# Timing Pulleys - XL

For e-Catalog non-standard products, see P.131.

For Timing Belts, see P. 1497. For Keyless Timing Pulleys, see P. 1479.

| Type | Belt Width 6.4mm (1/4inch) XL025 | 7.9mm (5/16inch) XL031 | 9.5mm (3/8inch) XL037 | 12.7mm (1/2inch) XL050 | M Material*1 Pulley | Flange | S Surface Treatment | A Accessory*1 Set Screws |
|---|---|---|---|---|---|---|---|---|
| ATP | ● | ● | ● | ● | Aluminum Alloy | Aluminum Alloy | Clear Anodize | SUS304 |
| BTP | ● | ● | ● | ● | | | Black Anodize | |
| KTP | ● | ● | ● | ● | | | Hard Clear Anodize*2 | |
| NTP | ● | ● | ● | ● | | | Electroless Nickel Plating | |
| MTP | ● | - | ● | ● | S45C Equivalent | SPCC | - | SCM435 (Black Oxide) |
| MTPB | ● | - | ● | ● | | | Black Oxide | |
| MTPP | ● | - | ● | ● | | | Electroless Nickel Plating | |
| STP | ● | - | ● | ● | SUS304 | SUS304 | - | SUS304 |

*1 Materials for pulleys and accessories may be changed to the equivalent ones. *2 Hard Clear Anodize: Film Hardness 300HV ~.
Flange is already swaged, and set screws are included with for Shaft Bores P, N and C.

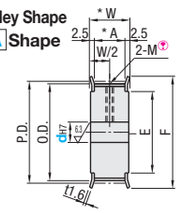
Tooth Profile (ISO Standard Rack Dimensions)

Tooth groove dimensions slightly vary according to the number of teeth.

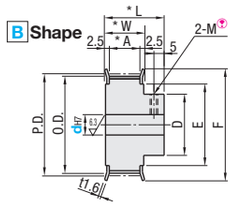
(Pitch: 5.08mm)

• Pulley Shape

A Shape




B Shape




Aluminum and stainless steel flanges will have a thickness of 1.5.
Shaft Bore Specs. H (Round hole), V or F (Stepped Hole), Y (Both Sides Stepped Hole) and WB (Two-stepped Hole) do not have tapped holes.

## Tapped Hole Dimensions (Shaft Bore Specs.: P, N, C)

| dH7 Shaft Bore I.D. | M (Coarse) | Accessory: Set Screw |
|---|---|---|
| 4 | M3 | M3x3 |
| 5~12 | M4 | M4x3 |
| 13~17 | M5 | M5x4 |
| 18~35 | M6 | M6x5 |

## Number of Teeth / Dimension

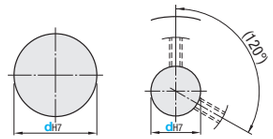
| mm | Number of Teeth 10 | 11 | 12 | 14 | 15 | 16 | 18 | 19 | 20 | 21 | 22 | 24 | 25 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 60 | 72 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P.D. | 16.17 | 17.79 | 19.40 | 22.64 | 24.26 | 25.87 | 29.11 | 30.72 | 32.34 | 33.96 | 35.57 | 38.81 | 40.43 | 42.01 | 45.28 | 48.51 | 51.74 | 54.98 | 58.21 | 61.45 | 64.68 | 67.91 | 71.15 | 74.38 | 77.62 | 80.85 | 97.01 | 116.43 |
| O.D. | 15.66 | 17.28 | 18.90 | 22.13 | 23.75 | 25.36 | 28.60 | 30.22 | 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 |
| D | 10 | 10 | 12 | 15 | 17 | 17 | 21 | 21 | 24 | 24 | 26 | 26 | 30 | 30 | 35 | 35 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| F | 24 | 24 | 25 | 28 | 32 | 32 | 36 | 36 | 40 | 40 | 45 | 45 | 48 | 48 | 55 | 55 | 61 | 61 | 67 | 67 | 74 | 74 | 80 | 80 | 87 | 87 | 104 | 123 |
| E | 12 | 12 | 15 | 18 | 20 | 20 | 24 | 24 | 27 | 27 | 30 | 30 | 35 | 35 | 40 | 40 | 45 | 45 | 50 | 50 | 58 | 58 | 60 | 60 | 67 | 67 | 84 | 102 |

