

# Shafts

## One End Stepped and Threaded One End Tapped

High Precision Linear Shafts when high precision assembly is needed  
 Features: Perpendicularity  $\perp 0.03$ , Concentricity  $\odot 0.02$

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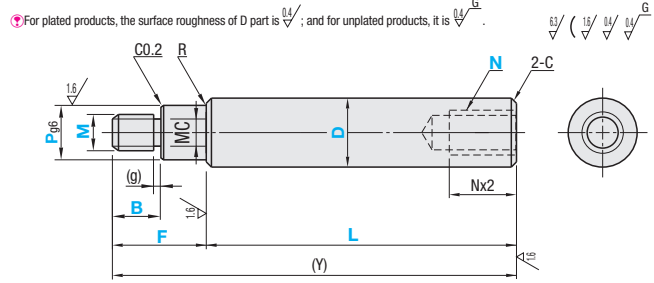
For High Precision Linear Shafts with high perpendicular precision of the shaft end ( $\perp 0.03$ ), see P.235.

RoHS10

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	D Tol. h5	D Tol. f8	Material	Hardness	Surface Treatment
SFAF	SFUU	-	-	SUJ2 Equivalent	-	-
SSFAY	SSFUY	-	-	SUS440C or 13Cr stainless	Effective Hardened Depth of Induction Hardening P.142	Hard Chrome Plating - Plating Hardness: HV750 -
PSFAY	PSFUY	-	-	SUJ2 Equivalent	SUJ2 Equivalent 58HRC- SUS440C or 13Cr stainless 56HRC-	Plating Thickness: 5 $\mu$ or More -
PSSFAY	PSSFUY	-	-	SUS440C or 13Cr stainless	-	Low Temp. Black Chrome Plating
RSFAY	-	-	-	SUJ2 Equivalent	-	-
-	-	-	-	S45C Equivalent	-	Hard Chrome Plating - Plating Hardness: HV750 -
-	-	-	-	SUS304	-	Plating Thickness: 10 $\mu$ or More -

D	D Tol.		
	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	-	-	-
13	-0.006	0	-0.016
15	-0.017	-0.008	-0.043
16	-	-	-
18	-	-	-
20	-0.007	0	-0.020
25	-0.020	-0.009	-0.053
30	-	-	-
35	-0.009	0	-0.025
40	-0.025	-0.011	-0.064
50	-	-	-



Part Number Type	1mm Increments					M (Coarse) Selection		N (Coarse) Selection		(Y) Max.	R	C	Coarse Thread Under Dimensions (g)				Under Dimensions for Fine Threads (g)			
	D	L	F	B	P	M	P	N	N				M	Pitch	MC	g	M	Pitch	MC	g
(D Tol. g6)	8	25-990				6		3 4 5		800			6	1.0	4.4	2	6	0.75	4.8	
(D Tol. h5)	12	25-990				6 8		3 4 5 6		800			8	1.25	6.0		8		6.4	
SFAF	SFUU	13	25-1190			6 8 10		4 5 6 8		1000			10	1.5	7.7	3	10		8.4	
SSFAY	SSFUY	15	25-1190			6 8 10		4 5 6 8		1000			12	1.75	9.4	4	12	1.0	10.4	
PSFAY	PSFUY	16	25-1190	10sF $\leq$ P $\times$ 5		6 8 10 12		4 5 6 8 10		1000	0.3 or Less		16	2.0	13.0		15		13.4	
PSSFAY	PSSFUY	18	25-1190			6 8 10 12		4 5 6 8 10		1200	0.3 or Less		20	2.5	16.4	5	17		15.4	
(D $\leq$ 30, L $\leq$ 500)		20	25-1190			6 8 10 12 16		4 5 6 8 10 12		1200	1.0 or Less		24	3.0	19.6		20		18.4	
(D Tol. f8)		25	25-1190			8 10 12 16 20		4 5 6 8 10 12 16		1200	0.5 or Less		30	3.5	25.0		25	1.5	22.7	
PSFGY		30	25-1490			8 10 12 16 20 24		6 8 10 12 16 20		1500	0.5 or Less		30				27		27.7	
PSSFGY		35	25-1480			10 12 16 20 24 30		8 10 12 16 20 24		1500	0.5 or Less									
		40	40-1480	20sF $\leq$ P $\times$ 5		12 16 20 24 30		10 12 16 20 24 30		1500	0.5 or Less									
		50	50-1480			16 20 24 30		12 16 20 24 30		1500	Less									

Full length L requires Nx2.5+4 $\leq$ L. F-B $\geq$ 2 is required.

Ordering Example: Part Number - L - F - B - P - M - N  
 SFAF20 - 277 - F25 - B12 - P10 - M8 - N12

Alterations: Part Number - L - F - B - P - M(MMC, MMS) - N(NSC, ND) - (LKC, SC-etc.)  
 SFAF30 - 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 $\pm$ 0.03 200 $\leq$ L < 500 ... L $\pm$ 0.05 L $\geq$ 500 ... L $\pm$ 0.1
	SC	Wrench Flats at One Location (Ordering Code) SC5 SC = 1mm Increment SC+ $\delta_1$ $\leq$ L SC $\geq$ 0 Not available in combination with WSC.
	WSC	Wrench Flats at Two Locations (Ordering Code) WSC12-X8 WSC, X=1mm Increment WSC+ $\delta_1$ + $\delta_2$ < L WSC(X) $\geq$ 0 Orientation between wrench flats is not coplanar. Not available in combination with SC.
	FC	Set Screw Flat at One Location (Ordering Code) FC10-E8 FC, E=1mm Increment D $\geq$ 30:FC $\leq$ 5xD D $\geq$ 35:FC $\geq$ 3xD E=0 or E $\geq$ 2 Not available in combination with WFC.

Alterations	Code	Spec.
	WFC	Set Screw Flats at Two Locations (Ordering Code) WFC10-A8-E20 WFC, A, E=1mm Increment D $\geq$ 30:WFC $\leq$ 5xD D $\geq$ 35:WFC $\geq$ 3xD A(E)=0 or A(E) $\geq$ 2 Orientation between set screw flats is not coplanar. Not available in combination with FC.
	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 $\leq$ L

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.