High Precision Linear Shafts

Both Ends Threaded / Both Ends Threaded with Wrench Flats

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

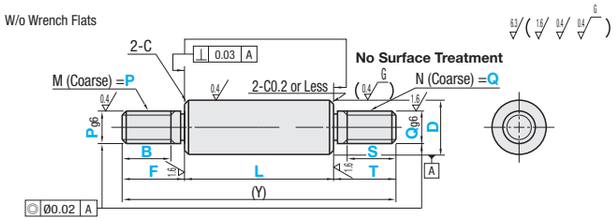
RoHS10

- Annealing may lower hardness at 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 Low Temp. Black Chrome Plating P.128

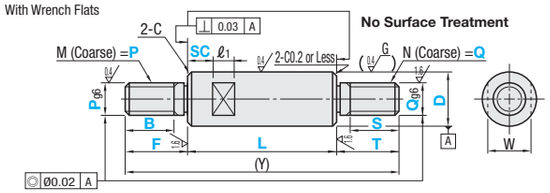
Type: W/o Wrench Flats	Type: With Wrench Flats	D Tolerance	M Material	H Hardness	S Surface Treatment
VFBM	VFBU	g6	SUJ2	Induction Hardened Effective Hardened Depth P.112	-
VSFBM	VSFBU		SUS440C Equivalent		
VPFBM	VPFBU		SUJ2		Hard Chrome Plating Plating Hardness HV750 ~ Plating Thickness: 5μ or More
VPSFBM	VPSFBU		SUS440C Equivalent	SUJ2 58HRC~ SUS440C Equivalent 56HRC~	
VRBM	VRBU		SUJ2		Low Temp. Black Chrome Plating

D Tol. D	g6
5	-0.004 -0.012
6	
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 Type	D	1mm Increment L	F, T	B, S	P, Q Selection	Wrench Flats Dimensions SC	W	ℓ1	(Y) Max.	C
(W/o Wrench Flats) (D5~30) (With Wrench Flats) (D6~30) VFBM VFBU VSFBM VSFBU VPFBM VPFBU VPSFBM VPSFBU VRBM VRBU	5	25~292	2≤F≤Px5 2≤T≤Qx5	(When P≤6) B≤F-2 (When P=8, 10) B≤F-3 (When P≥12) B≤F-5 (When Q≤6) S≤T-2 (When Q=8, 10) S≤T-3 (When Q≥12) S≤T-5 (W/o Threads) B=0 S=0 B, S≥Pitchx3	3	-	-	-	300	0.2 or Less
	6	25~292			3 4	SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.112	5	8	300	0.5 or Less
	8	25~292			3 4 5 6		7		300	
	10	25~340			4 5 6 8		8		350	
	12	25~340			5 6 8 10		10	10	350	
	13	25~340			5 6 8 10		11		350	
	15	25~340			5 6 8 10 12		13		350	
	16	25~340			5 6 8 10 12		14		350	
	18	25~340			5 6 8 10 12 16		16		350	
	20	25~440			6 8 10 12 16		17		450	1.0 or Less
	25	25~440			8 10 12 16 20		22		450	
	30	25~440			8 10 12 16 20 24		27	15	450	

Coarse Thread Dimension M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0

- Shafts have grinding undercuts at the bottom of threads.
- Shaft ends may have centering holes.
- Thread machining will not be applied to B=0 or S=0.
- D>P(Q)

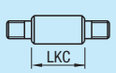
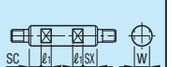
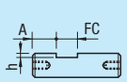
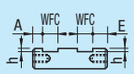
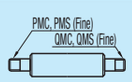
Ordering Example

Part Number	L	F	B	P	T	S	Q	SC
VFBU15	200	F28	B16	P6	T17	S12	Q12	SC8

Alterations

Part Number	L	F	B	P (PMC, PMS)	T	S	Q (QMC, QMS)	SC	(LKC···etc.)
VSFBU30	300	F40	B30	P20	T50	S40	Q16	SC10	LKC

Alteration Details P.113

Alterations	Code	Spec.
	LKC	Alteration to L dimension tolerance Ordering Code LKC ⊗Not applicable when D-P(Q)≤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 D=6 or more 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. D W ℓ1: 6 5 8; 8 7 10; 10 8 10; 12 10 10; 13 11 10; 15 13 10; 16 14 10 D W ℓ1: 18 16 8; 20 17 10; 25 22 10; 30 27 15
	FC	Set Screw Flat at One Location Ordering Code FC10-A8 Application Notes FC, A=1mm Increment FC≤3xD When 1.5xD<FC, FC≤L/2 A=0 or A≥2 ⊗ Not available in combination with WFC. D h: 5~18 1; 20~30 2
	WFC	Set Screw Flats at Two Locations Ordering Code WFC8-A8-E2 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. D h: 5~18 1; 20~30 2
	PMC PMS QMC QMS	Change to Fine Thread Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMC) QMC14 (Q is changed to QMC) QMS14 (Q is changed to QMS) For details, see Shaft Alteration Overview. P.113

- 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. P.114
- Alterations may lower hardness. See P.112

Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 440
VFBM	5					-
	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFBM	5					-
	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPFBM	5					-
	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBM	5					-
	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRBM	5					-
	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 440
VFBU	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFBU	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPFBU	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBU	6					-
	8					-
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRBU	6					-
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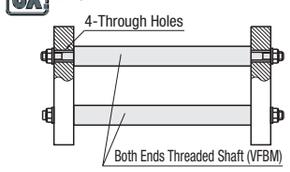
	25					
	30					

Example