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

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

RoHS

W/o Wrench Flats

No Surface Treatment

With Wrench Flats

No Surface Treatment

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

Part Number		1mm Increment			P, Q Selection	Wrench Flats Dimensions			(Y) Max.	C	Coarse Thread Dimension	
Type	D	L	F, T	B, S		SC	W	ℓ1			M	Pitch
(W/o Wrench Flats) (D5~30) VFBM VSFBM VPFBM VPSFBM VRBM	5	25~292		(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	3	0.5
	6	25~292			3 4	5			300		4	0.7
	8	25~292			3 4 5 6	7	8		300	0.5 or Less	5	0.8
(With Wrench Flats) (D6~30) VFBU VSFBU VPFBU VPSFBU VRBU	10	25~340	2≤F≤Px5 2≤T≤Qx5		4 5 6 8	8			350		6	1.0
	12	25~340			5 6 8 10	10		SC=1mm Increment SC+ℓ1≤L SC≥0 Details of Wrench Flats P.112	350		8	1.25
	13	25~340			5 6 8 10	11			350		10	1.5
	15	25~340			5 6 8 10 12	13			350		12	1.75
	16	25~340			5 6 8 10 12	14	10		350		16	2.0
	18	25~340			5 6 8 10 12 16	16			350		20	2.5
	20	25~440			6 8 10 12 16	17			450	1.0 or Less	24	3.0
	25	25~440			8 10 12 16 20	22			450			
	30	25~440			8 10 12 16 20 24	27	15		450			

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.
	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.

SX Application Notes table:
D	W	ℓ1	D	W	ℓ1
6	5	8	18	16	10
8	7		20	17	
10	8		25	22	
12	10	10	30	27	15
13	11				
15	13				
16	14				

FC table:
D	h
5~18	1
20~30	2

Alterations	Code	Spec.
	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.
	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

WFC table:
D	h
5~18	1
20~30	2

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		Unit Price				
Type	D	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		Unit Price				
Type	D	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				-	
	8				-	
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

ex Example

4-Through Holes

Both Ends Threaded Shaft (VFBM)