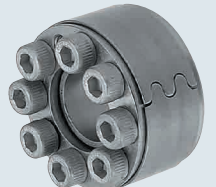


Keyless Bushings

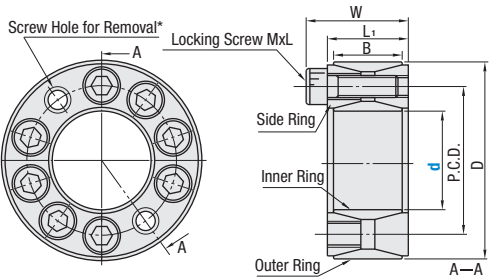
Straight Type

Keyless Bushings – Straight Type



RoHS 10

MLA MLAP Electroless Nickel Plating



*Thread diameter of screw hole for removal is the same as that of locking screw.

Ⓢ Locking screw of MLA and MLAP is tinted in red due to coating agent.

Ⓢ When installation, press down side rings strongly and tighten with screws.

Type	Main Body	
	Material	Surface Treatment
MLA MLAP	1045 Carbon Steel or Equivalent	Electroless Nickel Plating

kgf=Nx0.101972

Part Number	Type	d	D	W	P.C.D.	L ₁	B	Locking Screw				Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Hole for Removal	Mass (g)
								M x L	Qty.	Hexagonal Wrench Nominal	Tightening Torque (Nm)				
20	MLA MLAP	20	26	18	34.5	20	M6 x 18	8	5	12.7	29.4	2	294	240	
22		34.5			230										
24		37.5			250										
25		37.5			240										
28		42.5			290										
30		42.5			280										
32		47.5			340										
35		47.5			310										
38		52.5			370										
40		52.5			350										
42		60			600										
45		60			570										
48		65			630										
50		65			610										
55	32	70	24	21	M8 x 22	12	6	29.4	73.5	29.4	6	1736	660		
60		75										700			
65		80										710			
65		85										660			
65		90										700			
65		95										710			

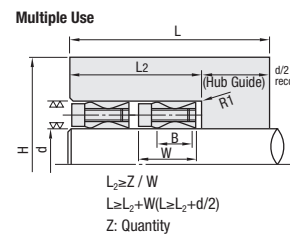
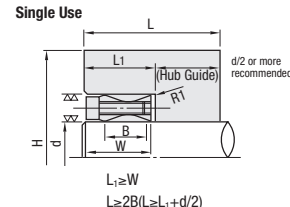
Part Number Example MLA30

Recommended Tolerance of Shaft and Hub

Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.

How to Determine Hub Outer Diameter
After selecting the Keyless Bushing size, hub size and material, confirm that the selected values meet the conditions H_{shub} minimum outer diameter in the right table.




Hub Minimum Outer Diameter Table kgf/mm²=MPaX0.101972

Machined Inner Diameter of Hub Bore d	Side Surface Pressure of Hub MPa	1 Hub				Hub Machining Depth L ₁	2 Hubs				Hub Machining Depth L ₂
		H Hub Minimum Outer Diameter					H Hub Minimum Outer Diameter				
		Yield Point Stress of Hub Material (MPa)	147	206	294		392	Yield Point Stress of Hub Material (MPa)	147	206	
20	100	Alloy Cast Iron Class No.35	FC350	FCD Cast Iron 450	FCD Cast Iron 600	28	Alloy Cast Iron Class No.35	FC350	FCD Cast Iron 450	FCD Cast Iron 600	55
			1018 Carbon Steel or Equivalent	1035 Carbon Steel	1055 Carbon Steel			1018 Carbon Steel or Equivalent	1035 Carbon Steel	1055 Carbon Steel	
22	94.1										
24	89.2										
25	89.2										
28	95.1										
30	95.1										
32	104.9										
35	98.1										
38	105.9										
40	105.9										
42	116.7										
45	124.5										
48	116.7										
50	108.8										
55	127.5										
60	128.5										
65	121.6										

Keyless Bushings

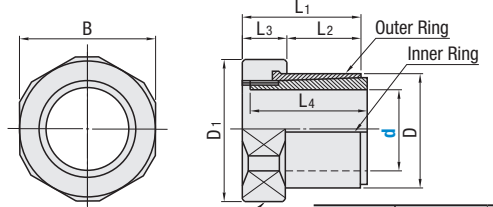
Easy Mounting (Nut) Type / Straight Type for High Torque

Keyless Bushings – Easy Mounting (Nut) Type



RoHS 10

MLN MLNB MLNP Black Oxide MLNP Electroless Nickel Plating



Ⓢ Nut of MLNP is tinted in red due to coating agent.

