Keyless Timing Pulleys
Overview

Keyless Timing Pulleys - XL

■Features of Keyless Timing Pulleys

- Machining on shafts such as keyway is not required.
- Unnecessity of machining on shafts retains the strength of shaft.
- Easy positioning.

■Installation

①Wipe off the shaft surface and apply oil or grease.
(Do not use any oil or grease containing molybdenum disulfide agent.)
②Wipe off and apply oil or grease on mating surfaces of pulley and bushing as well. Apply to the threads and seat of the screws also.
③Temporarily assemble the pulley and bushing, then insert the shaft.
(Do not tighten the bushing before inserting the shaft.)
④After locating, tighten the clamping screws using a torque wrench in the diagonal line order, beginning lightly (at approx. 1/4 of the specified tightening torque).
⑤Tighten the screws further to an increased torque value (approximately 1/2 of specified torque).
⑥Tighten the screws at the specified torque.
⑦Finally, tighten the screws in a circumferential order.

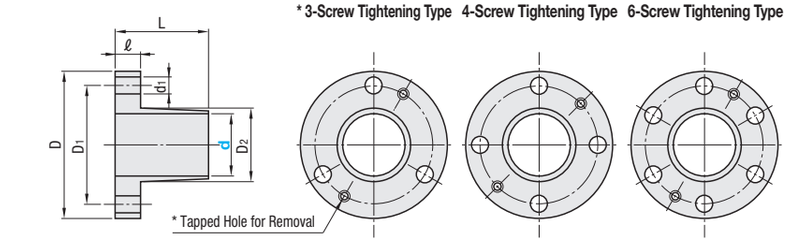
■Cautions on Installation

- Be sure to apply oil or grease to the shaft surfaces, the contact surfaces b/w pulleys, bushings, and the locking screws before installation. If not, the MechaLock may not be tightened firmly; the shaft may slip at rotation.
- Screw tighten the bushing after inserting the shaft.
(Bushing deforms if the screw is tightened before inserting the shaft.)
- Use a torque wrench to tighten the screws.
- Do not use screws other than the included tightening screws.

■Removal

- Be sure to work after the system is completely shut down.
- Loosen the tightening screws in circumferential order.
- Insert a screw in a hole for removal and tighten evenly.
- Repeat "Installation" process for re-installation.

Ⓨ No Slits on SH Bushings



Ⓨ Operating Temp.: -20~+80°C

* SH bushings have 3 tapped holes for removal.

Ⓜ Material Main Body: EN 1.1191 Equiv.
Screw EN 1.7220 Equiv. (Black Oxide)

■Bushing Dimension Table

· Standard Type Shape E (ST Bushings)

Shaft Bore Dia. d	Screw Qty.	Screw Size	Tapped Hole for Removal	Max. Allowable Torque N・m	Allowable Thrust Load kN	Tightening Torque N・m	D	D1	D2	d1	L	ℓ
8	4	M3X12	M3X2	16	4.0	2.0	25.5	19	10	3.3	15.5	4
10	3	M4X16	M4X2	39	5.34	4.0	30	22	12	4.5	16.5	5
11				43			31	23	13			
12				48			32	24	14			
14	4	M4X18	M4X2	73	5.34	4.0	35	27	16.6	4.5	22	6
15				78			36	28	17.6			
16				83			37	29	18.6		23	7
17				88			38	30	19.6			
18		M5X20	M5X2	154	8.74	8.3	43	33	20.6	5.5		
19				163			45	35	22.4			
20				171			46	36	23.4			
22				186			48	38	24.6			
24				206			50	40	26.6			
25				216			52	42	28.4			
28	6	M5X25	M5X2	353	8.74	8.3	54	44	30.6	5.5	24	8
30				382			57	47	33.4			
32				412			59	49	34.7		25	9
35				451			63	53	38.4		26.5	
38		M6X28	M6X2	686	12.3	13.7	70	58	42	6.6	28	10
40				725			71	59	43.5		30.5	
42				757			74	62	46		31.5	11
45		M8X35	M8X2	1490	22.7	34.3	84	69	49.5	8.8	38.5	13
48				1600			87	72	52.5			
50				1660			89	74	54.5			

· Short Type Shape F (SH Bushings)

Shaft Bore Dia. d	Screw Qty.	Screw Size	Tapped Hole for Removal	Max. Allowable Torque N・m	Allowable Thrust Load kN	Tightening Torque N・m	D	D1	D2	d1	L	ℓ
6	3	M3X10	M3X3	5.6	1.87	1.9	22.5	16	8.5	3.3	10.5	3
8				8.5	2.12		24.5	18	10.5			
10		M4X12	M4X3	18	3.59	3.9	29	21	12.75	4.4	13	4
11				20	3.63		30	22	13.75			
12				23	3.76		31	23	14.75			
14	4	M4X18	M4X2	37	5.21	3.9	36	26	17.65	4.4	17	5
15				39	5.10		37	27	18.65			
16				42	5.17		38	28	19.65			
17				45	5.23		39	29	20.65			
18				48	5.28		40	30	21.85			
19				49	5.12		42	32	22.85			
20	4	M5X18	M5X2	97	9.68	7.8	46	36	24.1	5.5	19	6
22				110	9.98		47	37	25.75			
24				121	10.00		49	39	27.75			
25				124	9.90		51	41	28.75			
28				141	10.00		53	43	31.75			
30				149	9.89		56	46	33.75			
32				163	10.12		58	47	35.75			
35				173	9.88		61	50	39.1		20	

kgf=Nx0.101972

- Shaft tolerance g6, shaft surface roughness Ra6.3 are standard.
- When there are keyway and D cut on the installation shaft, transmitting torque is reduced by approximately more than 15%.

