Keyless Timing Pulleys

T10 Type

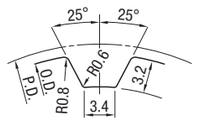
For Timing Belts, refer to **P.1443**, Long Timing Belts, refer to **P.1444**.

Keyless Timing Pulleys – T10 Type

Part Number						Material			Surface Treatment		
Belt Width 15 mm	Belt Width 20mm	Belt Width 25 mm	Belt Width 30 mm	Belt Width 40 mm	Belt Width 50 mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 17 W: 22	A: 22 W: 27	A: 27 W: 32	A: 32 W: 37	A: 43 W: 48	A: 53 W: 58						
TTLA__T10150	TTLA__T10200	TTLA__T10250	TTLA__T10300	TTLA__T10400	TTLA__T10500	Ultra Duralumin-Based Aluminum Alloy	Aluminum Alloy	1045 Carbon Steel or Equivalent	Clear Anodize		—
TTLK__T10150	TTLK__T10200	TTLK__T10250	TTLK__T10300	—	—				Hard Clear Anodize*		—
TTLN__T10150	TTLN__T10200	TTLN__T10250	TTLN__T10300	—	—				Electroless Nickel Plating		—
TTPL__T10150	TTPL__T10200	TTPL__T10250	TTPL__T10300	TTPL__T10400	TTPL__T10500	1045 Carbon Steel or Equivalent	Low Carbon Steel	1045 Carbon Steel or Equivalent	Black Oxide		
TTLG__T10150	TTLG__T10200	TTLG__T10250	TTLG__T10300	TTLG__T10400	TTLG__T10500				Electroless Nickel Plating		

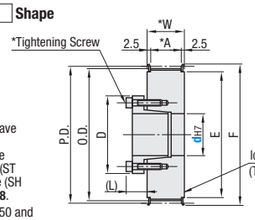
*Hard Anodize Treatment: Film Hardness 300 HV min.

Standard Tooth Profile

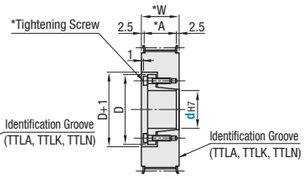


Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 10.0 mm)

Pulley Shape **E Shape**



F Shape



- The shaft bore may not have surface treatment. Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to **P.1388**.
- Machined Flange for 34, 50 and 60 toothed pulleys.

*For quantity and size of tightening screws with Flange attached, refer to **P.1388**.

Part Number			Pulley Shape	d_{H7} Range (Select Shaft Bore Dia. from Table 1)												P.D.	O.D.	F	E
Type	Teeth	Type, Nom. Width		E Shape						F Shape									
				T10150	T10200	T10250	T10300	T10400	T10500	T10150	T10200	T10250	T10300	T10400	T10500				
				ST Bushing	ST Bushing	ST Bushing	ST Bushing	ST Bushing	ST Bushing	SH Bushing	SH Bushing	ST Bushing: 12–30 SH Bushing: 32 35	ST Bushing: 15–30 SH Bushing: 35	ST Bushing	ST Bushing				
TTLA TTLK TTLN TTPL TTLG	15	T10150 *A: 17 *W: 22	E	12	12	12	—	12 14	12 14	12	12	12	—	12	12	47.75	45.90	52	36
	16			12 14–15	12 14–15	12 14–15	15	12 14–17	12 14–17	12	12	12 14–15	15	12 14–15	12 14–15	50.93	49.05	58	40
	18			12 14–17	12 14–17	12 14–17	15–17	12 14–17	12 14–17	12	12 14–17	12 14–17	15–17	12 14–17	12 14–17	57.30	55.45	61	45
	20			12 14–17	12 14–17	12 14–17	15–17	12 14–20 22		12	12 14–17	12 14–17	15–17	12 14–18	12 14–18	63.66	61.80	67	50
	22	T10200 *A: 22 *W: 27		14–20 22 24 25	14–20 22 24 25	14–20 22 24 25	15–20 22 24 25	14–20 22 24 25	—	14–20 22 24 25	14–20 22 24 25	15–20 22 24 25	14–20 22 24 25	14–20 22 24 25	70.03	68.15	80	60
	24														76.39	74.55	87	67
	25			14–20 22 24 25	14–20 22 24 25	14–20 22 24 25	15–20 22 24 25	14–20 22 24 25	—	14–20 22 24 25	15–20 22 24 25	14–20 22 24 25		79.58	77.70	87	67
	26	T10250 *A: 27 *W: 32						14–20 22 24 25 28 30 32 35	—	14–20 22 24 25		14–20 22 24 25 28 30 32 35		82.76	80.90		
	28			16–20 22 24 25 28 30 32 35				16–20 22 24 25 28 30 32 35	—	16–20 22 24 25 28 30 32 35		16–20 22 24 25 28 30 32 35		89.13	87.25	95	75
	30	T10300 *A: 32 *W: 37	F	16–20 22 24 25 28 30 32 35				16–20 22 24 25 28 30 32 35 38 40 42	—					95.49	93.65	104	84
	32			20 22 24 25 28 30 32 35 38 40 42	20 22 24 25 28 30 32 35 38 40 42			20 22 24 25 28 30 32 35 38 40 42	—	20 22 24 25 28 30 32 35			20 22 24 25 28 30 32 35 38 40 42	101.86	100.00	111	90
	34													108.23	106.40	115	95
	36													114.59	112.75	123	102
	40	T10400 *A: 43 *W: 48		20 22 24 25 28 30 32 35 38 40 42 45 48 50					—	20 22 24 25 28 30 32 35			20 22 24 25 28 30 32 35 38 40 42 45 48 50	127.32	125.45	135	115
	44													140.06	138.20	152	130
	48	T10500 *A: 53 *W: 58												152.79	150.95	160	140
	50													159.15	157.30	170	150
	60													190.99	189.10	200	175

