

Flange Integrated Oil-Free Bushings (Copper Alloy) / Oil-Free Copper Alloy Washers Pilot Flanged / Center Flanged / Flat-Head Countersunk Screw / Low Head Bolt

Features: Flange Integrated Oil Free Bushings can reduce the assembling time. Workpiece located near the center of the bushing provides balanced load and clearance on both sides of the flange.

Flange Integrated Oil-Free Bushings – Pilot Flanged / Center Flanged

RoHS10

Pilot Flanged

Center Flanged

Round Flange
MPIZ Pilot Flanged
MPCZ Center Flanged

Compact
MPITZ Pilot Flanged
MPCTZ Center Flanged

Material: High Tensile Brass Alloy
Solid Lubricant Embedded (Graphite)
Accessories: Hex Socket Low Head Cap Screws 2-4 pcs.

Type	Part Number	dF7	L	Dh7	Da	L1	H	T	t	d1	d2	P.C.D.	F	A	Accessories: Hex Socket Low Head Cap Screw
Center Flanged	8	+0.028	20 (25)	12	11.5	5	27					19		19	M3-10 x 2
	10	+0.013	25 30	14	13.5		29	4	2.2	3.5	6	21		21	M4-12 x 2
	12		25 30	18	17.5	6	36					26		26	M4-12 x 4
	13	+0.034	(25) (30) 35	19	18.5		37	5	3	4.5	7.5	27		27	M5-16 x 4
	16	+0.016	25 30 35 40	22	21.5		40					30	18	24	M6-20 x 4
Pilot Flanged	20		30 35 40 50	28	27.5	8	49	6	3.7	5.5	9	38	22	31	M6-20 x 4
	25	+0.041	(30) (35) (40) (50) 60	33	32.5		54					43	25	35	M8-25 x 4
	30	+0.020	(35) (40) (50) (60) 70	38	37.5	10	63	8	4.2	6.6	11	50	30	40	M8-25 x 4
	35		(50) 70	44	43.5		69					56	36	43	M8-25 x 4
	40	+0.050	(60) (70) 80	50	49.5		82					66	38	54	M8-25 x 4
50	+0.025	(70) 100	62	61.5	13	94	10	5.2	9	14	78	50	60	M8-25 x 4	

Part Number Example	Part Number	L
MPIZ12	- 30	
MPCZ16	- 30	

d-L	Available Types
8-20	MPIZ MPITZ MPCZ MPCTZ
25	MPIZ MPITZ MPCZ MPCTZ
10-25	MPIZ MPITZ MPCZ MPCTZ
30	MPIZ MPITZ MPCZ MPCTZ
12-25	MPIZ MPITZ MPCZ MPCTZ
13-25	MPIZ MPITZ MPCZ MPCTZ
30	MPIZ MPITZ MPCZ MPCTZ
35	MPIZ MPITZ MPCZ MPCTZ
16-25	MPIZ MPITZ MPCZ MPCTZ
30	MPIZ MPITZ MPCZ MPCTZ
35	MPIZ MPITZ MPCZ MPCTZ

Oil-Free Copper Alloy Washers – Flat-Head Countersunk Screw

RoHS10

MPWZ
(Flat-Head Countersunk Screw)

Material: High Tensile Brass Alloy
Solid Lubricant Embedded

Oil-Free Copper Alloy Washers – Low Head Bolt

RoHS10

MPWTZ
(Low Head Cap Screw)

Material: High Tensile Brass Alloy
Solid Lubricant Embedded

Type	No.	T	Tol.	D	Tol.	D1	P.C.D.	Qty	Mounting Hole			Chamfers	
									MPWZ	MPWTZ	Fleat-Head Countersunk Screw	d1	d2
MPWZ	6			6.2		25	15					1.5	0.3
	8			8.2		28	18						
	10			10.2		30	20						
	12	3(4)		12.2		40	28		M3	3.5	6	2.4	
	13			13.2									
MPWTZ	15			15.2									
	16			16.2	+0.2	50	35	2					
	18		-0.1	18.2	+0.1								
	20			20.2									
	25	5		25.2		55	40		M5	4.5	7.5	3	2.5
	30			30.2		60	45						
	35			35.2		70	50						
	40	7		40.2		80	60		M6	5.5	9	4	3 0.5
	50	8		50.3		100	75	4					4 0.6

*For MPWTZ, T dimensions of No. 6-18 are values in ().
*For Hex Socket Low Head Cap Screws, refer to P.2393.
*Indicated dimensions of Flat-head Countersunk Screws are recommended dimensions.

Part Number Example	Part Number	L
MPWZ18	- 20	
MPWTZ15	- 20	

Oil-Free Bushings (Bronze) Straight / Flanged

Oil-Free Bushings – Straight

RoHS10

SHBZ I.D. F7 O.D. m6
SHBR I.D. E7 O.D. r6

Material: Special Bronze Castings
Allowable Temperature: -40~150°C

- Ensure the bushing remains well lubricated.
- Use of Rotation Stopper Screws (SHBZ) or Press-fit (SHBR) is recommended to affix bushings.