■MechaLock Standard Type Incorporated

In addition to the above bushings, MechaLock Standard Type Incorporated Keyless Timing Pulleys (P.1491) have been newly added to the lineup.
It provides centering function and tolerates average 1.2 times and 2.5 times greater torque than ST bushing and SH bushings respectively.

■For Timing Belts, see P.1463.

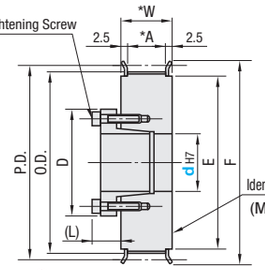
RoHS 10

Type	Part Number: Belt Width 12.7mm (1/2inch) A:14 W:19 XL050	Ⓜ Material *1: Pulley	Flange	Bushing	Ⓢ Surface Treatment: Pulley	Flange	Bushing
MTPLA	●	EN AW-7075 Equiv.	Aluminum Alloy 5000 series	EN 1.1191 Equiv.	Clear Anodize		-
MTPL	●	EN 1.1191 Equiv.	EN 1.0330 Equiv.	EN 1.1191 Equiv.	Black Oxide		

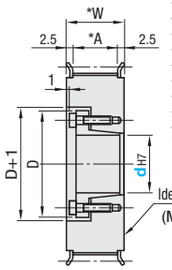
*1. The above material and accessory might be changed to the ones equivalent to the originals.

• Pulley Shape

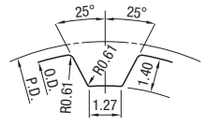
E Shape



F Shape



Tooth Profile (ISO Standard Rack Dimensions)



Tooth groove dimensions slightly vary according to the number of teeth.
(Pitch:5.08mm)

* For quantity and size of tightening screws with flange installed, see P.1425.

Table 1: Select Shaft Bore Dia.

dH7	Max. Allowable Torque N•m: ST Bushing	SH Bushing	D: ST Bushing	SH Bushing	(L)
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	
14	73		35		12
15	78		36		
16	83	-	37	-	13
17	88		38		
18	154		43		14
19	163		45		
20	171		46		14
22	186		48		
24	206		50		
25	216	-	52	-	
28	353		54		15.5
30	382		57		
32	412		59		16.5

Ⓨ Electroless nickel plated bushing (Alterations BMC, BMR) decreases maximum allowable torque and allowable thrust load by 20 ~ 30%.

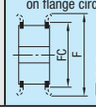
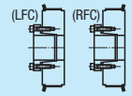
Ⓨ Surface treatment may not be applied to shaft bores.
Ⓨ Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). See P.1425.

Number of Teeth	20	21	22	24	25	26	28	30	32	34	36	38	40	42	44	46	48	50	60	72
P.D.	32.34	33.96	35.57	38.81	40.43	42.04	45.28	48.51	51.74	54.98	58.21	61.45	64.68	67.91	71.15	74.38	77.62	80.85	97.02	116.43
O.D.	31.83	33.45	35.07	38.30	39.92	41.53	44.77	48.00	51.24	54.47	57.70	60.94	64.17	67.41	70.64	73.87	77.11	80.34	96.51	115.92
F	40	40	45	45	48	48	55	55	61	61	67	67	74	74	80	80	87	87	104	123
E	27	27	30	30	35	35	40	40	45	45	50	50	58	58	60	60	67	67	84	102

Part Number: Type	Number of Teeth	Type, Nominal Width	Pulley Shape	dH7 Range (-): Specify in 1mm Increment, (,): Select the former or latter: Shape E (ST Bushing)	Shape F (SH Bushing)	Unit Price: MTPLA Shape E	MTPLA Shape F	MTPLA Shape E	MTPLA Shape F
MTPLA MTPL	20	XL050 *A:14 *W:19	E	8	-		-		-
	21			8	-		-		-
	22		E F	8	8				
	24			8	8				
	25			8, 10~12	8, 10, 11				
	26			8, 10~12	8, 10, 11				
	28			8, 10~12, 14~17	8, 10~12				
	30			10~12, 14~17	10~12				
	32			10~12, 14~18	10~12				
	34			10~12, 14~18	10~12				
	36			10~12, 14~20・22	10~12				
	38			10~12, 14~20, 22	10~12				
	40			10~12, 14~20, 22, 24, 25, 28, 30	10~12				
	42				10~12				
	44			10~12, 14~20, 22, 24, 25, 28, 30, 32	10~12				
	46				10~12				
	48				10~12				
	50			10~12, 14~20, 22, 24, 25, 28, 30, 32	10~12				
	60				10~12				
	72				10~12				

Ordering Example: Part Number MTPL30XL050 - Pulley Shape E - Shaft Bore Dia. 17

Alterations: Part Number MTPLA30XL050 - Pulley Shape E - Shaft Bore Dia. 17 - (FC, NFC, LFC, RFC, BMC, BMR) FC52.5

Alterations	Flange Cut	No Flange	Single Flange	Surface Treatment
Code	FC	NFC	LFC, RFC	BMC, BMR
Spec.	Lowers flange by cutting. FC: 0.5mm Increment Ⓨ No surface treatment is applied on flange circumference.  Ⓨ FC≥(O. D.)+1 Ⓨ FC≤F-2 Ordering Code FC35	Flange is not installed. (Flange Included) 	Flange is installed on either the bushing side (LFC) or the opposite side (RFC) prior to shipping. (Flange 1 pc. Included) 	Applies electroless nickel plating on a bushing. (Antirusting treatment is applied to screws.) Ⓨ Electroless nickel plated bushing decreases allowable torque by 20 ~ 30%. BMC: Not RoHS Compliant (Screw: EN 1.7220 Equiv. Dacrotized Treatment) BMR: RoHS Compliant (Screw: EN 1.7220 Equiv. GeoMet Coating)