Shafts

One End Stepped & Threaded / Both Ends Stepped & Threaded

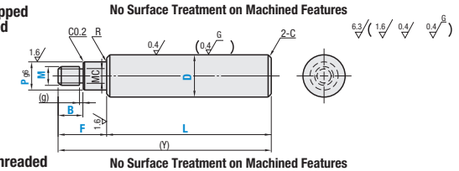
Shafts – One End Stepped & Threaded / Both Ends Stepped & Threaded

RoHS10

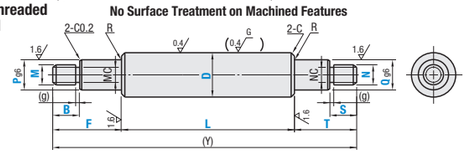
- Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10 mm). **P.199**
- Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P.198**.
- Features of Low Temperature Black Chrome Plating **P.213**.
- Precision Type selections are available on **P.264**.

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 Threaded and Stepped D Tol. g6	Both Ends Threaded and Stepped D Tol. h5	Both Ends Threaded and Stepped D Tol. f8	Material	Hardness	Surface Treatment
SFAF	SFUF	—	SFAX	SFUX	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened **P.199** 52100 Bearing Steel Equivalent 58 HRC min. SUS440C (13Cr) Stainless Steel Equivalent 56 HRC min.	—
SSFAF	SSFUF	—	SSFAX	SSFUX	—	SUS440C (13Cr) Stainless Steel Equivalent		
PSFAF	PSFUF	—	PSFAX	PSFUX	—	52100 Bearing Steel Equivalent		Hard Chrome Plating Plating Hardness: 750 HV min. Plating Thickness 5μ or More
PSSFAF	PSSFUF	—	PSSFAX	PSSFUX	—	SUS440C (13Cr) Stainless Steel Equivalent		
RSFAF	—	—	RSFAX	—	—	52100 Bearing Steel Equivalent		Low Temperature Black Chrome Plating
—	—	PSFGF	—	—	PSFGX	1045 Carbon Steel Equivalent	—	Hard Chrome Plating Plating Hardness: 750 HV min. Plating Thickness 10μ or More
—	—	PSSFGF	—	—	PSSFGX	304 Stainless Steel		

One End Stepped and Threaded — No Surface Treatment on Machined Features



Both Ends Threaded and Stepped — No Surface Treatment on Machined Features



D	D Tolerance g6	D Tolerance h5	D Tolerance 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	1 mm Increment L	F / T	B / S	P / Q	M / N (Coarse Thread)	(Y) Max.	R	C
One End Stepped and Threaded (D Tol. g6) SFAF SSFAF PSFAF PSSFAF	Both Ends Threaded and Stepped (D Tol. g6) SFAX SSFAX PSFAX PSSFAX	8	25–990	10≤F≤Px5 10≤T≤Qx5	Pitch x 3+(g)≤B≤Mx3 Pitch x 3+(g)≤S≤Nx3	M<P<D N<Q<D	6	800	0.3 or Less	0.5 or Less
(D Tol. h5) SFUF SSFUF PSFUF PSSFUF	(D Tol. h5) SFUX SSFUX PSFUX PSSFUX	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		
(D Tol. f8) PSFGF PSSFGF	(D Tol. f8) PSFGX PSSFGX	20	25–1190				6 8 10 12 16	1200		1.0 or Less
		25	25–1190				8 10 12 16 20	1200		
		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		

Coarse Threads 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	

Part Number Type		D	1 mm Increment L	F / T	B / S	P / Q	M / N (Coarse Thread)	(Y) Max.	R	C
One End Stepped and Threaded (D Tol. g6) Low Temperature Black Chrome Plating RSFAF (Ymax≤800)	Both Ends Threaded and Stepped (D Tol. g6) Low Temperature Black Chrome Plating RSFAX (Ymax≤800)	8	25–500	10≤F≤Px5 10≤T≤Qx5	Pitch x 3+(g)≤B≤Mx3 Pitch x 3+(g)≤S≤Nx3	M<P<D N<Q<D	6	800	0.3 or Less	0.5 or Less
		10	25–500				6 8	800		
		12	25–500				6 8 10	1000		
		13	25–500				6 8 10	1000		
		15	25–500				6 8 10 12	1000		
		16	25–500				6 8 10 12	1200		
		18	25–500				6 8 10 12 16	1200		
		20	25–500				6 8 10 12 16	1200		1.0 or Less
		25	25–500				8 10 12 16 20	1200		
		30	25–500				8 10 12 16 20 24	1500		

F-B(T-S)≥2 is required

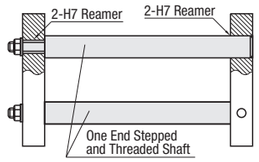
Shafts

One End Stepped & Threaded / Both Ends Stepped & Threaded, *continued*

Part Number Example

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

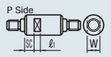
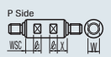
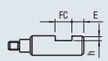
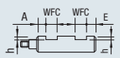
Application Example

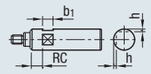
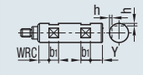
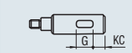
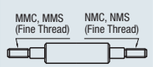


Part Number Alterations

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.200**

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance **Ordering Code:** LKC ⊗ Not applicable to D-P (Q)≤2 L dimensions can be specified in 0.1 increments 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=1 mm 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 = 1 mm Increment ! WSC+X+ℓ1x2<L ! WSC(X)C≥0 ⊗ Orientation between wrench flat features is random. Not available in combination with SC ⊗ Not applicable to One End Stepped and Threaded Type D / W: 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 = 1 mm Increment ! FC≤3xD ! When 1.5xD<FC, FC≤L/2 ! E=0 or E≥2 ⊗ Not available in combination with WFC ⊗ Not applicable to Both Ends Stepped and Threaded Type 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 = 1 mm Increment ! WFC≤3xD ! When 1.5xD<FC, 2WFC≤L/2 ! A (E)=0 or A (E)≥2 ⊗ Orientation between set screw flats is random. ⊗ 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° Set Screw Flat at One Location **Ordering Code:** RC10 **Application Notes:** Applicable to D=10–30 ⊗ Not available in combination with WRC For details, see Shaft Alteration Overview, **P.200**.
	WRC	90° Set Screw Flats at Two Locations **Ordering Code:** WRC10-Y10 **Application Notes:** Applicable to D=10–30 ⊗ Not available in combination with RC. ⊗ Orientation between set screw flats is random. For details, see Shaft Alteration Overview, **P.200**.
	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 Type For details, see Shaft Alteration Overview, **P.200**.
	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 toNMC) For details, see Shaft Alteration Overview, **P.200**.

Undercut Dimensions for Fine Threads (1) MMC NMC	Pitch	MC NC	(g)
6	0.75	4.8	2.0
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	3.0
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	

- Please see Shaft Alteration Guides for details if provided. **P.200**
- When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm. **P.201**
- Alterations may lower hardness. **P.199**