

Shafts

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

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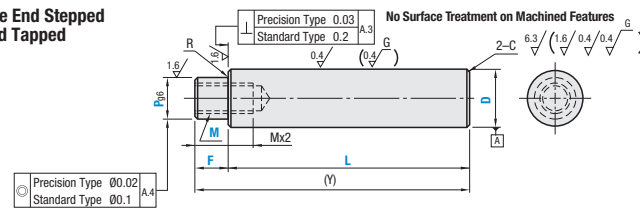


RoHS10

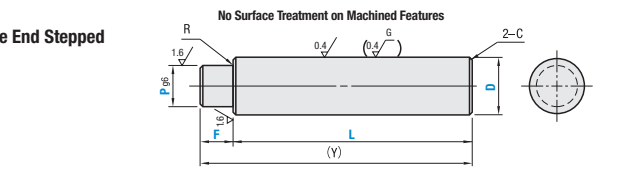
- Annealing caused by machining wrench flats and shaft end threading (effective thread length + approx. 10 mm) may lower hardness. P.199
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation
- Circularity, Straightness, Perpendicularity Concentricity, Changes in Hardness P.198.
- Features of Low Temp. Black Chrome Plating P.213.
- For Shafts with wrench flats or cross-drilled holes, please see P.248.

Type							Material	Hardness	Surface Treatment
One End Stepped and Tapped				One End Stepped					
Precision Type	Standard			Standard					
D Tol. g6	D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. g6	D Tol. h5			
VFAG	SFAG	SFUG	—	SFAC	SFCU	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened P.199	—
VSFAG	SSFAG	SSFUG	—	SSFAC	SSFCU	—	SUS440C (13Cr) Stainless Steel Equivalent		
VPFAG	PSFAG	PSFUG	—	PSFAC	PSFCU	—	52100 Bearing Steel Equivalent	52100 Bearing Steel Equivalent 58 HRC min.	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness 5 μ or More
VPSFAG	PSSFAG	PSSFUG	—	PSSFAC	PSSFCU	—	SUS440C (13Cr) Stainless Steel Equivalent		
VRAG	RSFAG	—	—	RSFAC	—	—	52100 Bearing Steel Equivalent	SUS440C (13Cr) Stainless Steel Equivalent 56 HRC min.	Low Temperature Black Chrome Plating
VSRAG	—	—	—	—	—	—	SUS440C (13Cr) Stainless Steel Equivalent		
—	—	—	—	PSFGG	—	—	1045 Carbon Steel Equivalent	—	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 10 μ or More
—	—	—	—	PSSGGG	—	—	304 Stainless Steel		

One End Stepped and Tapped

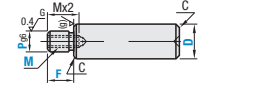


One End Stepped



D Tolerance			
D	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	-0.007	0	-0.020
25	-0.020	-0.009	-0.053
30			
35	-0.009	0	-0.025
40	-0.025	-0.011	-0.064
50			

Features of Precision Shafts
Concentricity is 0.00.02
Perpendicularity is 0.03



Precision shafts have grinding undercuts at stepped sections (max. width 1 mm, max. depth 0.1 mm) and centering holes on end faces.

Part Number	1 mm Increment				M (Coarse Thread)	(Y) Max.	R	C
	Type	D	L	F				
Precision Type One End Stepped and Tapped D Tolerance g 6	8	25-298	2 ≤ F ≤ Px4	6	3	300	0.3 or Less	0.5 or Less
	10	25-348		6-8	3 4 5	350		
	12	25-348		6-10	3 4 5 6	350		
	13	25-348		6-11	3 4 5 6 8	350		
	15	25-348		6-13	3 4 5 6 8 10	350		
	16	25-348		6-14	3 4 5 6 8 10	350		
	18	25-348		8-16	4 5 6 8 10 12	350		
	20	25-448		8-17	4 5 6 8 10 12	450		
	25	25-448		8-22	4 5 6 8 10 12 16	450		
	30	25-448		9-27	5 6 8 10 12 16 20 24	450		

One End Stepped and Tapped P dimensions require M+3≤P. When Mx2.5+4≥Y, tap pilot holes may go through. For Precision Type, (Y) dimensions require Mx4≤(Y). Tap pilot holes may go through. Shafts may have centering holes at end faces.

