

Shafts

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

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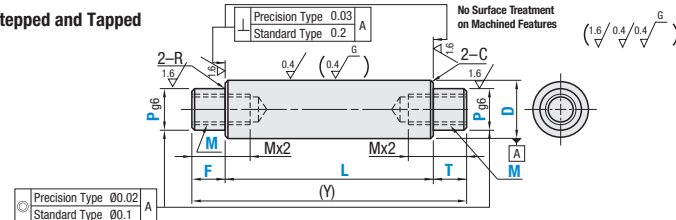


RoHS10

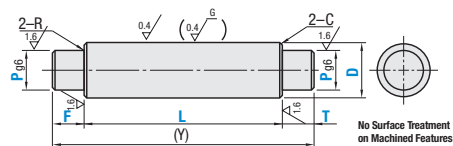
- Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10 mm). P.199
- Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.198.
- Features of Low Temperature Black Chrome Plating P.213.
- For Both Ends Stepped and Tapped with Wrench Flats, see P.252.

Precision Type	Type						Material	Hardness	Surface Treatment	D Tolerance			
	Both Ends Stepped and Tapped			Both Ends Stepped						D	g6	h5	f8
	Standard	Standard	Standard	Standard	Standard	Standard							
VFAH	SFAH	SFUH	—	SFAJ	SFUJ	—	52100 Bearing Steel Equivalent	Effective H ardened Depth Induction Hardened	—	8	-0.005	0	-0.013
VSAH	SSFAH	SSFUH	—	SSFAJ	SSFUJ	—	SUS440C (13Cr) Stainless Steel Equivalent	—	—	10	-0.014	-0.006	-0.035
VPSAH	PSFAH	PSFUH	—	PSFAJ	PSFUJ	—	52100 Bearing Steel Equivalent	P.199	Hard Chrome Plating	12	—	0	-0.016
VPSFAH	PSSFAH	PSSFUH	—	PSSFAJ	PSSFUJ	—	SUS440C (13Cr) Stainless Steel Equivalent	52100 Bearing Steel Equivalent	58 HRC min. Plating Thickness 5µ or More	13	—	0	-0.043
VRAH	RSFAH	—	—	RSFAJ	—	—	52100 Bearing Steel Equivalent	SUS440C (13Cr) Stainless Steel Equivalent	Low Temperature Black Chrome Plating	15	-0.006	0	-0.016
VPSFAH	—	—	—	—	—	—	SUS440C (13Cr) Stainless Steel Equivalent	—	—	16	-0.017	-0.008	-0.043
VRAH	—	—	—	—	—	—	52100 Bearing Steel Equivalent	—	—	18	—	—	—
VPSFAH	—	—	—	—	—	—	SUS440C (13Cr) Stainless Steel Equivalent	—	—	20	—	—	—
VPSFAH	—	—	—	—	—	—	1045 Carbon Steel Equivalent	—	—	25	-0.007	0	-0.020
VPSFAH	—	—	—	—	—	—	304 Stainless Steel	—	—	30	-0.020	-0.009	-0.053
VPSFAH	—	—	—	—	—	—	—	—	—	35	—	—	—
VPSFAH	—	—	—	—	—	—	—	—	—	40	-0.009	0	-0.025
VPSFAH	—	—	—	—	—	—	—	—	—	40	-0.025	-0.011	-0.064
VPSFAH	—	—	—	—	—	—	—	—	—	50	—	—	—

Both Ends Stepped and Tapped



Both Ends Stepped



Features of Precision Shafts
Concentricity is ± 0.02
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 Increments				M (Coarse Threads)	(Y) Max.	R	C
	Type	D	L	F / T				
Precision Type Both Ends Stepped and Tapped (D Tolerance g6) VFAH VSAH VPSAH VPSFAH VRAH VPSRAH	8	25-296	2 ≤ F ≤ Px4 2 ≤ T ≤ Px4	6	3	300	0.5 or Less	0.5 or Less
	10	25-346		6-8	3 4 5	350		
	12	25-346		6-10	3 4 5 6	350		
	13	25-346		6-11	3 4 5 6 8	350		
	15	25-346		6-13	3 4 5 6 8 10	350		
	16	25-346		6-14	3 4 5 6 8 10	350		
	18	25-346		8-16	4 5 6 8 10 12	350		
	20	25-446		8-17	4 5 6 8 10 12	450		
	25	25-446		8-22	4 5 6 8 10 12 16	450		
	30	25-446		9-27	5 6 8 10 12 16 20 24	450		

