


High Precision Linear Shafts

One End Stepped, Both Ends Tapped / One End Stepped, Both Ends Tapped with Wrench Flats

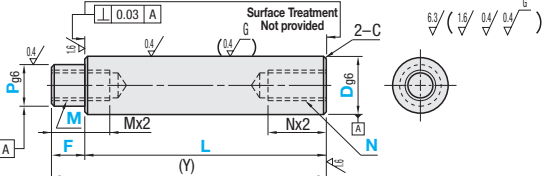
Suitable for assemblies of parts requiring high precision and high perpendicular precision of the shaft end ($\perp 0.03$).



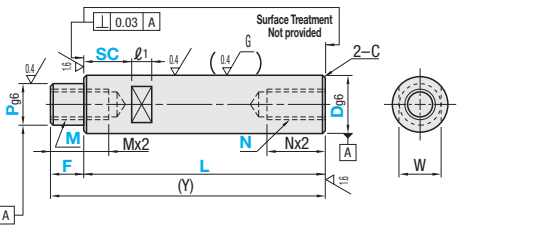
Type	D Tol.	Material	Hardness	Surface Treatment
VFAA (W/o Wrench Flats) / VFPA (With Wrench Flats)	g6	EN 1.3505 Equiv.	Induction Hardened Effective Hardened Depth P.112	Hard Chrome Plating Plating Hardness HV750 - Plating Thickness: 5µ or More
VSFAA (W/o Wrench Flats) / VSFPA (With Wrench Flats)		EN 1.4037 Equiv.		
VPFAA (W/o Wrench Flats) / VPFPA (With Wrench Flats)		EN 1.3505 Equiv.		
VPSFAA (W/o Wrench Flats) / VPSFPA (With Wrench Flats)		EN 1.4037 Equiv.		
VRAA (W/o Wrench Flats) / VRPA (With Wrench Flats)		EN 1.3505 Equiv.		
VSRAA (W/o Wrench Flats) / VSRPA (With Wrench Flats)		EN 1.4037 Equiv.		

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

W/o Wrench Flats



With Wrench Flats



RoHS10

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

Part Number Type	1mm Increment				M (Coarse) Selection	N (Coarse) Selection	Wrench Flats Dimensions			(Y) Max.	C
	D	L	F, T	P			SC	W	ℓ ₁		
(W/o Wrench Flats)	8	25-298		6	3	3 4 5	7	8	300	0.5 or Less	
(With Wrench Flats)	10	25-348		6-8	3 4 5	3 4 5 6	8	350			
VFAA	12	25-348		6-10	3 4 5 6	4 5 6 8	10	350			
VFPA	13	25-348		6-11	3 4 5 6 8	4 5 6 8	11	350			
VSFAA	15	25-348		6-13	3 4 5 6 8 10	4 5 6 8 10	13	350			
VSFPA	16	25-348		6-14	3 4 5 6 8 10	4 5 6 8 10	14	350			
VPFAA	18	25-348		8-16	4 5 6 8 10 12	4 5 6 8 10 12	16	350			
VPFPA	20	25-448		8-17	4 5 6 8 10 12	4 5 6 8 10 12	17	450			
VPSFAA	25	25-448		8-22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	22	450			
VPSFPA	30	25-448		9-27	5 6 8 10 12 16 20 24	6 8 10 12 16 20 24	27	450			

⚠ P dimensions require M+3≤P. ⚠ (Y) dimensions require Mx2+Nx2≤(Y). Tap pilot holes may go through.

Ordering Example

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

VFAA20 - 100 - F20 - P10 - M8 - N8






VFPA20 - 100 - F20 - P10 - M8 - N8 - SC20

Alterations

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

VFAA20 - 100 - F20 - P10 - M8 - N8 - LKC

Alteration Details **P.113**

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
	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 <L ⚠ SX≥0 ⚠ Orientation between two set screw flats is not coplanar.
	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.
	MD ND	Change the effective tap depth to M(N)x3. Ordering Code MD6/ND6 (M is changed to MD, N is changed to ND) Application Notes Only applicable to D=10-30, M(N)=6-20 ⚠ One End Tapped: MDx3.5+4≥L ⚠ Both Ends Tapped: MDx3.5+4+NDx3.5+4≥L

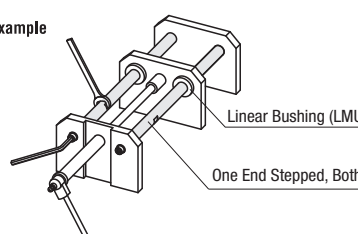
⚠ Please see Shaft Alteration Overview for details if provided. **P.113**

⚠ When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.

⚠ Alterations may lower hardness. See **P.112**

Part Number Type	D	Unit Price					Part Number Type	D	Unit Price				
		Min. L 50	L51 100	L101 200	L201 300	L301 448			Min. L 50	L51 100	L101 200	L201 300	L301 448
VFAA	8						VFPA	8					
	10							10					
	12							12					
	13							13					
	15							15					
	16							16					
	18							18					
	20							20					
	25							25					
	30							30					
VSFAA	8						VSFPA	8					
	10							10					
	12							12					
	13							13					
	15							15					
	16							16					
	18							18					
	20							20					
	25							25					
	30							30					
VPFAA	8						VPFPA	8					
	10							10					
	12							12					
	13							13					
	15							15					
	16							16					
	18							18					
	20							20					
	25							25					
	30							30					
VPSFAA	8						VPSFPA	8					
	10							10					
	12							12					
	13							13					
	15							15					
	16							16					
	18							18					
	20							20					
	25							25					
	30							30					
VRAA	8						VRPA	8					
	10							10					
	12							12					
	13							13					
	15							15					
	16							16					
	18							18					
	20							20					
	25							25					
	30							30					
VSRAA	8						VSRPA	8					
	10							10					
	12							12					
	13							13					
	15							15					
	16							16					
	18							18					
	20							20					
	25							25					
	30							30					

EX Example



Linear Bushing (LMU)

One End Stepped, Both Ends Tapped with Wrench Flats/Linear Shaft (VSFPA)