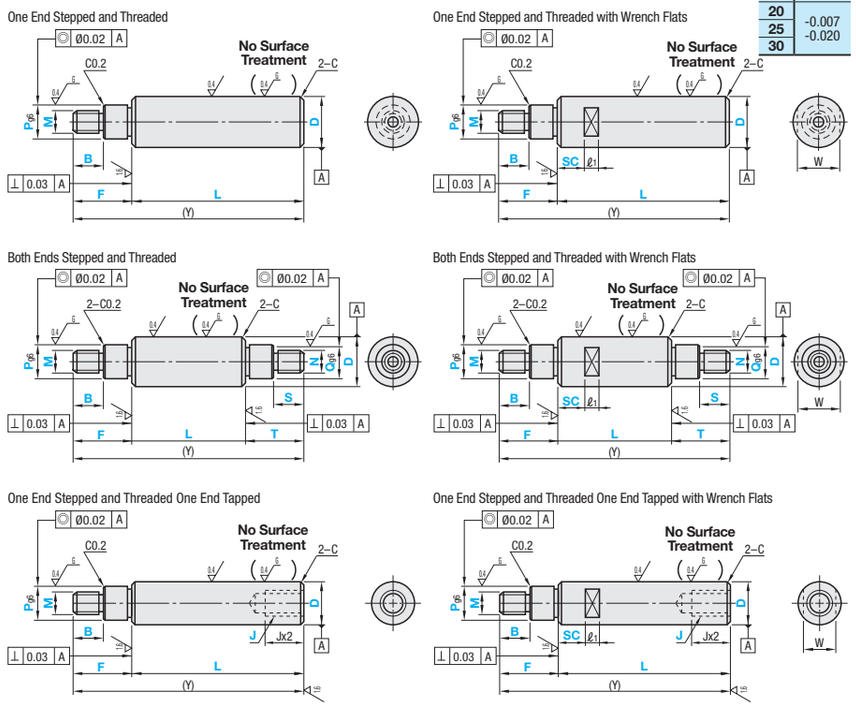
High Precision Linear Shafts - Stepped Ends / Stepped Ends with Wrench Flats

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).

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	SUJ2	Effective Hardened Depth of Induction Hardening P.112	-
VSFAN	VSFPN	VSFAM	VSFPM	VSFAD	VSFPD		SUS440C Equivalent		
VRAN	VRPN	VRAM	VRPM	VRAD	VRPD		SUJ2	SUJ2 58HRC~	Low Temp. Black Chrome Plating
VSRAN	VSRPN	VSRAM	VSRPM	VSRAD	VSRPD		SUS440C Equivalent	SUS440C Equivalent 56HRC~	

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	



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 Low Temp. Black Chrome Plating P.128

The inside of taps won't be surface treated.

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		11		350	
VRAM VRPM	15	25~345	5≤T≤Nx5	Mx1≤B≤Mx3	N<Q<D	5 6 8 10 12	4 5 6 8 10	SC+ℓ1≤L SC≥0	13		350	
VSRAM VSRPM	16	25~345		Nx1≤S≤Nx3		5 6 8 10 12	4 5 6 8 10	Details of Wrench Flats P.112	14	10	350	
VFAD VFPD	18	25~345				5 6 8 10 12	4 5 6 8 10 12		16		350	
VSFAD VSFPD	20	25~445				6 8 10 12 16	4 5 6 8 10 12 16		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	L301~440
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	L301~445
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					

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

Low Temp. Black Chrome 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					

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
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					

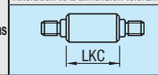
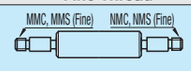
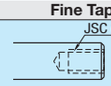
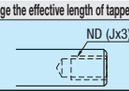
Part Number Type	D	Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VSFAD	4				-	-
	5					-
	6					-
VSRAD (Price on right + price in the table below)	8					-
	10					
	12					
VSFPD (Applicable to D≥6)	13					
	15					
	16					
VSRPD (Applicable to D≥6)	18					
	20					
	25					
	30					

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

Features of Low Temp. Black Chrome 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									10		
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		

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

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