- For "F" shape of S8M250, ST bushing is applicable to shaft bore diameter of 12–30 and SH bushing is applicable to 32 and 35.
- TTLK and TTLN are not available for T10400 and T10500.
- For "F" shape of S8M300, ST bushing is applicable to shaft bore diameter of 15–32 and SH bushing is applicable to 35.

Table 1: Select Shaft Bore Diameter

d_{H7}	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
12	48	23	32	31	10.5
14	73	37	35	36	12
15	78	39	36	37	
16	83	42	37	38	13
17	88	45	38	39	
18	154	48	43	40	14
19	163	49	45	42	
20	171	97	46	46	
22	186	110	48	47	
24	206	121	50	49	
25	216	124	52	51	
28	353	141	54	53	15.5
30	382	149	57	56	
32	412	163	59	58	16.5
35	451	173	63	61	
38	686	—	70	—	19
40	725		71		
42	757		74		20
45	1490		84		24.5
48	1600		87		
50	1660		89		

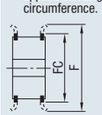
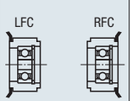
- Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20–30%

Part Number Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
TTLA40T10250	-	E	-	20

Part Number Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
TTLA40T10250	-	F	-	30	-	FC132

Alterations	Flange Cut	Flange Not Swaged	Flange Swaged on One Side	Surface Treatment
Code	FC	NFC	RFC / LFC	BMC / BMR
Spec.	Lowers flange by cutting. FC: 0.5 mm Increment. No surface treatment applied on flange circumference.  FC≥(O.D.)+2. FC≤F-2. **Ordering Code:** FC43	Flange is not Installed. (Flange included)	Flange installed on the hub side (LFC) or the opposite side (RFC) only prior to shipping. 	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied to screws). 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)

Keyless Timing Pulleys

T10 Type – Keyless Bushing with Centering Function

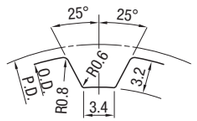
Feature: MechaLock Standard Type, refer to **P.1456** Incorporated Timing Pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively

Keyless Timing Pulleys – T10 Type – Keyless Bushing with Centering Function

Part Number						Material			Surface Treatment		
Belt Width 15 mm	Belt Width 20 mm	Belt Width 25 mm	Belt Width 30 mm	Belt Width 40 mm	Belt Width 50 mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 17 W: 22	A: 22 W: 26 Y: 18	A: 27 W: 32 Y: 22 (23.5)	A: 32 W: 37 Y: 24 (25, 27)	A: 43 W: 48 Y: 30 (31, 34)	A: 53 W: 58 Y: 35 (36, 39) 35(36, 39)						
HTTA__T10150	HTTA__T10200	HTTA__T10250	HTTA__T10300	HTTA__T10400	HTTA__T10500	Ultra Duralumin-Based Aluminum Alloy	Alum. Alloy	1045 Carbon Steel or Equivalent	Clear Anodize		—
HTTK__T10150	HTTK__T10200	HTTK__T10250	HTTK__T10300	—	—				Hard Clear Anodize*		—
HTTT__T10150	HTTT__T10200	HTTT__T10250	HTTT__T10300	HTTT__T10400	HTTT__T10500	1045 Carbon Steel or Equivalent	Low Carbon Steel	1045 Carbon Steel or Equivalent	—		

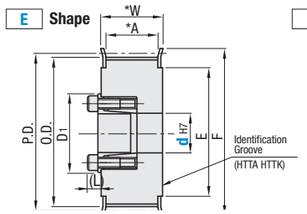
*Hard Anodize Treatment: Film Hardness 300 HV min.

