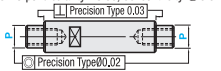


Shafts

Both Ends Stepped and Tapped with Wrench Flats

High Precision Linear Shafts for High Precision Assembly

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



P.225

For High Precision Linear Shafts with high perpendicular precision of the shaft end ($\perp 0.03$), see P.225. For Shafts W/o Wrench Flats, see P.157.



RoHS10

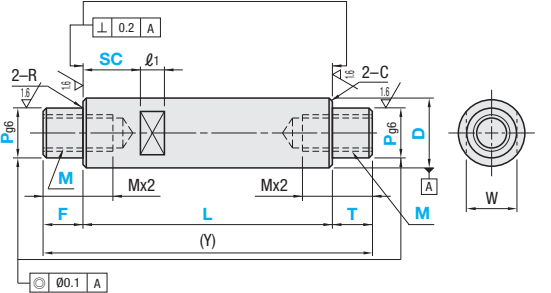
Annealing required for wrench flats machining and shaft end threading (thread effective length + approx. 10mm) may lower hardness. P.142

L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.141

Features of Low Temp. Black Chrome Plating P.156

Type		Material	Hardness	Surface Treatment
D Tol. g6	D Tol. h5			
SFPH	SFHU	SUJ2	Effective Hardened Depth of Induction Hardening P.142	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 5μ or More
SSFPH	SSFHU	SUS440C Equivalent		
PSFPH	PSFHU	SUJ2		
PSSFPH	PSSFHU	SUS440C Equivalent		
RSFPH	-	SUJ2	58HRC~	Low Temp. Black Chrome Plating
-	-	PFPGH	S45C Equivalent	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 10μ or More
-	-	PSFPGH	SUS304	

For plated products, the surface roughness of D part is $\sqrt{0.4}$; and for unplated products, it is $\sqrt{0.6}$.



Part Number		1mm Increments				M (Coarse) Selection		Wrench Flats Dimensions			(Y) Max.	R	C
Type	D	L	F, T	P				SC	W	ℓ1			
(D Tol. g6) SFPH SSFPH PSFPH PSSFPH RSFPH (D≤30, L≤500)	8	25~ 996	2≤F≤Px4	6	3			SC = 1mm Increment	7	8	800	0.5 or Less	
	10	25~ 996		6~ 8	3	4	5		8		800		
	12	25~1196		6~10	3	4	5		10		1000		
	13	25~1196		6~11	3	4	5		11		1000		
	15	25~1196		6~13	3	4	5		13		1000		
	16	25~1196		6~14	3	4	5		14	10	1200		
	18	25~1196		8~16	4	5	6		16		1200		
	20	25~1196		8~17	4	5	6		17		1200		
	25	25~1196		8~22	4	5	6		22		1200		
	30	25~1496		9~27	5	6	8		30	15	1500		
(D Tol. f8) PFPGH PSFPGH	35	25~1496	2≤T≤Px4	9~32	5	6	8	Details of Wrench Flats P.142	36	20	1500	1.0 or Less	
	40	25~1496		11~37	6	8	10		41		1500		
	50	25~1496		11~47	6	8	10						

P dimensions require M+3≤P. (Y) dimensions require Mx4≤(Y). Tap pilot holes may go through and the effective length of the smaller tap part may be shortened.

Ordering Example

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

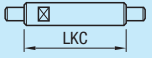
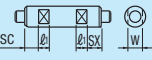
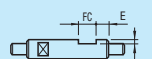
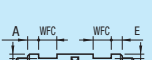
SFPH20 - 300 - F25 - P16 - M10 - T20 - SC10

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

Alterations

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

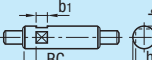
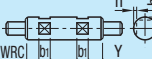
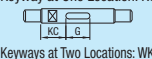
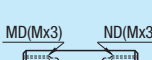
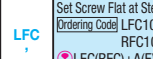
SFPH20 - 400 - F25 - P16 - M10 - T20 - SC10 - LKC

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
	SX	Second Set of Wrench Flats Ordering Code SX15 SX=1mm Increment SC+SC+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 D≤30:FC≤5xD, D≥35:FC≥3xD 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 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.

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.

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 WKC10-C8-KC10-G10 Application Notes Only applicable to D=12, 16, 20, 25 and 30.
	WKC	Keyways at Two Locations: WKC
	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=12~30 and M (N) = 6~20
	ND	Both Ends Stepped and Tapped: MDx3.5+4+NDx3.5+4≤L
	LFC	Set Screw Flat at Step Parts Ordering Code LFC10-A0 RFC10-E0 D-M≥1 Orientation between two set screw flats is not coplanar.
	RFC	

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

Part Number		Unit Price																			
Type	D	Min. L	L51	L101	L151	L201	L251	L301	L351	L401	L451	L501	L551	L601	L651	L701	L751	L801	L851	L901	L951
SFPH SSFHU	8	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
	30																				
SSFPH SSFHU	8																				
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
	30																				
PSFPH PSFHU	8																				
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
	30																				
PSSFPH PSSFHU	8																				
	10																				
	12																				
	13																				
	15																				
	16																				
	18																				
	20																				
	25																				
	30																				

For D tolerance h5, add the relevant surcharge to the prices above.

Part Number		Unit Price							
Type	D	Min. L	L51	L101	L151	L201	L301	L401	
RSFPH	8	50	100	150	200	300	400	500	
	10								
	12								
	13								
	15								
	16								
	18								
	20								
	25								
	30								
PFPGH	8, 10								
	12, 13								
	15, 16								
	18, 20								
	25								
	30								
	35								
	40								
	50								

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