

Shafts

Standard & Precision Type / One End Threaded & One End Tapped with Wrench Flats / One End Threaded & One End Tapped with Cross-Drilled Hole

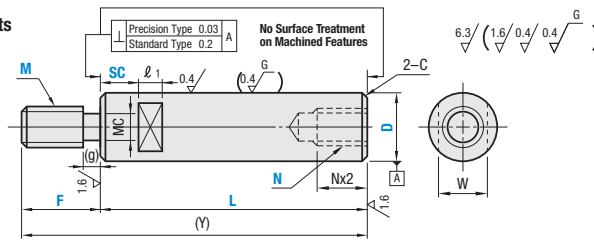
Shafts – Standard & Precision Type / One End Threaded & One End Tapped with Wrench Flats / One End Threaded & One End Tapped with Cross-Drilled Hole

RoHS10

Precision Type	Type						Material	Hardness	Surface Treatment
	Standard			With Cross-Drilled Holes					
	D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. h5	D Tol. f8			
VAFZ	SAFZ	SFBU	—	SAHD	—	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened P.199	
VSAFZ	SSAFZ	SSFBU	—	SSAHD	—	—	SUS440C (13Cr) Stainless Steel Equivalent		
VPAFZ	PSAFZ	PSFBU	—	PSAHD	—	—	52100 Bearing Steel Equivalent	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness 5 μ or More	
VPSAFZ	PSSAFZ	PSSFBU	—	PSSAHD	—	—	SUS440C (13Cr) Stainless Steel Equivalent		
VRFZ	RSAFZ	—	—	RSAHD	—	—	52100 Bearing Steel Equivalent	Low Temperature Black Chrome Plating	
—	—	—	—	PSAGZ	—	—	1045 Carbon Steel Equivalent	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 10 μ or More	
—	—	—	—	PSSAGZ	—	—	304 Stainless Steel		

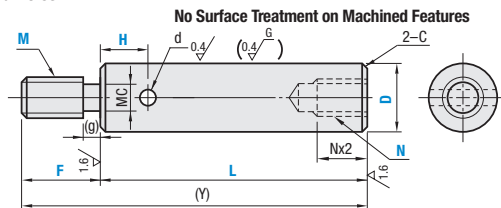
- Annealing caused by machining wrench flats and shaft end threading (effective thread length + approx. 10 mm) may lower hardness. P.199
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation
- Circularity, Straightness, Perpendicularity Concentricity, Changes in Hardness P.198.
- Features of Low Temp. Black Chrome Plating P.213.
- For Shafts without wrench flats or cross-drilled holes, please see P.242.

With Wrench Flats



With Cross-Drilled Holes

(D≥30, L≤500)

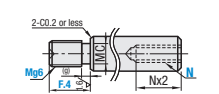


Overall length L requires Nx3≤L.

D	D Tolerance		
	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12			
13	-0.006	0	-0.016
15	-0.017	-0.008	-0.043
16			
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

Features of Precision Shafts

Perpendicularity is $\perp 0.03$



Precision shafts have centering holes on end faces.

Part Number	1 mm Increment			Wrench Flats Dimensions		C	1 mm Increments						
	Type	D	L	M (Coarse Thread)	M (Coarse Thread)		SC	W	ℓ ₁	MC	MC		
Precision Type Shafts with Wrench Flats Tolerance g6	8	25-295		6	3 4 5	SC=1 mm Increment ① SC+ℓ ₁ ≤L ② SC=0 ③ Details of Wrench Flats P.199	7	8	300	6	1.0	4.4 (4.2)	2
	10	25-345		6 8	3 4 5 6		8	8	350	8	1.25	6.0	3
	12	25-345		6 8 10	4 5 6 8		10	8	350	10	1.5	7.7	3
	13	25-345		6 8 10	4 5 6 8		11	8	350	12	1.75	9.4	4
	15	25-345		6 8 10 12	4 5 6 8 10		13	10	350	16	2.0	13.0	4
	16	25-345		6 8 10 12	4 5 6 8 10		14	10	350	20	2.5	16.4	5
	18	25-345		6 8 10 12 16	4 5 6 8 10 12		16	10	350	24	3.0	19.6	5
	20	25-445		6 8 10 12 16	4 5 6 8 10 12		17	10	450	30	3.5	25.0	5
	25	25-445		8 10 12 16 20	4 5 6 8 10 12 16		22	15	450				
	30	25-445		8 10 12 16 20 24	4 5 6 8 10 12 16 20		27	15	450				

