High Precision Linear Shafts

One End Threaded with Undercut / Wrench Flats

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

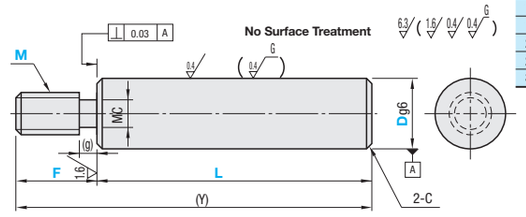
RoHS10

- 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

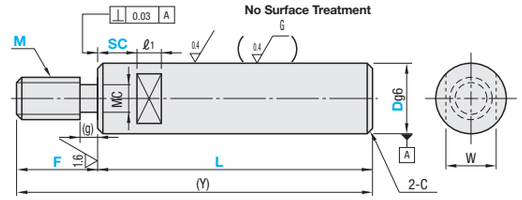
Type		D Tol.	Material	Hardness	Surface Treatment
W/o Wrench Flats	With Wrench Flats				
VAFN	VAFS	g6	SUJ2	Effective Hardened Depth of Induction Hardening P.112	-
VSAFN	VSAFS		SUS440C Equivalent		
VPAFN	VPAFS		SUJ2		Hard Chrome Plating Plating Hardness HV750 ~ Plating Thickness: 5μ or More
VPSAFN	VPSAFS		SUS440C Equivalent	SUJ2 58HRC~	
VRFN	VRFS		SUJ2	SUS440C Equivalent 56HRC~	Low Temp. Black Chrome Plating

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

W/o Wrench Flats



With Wrench Flats



Part Number		1mm Increment		Selection	Wrench Flats Dimensions			(Y) Max.	C
Type		D	L	F	M (Coarse)	SC	W	ℓ1		
(W/o Wrench Flats)	(With Wrench Flats)	8	25~295	5≤F≤Mx3 P.F-(g)≥Pitchx3	6	SC=1mm Increment P.SC+ℓ1≤L P.SC≥0 P.Details of Wrench Flats P.112	7	8	300	0.5 or Less
VAFN	VAFS	10	25~345		6 8		8		350	
VSAFN	VSAFS	12	25~345		6 8 10		10	10	350	
VPAFN	VPAFS	13	25~345		6 8 10		11		350	
VPSAFN	VPSAFS	15	25~345		6 8 10 12		13		350	
VRFN	VRFS	16	25~345		6 8 10 12		14		350	
		18	25~345		6 8 10 12 16		16		350	
		20	25~445		6 8 10 12 16		17		450	1.0 or Less
		25	25~445		8 10 12 16 20		22		450	
		30	25~445		8 10 12 16 20 24		27	15	450	

P.Shaft ends may have centering holes.

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

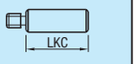
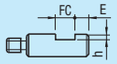
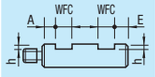
Ordering Example

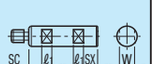
Part Number	-	L	-	F	-	M	-	SC
VAFS13	-	200	-	F20	-	M10	-	SC10

Alterations

Part Number	-	L	-	F	-	M (MMC, MMS)	-	SC	-	(LKC···etc.)
VAFS30	-	250	-	F20	-	M10	-	SC20	-	LKC

Alteration Details P.113

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. P.L<200 ···L±0.03 ⊗Not applicable when D-M≤2.
	FC	Set Screw Flat at One Location Ordering Code FC10-E8 FC, E=1mm Increment P.FC≤3xD P.When 1.5xD<FC, FC≤L/2 P.E=0 or E≥2 ⊗Not available in combination with WFC. D: 8~18 h: 1; 20~30 h: 2
	WFC	Set Screw Flats at Two Locations Ordering Code WFC8-A8-E4 WFC,A,E=1mm Increment P.WFC≤3xD P.When 1.5xD<WFC, 2WFC≤L/2 P.A(E)=0 or A(E)≥2 ⊗Orientation between set screw flats is not coplanar. Not available in combination with FC. D: 8~18 h: 1; 20~30 h: 2

Alterations	Code	Spec.
	SX	Second Set of Wrench Flats Ordering Code SX15 Application Notes Only applicable to Shafts with Wrench Flats. SX=1mmIncrement P.SC+SX+ℓ1x2<L P.SX≥0 ⊗Orientation between two set screw flats is not coplanar. D: 8 W: 7 ℓ1: 8; 10 8; 12 10; 13 11; 15 13 ℓ1: 10; 16 14; 18 16 ℓ1: 10 D: 20 W: 17 ℓ1: 10; 25 22; 30 27 ℓ1: 15
	MMC MMS	Change to Fine Thread Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) For details, see Shaft Alteration Overview. P.113

P.Please see Shaft Alteration Overview for details if provided. P.113
P.When selecting multiple alteration additions, the distance between machined areas should be greater than 2mm. P.114
P.Alterations may lower hardness. See P.112

Part Number		Unit Price					
Type	D	Min. L ~ 50	L51~100	L101~200	L201~300	L301~445	
VAFN	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VSAFN	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VPAFN	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VPSAFN	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VRFN	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	
VAFS	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VSAFS	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VPAFS	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VPSAFS	8					-	
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VRFS	8					-	
	10						
	12						
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	25						
	30						