

Keyless Timing Pulley

Overview

Features of Keyless Timing Pulleys

- Machining on shafts such as keyway is not required.
- Easy positioning.

Installation

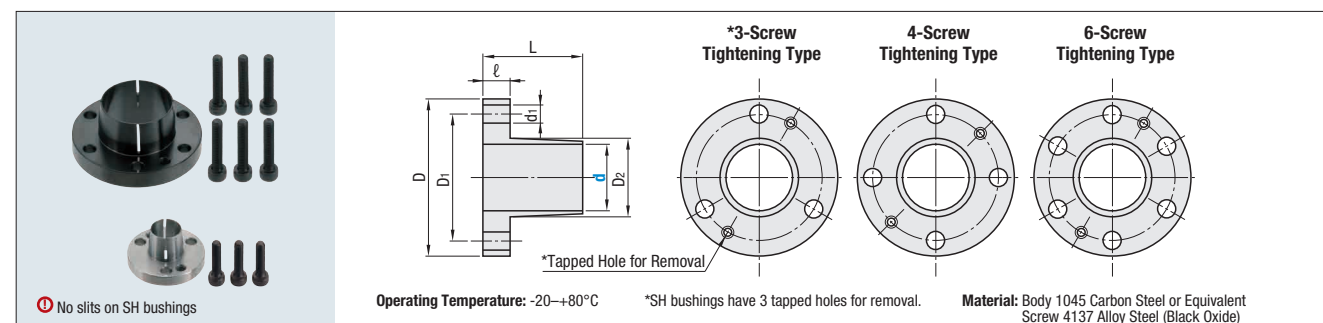
- (1) Wipe off the shaft surface and apply oil or grease. (Do not use any oil or grease containing molybdenum disulfide agent.)
- (2) Wipe off and apply oil or grease on mating surfaces of pulley and bushing as well. Apply to the threads and seat of tightening screws as well.
- (3) Temporarily assemble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

Note on Installation

- Be sure to apply oil or grease before installation.
- 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.



Bushing Dimension Table

Standard Type "E" Shape (ST Bushings)

Shaft Bore Dia. d	Screw Qty.	Screw Size	Tapped Hole for Removal	Max. Allowable Torque Nm	Allowable Thrust Load kN	Screw Tightening Torque Nm	D	D ₁	D ₂	d ₁	L	ℓ
8	4	M3 x 12	M3 x 2	16	4.0	2.0	25.5	19	10	3.3	15.5	4
10				39			30	22	12			
11	3	M4 x 16	M4 x 2	43	5.34	4.0	31	23	13	4.5	16.5	5
12				48			32	24	14			
14				73			35	27	16.6		22	6
15				78			36	28	17.6			
16				83			37	29	18.6	4.5		
17				88			38	30	19.6			
18	4	M4 x 18	M4 x 2	154	5.34	4.0	43	33	20.6		23	7
19				163			45	35	22.4			
20				171			46	36	23.4			
22				186			48	38	24.6	5.5		
24				206			50	40	26.6			
25				216			52	42	28.4			
28				353			54	44	30.6		24	8
30				382			57	47	33.4			
32				412			59	49	34.7	5.5	25	9
35				451			63	53	38.4		26.5	
38	6	M6 x 28	M6 x 2	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				1490			84	69	49.5			
48				1600			87	72	52.5	8.8	38.5	13
50				1660			89	74	54.5			

kgf=Nx0.101972

Short Type "F" Shape (SH Bushings)

Shaft Bore Dia. d	Screw Qty.	Screw Size	Tapped Hole for Removal	Max. Allowable Torque Nm	Allowable Thrust Load kN	Screw Tightening Torque Nm	D	D ₁	D ₂	d ₁	L	ℓ
6				5.6	1.87		22.5	16	8.5			
8				8.5	2.12	1.9	24.5	18	10.5	3.3	10.5	3
10	3	M3 x 10	M3 x 3	18	3.59		29	21	12.75			
11				20	3.63	3.9	30	22	13.75	4.4	13	4
12				23	3.76		31	23	14.75			
14				37	5.21		36	26	17.65			
15				39	5.10		37	27	18.65			
16				42	5.17		38	28	19.65			
17	4	M4 x 18	M4 x 2	45	5.23	3.9	39	29	20.65	4.4	17	5
18				48	5.28		40	30	21.85			
19				49	5.12		42	32	22.85			
20				97	9.68		46	36	24.1			
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	4	M5 x 18	M5 x 2	141	10.00	7.8	53	43	31.75	5.5	19	6
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%.

Mechanical Lock Standard Type Incorporated

In addition to the above bushings, Misumi offers keyless bushing with centering function (P.1456).

