

# High Precision Linear Shafts

One End Threaded One End Tapped / One End Threaded One End Tapped with Wrench Flats

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

**Type**

Type	W/o Wrench Flats	With Wrench Flats
VFB	VFB	VFAZ
VSF	VSF	VSAZ
VPF	VPF	VPFAZ
VPSF	VPSF	VPSFAZ
VRB	VRB	VRAZ

**D Tol.**

D	g6
5	-0.004
6	-0.012
8	-0.005
10	-0.014
12	-
13	-
15	-0.006
16	-0.017
18	-
20	-0.007
25	-0.020
30	-

**Material**

Material	Hardness	Surface Treatment
SUU2	Effective Hardened Depth of Induction Hardening	-
SUS440C Equivalent	58HRC-56HRC	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5µ or More
SUU2	P.112	-
SUS440C Equivalent	58HRC-56HRC	Low Temp. Black Chrome Plating
SUU2	-	-

**Surface Treatment**

W/o Wrench Flats

With Wrench Flats

**RoHS**

- Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm). **P.112**
- 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 (Coarse) Selection	N (Coarse) Selection	Wrench Flats Dimensions				C	Coarse Thread Dimension	
		D	L	F	B			SC	W	ℓ <sub>1</sub>	(Y) Max.		M	Pitch
(W/o Wrench Flats)	(With Wrench Flats)	5	25-296			3	2,6 3	-	-	-	300	0.2 or Less	3	0.5
		6	25-296			3 4	3				5		4	0.7
		8	25-296			3 4 5 6	3 4 5			8	8		5	0.8
		10	25-345			4 5 6 8	3 4 5 6			8			6	1.0
		12	25-345			5 6 8 10	4 5 6 8			10			8	1.25
		13	25-345			5 6 8 10	4 5 6 8			11			10	1.5
		15	25-345			5 6 8 10 12	4 5 6 8 10			13			12	1.75
		16	25-345			5 6 8 10 12	4 5 6 8 10			14	10		16	2.0
		18	25-345			6 8 10 12 16	4 5 6 8 10 12			16			20	2.5
		20	25-445			8 10 12 16 20	4 5 6 8 10 12 16			17			25	
		25	25-445			8 10 12 16 20 24	6 8 10 12 16 20			22			450	1.0 or Less
		30	25-445							27	15		450	

Overall length L requires Nx3. **P.112** When D=P, specify F=B as B dimensions. However, L and F dimensions have manufacturing priority and B dimension of the product will be F-(Pitchx2).  
 Shaft ends may have centering holes.

**Ordering Example**

Part Number	L	F	B	P	N	SC
VFAZ16	200	F20	B12	P10	N8	SC10
VFB12	277	F20	B12	P8	N5	

**Alterations**

Part Number	L	F	B	P (PMC, PMS)	N (NSC, ND)	SC	(LKC-etc.)
VFAZ16	200	F20	B12	P10	N8	SC10	LKC

**Alteration Details P.113**

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code: LKC 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: Applicable to Shafts with Wrench Flats only. Applicable to D=6 or more. SX=1mm Increment SC+SX+ℓ <sub>1</sub> ×2<L SX≥0 Only applicable to Shafts with Wrench Flats. 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.
	PMC PMS	Change to Fine Thread Ordering Code: PMC14 (P is changed to PMC) PMS14 (P is changed to PMS)
	NSC	Change to Fine Tapped Thread Ordering Code: NSC14 (N is changed to NSC) Application Notes: Applicable to D=12 or more
	ND (Nx3)	Change the effective length of tapped part to Nx3. Ordering Code: ND6 (N is changed to ND) Application Notes: Only applicable to D=10-30, N=6-20 One End Tapped: 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				
			Min. L 50	L51 100	L101 200	L201 300	L301 445
	VFB	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VSF	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VPF	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VPSF	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VRB	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					

Part Number	Type	D	Unit Price				
			Min. L 50	L51 100	L101 200	L201 300	L301 445
	VFAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					
	VSAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					
	VPFAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					
	VPSFAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					
	VRAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					

