High Precision Linear Shafts - Stepped Ends / Stepped Ends with Wrench Flats

One End Threaded / Both Ends Threaded / One End Threaded / One End Tapped

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

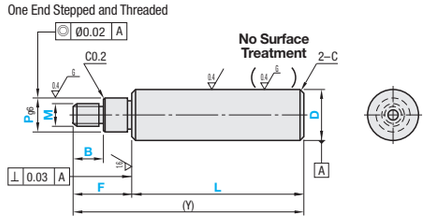
RoHS 10

- Annealing required for wrench flats machining and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.112
- L Dimension Tolerance, Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness P.111
- Shafts may have centering holes at end faces.
- Features of LTBC Plating P.128

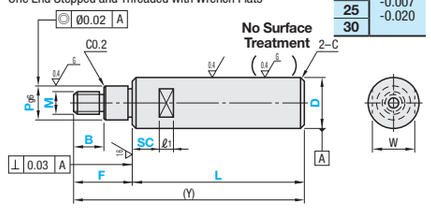
Type						D Tol.	M Material	H Hardness	S Surface Treatment
One End Stepped and Threaded		Both Ends Stepped and Threaded		One End Stepped and Threaded One End Tapped					
W/o Wrench Flats	With Wrench Flats	W/o Wrench Flats	With Wrench Flats	W/o Wrench Flats	With Wrench Flats				
VFAN	VFPN	VFAM	VFPM	VFAD	VFPD	g6	EN 1.3505 Equiv.	Effective Hardened Depth of Induction Hardening P.112 EN 1.3505 Equiv. 58HRC~	-
VSFAN	VSFPN	VSFAM	VSFPM	VSFAD	VSFPD		EN 1.4037 Equiv.	EN 1.4037 Equiv. 56HRC~	LTBC Plating
VRAN	VRPN	VRAM	VRPM	VRAD	VRPD				
VSRAN	VSRPN	VSRAM	VSRPM	VSRAD	VSRPD				

D Tol. Dg6	
4	-0.004 -0.012
5	
6	
8	-0.005 -0.014
10	
12	
13	-0.006 -0.017
15	
16	
18	
20	-0.007 -0.020
25	
30	

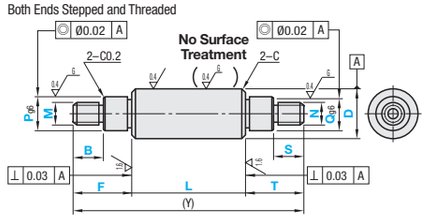
One End Stepped and Threaded



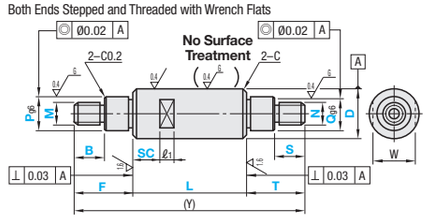
One End Stepped and Threaded with Wrench Flats



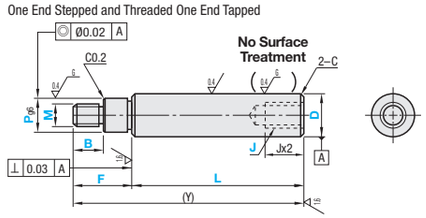
Both Ends Stepped and Threaded



Both Ends Stepped and Threaded with Wrench Flats

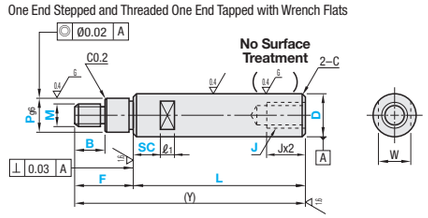


One End Stepped and Threaded One End Tapped



- The inside of taps won't be surface treated.

One End Stepped and Threaded One End Tapped with Wrench Flats



- The inside of taps won't be surface treated.

Part Number Type		D	1mm Increment L	F, T	B, S	P, Q	M, N (Coarse) Selection	J (Coarse) Selection	Wrench Flats Dimensions SC	W	ℓ1	(Y) Max.	C
(W/o Wrench Flats)	(With Wrench Flats)	(4)	25~195				3	2	-	-	-	200	0.2 or Less
VFAN	VFPN	(5)	25~295				3 4	2.6 3	-	-	-	300	
VSFAN	VSFPN	6	25~295				3 4 5	3		5		300	
VRAN	VRPN	8	25~295				3 4 5 6	3 4 5		7	8	300	
VSRAN	VSRPN	10	25~345		(W/o Threads) B=0 S=0		4 5 6 8	3 4 5 6		8		350	
VFAM	VFPM	12	25~345	5≤F≤Px5		M<P<D	5 6 8 10	4 5 6 8	SC=1mm Increment	10		350	0.5 or Less
VSFAM	VSFPM	13	25~345				5 6 8 10	4 5 6 8	●SC+ℓ1≤L	11		350	
VRAM	VRPM	15	25~345	5≤T≤Nx5	Mx1≤B≤Mx3 Nx1≤S≤Nx3	N<Q<D	5 6 8 1012	4 5 6 8 10	●SC≥0	13		350	
VSRAM	VSRPM	16	25~345				5 6 8 1012	4 5 6 8 10	●Details of Wrench Flats P.112	14	10	350	
VFAD	VFPD	18	25~345				5 6 8 1012	4 5 6 8 10 12		16		350	
VSFAD	VSFPD	20	25~445				6 8 1012 16	4 5 6 8 10 12		17		450	
VRAD	VRPD	25	25~445				8 10 12 16 20	4 5 6 8 10 12 16		22		450	1.0 or Less
VSRAD	VSRPD	30	25~445				8 10 12 16 20 24	6 8 10 12 16 20		27	15	450	

- For VFAD, VRAD, VSFAD, VSRAD, VFPD, VSFPD, VRPD and VSRPD, overall length L requires Jx3≤L.
- F-B(T-S)≥2 is required.
- Specify M=0 when B=0; N=0 when S=0.
- ⊗Sizes in ( ) are not applicable to Shafts with Wrench Flats.

