Selection Guidance

Series	Nut	Thin	Standard	Straight / Straight for High Torque	Compact
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. · Centering Function provided	· 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.

Ex: Standard

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
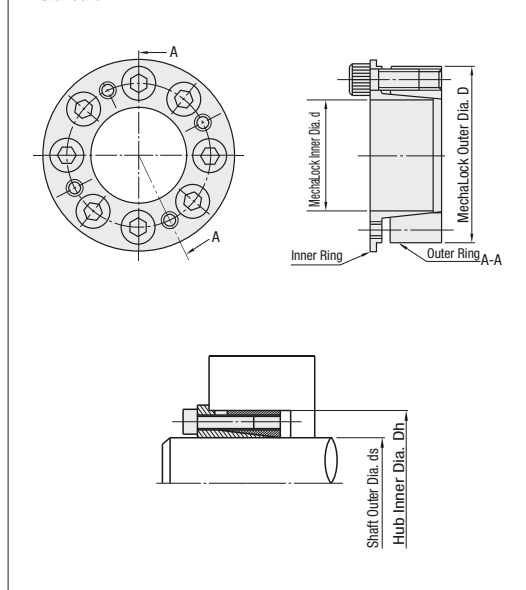
Step ② Check Installation Space

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 foe 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

①Tapered 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.

②Please do not tighten the screw before inserting the shaft. MechaLock may deform.

③Do not use lock screws other than those included.

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

■**Easy Mounting (Nut)**

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

Type	M Material	S Surface Treatment
MLN	EN 1.1191 Equiv.	-
MLNB		Black Oxide
MLNP		Electroless Nickel Plating

🔴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) MLN, MLNP	MLNB	Allowable Thrust Load (kN) MLN, MLNP	MLNB	Tightening Torque (N·m)	Mass (g)	Side Surface Pressure of Hub MPa	206 MLN, MLNP	MLNB	294 MLN, MLNP	MLNB	392 MLN, MLNP	MLNB	Hub Machining Depth L	MLN	MLNB	MLNP
	8	14	22	23.5	19	11	8	19	29.4	21		5.2	24.5	34	178	128	31	24	24	21	22	19	13			
	10	17			21		9	21	34.3	24	6.9	4.8	29.4	43	128	89	33	28	26	23	24	21	14			
	11	18	24	26	22	12	10	22	39.2	28		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			
MLN	15	24	30	32.5	27	16		27	108	76	13.7	10.1	68.6	85			43	36	35	31	32	29	18			
MLNB	17	26			31	19	12	31	186	130	19.6	15.3	98.1	96	107	74	50	41	40	35	36	33	21			
MLNP	20	29	36	39	33	20		33	245	172		17.2	137	135	114	80	52	44	45	39	40	37	22			
	22	32			35	22		35	275	193	24.5	17.6	147	147	90	62	54	46		41	41	38	24			
	24	34	41	44	37	24	13	37	314	220	25.5	18.3	167	185	83	58		48	47	42	43	40	26			
	25	35			38	25		38	353	247	27.5	19.8	186	187	85.1	60	55	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	48	45	30			
	30	42	55	60	46	30	16	46	392	274		18.3	255	398	66.3	46	61	55	54	50	50	48	32			
	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			

kgf=Nx0.101972   kgf/mm²=MPax0.101972

📞**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 H≤hub in the Minimum O.D. Table.
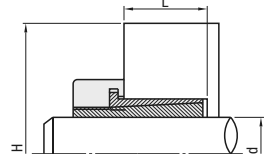
■**Features:** Because the screw is installed directly on the hub, the inner and outer diameter difference is small and thin. Applicable to installation on a small hub.

■**Thin**

MLSL

TYPE	M Material	S Surface Treatment
MLSL	EN 1.1191 Equiv.	-

* 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 MxL	Qty.	Max. Tightening Torque (N·m)	Allowable Thrust Load (kN)	Mass (g)	Side Surface Pressure of Hub MPa	206	294	392	Hub Machining Depth L1	Unit Price
	5	8	22	15	4	10	M3x10	3	2	4	2	13	134	21.5	21.5	21.5	8	
	6	9	23	16						6	2	15	132	23	22.5	22.5		
	8	11	25	18						9	2	17	123	25	24.5	24.5		
	10	13	29	21	5	12				18	4	28	153	38	29	29	9.5	
	12	15	31	23						23	4	31	139	39	31	31		
	14	18	36	26	6	14	M4x18	4		37	5	52	161	56	38	36	11	
	15	19	37	27						39	5	55	149	52	38	37		
MLSL	16	20	38	28						42	5	57	143	52	39	38		
	17	21	39	29						45	5	59	138	52	39	39		
	19	24	42	32						49	5	71	118	51	42	42		
	20	25	46	36	7	15	M5x20	8		97	10	103	198	-*	62	49	12	
	22	26	47	37						110	10	101	196		64	51		
	24	28	49	39						121	10	106	184		64	52		
	25	30	51	41						124	10	119	169	101	63	53		
	28	32	53	43						141	10	118	160	96	64	55		
	30	35	56	46						149	10	135	145	89	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 H≤hub 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