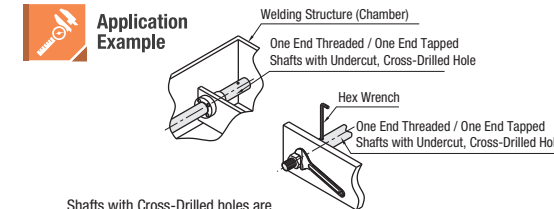
Shaft ends may have centering holes.

Part Number	1 mm Increment			Wrench Flats Dimensions		C	Cross-Drilled Hole Dimensions		(Y) Max.		
	Type	D	L	M (Coarse Thread)	M (Coarse Thread)		SC	W		ℓ ₁	H
Standard Type Shafts with Wrench Flats	8	25-995		6	3 4 5	SC=1 mm Increment ① SC+ℓ ₁ ≤L ② SC=0 ③ Details of Wrench Flats P.199	7	8	800		
	10	25-995		6 8	3 4 5 6		8	8	800	3	800
	12	25-1195		6 8 10	4 5 6 8		10	8	1000	4	1000
	13	25-1195		6 8 10 12	4 5 6 8		11	8	1000	6	1200
	15	25-1195		6 8 10 12	4 5 6 8 10		13	10	1200	7	1200
	16	25-1195		6 8 10 12	4 5 6 8 10		14	10	1200	7	1200
	18	25-1195		6 8 10 12 16	4 5 6 8 10 12		16	10	1200	7	1200
	20	25-1195		6 8 10 12 16	4 5 6 8 10 12		17	10	1200	7	1200
	25	25-1193		8 10 12 16 20 24	4 5 6 8 10 12 16		22	15	1500	7	1500
	30	25-1493		8 10 12 16 20 24	4 5 6 8 10 12 16		27	15	1500	7	1500

Shafts

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Part Number Example	Part Number	L	F	M	N	SC	H
SAFZ20	- 277	- F25	- M12	- N12	- SC10	- H10	
SSAHD20	- 277	- F25	- M12	- N12	- H10		



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

Part Number Alterations	Part Number	L	F	M (MMC / MMS)	N (NSC)	SC	H	(LKC...etc.)
SAFZ30	- 250	- F40	- M20	- N20	- SC10	- 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-P≤2 L dimensions can be specified in 0.1 increment for LKC. ① 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: Applicable to Shafts with Wrench Flats only. SX = 1 mm increment ① SC+SX+ℓ ₁ ×2<L ② SX≥0 ③ Orientation between wrench flat features is random.
	FC	Set Screw Flat at One Location Ordering Code: FC10-E8 Application Notes: ⊗ Not applicable to precision type FC, E = 1 mm increments ① FC≤3xD ② When 1.5xD<FC, FC≤L/2 ③ 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 type WFC, A, E = 1 mm increment ① WFC≤3xD ② When 1.5xD<FC, 2WFC≤L/2 ③ 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 for D=10-30 ⊗ Not applicable to precision type ⊗ Not available in combination with WRC. ① 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 type ⊗ Orientation between set screw features is random. ① For details, see Shaft Alteration Overview P.200.
	NSC	Change to Fine Tapped Thread Ordering Code: NSC14 (N is changed to NSC) Application Notes: Applicable for D=12 or more ① For details, see Shaft Alteration Overview P.200.
	MMC	Change to fine threads. Ordering Code: MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) ① 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