Recommended Mating Shaft: f6 or g6

SHFZ

Material: Special Bronze Castings
Allowable Temperature: -40~150°C

- Ensure the bushing remains well lubricated.
- Press-fit is recommended to affix bushings.

Type	Part Number	d	F7	E7	L	D	m6	r6	Thickness (N)	*Housing Dia.		*Rotation Stopper Screw (Reference)
										Reference Dimension	Tolerance (H7)	
SHBZ	I.D. F7 O.D. m6	5	+0.022	+0.032	8 10 12 15	9	+0.015	+0.028	2	9	+0.015	M4 x 8
		6	+0.010	+0.020	8 10 12 15 20	10	+0.006	+0.019		10	0	
		8	+0.028	+0.040	8 10 12 15 20 25	12	+0.018	+0.034		12	+0.018	
		10	+0.013	+0.025	8 10 12 15 20 25	14	+0.007	+0.023		14	0	
		12			10 12 15 20 25	18			18			
		13	+0.034	+0.050	15 20	19			19			
		15	+0.016	+0.032	10 12 15 20 25	21	+0.021	+0.041	21	+0.021		
		16			10 12 15 20 25 30 40	22	+0.008	+0.028	22	0		
		20	+0.041	+0.061	15 20 25 30 40 50	28			28			
		25	+0.020	+0.040	20 25 30 40 50 60	33	+0.025	+0.050	33	+0.025		
30			25 30 40 50 60	38	+0.009	+0.034	38	0				
										38	+0.025	M5 x 8
										38	0	M6 x 16

*Indicated dimensions of Housing Dia. and Rotation Stopper Screws are recommended dimensions. When using the SHBZ, the use of Rotation Stopper Screws is recommended.

Type	d	Available Types									
		L8	L10	L12	L15	L20	L25	L30	L40	L50	L60
SHBZ	5	*	*	*	*	*	*	*	*	*	*
	6	*	*	*	*	*	*	*	*	*	*
	8	*	*	*	*	*	*	*	*	*	*
	10	*	*	*	*	*	*	*	*	*	*
	12	*	*	*	*	*	*	*	*	*	*
	13	*	*	*	*	*	*	*	*	*	*
	15	*	*	*	*	*	*	*	*	*	*
	16	*	*	*	*	*	*	*	*	*	*
	20	*	*	*	*	*	*	*	*	*	*
	25	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	
SHBR	5	*	*	*	*	*	*	*	*	*	
	6	*	*	*	*	*	*	*	*	*	
	8	*	*	*	*	*	*	*	*	*	
	10	*	*	*	*	*	*	*	*	*	
	12	*	*	*	*	*	*	*	*	*	
	13	*	*	*	*	*	*	*	*	*	
	15	*	*	*	*	*	*	*	*	*	
	16	*	*	*	*	*	*	*	*	*	
	20	*	*	*	*	*	*	*	*	*	
	25	*	*	*	*	*	*	*	*	*	
30	*	*	*	*	*	*	*	*	*		

Oil-Free Bushings – Shoulder

RoHS10

SHFZ

Material: Special Bronze Castings
Allowable Temperature: -40~150°C

- Ensure the bushing remains well lubricated.
- Press-fit is recommended to affix bushings.

Features of I.D. E7 O.D. r6 Type

- Less likely to pull-out than I.D. F7 O.D. m6 Type.
- Inner Diameter after press-fit is almost equal to I.D. F7 O.D. m6 Type.

Bronze Bushings: I.D. Variations after Press-Fitted (Reference)

I.D. E7 O.D. r6	I.D. F7 O.D. m6
99.82%	99.94%

The data above is obtained by test, and is for reference only.

Type	Part Number	dE7	L	Dr6	Thickness (N)	H	T-0.1	*Housing Dia.	
								Reference Dimension	Tolerance (H7)
SHFZ		5	+0.032	10 12	9	+0.028		9	+0.015
		6	+0.020	10 12 15	10	+0.019		10	0
		8	+0.040	10 12 15 20	12	+0.034		12	+0.018
		10	+0.025	10 12 15 20	14	+0.023		14	0
		12		10 12 15 20 25 30	18			18	
		13	+0.050	12 15 20	19			19	
		15	+0.032	10 12 15 20 25	21	+0.041		21	+0.021
		16		12 15 20 25 30	22	+0.028		22	0
		20		15 20 25 30 40	30			30	
		25	+0.061	30 40 50	35	+0.050		35	+0.025
30	+0.040	30 40 50	40	+0.034		40	0		

*Housing diameters listed here are recommended dimensions.

Part Number Example	Part Number	L
SHBZ12	- 15	
SHBR16	- 20	
SHFZ16	- 20	