

Shafts

Standard & Precision Type / Both Ends Threaded with Undercuts & Wrench Flats / Both Ends Threaded with Undercuts & Cross-Drilled Hole

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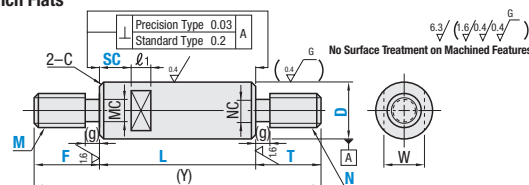


RoHS10

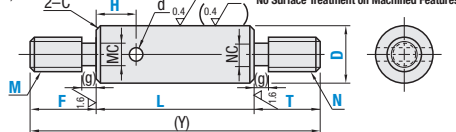
- Annealing caused by machining wrench flats and shaft end threading (effective thread length + approx. 10 mm) may lower hardness. P.199
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation
- Circularity, Straightness, Perpendicularity Concentricity, Changes in Hardness P.198
- Features of Low Temp. Black Chrome Plating P.213.
- For Shafts without wrench flats or cross-drilled holes, please see P.234.

Type						Material	Hardness	Surface Treatment
With Wrench Flats			With Cross-Drilled Holes					
Precision Type	Standard							
D Tol. g6	D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. f8			
VAFU	SAFU	SFFU	—	SFHAM	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened P.199	—
VSAFU	SSAFU	SSFFU	—	SSHAM	—	SUS440C (13Cr) Stainless Steel Equivalent	52100 Bearing Steel Equivalent	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 5 μ or More
VPSAFU	PSAFU	PSFFU	—	PSHAM	—	52100 Bearing Steel Equivalent	58 HRC min.	Low Temperature Black Chrome Plating
VPSAFU	PSSAFU	PSSFFU	—	PSSHAM	—	SUS440C (13Cr) Stainless Steel Equivalent	SUS440C (13Cr) Stainless Steel Equivalent	
VPSAFU	RSAFU	—	—	RSHAM	—	52100 Bearing Steel Equivalent	56 HRC min.	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 10 μ or More
—	—	—	PSAGU	—	PSHGM	1045 Carbon Steel Equivalent	—	
—	—	—	PSSAGU	—	—	304 Stainless Steel	—	

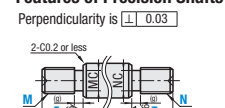
With Wrench Flats



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



Features of Precision Shafts



D Tolerance			
D	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	—	—	—
13	—	—	—
15	-0.006	0	-0.016
16	-0.017	-0.008	-0.043
18	—	—	—
20	—	—	—
25	-0.007	0	-0.020
30	-0.020	-0.009	-0.053
35	—	—	—
40	-0.009	0	-0.025
50	-0.025	-0.011	-0.064

- Precision shafts have centering holes on end faces.

Part Number	1 mm Increment			Selection	Wrench Flats Dimensions			(Y) Max.	C	Undercut Dimensions (Coarse Threads)		
	Type	D	L		F, T	M, N (Coarse)	SC			W	ℓ ₁	M
Precision Type With Wrench Flats D Tolerance g6 VAFU VSAFU VPAFU VPSAFU VRFU	8	25-290		6		SC=1 mm Increment	7	8	300			
	10	25-340		6 8		⊙ SC+ℓ ₁ ≤L	8		350			
	12	25-340		6 8 10		⊙ SC=0	10		350			
	13	25-340	5≤F≤Mx3 5≤T≤Nx3	6 8 10 12		⊙ Details of Wrench Flats P.199	11		350			
	15	25-340	⊙ F-(g)≥Pitchx3 ⊙ T-(g)≥Pitchx3	6 8 10 12			13	10	350			
	16	25-340		6 8 10 12 16			14		350			
	18	25-340		6 8 10 12 16			16		350			
	20	25-440		8 10 12 16 20			17		450			
	25	25-440		8 10 12 16 20			22		450	1.0 or Less		
	30	25-440		8 10 12 16 20 24			27	15	450			

Shaft ends may have centering holes.

MC dimensions in () are for Precision Type M6.

