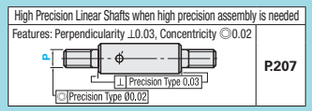
Shafts

Both Ends 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.207

■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see **P.207**.
■For Shafts w/o Wrench Flats or Cross-Drilled Hole, see **P.153.**

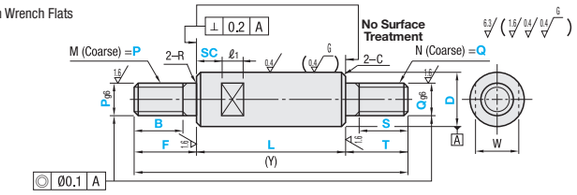
RoHS10

- 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**

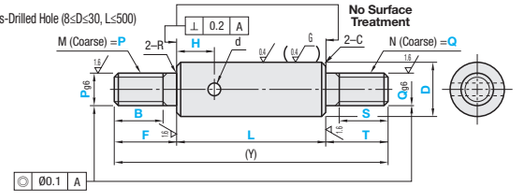
Type: With Wrench Flats D Tol. g6	With Wrench Flats D Tol. h5	With Wrench Flats D Tol. f8	With Cross-Drilled Hole D Tol. g6	With Cross-Drilled Hole D Tol. f8	M Material	H Hardness	S Surface Treatment
SFAU	SFUU	-	SFHM	-	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening **P.112** EN 1.3505 Equiv. 58HRC~	-
SSFAU	SSFUU	-	SSFHM	-	EN 1.4037 Equiv.		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5μ or More
PSFAU	PSFUU	-	PSFHM	-	EN 1.3505 Equiv.		
PSSFAU	PSSFUU	-	PSSFHM	-	EN 1.4037 Equiv.	EN 1.4037 Equiv. 56HRC~	LTBC Plating
RSFAU	-	-	RSFHM	-	EN 1.3505 Equiv.		
-	-	PSFGU	-	PSGHM	EN 1.1191 Equiv.	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μ or More
-	-	PSSFGU	-	-	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	1mm Increment F, T	B, S	P, Q Selection
(With Wrench Flats) (D Tol. g6) SFAU SSFAU PSFAU PSSFAU RSFAU (D≤30, L<500, Ymax≤800) (D Tol. f8) PSGHM	6	25~596	2≤F≤Px5 2≤T≤Qx5	(When P≤6) B≤F-2 (When P=8, 10) B≤F-3 (When P≥12) B≤F-5 (When Q≤6) S≤T-2 (When Q=8, 10) S≤T-3 (When Q≥12) S≤T-5 (W/o Threads) B=0 S=0 (ℓ8, S=Pitchx3	3 4 5
	8	25~796			3 4 5 6
	10	25~796			4 5 6 8
	12	25~996			5 6 8 10
	13	25~996			5 6 8 10 12
	15	25~996			5 6 8 10 12
	16	25~1196			5 6 8 10 12
	18	25~1196			5 6 8 10 12 16
	20	25~1196			6 8 10 12 16
	25	25~1196			8 10 12 16 20 24
	30	25~1496			8 10 12 16 20 24
	35	25~1496			10 12 16 20 24 30
	40	25~1496			12 16 20 24 30
	50	25~1496			16 20 24 30

(With Cross-Drilled Hole) 8≤D≤30, L≤500 (D Tol. g6) SFHM SSFHM PSFHM PSSFHM RSFHM (D Tol. f8) PSGHM; (D Tol. h5) SFUU SSFUU PSFUU PSSFUU

Wrench Flats Dimensions SC	W	ℓ1	Cross-Drilled Hole Dimensions H	d	(Y) Max.	R	C
SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.112	5	8	H=1mm Increment L≥H+d/2+2 H≥d/2+2	-	600	0.3 or Less	0.5 or Less
	7			3	800		
	8				800		
	10				1000		
	11	10		4	1000		
	13				1000		
	14				1200		
	16			6	1200		
	17				1200		
	22	15		7	1200		
	27				1500		
	30			-	1500	0.5 or Less	
	36	20			1500		1.0 or Less
	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

- Thread machining will not be applied to B=0 or S=0.

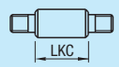
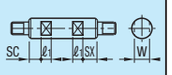
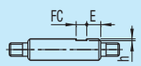
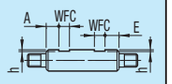
Ordering Example

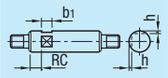
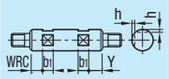
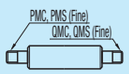
Part Number	L	F	B	P	T	S	Q	SC	H
SFHM15	300	F28	B16	P6	T17	S12	Q12		H8

Alterations

Part Number	L	F	B	P (PMC, PMS)	T	S	Q (QMC, QMS)	SC	H	(LKC…etc.)
SFAU30	300	F40	B30	P20	T50	S40	Q16	SC10		LKC

Alteration Details **P.113**

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code LKC ⊗Not applicable when D-P(Q)≤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 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 10; 12 10; 13 11 10; 15 13; 16 14 D W ℓ1: 18 16; 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: 6~18 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: 6~18 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.113
	PMC PMS QMC QMS	Change to Fine Thread Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMS) QMC14 (Q is changed to QMC) QMS14 (Q is changed to QMS)

- 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	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 1496
SFAU SFUU SFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
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	15																					-	-	-	-	-
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	35																									
	40																									
	50																									
SSFAU SSFUU SSFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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	10																	-	-	-	-	-	-	-	-	-
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PSSFAU PSSFUU PSSFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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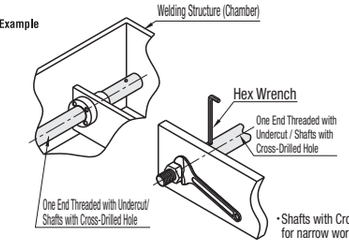
	35																									
	40																									
	50																									

Part Number Type	D	Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500
RSFAU RSFHM	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	Min. L 100	L101 200	L201 400	L401 600	L601 800	L801 1000	L1001 1200	L1201 1496
PSFGU PSGHM	6						-	-	-
	8						-	-	-
	10						-	-	-
	12, 13							-	-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								
PSSFGU	6						-	-	-
	8							-	-
	10							-	-
	12, 13								-
	15, 16								-
	18, 20								-
	25								-
	30								
	35								
	40								
	50								

Example



・Shafts with Cross-Drilled Hole are suitable for narrow work space.