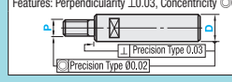
Shafts

One End Threaded with Wrench Flats / Cross-Drilled Hole

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



P.211

■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see P.211.
■For Shafts w/o Wrench Flats or Cross-Drilled Hole, see P.163.

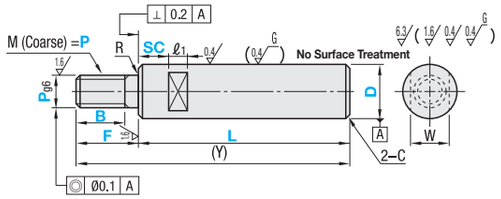
RoHS10

- Annealing may lower hardness at wrench flats, cross-drilled hole and shaft end machined areas (effective thread length + approx. 10mm). P.112
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation.
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.111
- Features of LTBC Plating P.128

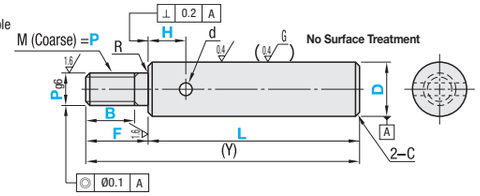
Type: With Wrench Flats D Tol. g6	With Wrench Flats D Tol. h5	With Wrench Flats D Tol. f8	With Cross-Drilled Hole D Tol. g6	With Cross-Drilled Hole D Tol. f8	Material	Hardness	Surface Treatment
SFAS	SFUS	-	SFHN	-	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112	-
SSFAS	SSFUS	-	SSFHN	-	EN 1.4037 Equiv.		Hard Chrome Plating, Plating Hardness: HV750 ~, Plating Thickness: 5μ or More
PSFAS	PSFUS	-	PSFHN	-	EN 1.3505 Equiv.		
PSSFAS	PSSFUS	-	PSSFHN	-	EN 1.4037 Equiv.	EN 1.3505 Equiv. 58HRC~	
RSFAS	-	-	RSFHN	-	EN 1.3505 Equiv.	EN 1.4037 Equiv. 56HRC~	LTBC Plating
-	-	PSFGS	-	PSGHN	EN 1.1191 Equiv.	-	Hard Chrome Plating, Plating Hardness: HV750 ~, Plating Thickness: 10μ or More
-	-	PSSFGS	-	-	EN 1.4301 Equiv.		

D	D Tol. g6	D Tol. h5	D Tol. f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
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			

With Wrench Flats



With Cross-Drilled Hole
(8≤D≤30,L≤500)



Part Number Type		D	L	F	B	P Selection	Wrench Flats Dimensions SC	W	ℓ1	Cross-Drilled Hole Dimensions H	d	(Y) Max.	R	C
(With Wrench Flats)	(With Cross-Drilled Hole) 8≤D≤30,L≤500	6	25~598	2≤F≤Px5	(When P≤6) B≤F-2	3 4 5	SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.112	5	8	-	-	600	0.3 or Less	0.5 or Less
(D Tolerance g6) SFAS SSFAS PSFAS PSSFAS RSFAS (D≤30, L≤500)	(D Tolerance h5) SFUS SSFUS PSFUS PSSFUS	8	25~798			3 4 5 6		7		H=1mm Increment L≥H+d/2+2 H≥d/2+2	3	800		
		10	25~798			4 5 6 8		8				800		
	(D Tolerance g6) SFHN SSFHN PSFHN PSSFHN RSFHN	12	25~998			5 6 8 10		10				1000		
		13	25~998			5 6 8 10 12		11			4	1000		
		15	25~998		(when P=8 or 10) B≤F-3;	5 6 8 10 12		13				1000		1.0 or Less
		16	25~1198			5 6 8 10 12		14	10			1200		
		18	25~1198		(When P≥12) B≤F-5	5 6 8 10 12 16		16			6	1200		
		20	25~1198			6 8 10 12 16		17				1200		
	(D Tolerance f8) PSGHN	25	25~1198		B≥Pitchx3	8 10 12 16 20 24		22			7	1200		
		30	25~1498			8 10 12 16 20 24		27	15			1500		
(D Tolerance f8) PSFGS PSSFGS		35	25~1498			10 12 16 20 24 30		30		-	-	1500	0.5 or Less	
		40	25~1498			12 16 20 24 30		36	20			1500		
		50	25~1498			16 20 24 30		41				1500		

Coarse Thread Dimension M	pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

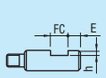
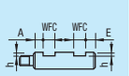
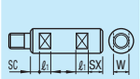
Ordering Example

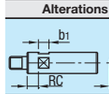
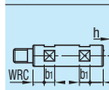
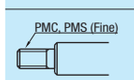
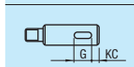
Part Number	L	F	B	P	SC	H
SFAS12	200	F20	B15	P8	SC5	
SFHN18	450	F40	B25	P12		H10

Alterations

Part Number	L	F	B	P (PMC, PMS)	SC	H	(LKC···etc.)
SFAS30	250	F40	B30	P10	SC10	LKC	

Alteration Details P.113

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 Not applicable when D-P≤2.
	FC	Set Screw Flat at One Location Ordering Code FC10-E8 Application Notes 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: 6~18 / 1; 20~40 / 2; 50 / 3
	WFC	Set Screw Flats at Two Locations Ordering Code WFC8-A8-E4 Application Notes 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: 6~18 / 1; 20~40 / 2; 50 / 3
	SX	Second Set of Wrench Flats Ordering Code SX15 Application Notes Only applicable to Shafts with Wrench Flats. SX=1mm Increment SC+SX+ℓ1x2<L SX≥0 Orientation between two set screw flats is not coplanar. D / W / ℓ1: 6 / 5 / 8; 8 / 7; 10 / 8; 12 / 10; 13 / 11; 15 / 13; 16 / 14 / 10 D / W / ℓ1: 18 / 16 / 10; 20 / 17; 25 / 22; 30 / 27; 35 / 30 / 15; 40 / 36; 50 / 41 / 20

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. For details, see Shaft Alteration Overview. P.113
	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.
	PMC PMS	Change to Fine Thread Ordering Code PMC14 (P is changed to PMC.) PMS14 (P is changed to PMSC)
	KC	Keyway is added at one location. Ordering Code KC10-G10 Application Notes Only applicable to D=12, 16, 20, 25 and 30.

- Please see Alteration Overview for details. P.113
- When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.
- The distance between wrench flats and cross-drilled holes should be greater than 2mm for alterations.
- 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
SFAS SFUS SFHN	6													-	-	-	-	-	-	-	-	-	-	-	-	-
	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
	13																					-	-	-	-	-
	15																					-	-	-	-	-
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	50																									
SSFAS SSFUS SSFHN	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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	10																	-	-	-	-	-	-	-	-	-
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PSFAS PSFUS PSFHN	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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	50																									

Part Number Type	D	Unit Price Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1498
PSFGS PSGHN	6					-	-	-	-
	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								
PSSFGS	6					-	-	-	-
	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	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
RSFAS RSFHN	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							