Part Number	1 mm Increment				M (Coarse Thread)	(Y) Max.	R	C				
	Type	D	L	F								
Standard Type		8	25-998		6	3	800	0.5 or Less				
One End Stepped and Tapped D Tolerance g 6	One End Stepped D Tolerance h5	10	25-998	2 ≤ F ≤ Px4	6-8	3 4 5	800					
		12	25-1198		6-10	3 4 5 6	1000					
		SFAG	SFUG		SFAC	SFCU	13		25-1198	6-11	3 4 5 6 8	1000
		SSFAG	SSFUG		SSFAC	SSFCU	15		25-1198	6-13	3 4 5 6 8 10	1000
		PSFAG	PSFUG		PSFAC	PSFCU	16		25-1198	6-14	3 4 5 6 8 10	1200
		PSSFAG	PSSFUG		PSSFAC	PSSFCU	18		25-1198	8-16	4 5 6 8 10 12	1200
		RSFAG	RSFAC		RSFAC	RSFAC	20		25-1198	8-17	4 5 6 8 10 12	1200
		D ≤ 30, L ≤ 500	D ≤ 30, L ≤ 500		D ≤ 30, L ≤ 500	D ≤ 30, L ≤ 500	25		25-1198	8-22	4 5 6 8 10 12 16	1200
		D Tolerance f8	D Tolerance f8		D Tolerance f8	D Tolerance f8	30		25-1498	9-27	5 6 8 10 12 16 20 24	1500
		PSFGG	PSSGGG		PSSGGG	PSSGGG	35	25-1498	9-32	5 6 8 10 12 16 20 24	1500	
PSSFGG	PSSFGG	PSSFGG	PSSFGG	40	25-1498	11-37	6 8 10 12 16 20 24 30	1500				
				50	25-1498	11-47	6 8 10 12 16 20 24 30	1500				

One End Stepped and Tapped P dimensions require M+3≤P. When Mx2.5+4≥Y, tap pilot holes may go through.

Shafts

Standard & Precision Type / One End Stepped & Tapped / One End Stepped, continued

Part Number Example

Part Number	-	L	-	F	-	P	-	M
VFAG20	-	400	-	F25	-	P16	-	M10
SFAG20	-	400	-	F25	-	P16	-	M10
SFAC20	-	500	-	F25	-	P16	-	

Part Number Alterations

Part Number	-	L	-	F	-	P	-	M	-	(LKC/FC...etc.)
SFAG30	-	400	-	F25	-	P16	-	M10	-	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 ⓪ L<200 → L±0.03 200≤L<500 → L±0.05 L≥500 → L±0.1
	FC	Set Screw Flat at One Location Ordering Code: FC10-E8 Application Notes: ⊗ Not applicable to precision shafts. FC, E = 1 mm increment ⓪ FC≤3xD ⓪ When 1.5xD<FC, FC≤L/2 ⓪ 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 ⓪ WFC≤3xD ⓪ When 1.5xD<FC, 2WFC≤L/2 ⓪ 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 shafts. ⊗ Not available in combination with WRC. ⓪ 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. ⓪ Orientation between set screw features is random. ⓪ For details, see Shaft Alteration Overview P.200.
Keyway at one location: KC	KC WKC	Keyway Ordering Code: KC10-G10 WKC10-C8-KC10-G10 Application Notes: Applicable only to D=12, 16, 20, and or 30. ⊗ Not applicable to precision shafts. ⓪ For details, see Shaft Alteration Overview P.200.
Keyways at two locations: WKC		

⓪ Please see Shaft Alteration Overview for details if provided. P.200
⓪ When selecting multiple alteration additions, the distance between machined areas should be greater than 2 mm. P.201
⓪ Alterations may lower hardness. P.199