

# 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	D Tol.	Material	Hardness	Surface Treatment	
W/o Wrench Flats	g6	SUJ2 Equivalent	Effective Hardened Depth of Induction Hardening	-	
VFBFD		SUS440C or 13Cr stainless			
VFAZ		SUJ2 Equivalent	P.112		
VSFBD		SUS440C or 13Cr stainless			58HRC-56HRC
VPFBD		SUJ2 Equivalent			
VPSFBD	SUS440C or 13Cr stainless	58HRC-56HRC	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 5μ or More		
VRBD	SUJ2 Equivalent			Low Temp. Black Chrome Plating	

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

RoHS 10

⚠ Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm). See P.112

⚠ L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness See P.111

⚠ Features of Low Temp. Black Chrome Plating See P.128

Part Number	1mm Increment				P (Coarse) Selection	N (Coarse) Selection	Wrench Flats Dimensions			(Y) Max.	C	Coarse Thread Dimension	
	Type	D	L	F			B	SC	W			ℓ1	M
(W/o Wrench Flats)	5	25-296			3	2,6 3	-	-	-	300	0.2 or Less	3	0.5
(With Wrench Flats)	6	25-296			3 4	3				300		4	0.7
(D5-30)	8	25-296			3 4 5 6	3 4 5				300		5	0.8
	10	25-345			4 5 6 8	3 4 5 6				350		6	1.0
	12	25-345			5 6 8 10	4 5 6 8				350	0.5 or Less	8	1.25
	13	25-345			5 6 8 10	4 5 6 8				350		10	1.5
	15	25-345			5 6 8 10 12	4 5 6 8 10				350		12	1.75
	16	25-345			5 6 8 10 12	4 5 6 8 10				350		16	2.0
	18	25-345			5 6 8 10 12 16	4 5 6 8 10 12				450		20	2.5
	20	25-445			8 10 12 16 20	4 5 6 8 10 12 16				450	1.0 or Less	24	3.0
	25	25-445			8 10 12 16 20 24	6 8 10 12 16 20				450			
	30	25-445								450			

⚠ Overall length L requires Nx3<L. ⚠ 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

VFBFD12 - 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

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+ℓ1x2<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. See 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
	VFBFD	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VSFBD	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VPFBD	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VPSFBD	5					
		6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
	VRAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					
	VPSFAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					

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					
	VPSFAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					
	VRAZ	6					
		8					
		10					
		12					
		13					
		15					
		16					
		18					
		20					
		25					