Standard Tooth Profile

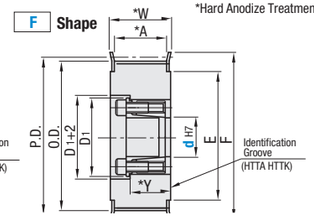


Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 10.0 mm)

Pulley Shape **E Shape**



F Shape



- The shaft bore may not have surface treatment.
- Machined Flange for 34, 50 and 60 toothed pulleys.
- Flange attached. Y dimensions in ( ) require the shaft bore diameter of 24 and above.
- For installation, refer to **P.1452**, for details of Keyless Bushing refer to **P.1456**.

Part Number			Pulley Shape	d_{H7} Range (Select Shaft Bore Dia. from Table 1)											P.D.	O.D.	F	E
Type	Teeth	Type, Nom. Width		E Shape						F Shape								
				T10150	T10200	T10250	T10300	T10400	T10500	T10200	T10250	T10300	T10400	T10500				
HTTA HTTK HTTT	16	T10150 *A: 17 *W: 22 T10200 *A: 22 *W: 27 *Y: 18 T10250 *A: 27 *W: 32 *Y: 22 (d24~: Y=23.5) T10300 *A: 32 *W: 37 *Y: 24 (d24–32: Y=25) (d35~: Y=27) T10400 *A: 43 *W: 48 *Y: 30 (d24–32: Y=31) (d35~: Y=34) T10500 *A: 53 *W: 58 *Y: 35 (d24–32: Y=36) (d35~: Y=39)	E	12 14	12 14	12 14	12 14	12 14	12 14	12 14	12 14	12 14	12 14	12 14	50.93	49.05	58	40
	18			12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	12 14–16	57.3	55.45	61	45
	20			12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	12 14–19	63.66	61.8	67	50
	22			14–20 22	14–20 22	14–20 22	14–20 22	14–20 22	14–20 22	14–19	14–20 22	14–20 22	14–20 22	14–20 22	70.03	68.15	80	60
	24			14–20 22	14–20 22 24 25 28	14–20 22 24 25 28	14–20 22 24 25 28	14–20 22 24 25 28	14–20 22 24 25 28	14–19	14–20 22 24 25 28	14–20 22 24 25 28	14–20 22 24 25 28	14–20 22 24 25 28	76.39	74.55	87	67
	25														79.58	77.7	87	67
	26														82.76	80.9		
	28			16–20 22	16–20 22 24 25 28 30 32			16–20 22 24 25 28 30 32		16–19	16–20 22 24 25 28 30	16–20 22 24 25 28 30 32			89.13	87.25	95	75
	30														95.49	93.65	104	84
	32			20 22	20 22 24 25 28 30 32 35	20 22 24 25 28 30 32 35		20 22 24 25 28 30 32 35	—	20 22 24 25 28 30 32 35		20 22 24 25 28 30 32 35 40			101.86	100	111	90
	34														108.22	106.40	115	95
	36			20 22	20 22 24 25 28 30 32 35	20 22 24 25 28 30 32 35 40			—						114.59	112.75	123	102
	40			20 22					—	20 22 24 25 28 30 32 35					127.32	125.45	135	115
	44														140.06	138.2	152	130
	48														152.79	150.95	160	140
	50														159.15	157.30	170	150
	60														190.99	189.10	200	175

Part Number Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HTTA36T10250	-	F	-	25

Part Number Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
HTTA36T10200	-	E	-	30	-	BMC

Alterations	Flange Cut	Flange Not Swaged	Flange Swaged on One Side	Surface Treatment	Pulley for Replacement (Pulley Only)
Code	FC	NFC	RFC / LFC	BMC / BMR	OP
Spec.	Lowers flange by cutting. FC: 0.5 mm Increment. No surface treatment applied on flange circumference. FC≥(O.D.)+2. FC≤F-2. **Ordering Code:** FC35	Flange is not Installed. (Flange included)	Flange installed on the hub side (LFC) or the opposite side (RFC) only prior to shipping.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied to screws). 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)	Pulleys will be shipped individually (no bushings).

Table 1: Select Shaft Bore Diameter

d_{H7}	Max. Allowable Torque (Nm)	D_1	(L)
12	44.1	28.5	6.5
14	63.7	30.5	
15	80.4	31.5	
16	83.3	33	
17	92.2	33.5	
18	95.1	34.5	
19	98.1	35.5	
20	216.0	42	8
22	255.0	44	
24	363.0	46	
25	392.0	47	
28	441.0	50	8.5
30	500.0	52	
32	530.0	54	
35	883.0	62	10
40	1079.0	67	
45	1285.0	72	
50	1706.0	77	10.5