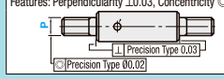
Shafts

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

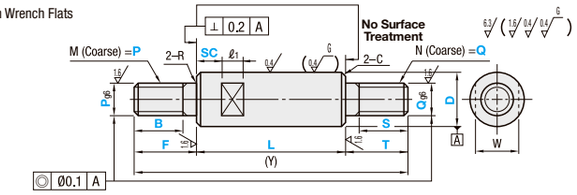
■For High Precision Linear Shafts with high perpendicular precision of the shaft end (⊥ 0.03), see **P.207**.
■For Shafts w/o Wrench Flats or Cross-Drilled Hole, see **P.153.**

RoHS

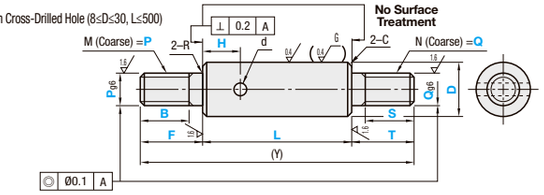
- Annealing may lower hardness at wrench flats, cross-drilled hole and shaft end machined areas (effective thread length + approx. 10mm). **P.112**
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation.
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity,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

Type					M Material	H Hardness	S Surface Treatment
With Wrench Flats			With Cross-Drilled Hole				
D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. f8			
SFAU	SFUU	-	SFHM	-	SUJ2	Effective Hardened Depth of Induction Hardening **P.112**	-
SSFAU	SSFUU	-	SSFHM	-	SUS440C Equivalent		
PSFAU	PSFUU	-	PSFHM	-	SUJ2	SUJ2 58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5μ or More
PSSFAU	PSSFUU	-	PSSFHM	-	SUS440C Equivalent	SUS440C Equivalent 58HRC~	Low Temp. Black Chrome Plating
RSFAU	-	-	RSFHM	-	SUJ2		
-	-	PSFGU	-	PSGHM	S45C Equivalent	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μ or More
-	-	PSSFGU	-	-	SUS304		

With Wrench Flats



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



D	D Tol. g6	D Tol. h5	D Tol. f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8 10	-0.005 -0.014	0 -0.006	-0.013 -0.035
12 13 15 16 18	-0.006 -0.017	0 -0.008	-0.016 -0.043
20 25 30	-0.007 -0.020	0 -0.009	-0.020 -0.053
35 40 50	-0.009 -0.025	0 -0.011	-0.025 -0.064

Part Number Type	D	L	F, T	B, S	P, Q 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 (D Tol. g6) SFAU SSFAU PSFAU PSSFAU RSFAU (D≤30,L≤500,Ymax≤800) (D Tol. h5) SFUU SSFUU PSFUU PSSFUU (D Tol. g6) SFHM SSFHM PSFHM PSSFHM RSFHM (D Tol. f8) PSGHM (D Tol. f8) PSFGU PSSFGU	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 B, S:Pitchx3	3 4 5	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
	8	25~796			3 4 5 6		7				800		
	10	25~796			4 5 6 8		8			3	800		
	12	25~996			5 6 8 10		10				1000		
	13	25~996			5 6 8 10 12		11	10		4	1000		
	15	25~996			5 6 8 10 12		13				1000		
	16	25~1196			5 6 8 10 12		14				1200		
	18	25~1196			5 6 8 10 12 16		16			6	1200		
	20	25~1196			6 8 10 12 16		17				1200		
	25	25~1196			8 10 12 16 20 24		22			7	1200		1.0 or Less
	30	25~1496			8 10 12 16 20 24		27	15			1500		
	35	25~1496			10 12 16 20 24 30		30			-	1500	0.5 or Less	
	40	25~1496			12 16 20 24 30		36	20			1500		
	50	25~1496			16 20 24 30		41				1500		

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

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

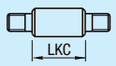
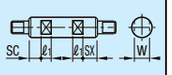
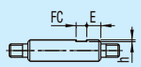
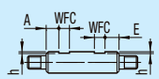
Ordering Example

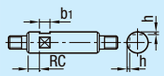
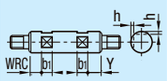
Part Number	-	L	-	F	-	B	-	P	-	T	-	S	-	Q	-	SC	-	H
SFHM15	-	300	-	F28	-	B16	-	P6	-	T17	-	S12	-	Q12	-	H8		

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 8; 10 8 10; 12 10 10; 13 11 10; 15 13 10; 16 14 10; 18 16 8; 20 17 10; 25 22 10; 30 27 15; 35 30 15; 40 36 20; 50 41 20
	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 PMC) 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	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 ~ 1496
SFAU SFUU SFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
	8																	-	-	-	-	-	-	-	-	-
	10																	-	-	-	-	-	-	-	-	-
	12																					-	-	-	-	-
	13																					-	-	-	-	-
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	50																									
SSFAU SSFUU SSFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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PSFAU PSFUU PSFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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PSSFAU PSSFUU PSSFHM	6													-	-	-	-	-	-	-	-	-	-	-	-	-
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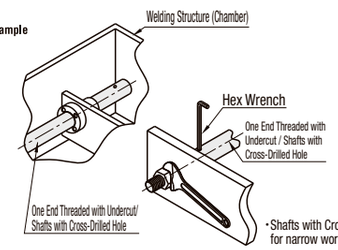
	50																									

Part Number Type	D	Unit Price 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	Unit Price 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.