

# Shafts

## Standard & Precision Type / One End Threaded / One End Tapped

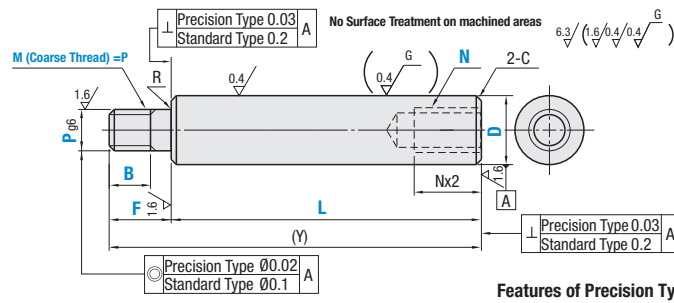
Shafts – Standard & Precision Type / One End Threaded / One End Tapped



RoHS10

- Annealing caused by machining wrench flats and shaft end threading (effective thread length + approx. 10 mm) may lower hardness. P.199
- Circularity, Straightness, Perpendicularity Concentricity, Changes in Hardness P.198.
- Features of Low Temp. Black Chrome Plating P.213.
- For Shafts with wrench flats or cross-drilled holes, please see P.240.

Precision Type	Type			Material	Hardness	Surface Treatment
	D Tol. g6	D Tol. g6	D Tol. h5			
VFBD	SFAD	SFUD	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened P.199	—
VSFBD	SSFAD	SSFUD	—	SUS440C (13Cr) Stainless Steel Equivalent		
VPFBD	PSFAD	PSFUD	—	52100 Bearing Steel Equivalent	52100 Bearing Steel Equivalent 58 HRC min.	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 5 μm or More
VPSFBD	PSSFAD	PSSFUD	—	SUS440C (13Cr) Stainless Steel Equivalent		
VRBD	RSFAD	—	—	52100 Bearing Steel Equivalent	SUS440C (13Cr) Stainless Steel Equivalent 56 HRC min.	Low Temperature Black Chrome Plating
—	—	—	PSFGD	1045 Carbon Steel Equivalent		
—	—	—	PSSFGD	304 Stainless Steel	—	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 10 μm or More



D	D Tolerance		
	g6	h5	f8
4	-0.004	0	-0.010
5	-0.012	-0.005	-0.028
6	-0.005	0	-0.013
8	-0.014	-0.006	-0.035
10	-0.006	0	-0.016
12	-0.017	-0.008	-0.043
13	-0.007	0	-0.020
15	-0.020	-0.009	-0.053
16	-0.009	0	-0.025
18	-0.025	-0.011	-0.064
20	-0.007	0	-0.020
25	-0.020	-0.009	-0.053
30	-0.009	0	-0.025
35	-0.025	-0.011	-0.064
40	-0.009	0	-0.025
50	-0.025	-0.011	-0.064

- Overall length L requires N×3≤L
- When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).

Features of Precision Type

Concentricity is  $\square 0.02$

Perpendicularity is  $\square 0.03$

M (Coarse Thread) up to 2-C0.2 or less

- Precision shafts have grinding undercut section at the bottom of threads. Shaft ends faces have centering holes.

Part Number	1 mm Increment				P (Coarse Thread)	N (Coarse Thread)	(Y) Max.	R	C	Coarse Thread Dimensions
	Type	D	L	F						
Precision Type	5	25-296	2≤F≤Px5	B	3 4	2.6 3	300	0.2 or Less	0.2 or Less	M, N Pitch
	6	25-296								
	8	25-296								
	10	25-345								
	12	25-345								
	13	25-345								
	15	25-345								
	16	25-345								
	18	25-345								
	20	25-445								
D Tolerance g6	VFBD	25-345	2≤F≤Px5	B	3 4 5 6	3 4 5 6	350	0.3 or Less	0.5 or Less	M, N Pitch
	VSFBD	25-345								
	VPFBD	25-345								
	VPSFBD	25-345								
	VRBD	25-445								
	25	25-445								
	30	25-445								

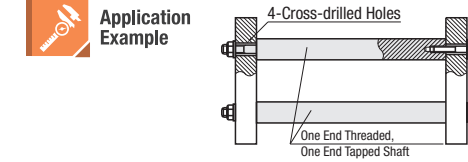
Part Number	1 mm Increment				P (Coarse Thread)	N (Coarse Thread)	(Y) Max.	R	C
	Type	D	L	F					
Standard Type	4	25-298	2≤F≤Px5	B	3 4	2	300	0.2 or Less	0.2 or Less
	5	25-398							
	6	25-798							
	8	25-998							
	10	25-998							
	12	25-1198							
	13	25-1198							
	15	25-1198							
	16	25-1198							
	18	25-1198							
D Tol. g6	SFAD	25-998	2≤F≤Px5	B	3 4 5 6 8	3 4 5	800	0.3 or Less	0.5 or Less
	SSFAD	25-1198							
	PSFAD	25-1198							
	PSSFAD	25-1198							
	RSFAD	25-1198							
	PSFUD	25-1198							
	PSSFUD	25-1198							
	18	25-1198							
	20	25-1198							
	25	25-1198							
D Tol. f8	PSFGD	25-1498	2≤F≤Px5	B	3 4 5 6 8 10 12 16 20	4 5 6 8 10 12 16	1200	0.3 or Less	1.0 or Less
	PSSFGD	25-1498							
	35	25-1498							
	40	25-1498							
	50	25-1498							

# Shafts

## Standard & Precision Type / One End Threaded / One End Tapped, continued

Part Number Example

Part Number	L	F	B	P	N
VFBD12	- 277	- F20	- B12	- P8	- N5
SFAD20	- 277	- F25	- B12	- P10	- N8



Part Number Alterations

Part Number	L	F	B	P (PMC / PSC)	N (NSC)	(LKC...etc.)
SFAD30	- 250	- F40	- B30	- P10	- N10	- 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 When using LKC, L dimensions can be specified in 0.1 increments. L<200 → L±0.03 200≤L<500 → L±0.05 L≥500 → L±0.1
	WSC	Wrench Flats at Two Locations Ordering Code: WSC12-X8 Application Notes: Application to D=6 or more WSC, X = 1 mm increment WSC+X+ℓ; X2<L WSC (X)=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, E = 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.
	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.
	PMC PMS	Change to Fine Thread Ordering Code: PMC14 (P is changed to PMC) PMS14 (P is changed to PMS)
	MMC MMS NMC NMS	Change to Fine Tapped Thread Ordering Code: NSC14 (N is changed to NSC) Application Notes: Applicable for D=6 or more

- 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