


High Precision Linear Shafts

One End Stepped and Tapped / One End Stepped and Tapped with Wrench Flats

■ Suitable for assemblies of parts requiring high precision and high perpendicular precision of the shaft end ($\perp 0.03$).



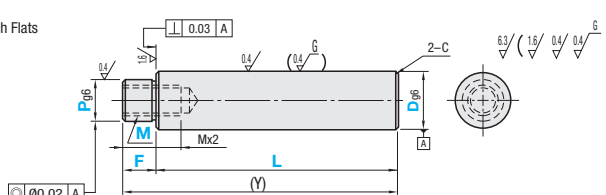
RoHS 10

- ⚠ Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm). **P.112**
- ⚠ Full Length Hardness Guaranteed Shafts **P.127**
- ⚠ L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P.111**
- ⚠ Features of Low Temp. Black Chrome Plating **P.128**

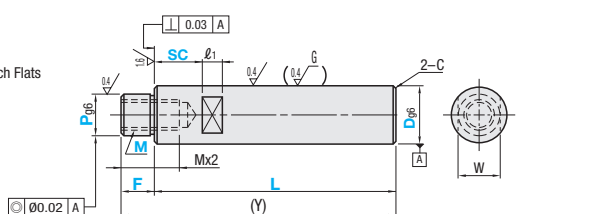
Type		D Tol.	Material	Hardness	Surface Treatment
W/o Wrench Flats	With Wrench Flats				
VFAG	VFPG	g6	SUJ2 Equivalent	Induction Hardened Effective Hardened Depth P.112	- Hard Chrome Plating Plating Hardness HV750 ~ Plating Thickness: 5µ or More Low Temp. Black Chrome Plating
VSFAG	VSFPG		SUS440C or 13Cr stainless		
VPFAG	VPFPG		SUJ2 Equivalent		
VPSFAG	VPSFPG		SUS440C or 13Cr stainless		
VRAG	VRPG		SUJ2 Equivalent		
VSRAG	VSRPG		SUS440C or 13Cr stainless		
			SUS440C or 13Cr stainless 56HRC~		

D Tol.	
D	g6
8	-0.005
10	-0.014
12	
13	-0.006
15	-0.017
16	
18	
20	-0.007
25	-0.020
30	

W/o Wrench Flats



With Wrench Flats



Part Number	1mm Increment				M (Coarse) Selection	Wrench Flats Dimensions			(Y) Max.	C	
	Type	D	L	F		P	SC	W			ℓ ₁
(W/o Wrench Flats) (With Wrench Flats)	8	25-298	2 ≤ F ≤ P × 4	6	3	SC=1mm Increment ⚠ SC+ℓ ₁ ≤ L ⚠ SC ≥ 0 ⚠ Details of Wrench Flats P.112	7	8	300	0.5 or Less	
VFAG VFPG	10	25-348		6-8	3 4 5		8		350		
VSFAG VSFPG	12	25-348		6-10	3 4 5 6		10		350		
VPFAG VPFPG	13	25-348		6-11	3 4 5 6 8		11		350		
VPSFAG VPSFPG	15	25-348		6-13	3 4 5 6 8 10		13		350		
VRAG VRPG	16	25-348		6-14	3 4 5 6 8 10		14		350		
VSRAG VSRPG	18	25-348		8-16	4 5 6 8 10 12		16		350		
	20	25-448		8-17	4 5 6 8 10 12		17		450		
	25	25-448		8-22	4 5 6 8 10 12 16		22		450		
	30	25-448		9-27	5 6 8 10 12 16 20 24		27		450		
							15		450		1.0 or Less

⚠ P dimensions require M+3 ≤ P. ⚠ (Y) dimensions require Mx4 ≤ (Y). ⚠ When Mx2.5+4 > Y, tap pilot holes may go through. ⚠ Shafts may have centering holes at end faces.

Ordering Example

Part Number - L - F - P - M - SC




VFAG20 - 100 - F20 - P10 - M8 - SC20


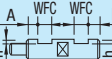
VFPG20 - 100 - F20 - P10 - M8 - SC20

Alterations

Part Number - L - F - P - M (MD) - SC (LKC-etc.)

VFAG20 - 100 - F20 - P10 - M8 - LKC

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less. ⚠ Not applicable when D-P ≤ 2. L dimensions can be specified in 0.1mm increment for LKC. ⚠ L ≤ 200 → L ± 0.03
	MD	Change the effective length of tapped part to Mx3. Ordering Code MD6 (M is changed to MD) Application Notes Only applicable to D=12-30, M=6-20 ⚠ One End Tapped: MDx3.5+4 ≥ L
	SX	Second Set of Wrench Flats Ordering Code SX15 Application Notes Only applicable to Shafts with Wrench Flats. SX=1mm Increment ⚠ SC+SX+ℓ ₁ × 2 < L ⚠ SX ≥ 0 ⚠ Orientation between two set screw flats is not coplanar.

Alterations	Code	Spec.
	FC	Set Screw Flat at One Location Ordering Code FC10-E8 FC, E=1mm 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 WFC, A, E=1mm Increment ⚠ WFC ≤ 3xD ⚠ When 1.5xD < WFC, 2WFC ≤ L/2 ⚠ A(E)=0 or A(E)=2 ⚠ Orientation between set screw flats is not coplanar. Not available in combination with FC.

⚠ Please see Shaft Alteration Overview for details if provided **P.113**
 ⚠ When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.
 ⚠ Alterations may lower hardness. See **P.112**