

Shafts

Both Ends Stepped and Tapped with Wrench Flats

■ For High Precision Linear Shafts with high perpendicular precision of the shaft end ($\perp 0.03$), see **P.195**.

■ For Shafts W/o Wrench Flats, see **P.129**.



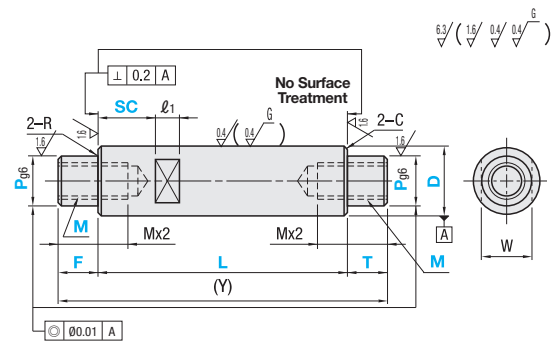
RoHS10

⚠ Annealing required for wrench flats machining and shaft end threading (thread effective length + approx. 10mm) may lower hardness. **P.112**

⚠ L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P.111**

⚠ Features of LTBC Plating **P.128**

Type		D Tol. f8	Material	Hardness	Surface Treatment
D Tol. g6	D Tol. h5				
SFPH	SFHU	-	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112	-
SSFPH	SSFHU	-	EN 1.4125 Equiv.		
PSFPH	PSFHU	-	EN 1.3505 Equiv.		
PSSFPH	PSSFHU	-	EN 1.4125 Equiv.		
RSFPH	-	-	EN 1.3505 Equiv.	EN 1.3505 Equiv. 58HRC~	LTBC Plating
-	-	-	EN 1.4125 Equiv.	EN 1.4125 Equiv. 56HRC~	-
-	-	PFPGH	EN 1.1191 Equiv.	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5µ or More
-	-	PSFPGH	EN 1.4301 Equiv.	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10µ or More



Technical drawing showing shaft dimensions: D (outer diameter), L (length), F (flange width), T (thread length), M (thread pitch), P (pitch diameter), W (width), and Y (keyway width). Tolerances are specified for D (g6, h5, f8), L (0.03), F (0.03), T (0.03), M (0.03), P (0.03), W (0.03), and Y (0.03). Surface treatment is indicated as "No Surface Treatment".

Part Number	Type	D	L	F, T	P	M (Coarse) Selection	Wrench Flats Dimensions	Y	R	C
		8	25~796		6	3	SC	7	8	800
		10	25~796		6~8	3 4 5	W	8		800
		12	25~996		6~10	3 4 5 6	ℓ1	10		1000
		13	25~996		6~11	3 4 5 6 8	SC=1mm Increment	11		1000
		15	25~996		6~13	3 4 5 6 8 10	⚠ SC+ℓ1≤L	13		1000
		16	25~1196		6~14	3 4 5 6 8 10	⚠ SC≥0	14	10	1200
		18	25~1196		8~16	4 5 6 8 10 12	⚠ Details of Wrench Flats P.112	16		1200
		20	25~1196		8~17	4 5 6 8 10 12		17		1200
		25	25~1196		8~22	4 5 6 8 10 12 16		22		1200
		30	25~1496		9~27	5 6 8 10 12 16 20 24		27		1500
		35	25~1496		9~32	5 6 8 10 12 16 20 24		30	15	1500
		40	25~1496		11~37	6 8 10 12 16 20 24 30		36		1500
		50	25~1496		11~47	6 8 10 12 16 20 24 30		41	20	1500

⚠ P dimensions require M+3≤P. ⚠ (Y) dimensions require Mx4≤(Y). Tap pilot holes may go through.

**Ordering**

Part Number - **L** - **F** - **P** - **M** - **T** - **SC**

Example

SFPH20 - 300 - F25 - P16 - M10 - T20 - SC10

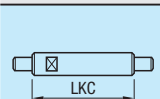
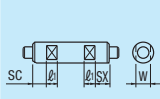
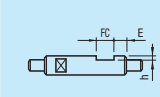
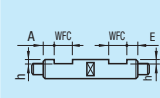
SFHU20 - 400 - F25 - P16 - M10 - T20 - SC10

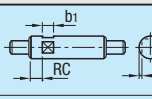
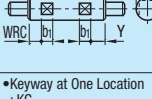
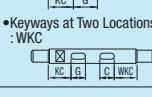
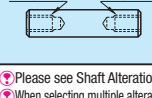
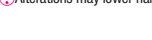
**Alterations**

Part Number - **L** - **F** - **P** - **M (MD)** - **T** - **SC** - (LKC...etc.)

Example

SFPH20 - 400 - F25 - P16 - M10 - T20 - SC10 - LKC

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance (Ordering Code) LKC ⚠ Not applicable when D-P≤2. 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
	SX	Second Set of Wrench Flats (Ordering Code) SX15 SX=1mm Increment ⚠ SC+ SX+ ℓ1x2<L ⚠ SX≥0 ⚠ Orientation between two set screw flats is not coplanar.
	FC	Set Screw Flat at One Location (Ordering Code) FC10-E8 FC, E=1mm Increment ⚠ FC≤3xD ⚠ When 1.5xD<FC, FC≤L/2 ⚠ E=0 or E≥2 ⚠ Not available in combination with WFC.
	WFC	Set Screw Flats at Two Locations (Ordering Code) WFC8-A8-E4 WFC, A, E=1mm Increment ⚠ WFC≤3xD ⚠ When 1.5xD<WFC, 2WFC≤L/2 ⚠ A(E)=0 or A(E)≥2 ⚠ Orientation between set screw flats is not coplanar. Not available in combination with FC.

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.
	KC	Keyway (Ordering Code) KC10-G10
	WKC	Keyways at Two Locations (Ordering Code) WKC10-G8-KC10-G10 (Application Notes) Only applicable to D=12, 16, 20, 25 and 30.
	MD	Change the effective tap depth to M(N)x3. (Ordering Code) MD6 (M is changed to MD, N is changed to ND) (Application Notes) Only applicable to D=6~30, M(N)=6~20 ⚠ Both Ends Stepped and Tapped: MDx3.5+4+NDx3.5+4≤L

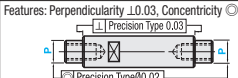
⚠ Please see Shaft Alteration Overview for details if provided. **P.113**

⚠ When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.

⚠ Alterations may lower hardness. See **P.112**

High Precision Linear Shafts when high precision assembly is needed

Features: Perpendicularity $\perp 0.03$, Concentricity $\odot 0.02$



P.195

Part Number	Type	D	Min. L	L51	L101	L151	L201	L251	L301	L351	L401	L451	L501	L551	L601	L651	L701	L751	L801	L851	L901	L951	L1001	L1101	L1201	L1301	L1401
		8	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400	1496
	SFPH	8																									
	SSFHU	10																									
		12																									
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Part Number	Type	D	Min. L	L51	L101	L151	L201	L251	L301	L401
		8	50	100	150	200	300	400	500	
		10								
		12								
		13								
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		40								
		50								

Part Number		Unit Price								
Type	D	Min. L 100	L101 200	L201 400	L401 600	L601 800	L801 1000	L1001 1200	L1201 1496	
PSFPGH	8, 10						-	-	-	
	12, 13							-	-	
	15, 16									
	18, 20								-	
	25								-	
	30									
	35									
	40									
	50									