Shafts

Standard & Precision Type / One End Stepped & Both Ends Tapped / One End Stepped & One End Tapped

Shafts – Standard & Precision Type / One End Stepped & Both Ends Tapped / One End Stepped & One End Tapped

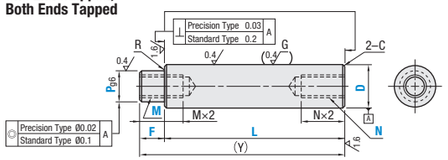
RoHS10

Type							Material	Hardness	Surface Treatment
Both Ends Tapped				One End Tapped					
Precision Type	Standard								
D Tol. g6	D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. h5	D Tol. f8			
VFAA	SFAA	SFUE	—	SFNA	SFEU	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened **P.199** 52100 Bearing Steel Equivalent 58 HRC min. SUS440C (13Cr) Stainless Steel Equivalent 56 HRC min.	—
VSFAA	SSFAA	SSFUE	—	SSFNA	SSFEU	—	SUS440C (13Cr) Stainless Steel Equivalent		Hard Chrome Plating Plating Hardness: 750 HV min. Plating Thickness 5μ or More
VPFAA	PSFAA	PSFUE	—	PSFNA	PSFEU	—	52100 Bearing Steel Equivalent		
VPSFAA	PSSFAA	PSSFUE	—	PSSFNA	PSSFEU	—	SUS440C (13Cr) Stainless Steel Equivalent		
VRAA	RSFAA	—	—	RSFNA	—	—	52100 Bearing Steel Equivalent		Low Temperature Black Chrome Plating
VSRAA	—	—	—	—	—	—	SUS440C (13Cr) Stainless Steel Equivalent		
—	—	—	PSFGA	—	—	PSNGA	1045 Carbon Steel Equivalent	—	Hard Chrome Plating Plating Hardness: 750 HV min. Plating Thickness 10μ or More
—	—	—	PSSFGA	—	—	PSSNGA	304 Stainless Steel		

- Shaft End Machined Area (Effective Thread Length + approx. 10 mm) hardness may be reduced by annealing **P.199**.
- Circularity, Straightness, Perpendicularity **P.198**.
- Features of Low Temperature Black Chrome Plating **P.213**.
- For Both Ends Stepped and Tapped with Wrench Flats, see **P.256**.

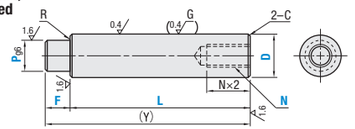
One End Stepped, Both Ends Tapped

No Surface Treatment on Machined Areas



One End Stepped, One End Tapped

No Surface Treatment on Machined Areas



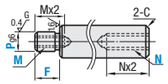
6.3/ (1.6/ 0.4/ 0.4/ G)

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

Features of Precision Shafts

Concentricity is ◎ Ø0.02

Perpendicularity is ⊥ 0.03



- Precision shafts have grinding undercuts at stepped sections (max. width 1 mm / max. depth 0.1 mm).

Part Number		1 mm Increment			M (Coarse Thread)	N (Coarse Thread)	(Y) Max.	R	C
Type	D	L	F	P					
Precision Type One End Stepped, Both Ends Tapped (D Tolerance g6) VFAA VSFAA VPFAA VPSFAA VRAA VSRAA	8	25–298	2≤F≤Px4	6	3	3 4 5	300	0.3 or Less	0.5 or Less
	10	25–348		6–8	3 4 5	3 4 5 6	350		
	12	25–348		6–10	3 4 5 6	4 5 6 8	350		
	13	25–348		6–11	3 4 5 6 8	4 5 6 8	350		
	15	25–348		6–13	3 4 5 6 8 10	4 5 6 8 10	350		
	16	25–348		6–14	3 4 5 6 8 10	4 5 6 8 10	350		
	18	25–348		8–16	4 5 6 8 10 12	4 5 6 8 10 12	350		
	20	25–448		8–17	4 5 6 8 10 12	4 5 6 8 10 12	450		1.0 or Less
	25	25–448		8–22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	450		
	30	25–448		9–27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	450		

- P Dimensions require M+3≤P.
- For Precision Type, (Y) dimensions require Mx2+Nx2≤(Y). Tap pilot holes may go through.

