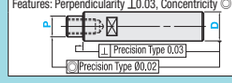
Shafts

One End Stepped and Tapped with Wrench Flats

High Precision Linear Shafts for High Precision Assembly
Features: Perpendicularity ⊥0.03, Concentricity ◎0.02



P.229

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.229. ■For Shafts w/o Wrench Flats, see P.165.

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

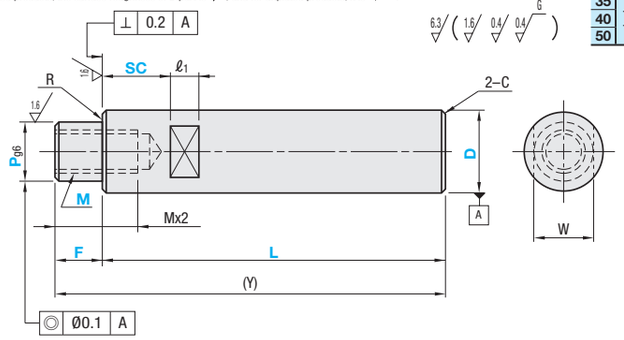
Features of Low Temp. Black Chrome Plating P.156

Type			Material	Hardness	Surface Treatment
D Tol. g6	D Tol. h5	D Tol. f8			
SFPG	SFPU	-	SUJ2 Equivalent	Effective Hardened Depth of Induction Hardening P.142 SUJ2 Equivalent 58HRC~ SUS440C or 13Cr stainless 56HRC~	-
SSFPG	SSFPU	-	SUS440C or 13Cr stainless		Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 5μ or More
PSFPG	PSFPU	-	SUJ2 Equivalent		
PSSFPG	PSSFPU	-	SUS440C or 13Cr stainless		
RSFPG	-	-	SUJ2 Equivalent		Low Temp. Black Chrome Plating
-	-	PFPGG	S45C Equivalent	-	Hard Chrome Plating - Plating Hardness: HV750 ~, Plating Thickness: 10μ or More
-	-	PSFPGG	SUS304		

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			

For plated products, the surface roughness of D part is 0.4; and for unplated products, it is 0.4 / 6.

6.3 (1.6 0.4 0.4 / 6)



Part Number Type	D	1mm Increments L	F	P	M(Coarse) Selection	Wrench Flats Dimensions SC	W	ℓ1	(Y) Max.	R	C
(D Tol. g6) SFPG SSFPG PSFPG PSSFPG RSFPG (D≤30, L≤500) (D Tol. f8) PFPGG PSFPGG / (D Tol. h5) SFPU SSFPU PSFPU PSSFPU	8	25~ 998	2≤F≤Px4	6	3	SC = 1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.142	7	8	800	0.3 or Less	0.5 or Less
	10	25~ 998		6~ 8	3 4 5		8		800		
	12	25~1198		6~10	3 4 5 6		10	10	1000		
	13	25~1198		6~11	3 4 5 6 8		11		1000		
	15	25~1198		6~13	3 4 5 6 8 10		13		1000		
	16	25~1198		6~14	3 4 5 6 8 10		14		1200		
	18	25~1198		8~16	4 5 6 8 10 12		16		1200		
	20	25~1198		8~17	4 5 6 8 10 12		17		1200		
	25	25~1198		8~22	4 5 6 8 10 12 16		22		1200		
	30	25~1498		9~27	5 6 8 10 12 16 20 24		27	15	1500		1.0 or Less
	35	25~1498		9~32	5 6 8 10 12 16 20 24		30		1500	0.5 or Less	
	40	25~1498		11~37	6 8 10 12 16 20 24 30		36	20	1500		
	50	25~1498		11~47	6 8 10 12 16 20 24 30		41		1500		

P dimensions require M+3≤P. (Y) dimensions require Mx2.5+4≥Y. Tap pilot holes may go through.

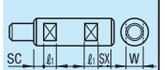
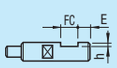
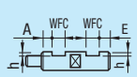
Ordering Example

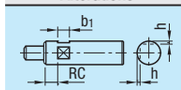
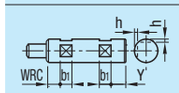
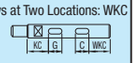
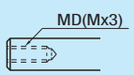
Part Number	L	F	P	M	SC
SFPG20	400	F25	P16	M10	SC10
SFPU20	500	F25	P16	M10	SC10

Alterations

Part Number	L	F	P	M(MD)	SC	(LKC, FC··· etc.)
SFPG30	400	F25	P16	M10	SC10	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
	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. D W ℓ1: 8 7 8; 10 8; 12 10; 13 11; 15 13 10; 16 14; 18 16 D W ℓ1: 20 17 10; 25 22; 30 27 15; 35 30; 40 36 20; 50 41
	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
	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. D h: 8~18 1; 20~40 2; 50 3

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. For details, see Shaft Alteration Overview. P.143
• Keyway at One Location: KC • Keyways at Two Locations: WKC 	KC WKC	Keyway Ordering Code KC10-G10 WKC10-C8-KC10-G10 Application Notes Only applicable to D=12, 16, 20, 25 and 30.
	MD	Change the effective length of tapped part to Mx3. Ordering Code MD6 (M is changed to MD) Application Notes Only applicable to D=10~30 and M=6~20 One End Tapped: MDx3.5+4≤L Not available in combination with KC, WSC.
	LFC	Set Screw Flat at Step Parts Ordering Code LFC10-A0 LFC+A≤F D-M≥1 P H: 6~18 1; 20~40 2; 41~ 2

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. P.144
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 1498
SFPG SFPU	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
SSFPG SSFPU	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
PSFPG PSFPU	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	20																							-	-	-
	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
PSSFPG PSSFPU	8																					-	-	-	-	-
	10																					-	-	-	-	-
	12																							-	-	-
	13																							-	-	-
	15																							-	-	-
	16																							-	-	-
	18																							-	-	-
	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
RSFPG	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 1498
PFPGG	8, 10						-	-	-
	12							-	-
	13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								

Part Number Type	D	Unit Price Min. L 100	L101 200	L201 400	L401 600	L601 800	L801 1000	L1001 1200	L1201 1498
PSFPGG	8, 10						-	-	-
	12							-	-
	13								
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								