

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 ($\perp 0.03$).

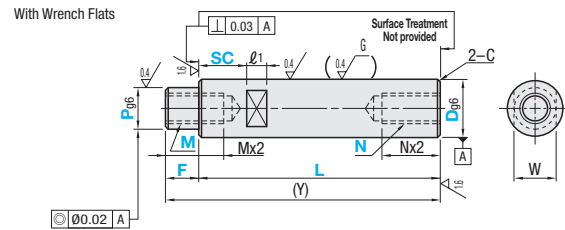
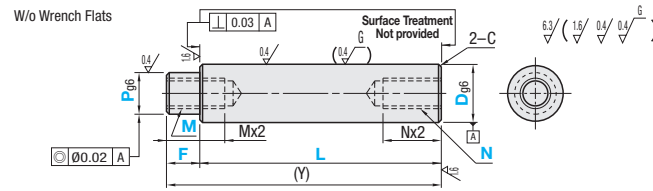


RoHS10

- Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm). **P112**
- Full Length Hardness Guaranteed Shafts **P127**
- Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P111**
- Features of Low Temp. Black Chrome Plating **P128**

Type	D Tol.	Material	Hardness	Surface Treatment
W/o Wrench Flats	g6	SUJ2 Equivalent	Induction Hardened Effective Hardened Depth P112	Hard Chrome Plating Plating Hardness HV750 ~ Plating Thickness: 5µ or More
With Wrench Flats		SUS440C or 13Cr stainless		
VFAA		SUJ2 Equivalent	58HRC~	Low Temp. Black Chrome Plating
VSFPA		SUS440C or 13Cr stainless		
VPFAA		SUJ2 Equivalent	56HRC~	
VPSFPA		SUS440C or 13Cr stainless		
VRAA		SUJ2 Equivalent		
VRPA		SUS440C or 13Cr stainless		
VSRAA		SUJ2 Equivalent		
VSRPA		SUS440C or 13Cr stainless		

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



Part Number Type	D	1mm Increment				M (Coarse) Selection				N (Coarse) Selection				Wrench Flats Dimensions			(Y) Max.	C		
		L	F, T	P		F	T	P		SC	W	ℓ1								
(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					
VSFPA	13	25-348		6-11	3	4	5	6	8	4	5	6	8	11	350					
VPFAA	15	25-348	2≤F≤Px4	6-13	3	4	5	6	8	10	4	5	6	8	10	350				
VPSFPA	16	25-348		6-14	3	4	5	6	8	10	4	5	6	8	10	350				
VRAA	18	25-348		8-16	4	5	6	8	10	12	4	5	6	8	10	12		350		
VRPA	20	25-448		8-17	4	5	6	8	10	12	4	5	6	8	10	12		450		
VSRAA	25	25-448		8-22	4	5	6	8	10	12	16	4	5	6	8	10		12	450	
VSRPA	30	25-448		9-27	5	6	8	10	12	16	20	24	6	8	10	12		16	20	24

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

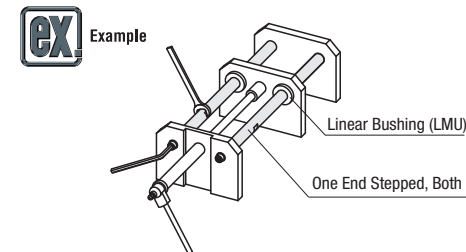
Part Number	L	F	P	M(MD)	N(ND)	SC	(LKC...etc)
VFAA20	- 100	- F20	- P10	- M8	- N8		- LKC

Alteration Details **P113**

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+ℓ1x2<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. **P113**
- When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.
- Alterations may lower hardness. See **P112**

Part Number		Unit Price					Part Number		Unit Price				
Type	D	Min. L 50	L51 100	L101 200	L201 300	L301 448	Type	D	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					



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