It tolerates on average 1.2 and 2.5 times greater torque against ST bushing and SH bushing respectively.

Keyless Timing Pulleys

XL Type

For Timing Belts, refer to P.1434.

Keyless Timing Pulleys – XL Type



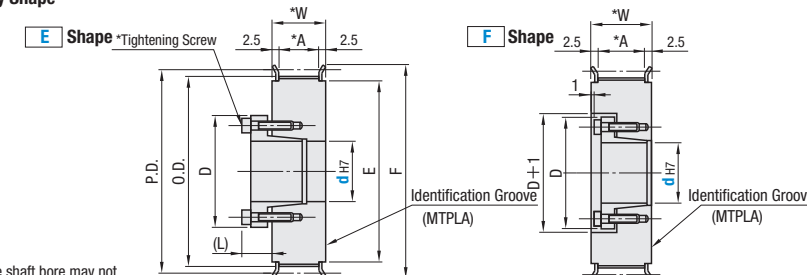
Tooth Profile (ISO Standard Rack Dimensions)



Tooth groove dimensions slightly change according to No. of teeth. (Pitch: 5.08 mm)
*For quantity and size of tightening screws with Flange attached, refer to P.1388.

Catalog No. Belt Width 12.7 mm (1/2") A: 14 W: 19	Material			Surface Treatment		
	Pulley	Flange	Bushing	Pulley	Flange	Bushing
MTPLA_XL050	Ultra Duralumin-Based Aluminum Alloy	Aluminum Alloy	1045 Carbon Steel or Equivalent	Clear Anodize		—
MTPL_XL050	1045 Carbon Steel or Equivalent	Low Carbon Steel	1045 Carbon Steel or Equivalent			Black Oxide

Pulley Shape



- ① The shaft bore may not have surface treatment.
- ② Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1388.

Part Number	Type	Teeth	Type, Nominal Width	d _{H7} Range (Select Shaft Bore Dia. from Table 1)		P.D.	O.D.	F	E
				E Shape (ST Bushing)	F Shape (SH Bushing)				
20	MTPLA MTPL	20	XL050 *A: 14 *W: 19	8	—	32.34	31.83	40	27
21		8		—	33.96	33.45			
22		8		8	35.57	35.07	45	30	
24		8		8	38.81	38.30			
25		8 10-12		8 10 11	40.43	39.92	48	35	
26		8 10-12		8 10 11	42.04	41.53			
28		8 10-12 14-17		8-12	45.28	44.77	55	55	
30		10-12 14-17		10-12	48.51	48.00	48	48	
32		10-12 14-18		10-12	51.74	51.24			
34		10-12 14-18		10-12	54.98	54.47	61	45	
36		10-12 14-20 22		10-12	58.21	57.70	67	50	
38		10-12 14-20 22		10-12	61.45	60.94			
40		10-12 14-20 22 24 25 28 30		10-12	64.68	64.17	74	58	
42		10-12 14-20 22 24 25 28 30		10-12	67.91	67.41			
44		10-12 14-20 22 24 25 28 30 32		10-12	71.15	70.64	80	60	
46		10-12 14-20 22 24 25 28 30 32		10-12	74.38	73.87			
48		10-12 14-20 22 24 25 28 30 32		10-12	77.62	77.11	87	67	
50		10-12 14-20 22 24 25 28 30 32		10-12	80.85	80.34	87	67	
60		10-32		10-12	97.02	96.51	104	84	
72		10-32		10-12	116.43	115.92	123	102	

Table 1: Select Shaft Bore Diameter

d _{H7}	Max. Allowable Torque Nm				D (L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	
11	43	20	31	30	10.5
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		
22	186		48		14
24	206		50		
25	216		52		
28	353		54		15.5
30	382		57		
32	412		59		16.5

- ① Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20-30%

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

Part Number Alterations: Part Number - Pulley Shape - Shaft Bore Dia. - (FC / NFC / LFC / RFC / BMC / BMR)
MTPLA30XL050 - E - 17 - FC5.25

Alterations	Flange Cut	Flange Not Swaged	Flange Swaged on One Side	Surface Treatment
Code	FC	NFC	RFC / LFC	BMC / BMR
Spec.	<p>Lowers flange by cutting. FC: 0.5 mm Increment ① No surface treatment applied on flange circumference.</p> <p>FC=(O.D.)+2 FC=F-2 Ordering Code: FC35</p>	<p>Flange is not installed. (Flange included)</p>	<p>Flange installed on the hub side (LFC) or the opposite side (RFC) only prior to shipping.</p>	<p>Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied to screws). ① Electroless nickel plated bushing decreases allowable torque by 20-30%. BMC: Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR: RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)</p>