Ordering Example

Part Number	L	F	B	P	M	SC
VFAN20	400	F30	B20	P10	M8	

Part Number	L	F	B	P	M	T	S	Q	N	SC
VFPM12	300	F30	B20	P10	M8	T20	S10	Q10	N6	SC10

Part Number	L	F	B	P	M	J	SC
VSFAD30	250	F50	B40	P20	M16	J20	

Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VFAN	4				-	-
	5					-
	6					-
VRAN (Price on right + Price in the table below)	8					-
	10					
	12					
VFPN (Applicable to D≥6)	13					
	15					
	16					
VRPN (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VSFAN	4				-	-
	5					-
	6					-
VSRAN (Price on right + price in the table below)	8					-
	10					
	12					
VSFPN (Applicable to D≥6)	13					
	15					
	16					
VSRPN (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~440
VFAM	4				-	-
	5					-
	6					-
VRAM (Price on right + Price in the table below)	8					-
	10					
	12					
VFPM (Applicable to D≥6)	13					
	15					
	16					
VRPM (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~440
VSFAM	4				-	-
	5					-
	6					-
VSRAM (Price on right + price in the table below)	8					-
	10					
	12					
VSFPM (Applicable to D≥6)	13					
	15					
	16					
VSRPM (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VFAD	4				-	-
	5					-
	6					-
VRAD (Price on right + Price in the table below)	8					-
	10					
	12					
VFPD (Applicable to D≥6)	13					
	15					
	16					
VRPD (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VSFAD	4				-	-
	5					-
	6					-
VSRAD (Price on right + price in the table below)	8					-
	10					
	12					
VSFPD (Applicable to D≥6)	13					
	15					
	16					
VSRPD (Applicable to D≥6)	18					
	20					
	25					
	30					

- For LTBC plated Shafts, please add Low Temp. Chrome Plating Additional Charge below to the non-plated shafts Unit Price above.

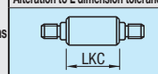
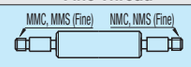
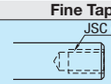
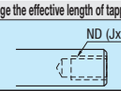
LTBC Plating Additional Charge D	Additional Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
4~6					-
8, 10					
12, 13					
15, 16					

LTBC Plating Additional Charge D	Additional Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
18, 20					
25					
30					

- Features of LTBC Plating P.128

Alterations

Part Number	L	F	B	P	M (MMC, MMS)	T, J (JSC)	S	Q	N (NMC, NMS)	SC	(LKC)
VFAM13	300	F30	B20	P10	M8	T20	S10	Q10	NMC6		

Alterations	Alteration to L dimension tolerance	Fine Thread	Fine Tap	Change the effective length of tapped part to Jx3.
				
Code	LKC	MMC, MMS, NMC, NMS	JSC	ND
Spec.	Changes L tolerance. Ordering Code LKC ●Applicable to L dimension 200 or less.···±0.03 ●L dimensions can be specified in 0.1mm increment for LKC. ⊗Not applicable when D-P(Q)≤2.	Changes the threads to fine threads shown in the table below. (MMC, NMC→Applicable to bearing nut fine thread pitches.) (MMS, NMS→Applicable to cylinder fine thread pitches.) Ordering Code MMC17	Changes tapped threads to fine tapped threads shown in the table below. Ordering Code JSC14	Change the effective length of tapped part to Jx3. Ordering Code ND6 (J is changed to ND) Application Notes Only applicable to D=10~30, N=6~20 ●One End Tapped: NDx3.5+4≥L

D	MMC, NMC										MMS, NMS			
4	3													
5	3	4												
6	3	4	5											
8	3	4	5	6										
10		4	5	6	8									
12			5	6	8	10					10			
13			5	6	8	10					10			
15			5	6	8	10	12				10	12		
16			5	6	8	10	12				10	12		
18			5	6	8	10	12	15			10	12	14	
20				6	8	10	12	15	17		10	12	14	
25					8	10	12	15	17	20	10	12	14	18
30					8	10	12	15	17	20	25	10	12	14	18
Pitch	0.35		0.5	0.75		1.0					1.5	1.25		1.5

- Specify M dimensions with MMC (MMS). Specify N dimensions with NMC (NMS).

D	JSC				
12	8				
13	8				
15	8	10			
16	8	10			
18	8	10	12		
20	8	10	12	14	
25	8	10	12	14	18
30	8	10	12	14	18
Pitch	1.0	1.25		1.5	

- Specify J dimensions with JSC.
- J dimension is equal to JSC.
- Only applicable to V□AD, VS□AD, V□PD and VS□PD.

- The distance between wrench flats and alteration areas should be greater than 2mm for alterations. P.114
- Alterations may lower hardness. See P.112