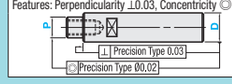
Shafts

One End Stepped and Tapped with Wrench Flats

High Precision Linear Shafts when high precision assembly is needed
Features: Perpendicularity ⊥0.03, Concentricity ◎0.02



P.199

■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see P.199.
■For Shafts w/o Wrench Flats, see P.137.

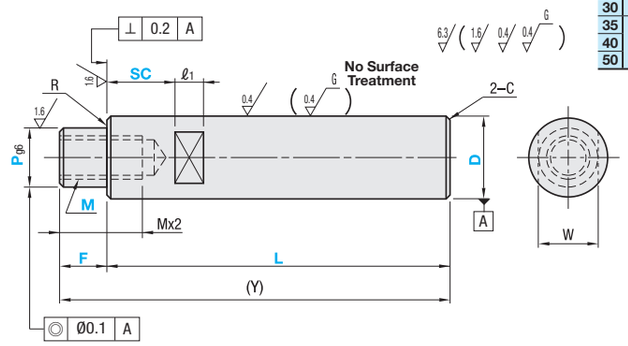
Annealing required for wrench flats machining and shaft end threading (thread effective length + approx. 10mm) may lower hardness. P.112

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

Features of LTBC Plating P.128

Type: D Tol. g6	Type: D Tol. h5	Type: D Tol. f8	Material	Hardness	Surface Treatment
SFPG	SFPU	-	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112 EN 1.3505 Equiv. 58HRC~	-
SSFPG	SSFPU	-	EN 1.4125 Equiv.		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5μ or More
PSFPG	PSFPU	-	EN 1.3505 Equiv.		
PSSFPG	PSSFPU	-	EN 1.4125 Equiv.	EN 1.4125 Equiv. 56HRC~	LTBC Plating
RSFPG	-	-	EN 1.3505 Equiv.		
-	-	PFPGG	EN 1.1191 Equiv.	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μ or More
-	-	PSFPGG	EN 1.4301 Equiv.		

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			



Part Number Type		D	1mm Increment L	F	P	M (Coarse) Selection
(D Tolerance g6) SFPG, SSFPG, PSFPG, PSSFPG, RSFPG (D≤30, L≤500)	(D Tolerance h5) SFPU, SSFPU, PSFPU, PSSFPU	8	25~798	2≤F≤Px4	6	3
		10	25~798		6~8	3 4 5
		12	25~998		6~10	3 4 5 6
		13	25~998		6~11	3 4 5 6 8
		15	25~998		6~13	3 4 5 6 8 10
		16	25~1198		6~14	3 4 5 6 8 10
		18	25~1198		8~16	4 5 6 8 10 12
		20	25~1198		8~17	4 5 6 8 10 12
(D Tolerance f8) PFPGG, PSFPGG		25	25~1198		8~22	4 5 6 8 10 12 16
		30	25~1498		9~27	5 6 8 10 12 16 20 24
		35	25~1498		9~32	5 6 8 10 12 16 20 24
		40	25~1498		11~37	6 8 10 12 16 20 24 30
		50	25~1498		11~47	6 8 10 12 16 20 24 30

Wrench Flats Dimensions SC	W	ℓ1	(Y) Max.	R	C
SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.112	7	8	800	0.3 or Less	0.5 or Less
	8		800		
	10	10	1000		
	11		1000		
	13		1000		
	14		1200		
	16		1200		
	17		1200		
	22		1200		1.0 or Less
	27	15	1500		
	30		1500	0.5 or Less	
	36	20	1500		
	41		1500		

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

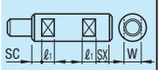
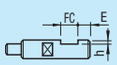
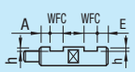
Ordering Example

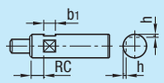
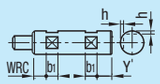
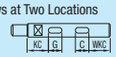
Part Number	L	F	P	M	SC
SFPG20	400	F25	P16	M10	SC10
SFPU20	500	F25	P16	M10	SC10

Alterations

Part Number	L	F	P	M (MD)	SC	(LKC, FC…etc.)
SFPG30	400	F25	P16	M10	SC10	LKC

Alteration Details P.113

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. 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 FC≤3xD When 1.5xD<FC, FC≤L/2 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 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. 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.
• 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=8~30, M=6~20 One End Tapped: MDx3.5+4≥L

For details, see Shaft Alteration Overview. P.113

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. P.114
Alterations may lower hardness. See P.112

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																							-	-	-
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	25																							-	-	-
	30																									
	35																									
	40																									
	50																									
SSFPG SSFPU	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
	13																					-	-	-	-	-
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PSFPG PSFPU	8																	-	-	-	-	-	-	-	-	-
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	40																									
	50																									
PSSFPG PSSFPU	8																	-	-	-	-	-	-	-	-	-
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	30																									
	35																									
	40																									
	50																									

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								