

MechaLock

Overview

Selection Guidance

	Nut	Thin	Standard	Straight Straight for High Torque	Compact
Series					
Allowable Load	○	△	○	◎	△
Installation Tool	Wrench	Hex Wrench	Hex Wrench	Hex Wrench	Hex Wrench
Centering Function	Not Provided	Not Provided	Provided	Not Provided	Provided
Features	Installation can be completed by tightening one nut.	The screw is installed directly on the hub. Small difference between the I.D. and O.D.	Available in wide range of sizes, materials and surface treatment types. Centering Function provided	High load capacity Multiple piece can be used easily.	Small difference between the I.D. and O.D. Centering Function provided
Part Number	MLN, MLNB, MLNP	MLSL	MLM, MLMB, MLMP, MLHS	MLA, MLAP, MLAT	MLR, MLRP, MLRS
Page	P.1490	P.1490	P.1491, 1492	P.1493, 1494	P.1495, 1496

Step ① Check Shaft O.D. / Hub I.D.

Select the proper MechaLock based on the shaft O.D. and hub I.D.

See the diagram on the right.

- Shaft Outer Dia. ds = MechaLock Inner Dia. d
- Hub Inner Dia. Dh = MechaLock Outer Dia. D

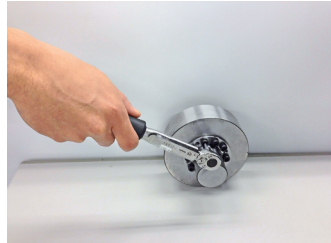
Furthermore, make sure that, on the mounting surface of shaft/hub, the value for the tolerance / roughness of surface conforms to the following standards. Otherwise, MechaLock might be unable to be installed.

Mounting Surface	Tolerance	Roughness of Surface
Shaft Outer Dia. ds	h7(g6)	Ra1.6 or less
Hub Inner Dia. Dh	H7	Ra3.2 or less

Step ② Check Installation Space

When installing MechaLock, use a torque wrench.

When installing MechaLock, consider the corresponding installation space.



The photo above shows MLM40.

Step ③ Check the Material / Surface Treatment

For MISUMI MechaLock product lineup, a various options are offered in material and surface treatment. For location full of humidity, condensation or moisture, adoption of Electroless Nickel Plating Type or Stainless Steel Type is recommended. It should be noted that the option list for material / surface treatment differs depending on the current series.

Step ④ Check MechaLock for allowable load applied

Calculate the torque/load applied to MechaLock and make sure that the calculation result does not exceed the upper limit provided for the selected series type.

- Torque applied to MechaLock < Upper Limit for Torque applied to MechaLock
- Thrust Load applied to MechaLock < Upper Limit for Thrust Load applied to MechaLock

Cautions - Can be used on shafts/hubs with keyways with width within JIS standards but allowable torque and thrust ratings will be reduced by 15~20%.

Basically, MechaLock must not be subjected to bending moment. The adequate MechaLock becomes available by changing the load receiving location or by selecting the properly shaped hub.

Step ⑤ Check Shaft / Hub for Rigidity

- Shaft For shaft materials, verify the Yield Point Stress and select the material that is equal to or exceeds the following value: Side Surface Pressure of Hub provided for the selected series type x 1.2.
 - Hub For hub materials, verify the Yield Point Stress and select the material that is equal to or exceeds the following value: Side Surface Pressure of Hub provided for the selected series type x 1.2.
- For the typical materials used for hub, the corresponding min. outer diameters of hub are calculated and listed. Please refer to the Min. Outer Diameter table for the selected series type.

Cautions

- Tapered portions of inner ring and outer ring will bite into each other even with a little shock from conveyance. Loosen the screw and nut and disassemble parts to release tapered parts before installation.
- Please do not tighten the screw before inserting the shaft. MechaLock may deform.
- Do not use lock screws other than those included.

MechaLock

Easy Mounting (Nut) / Thin

Feature: Installation can be completed easily just by tightening one nut.

Easy Mounting (Nut)

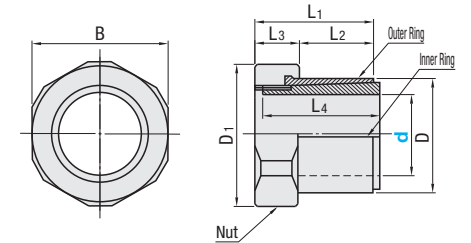


MLN
MLNB (Black Oxide)
MLNP (Electroless Nickel Plating)

Type	Material	Surface Treatment
MLN	S45C	-
MLNB		Black Oxide
MLNP		Electroless Nickel Plating

RoHS

Nut of MLNP is colored with RED coating material.