Part Number	1 mm Increment			Selection	Wrench Flats Dim.			Cross-Drilled Hole Dim.		(Y) Max.	C
	Type	D	L		F, T	M, N (Coarse)	SC	W	ℓ ₁		
Standard Type With Wrench Flats D Tol. g6 SAFU SSAFU PSAFU PSSAFU RSAFU (D≤30, L≤500 Ymax≤800) D Tol. f8 PSAGU PSSAGU	8	25-1090		(5) 6		SC=1 mm Inc.	7	8			1100
	10	25-1190		(5) 6 8		⊙ SC+ℓ ₁ ≤L	8			3	1200
	12	25-1390		(5) 6 8 10		⊙ SC=0	10			4	1400
	13	25-1390	5≤F≤Mx3 5≤T≤Nx3	(5) 6 8 10		⊙ Details of Wrench Flats P.199	11			6	1400
	15	25-1390	⊙ F-(g)≥Pitchx3 ⊙ T-(g)≥Pitchx3	(5) 6 8 10 12			13	10		7	1400
	16	25-1390		(5) 6 8 10 12			14			—	1400
	18	25-1390		(5) 6 8 10 12 16			16			—	1400
	20	25-1390		(5) 6 8 10 12 16			17			—	1400
	25	25-1390		(5) (6) 8 10 12 16 20 24			22			—	1400
	30	25-1490		(6) 8 10 12 16 20 24			27			—	1500
	35	25-1490		10 12 16 20 24 30			30	15		—	1500
	40	25-1490		12 16 20 24 30			36			—	1500
	50	25-1490		16 20 24 30			41	20		—	1500

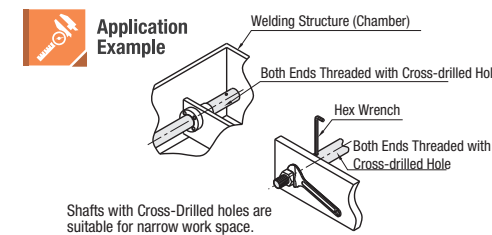
⊙ M () and N () dimensions are applicable only for D diameter tolerance with g6.

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Part Number Example

Part Number	L	F	M	T	N	SC	H
VAFU20	200	F30	M10	T20	N10	SC8	H
SAFU15	300	F18	M6	T17	N12	SC8	H
SFHAM15	300	F18	M6	T17	N12		H8



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

Part Number Alterations

Part Number	L	F	M (MMC / MMS)	T	N (MMC / NMS)	SC	H	(LKC...etc.)
SAFU30	300	F40	M20	T48	N16	20		LKC

Alteration Details P.200

Alterations	Code	Spec.
	LKC	Alteration to L Dimension Tolerance Ordering Code: LKC Application Notes: Applicable when L=200 or less for precision type. ⊗ Not applicable when D-M (N)≤2 L dimensions can be specified in 0.1 increment for LKC. ⊙ L<200 → L±0.03 200≤L<500 → L±0.05 L≥500 → L±0.1
	SX	Wrench Flats at Two Locations Ordering Code: WSC12-X8 SX = 1 mm increments ⊙ SC+SX+ℓ ₁ x2<L ⊙ SX≥0 ⊗ Orientation between wrench flat features is random.
	FC	Set Screw Flat at One Location Ordering Code: FC10-E8 Application Notes: ⊗ Not applicable to precision shafts. FC, A = 1 mm increment ⊙ FC≤3xD ⊙ When 1.5xD<FC, FC≤L/2 ⊙ E=0 or E≥2 ⊗ Not available in combination with WFC.
	WFC	Set Screw Flats at Two Locations Ordering Code: WFC8-A8-E4 Application Notes: ⊗ Not applicable to precision shafts. WFC, A, E = 1 mm increment ⊙ WFC≤3xD ⊙ When 1.5xD<FC, 2WFC≤L/2 ⊙ A (E)=0 or A (E)≥2 ⊗ Orientation between set screw flats is random. Not available in combination with FC.

Alterations	Code	Spec.
	RC	90° Set Screw Flat at One Location Ordering Code: RC10 Application Notes: Only applicable to D=10-30 ⊗ Not applicable to precision shafts. ⊗ Not available in combination with WRC. ⊙ For details, see Shaft Alteration Overview P.200.
	WRC	90° Set Screw Flats at Two Locations Ordering Code: WRC10-Y10 Application Notes: Only applicable to D=10-30 ⊗ Not applicable to precision shafts. ⊗ Not available in combination with RC. ⊗ Orientation between set screw features is random. ⊙ For details, see Shaft Alteration Overview P.200.
	MMC MMS NMC NMS	Change to fine threads. Ordering Code: MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) NMC14 (N is changed to NMC) NMS14 (N is changed to NMS) ⊙ For details, see Shaft Alteration Overview P.200.

- ⊙ Please see Shaft Alteration Overview for details if provided. P.200
- ⊙ When selecting multiple alteration additions, the distance between machined areas should be greater than 2 mm. P.201
- ⊙ Alterations may lower hardness. P.199