P Dimensions require M+3≤P. For Precision Type, (Y) dimensions require Mx4≤(Y). When (Mx2.5+4)x2≥(Y), tap pilot holes may go through.

Part Number	1 mm Increment				M (Coarse Thread)	(Y) Max.	R	C					
	Type	D	L	F / T									
Standard Type	8	25-1096		(3)-6	3	1100	0.5 or Less	0.5 or Less					
Both Ends Stepped and Tapped	10	25-1196		6(3)-8	3 4 5	1200							
	12	25-1396		6(3)-10	3 4 5 6	1400							
	D Tolerance g6	SFAH	SFUH	SFAJ	SFUJ	D Tol. g6 8≤D≤30			13	25-1396	6(4)-11	3 4 5 6 8	1400
									15	25-1396	6(4)-13	3 4 5 6 8 10	1400
	D Tolerance h5	SSFAH	SSFUH	SSFAJ	SSFUJ	2≤F(T)≤Px5			16	25-1396	6(4)-14	3 4 5 6 8 10	1400
									18	25-1396	8(5)-16	4 5 6 8 10 12	1400
	D Tolerance g6	PSFAH	PSFUH	PSFAJ	PSFUJ	D Tol. g6 D≥35			20	25-1396	8(5)-17	4 5 6 8 10 12	1400
									25	25-1396	8(6)-22	4 5 6 8 10 12 16	1400
	D Tolerance f8	PSSFAH	PSSFUH	PSSFAJ	PSSFUJ	2≤F(T)≤Px4			30	25-1496	9(8)-27	5 6 8 10 12 16 20 24	1500
							35	25-1496	9-32	5 6 8 10 12 16 20 24	1500		
PSFGH	PSSFGH	PSFGJ	PSSFGJ			40	25-1496	11-37	6 8 10 12 16 20 24 30	1500			
						50	25-1496	11-47	6 8 10 12 16 20 24 30	1500			

P () dimensions are applicable only for D diameter tolerance with g6.

Both Ends Tapped P Dimensions require M+3≤P. Total length (Y) requires Mx4≤(Y). When (Mx2.5+4)x2≥(Y), tap pilot hole may go through.

Shafts

Standard & Precision Type / Both Ends Stepped & Tapped / Both Ends Stepped, continued

Part Number Example

Part Number	L	F	P	M	T
VFAH18	200	F20	P15	M8	T20
SFAH20	400	F25	P16	M10	T20
SFAJ20	400	F25	P16		T20

Part Number Alterations

Part Number	L	F	P	M	T	(LKC/WSC... etc.)
SFAH20	400	F25	P16	M10	T20	LKC

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 mm increments for LKC. Ⓛ L<200 → L±0.03 200≤L<500 → L±0.05 L≥500 → L±0.1
	WSC	Wrench Flat at Two Locations. Ordering Code: WSC12-X8 WSC/X in=1 mm increment Ⓛ WSC+X+ℓ,x2<L Ⓛ WSC(X)≥0 ⊗ Orientation between set screw flats 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<WFC, 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: 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.
	KC	Keyway at One Location: KC
	WKC	Keyways at Two Locations: WKC
	MD	Change the effective tap depth to Mx3. Ordering Code: MD6 (M is changed to MD) Application Notes: Only applicable to D=10-30 and M = 6-20 Ⓛ One End Tapped: MDx3.5+4≤L ⊗ Not available combination with KC, WSC.
	LFC/RFC	Set Screw Flat at Step Parts Ordering Code: LFC10-A0 RFC10-E0 Ⓛ D-M≥1 ⊗ Orientation between two set screw flats is not coplanar.

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