


# High Precision Linear Shafts

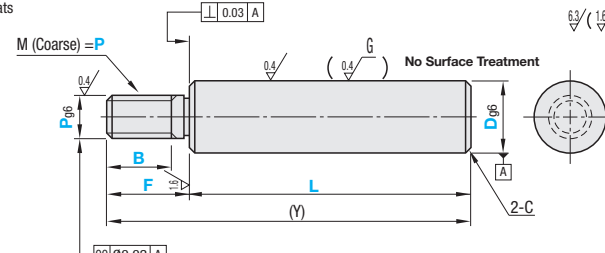
## One End Threaded / One End Threaded with Wrench Flats

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

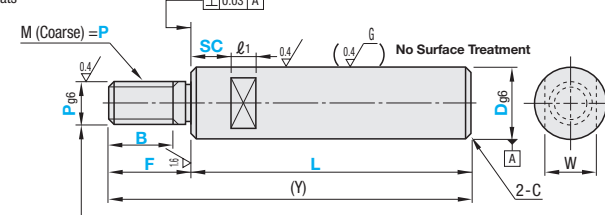


Type	D Tol.	Material	Hardness	Surface Treatment	D Tol. g6
VFBN	g6	SUJ2 Equivalent	Induction Hardened Effective Hardened Depth	Hard Chrome Plating Plating Hardness HV750 ~ Plating Thickness: 5μ or More Low Temp. Black Chrome Plating	5
VSFBN		SUS440C or 13Cr stainless			6
VPFBN		SUJ2 Equivalent	8		
VPSFBN		SUS440C or 13Cr stainless	10		
VRBN		SUJ2 Equivalent	12		
VRBS		SUJ2 Equivalent	15		
					16
					18
					20
					25
					30

W/o Wrench Flats



With Wrench Flats



RoHS 10

- Annealing may lower hardness at wrench flats, cross-drilled hole and shaft end machined areas (effective thread length + approx. 10mm). **P.112**
- Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation.
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P.111**
- Features of Low Temp. Black Chrome Plating **P.128**

Part Number Type	1mm Increment				P Selection	Wrench Flats Dimensions SC				(Y) Max.	C	Coarse Thread Undercut Dimension			
	D	L	F	B		W	ℓ1	Max.	M			Pitch			
(W/o Wrench Flats) (With Wrench Flats) (D5-D30) (D6-D30) VFBN VSFBN VPFBN VPSFBN VRBN VRBS	5	25~296	2≤F≤Px5	B≤F-2 (When P≤6) B≤F-3 (when P=8 or 10) B≤F-5 (When P≥12) B≥Pitchx3	3	SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats <b>P.112</b>	8	10	350	0.5 or Less	0.2 or Less	3	0.5		
	6	25~296			3 4							5	300	4	0.7
	8	25~296			3 4 5 6							7	300	5	0.8
	10	25~345			4 5 6 8							8	350	6	1.0
	12	25~345			5 6 8 10							10	350	8	1.25
	13	25~345			5 6 8 10							11	350	10	1.5
	15	25~345			5 6 8 10 12							13	350	12	1.75
	16	25~345			5 6 8 10 12							14	350	16	2.0
	18	25~345			5 6 8 10 12 16							16	350	20	2.5
	20	25~445			6 8 10 12 16							17	450	25	3.0
25	25~445	8 10 12 16 20	22	450	30	-									
30	25~445	8 10 12 16 20 24	27	450	30	-									

Shafts have grinding undercuts at the bottom of threads. Shaft ends may have centering holes.

Ordering Example: Part Number - L - F - B - P - SC  
 VFB512 - 200 - F20 - B15 - P8 - SC5

Alterations: Part Number - L - F - B - P(PMC, PMS) - SC - (LKC-etc.)  
 VFB530 - 250 - F40 - B30 - P10 - SC10 - LKC

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance [Ordering Code] LKC [Application Notes] Applicable when L=200 or less. L dimensions can be specified in 0.1mm increment for LKC. L≤200 → L±0.03 Not applicable when D-P≤2.
	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.

Alterations	Code	Spec.
	PMC PMS	Change to Fine Thread [Ordering Code] PMC14 (M is changed to PMC.) PMC14 (M is changed to PMC.) PMS14 (M is changed to PMS)
	SX	Second Set of Wrench Flats [Ordering Code] SX15 [Application Notes] Applicable to Shafts with Wrench Flats only. Applicable to D=6 or more. SX=1mm Increment SC+SX+ℓ1x2<L SX≥0 Only applicable to Shafts with Wrench Flats. Orientation between two set screw flats is not coplanar.

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. **P.114**  
 Alterations may lower hardness. See **P.112**

Part Number Type	D	Unit Price				
		Min. L - 50	L51~100	L101~200	L201~300	L301~445
VFBN	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
VSFBN	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
VPFBN	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
VPSFBN	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
VRBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
30						

Part Number Type	D	Unit Price				
		Min. L - 50	L51~100	L101~200	L201~300	L301~445
VFBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
VPSFBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
VRBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					