Part Number		1 mm Increment			M (Coarse Threads)	N (Coarse Threads)	(Y) Max.	R	C
Type	D	L	F	P					
Standard Type One End Stepped, Both Ends Tapped (D Tolerance g6) SFAA SSFAA PSFAA PSSFAA RSFAA (D≤30, L≤500) (D Tolerance h5) SFUE SSFUE PSFUE PSSFUE (D Tolerance f8) PSFGA PSSFGA	8	25–998	2≤F≤Px4	6	3	3 4 5	800	0.3 or Less	0.5 or Less
	10	25–998		6–8	3 4 5	3 4 5 6	800		
	12	25–1198		6–10	3 4 5 6	4 5 6 8	1000		
	13	25–1198		6–11	3 4 5 6 8	4 5 6 8	1000		
	15	25–1198		6–13	3 4 5 6 8 10	4 5 6 8 10	1000		
	16	25–1198		6–14	3 4 5 6 8 10	4 5 6 8 10	1200		
	18	25–1198		8–16	4 5 6 8 10 12	4 5 6 8 10 12	1200		
	20	25–1198		8–17	4 5 6 8 10 12	4 5 6 8 10 12	1200		1.0 or Less
	25	25–1198		8–22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	1200		
One End Stepped, One End Tapped (D Tolerance g6) SFNA SSFNA PSFNA PSSFNA RSFNA (D≤30, L≤500) (D Tolerance h5) SFEU SSFEU PSFEU PSSFEU (D Tolerance f8) PSNGA PSSNGA	30	25–1498		9–27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	1500		
	35	25–1498		9–32	5 6 8 10 12 16 20 24	8 10 12 16 20 24	1500	0.5 or Less	
	40	25–1498		11–37	6 8 10 12 16 20 24 30	10 12 16 20 24 30	1500		
	50	25–1498		11–47	6 8 10 12 16 20 24 30	12 16 20 24 30	1500		

- P Dimensions require M+3≤P.
- When D-P≤4, stepped section chamfer C is 0.2 or less.
- For One End Stepped One End Tapped Type, L dimensions require Nx3≤L.
- When Mx2.5+4+Nx2.5+4≥(Y), tap pilot holes may go through. When Mx2+Nx2≥(Y), effective depth of larger diameter tap has priority. In such case, Y requires to be Y≥Mx2.5+4+N or Y≥Nx2.5+4+M.

Shafts

Standard & Precision Type / One End Stepped & Both Ends Tapped / One End Stepped & One End Tapped, *continued*

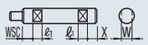
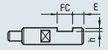
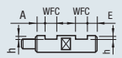
Part Number Example

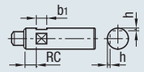
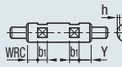
Part Number	-	L	-	F	-	P	-	M	-	N
VFAA20	-	400	-	F25	-	P16	-	M10	-	N10
SFAA20	-	400	-	F25	-	P16	-	M10	-	N10
SFNA20	-	400	-	F25	-	P15			-	N10

Part Number Alterations

Part Number	-	L	-	F	-	P	-	M	-	N (NSC)	-	(LKC / WSC...etc.)
SFAA30	-	400	-	F25	-	P16	-	M10	-	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 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
	WSC	Wrench Flats at Two Locations **Ordering Code:** WSC12-X8 WSC, X in 1 mm Increment. ! WSC+X+ℓ1x2<L ! WSC (X)≥0 ⊗ Orientation between set screw flats is random. D / W / ℓ1: 8 7 8; 10 8 8; 12 10 8; 13 11 10; 15 13 10; 16 14 10; 18 16 10; 20 17 10; 22 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 **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. D / h: 8–18 1; 20–40 2; 50 3
	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. D / h: 8–18 1; 20–40 2; 50 3

Alterations	Code	Spec.
	RC	90° Set Screw Flat at One Location **Ordering Code:** RC10 **Application Notes:** 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:** Applicable to D=10–30 ⊗ Not applicable to precision shafts ⊗ Not available in combination with RC. ⊗ Orientation between set screw flats is random. 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 to D=12 or more For details, see Shaft Alteration Overview, **P.200**.

Alteration Details **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 2mm. **P.201**
- Alterations may lower hardness. **P.199**