Equivalent		Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 5μ or More ~
PSSFAY	PSSFUY	-	SUS440C or 13Cr stainless		
RSFAY	-	-	SUJ2 Equivalent		Low Temp. Black Chrome Plating
-	-	PSFGY	S45C Equivalent	-	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 10μ or More ~
-	-	PSSFGY	SUS304		

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

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			



Part Number: Type	D	1mm Increments: L	F	B	P	M (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C
(D Tol. g6) SFAY, SSFAY, PSFAY, PSSFAY, RSFAY (D≤30, L≤500) (D Tol. f8) PSFGY, PSSFGY; (D Tol. h5) SFUY, SSFUY, PSFUY, PSSFUY	8	25~ 990	10≤F≤Px5	Pitchx3+(g)≤B≤Mx3	M<P<D	6	3 4 5	800	0.3 or Less	0.5 or Less
	10	25~ 990				6 8	3 4 5 6	800		
	12	25~1190				6 8 10	4 5 6 8	1000		
	13	25~1190				6 8 10	4 5 6 8	1000		
	15	25~1190				6 8 10 12	4 5 6 8 10	1000		
	16	25~1190				6 8 10 12	4 5 6 8 10	1200		
	18	25~1190				6 8 10 12 16	4 5 6 8 10 12	1200		
	20	25~1190				6 8 10 12 16	4 5 6 8 10 12	1200		1.0 or Less
	25	25~1190				8 10 12 16 20	4 5 6 8 10 12 16	1200		
	30	25~1490				8 10 12 16 20 24	6 8 10 12 16 20	1500		
	35	25~1480	20≤F≤Px5			10 12 16 20 24 30	8 10 12 16 20 24	1500	0.5 or Less	
	40	40~1480				12 16 20 24 30	10 12 16 20 24 30	1500		
	50	50~1480				16 20 24 30	12 16 20 24 30	1500		

Full length L requires Nx2.5+4≤L. F-B≥2 is required.

Coarse Thread Undercut Dimensions

M	Pitch	MC	(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	

Undercut Dimensions for Fine Threads (1)

MMC	Pitch	MC	(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	

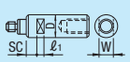
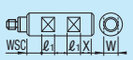
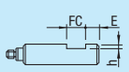
Undercut Dimensions for Fine Threads (2)

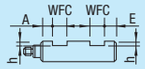
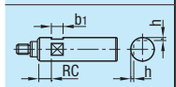
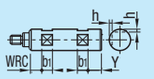
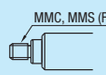
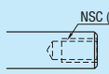
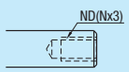
MMS	Pitch	MC	(g)
10	1.25	8	3
12	1.5	9.7	
14		11.7	
18		15.7	

Ordering Example: Part Number - L - F - B - P - M - N
SFAY20 - 277 - F25 - B12 - P10 - M8 - N12

Alterations: Part Number - L - F - B - P - M(MMC, MMS) - N(NSC, ND) - (LKC, SC…etc.)
SFAY30 - 250 - F40 - B20 - P10 - M8 - 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 (10); 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. D/W/ℓ1: 18/16; 20/17; 25/22; 30/27; 35/30 (15); 40/36; 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: 8~18/1; 20~40/2; 50/3

Alterations	Code	Spec.
	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. D/h: 8~18/1; 20~40/2; 50/3
	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	Change to Fine Thread Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS)
	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, 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.
- 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 ~ 1490
SFAY, SFUY	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
SSFAY, SSFUY	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
PSFAY, PSFUY	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
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	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
PSSFAY, PSSFUY	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
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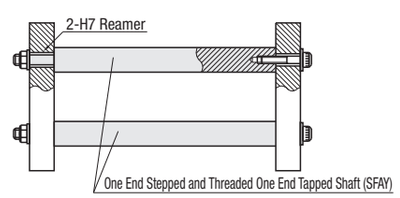
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									

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
RSFAY	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 ~ 1490
PSFGY	8						-	-	-
	10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								
PSSFGY	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								

Example