

High Precision Linear Shafts

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

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

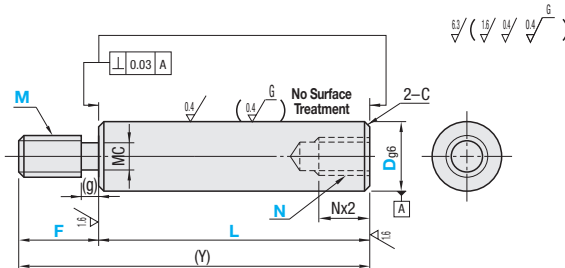


RoHS10

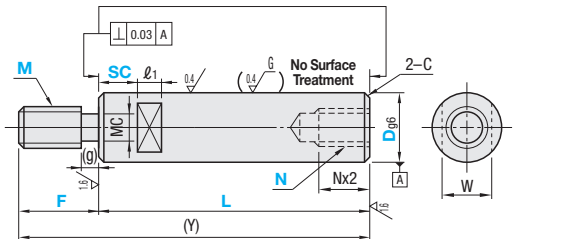
- ⚠️ Annealing may lower hardness at shaft end machined areas (effective thread length+approx.10mm). **P.112**
- ⚠️ L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P.111**
- ⚠️ Features of LTBC Plating **P.128**

Type		D Tol.	Material	Hardness	Surface Treatment
W/o Wrench Flats	With Wrench Flats				
VAFD	VAFZ	g6	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112 EN 1.4037 Equiv. 58HRC~ EN 1.3505 Equiv. 56HRC~ EN 1.4037 Equiv. 56HRC~ EN 1.3505 Equiv.	Hard Chrome Plating Plating Hardness HV750 ~ Plating Thickness: 5μ or More LTBC Plating
VSAFD	VSAFZ		EN 1.3505 Equiv.		
VPAFD	VPAFZ		EN 1.3505 Equiv.		
VPSAFD	VPSAFZ		EN 1.4037 Equiv.		
VRFD	VRFZ		EN 1.3505 Equiv.		

W/o Wrench Flats



With Wrench Flats



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

Part Number		1mm Increment		M (Coarse) Selection	N (Coarse) Selection	Wrench Flats Dimensions			Y Max.	C	
Type	D	L	F			SC	W	ℓ ₁			
(W/o Wrench Flats) VAFD VSAFD VPAFD VPSAFD VRFD	(With Wrench Flats) VAFZ VSAFZ VPAFZ VPSAFZ VRFZ	8	25~295	5≤F≤Mx3 F-g:Pitchx3	6	3 4 5	SC=1mm Increment SC+ℓ ₁ ≤L SC≥0 Details of Wrench Flats P.112	7	8	300	0.5 or Less
	10	25~345	6 8		3 4 5 6	8		350			
	12	25~345	6 8 10		4 5 6 8	10		350			
	13	25~345	6 8 10		4 5 6 8	11		350			
	15	25~345	6 8 10 12		4 5 6 8 10	13		350			
	16	25~345	6 8 10 12		4 5 6 8 10	14		10	350		
	18	25~345	6 8 10 12 16		4 5 6 8 10 12	16		350			
	20	25~445	6 8 10 12 16		4 5 6 8 10 12	17		450			
	25	25~445	8 10 12 16 20		4 5 6 8 10 12 16	22		450			
	30	25~445	8 10 12 16 20 24		6 8 10 12 16 20	27		15	450		

Coarse Thread Undercut Dimension			
M	Pitch	MC	(g)
6	1.0	4.2	2
8	1.25	6.0	3
10	1.5	7.7	3
12	1.75	9.4	4
16	2.0	13.0	4
20	2.5	16.4	5
24	3.0	19.6	5
30	3.5	25.0	5

⚠️ Overall length L requires Nx3-L. ⚠️ Shaft ends may have centering holes.

Ordering Example: Part Number - L - F - M - N - SC
VPAFD20 - 300 - F25 - M16 - N12

Alterations: Part Number - L - F - M (MMC, MMS) - N (NSC, ND) - SC - (LKC--etc.)
VAFZ30 - 250 - F40 - M20 - N20 - SC10 - LKC

Alteration Details **P.113**

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code: LKC ⚠️ Not applicable when D-M≤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 Application Notes: FC, E=1mm Increment ⚠️ FC≤3xD ⚠️ When 1.5xD<FC, FC≤L/2 ⚠️ E=0 or E≥2 ⚠️ Not available in combination with WFC.

Alterations	Code	Spec.
	WFC	Set Screw Flats at Two Locations Ordering Code: WFC8-A8-E4 Application Notes: 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.
	MMC, MMS (Fine)	Change to Fine Thread Ordering Code: MMC14 (M is changed to MMC) (M is changed to MMS)
	NSC (Fine)	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: MDx3.5+4-L

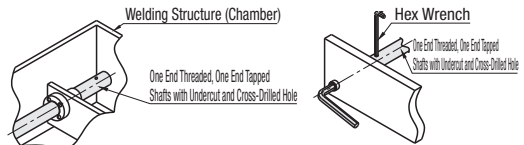
- ⚠️ Please see Shaft Alteration Overview for details if provided. **P.113**
- ⚠️ When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm.
- ⚠️ Alterations may lower hardness. See **P.112**

Part Number		Unit Price				
Type	D	Min. L 50	L51 100	L101 200	L201 300	L301 445
VAFD	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFD	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPAFD	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFD	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFD	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number		Unit Price				
Type	D	Min. L 50	L51 100	L101 200	L201 300	L301 445
VAFZ	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFZ	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPAFZ	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFZ	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFZ	8					-
	10					
	12					
	13					
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	16					
	18					
	20					
	25					
	30					



Example



• Shafts with Cross-Drilled Hole are suitable for narrow work space.