Part Number	Type	d	D	B	D1	L1	L2	L3	L4	Max. Allowable Torque (N·m)	Allowable Thrust Load (kN)	Tightening Torque (N·m)	Mass (g)	Side Surface Pressure of Hub (MPa)	H Hub Minimum O.D.						Hub Machining Depth L	Unit Price								
															Yield Point Stress of Hub Material (MPa)															
															206	294	392													
															FC350	SS400	S10C	FC450	S35C	FCD600	S55C	MLN	MLNP	MLNB	MLN	MLNP	MLNB	MLN	MLNP	MLNB
8	14	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	17	21	22	12	9	21	34.3	24	22	4.8	29.4	43	128	89	33	28	26	23	24	21	14									
11	18	24	26	10	10	22	39.2	28	23	5.1	34.3	46	132	92	38	30	29	25	25	23										
12	20	23	13	23	49.0	34	7.3	5.7	44.1	50	122	82	40	32	31	27	28	25	15											
14	23	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	27	108	76	13.7	10.1	68.6	85	107	74	50	41	40	35	36	33	21									
17	26	31	19	12	31	186	130	19.6	15.3	98.1	96	172	135	114	80	52	44	39	40	37	22									
20	29	35	22	33	245	172	24.5	17.2	137	147	147	90	62	54	46	45	41	41	38	24										
22	32	36	39	33	275	193	25.5	18.3	167	185	83	58	55	48	47	42	43	40	26											
24	34	37	24	13	37	314	220	25.5	18.3	167	185	83	58	55	48	47	42	43	40	26										
25	35	41	44	38	25	38	353	247	27.5	19.8	186	187	85.1	60	49	48	44	44	41	27										
28	40	50	54	43	28	15	43	378	265	26.5	18.9	226	320	68.9	48	57	52	51	48	45	30									
30	42	55	60	46	30	16	46	392	274	25.5	18.3	255	398	66.3	46	61	55	54	50	48	32									
35	48	60	66	52	35	17	52	461	323	18.5	18.5	294	521	50	35	64	59	58	55	53	37									

Ordering Example Part Number **MLN25**

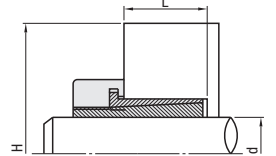
Recommended Tolerance of Shaft and Hub / Roughness of Surface

Shaft O.D.	h7(g6)	Ra1.6 or less
Hub I.D.	H7	Ra3.2 or less

How to Determine Hub O.D.

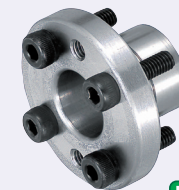
After selecting the MechaLock size, hub size and material, confirm that the selected values meet the conditions Hshub in the Minimum O.D. Table.

kgf/mm²=MPa x 0.101972



Features: Because the screw is installed directly on the hub, the inner and outer diameter difference is small and thin. Applicable to installation on a small hub.

Thin

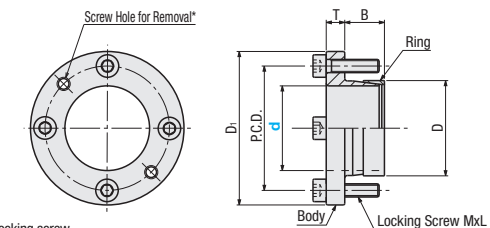


MLSL

TYPE	Material	Surface Treatment
MLSL	S45C	-

RoHS

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



Part Number	Type	d	D	D1	P.C.D.	T	B	Locking Screw		Max. Allowable Torque (N·m)	Allowable Thrust Load (kN)	Mass (g)	Side Surface Pressure of Hub (MPa)	H Hub Minimum O.D.			Hub Machining Depth L1	Unit Price					
								MxL	Qty.					Yield Point Stress of Hub Material (MPa)									
														206	294	392							
														FC350	SS400	S10C	FC450	S35C	FCD600	S55C	MLN	MLNP	MLNB
5	8	22	15	4	10	M3x10	3	2	4	2	13	134	21.5	21.5	21.5	8							
6	9	23	16	5	12	M3x10	3	2	6	2	15	132	23	22.5	22.5								
8	11	25	18	6	14	M3x10	3	2	9	2	17	123	25	24.5	24.5								
10	13	29	21	7	15	M4x18	4	2	18	4	28	153	38	29	29								
12	15	31	23	8	16	M4x18	4	2	23	4	31	139	39	31	31								
14	18	36	26	9	17	M4x18	4	2	37	5	52	161	56	38	36								
15	19	37	27	10	18	M4x18	4	2	39	5	55	149	52	38	37								
16	20	38	28	11	19	M4x18	4	2	42	5	57	143	52	39	38								
17	21	39	29	12	20	M4x18	4	2	45	5	59	138	52	39	39								
19	24	42	32	13	22	M5x20	4	2	49	5	71	118	51	42	42								
20	25	46	36	14	23	M5x20	4	2	97	10	103	198	62	49									
22	26	47	37	15	24	M5x20	4	2	110	10	101	196	-*	64	51								
24	28	49	39	16	25	M5x20	4	2	121	10	106	184	64	52									
25	30	51	41	17	26	M5x20	4	2	124	10	119	169	101	63	53								
28	32	53	43	18	27	M5x20	4	2	141	10	118	160	96	64	55								
30	35	56	46	19	28	M5x20	4	2	149	10	135	145	99	66	57								

* Unavailable due to excessive Side Surface Pressure

Ordering Example Part Number **MLSL10**

How to Determine Hub O.D.

After selecting the MechaLock size, hub size and material, confirm that the selected values meet the conditions Hshub in the right-hand Hub Minimum O.D. Table.

Recommended Tolerance of Shaft and Hub / Roughness of Surface

Shaft O.D.	h7(g6)	Ra1.6 or less
Hub I.D.	H7	Ra3.2 or less