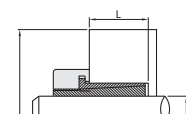
Type	Material	Surface Treatment
MLNB	1045 Carbon Steel or Equivalent	Electroless Nickel Plating

kgf=Nx0.101972 kgf/mm²=MPaX0.101972

Part Number	Type	d	D	B	D ₁	L ₁	L ₂	L ₃	L ₄	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Tightening (Nm)	Mass (g)	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter						Hub Machining Depth L																							
															Yield Point Stress of Hub Material (MPa)																													
															206	294	392	1018 Carbon Steel or Equivalent	FCD Cast Iron 450 1035 Carbon Steel	FCD Cast Iron 600 1055 Carbon Steel																								
8	MLN MLNB MLNP	8	22	23.5	19	11	8	19	29.4	21	6.9	5.2	24.5	34	178	128	31	24	24	21	22	19	13																					
10		21																						34.3	28	4.8	29.4	43	128	89	33	28	26	23	24	21								
11		18																						24	26	22	12	10	22	39.2	24	5.1	34.3	46	132	92	38	30	29	25	25	23	21	
12		20																						23	13	23	13	11	23	49.0	34	7.3	5.7	44.1	50	122	82	40	32	31	27	28	25	15
14		23																						26	15	26	15	11	26	88.3	62	12.3	8.9	58.8	80	106	73	41	34	34	30	31	28	17
15		24																						30	32.5	27	16	12	27	108	76	13.7	10.1	68.6	85	106	73	43	36	35	31	32	29	18
17		26																						31	19	31	19	12	31	186	130	19.6	15.3	98.1	96	107	74	50	41	40	35	36	33	21
20		29																						36	39	33	20	13	33	245	172	24.5	17.2	137	135	114	80	52	44	45	39	40	37	22
22		32																						35	22	35	22	13	35	275	193	25.5	18.3	167	185	83	58	55	49	48	44	44	41	27
24		34																						41	44	37	24	15	37	314	220	27.5	19.8	186	187	85.1	60	55	49	48	44	44	41	27
25		35																						43	28	38	25	15	38	353	247	26.5	18.9	226	320	68.9	48	57	52	51	48	48	45	30
28		40																						50	54	43	28	16	43	378	265	25.5	18.3	255	398	66.3	46	61	55	54	50	50	48	32
30		42																						55	60	46	30	16	46	392	274	25.5	18.5	294	521	50	35	64	59	58	55	55	53	37
35		48																						60	66	52	35	17	52	461	323	25.5	18.5	294	521	50	35	64	59	58	55	55	53	37

Recommended Tolerance of Shaft and Hub / Roughness of Surface


Shaft Outer Diameter	h7 (g6)	Ra1.6 or less
Hub Inner Diameter	H7	Ra3.2 or less



How to Determine Hub Outer Diameter
After selecting the Keyless Bushing size, hub size and material, confirm that the selected values meet the conditions H_{shub} minimum outer diameter in the table.

Part Number Example MLN25

Keyless Bushings – Straight Type for High Torque

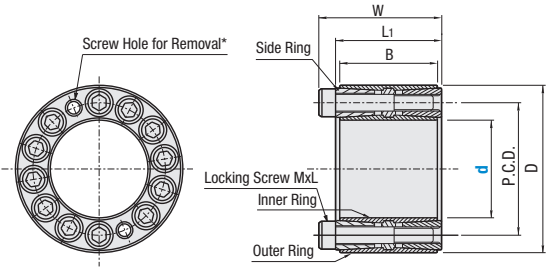


RoHS 10

MLAT

*Thread diameters of the screw hole for removal is the same as that of the lock screw.

Ⓢ Weight of side ring itself may shrink or enlarge the inner or outer rings. When installation, loosen side rings on both sides and insert a shaft into the hub.



Main Body Material: 1045 Carbon Steel or Equivalent

kgf=Nx0.101972 kgf/mm²=MPaX0.101972

Part Number	Type	d	D	W	P.C.D.	L ₁	B	Locking Screw			Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Hole for Removal	Mass (g)	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter			Hub Machining Depth L	
								MxL	Qty.	Tightening Torque (Nm)						Yield Point Stress of Hub Material (MPa)				
																206	294	392		1018 Carbon Steel or Equivalent
30	MLAT	30	44	58	70	38	35	M6x35	10	15.7	2	490	136	122	91	80	44			
35		150																151	106	90
40		161																187	121	101
45		166																229	143	118
50		170																215	145	122
55		1250																147	207	126
60		1340																138	204	131
65		1430																153	247	144

Part Number Example MLAT35

Recommended Tolerance of Shaft and Hub / Roughness of Surface

Shaft Outer Diameter	h7 (g6)	Ra1.6 or less
Hub Inner Diameter	H7	Ra3.2 or less

How to Determine Hub Outer Diameter
After selecting the Keyless Bushing size, hub size and material, confirm that the selected values meet the conditions H_{shub} minimum outer diameter in the table.