## Belt Nominal Width / Dimension

| mm | Nominal XL025 | XL031 | XL037 | XL050 |
|---|---|---|---|---|
| A | 7.5 | 9.0 | 11.0 | 14.0 |
| W | 12.5 | 14.0 | 16.0 | 19.0 |
| L | 21.0 | 23.0 | 25.0 | 28.0 |

• Shaft Bore Specs. Select shaft bore spec mark and each dim. from the table below. Surface treatment may not be applied to shaft bores.

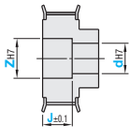
H Round Hole | P Round Hole + Tap | N New JIS Keywayed Bore + Tap | C Old JIS Keywayed Bore + Tap | V Stepped Hole | F Stepped Hole (Counterbored Holes on the Hub Side) | Y Both Ends Stepped Hole | WB Two-stepped Hole



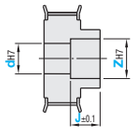

No tapped holes or set screws.
Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.

Not applicable to Shape A with 15 or less teeth and nominal width 025.
For A-Shape pulley, the screw holes are set at around 120° to keep away from peaks.
Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.

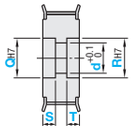
Shape A with 15 or less teeth and nominal width 025 has keywayed bores only, not tapped holes.
For Keyway Dimension Details, see P.1413. Specify NK10 when selecting "New JIS Keywayed Bore" + "Shaft Bore Dia. 10" + "Keyway Width 4.0mm (Height 1.8mm)".



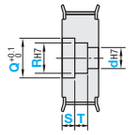

No tapped holes or set screws.
Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.




Applicable to Shape B only.
No tapped holes or set screws.
Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.




Applicable to Shape A only.
Shaft Bore Dia. d is +0.1 / 0
No tapped holes or set screws.




Applicable to Shape A only.
No tapped holes or set screws.

| Part Number Type | Number of Teeth | Type Nominal Width | Pulley Shape | Pulley Shape A: Shaft Bore Specs. "~": 1mm Increments ", ": Selectable H(d) Round Hole | P(d) Round Hole + Tap See Below | N(d), C(d) Keyway + Tap See Below | V Stepped Hole V(d) | Z Z-d≥2 | J (0.1mm Increment) | Y WB Both Ends Stepped Hole, Two-stepped Hole Y(d), WB(d) | Q, R Q(R)-d≥2 | S,T (0.1mm Increment) | B: Shaft Bore Specs. "~": 1mm Increments ", ": Selectable H(d) Round Hole | P(d) Round Hole + Tap | N(d), C(d) Keyway + Tap | V, F Stepped Hole V(d), F(d) | Z Z-d≥2 | J (0.1mm Increment) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum ATP BTP KTP NTP | 10 | XL025 | A B | 4~8 | - | - | 4~6 | 6~8 | 2.0≤J≤W-2.0 | 4~6 | 6~8 | 3~8 S+T≤W-3 | 4~6 | 4~6 | - | 4 | 6 | 2.0≤J≤L-2.0 |
| | 11 | | | 4~8 | - | - | 4~6 | 6~8 | | 4~6 | 6~8 | | 4~6 | 4~6 | - | 4 | 6 | |
| | 12 | | | 4~11 | 4~8 | - | 4~9 | 6~11 | | 4~9 | 6~11 | | 4~8 | 4~6 | - | 4~6 | 6~8 | |
| | 14 | | | 5~14 | 5~11 | 8 | 5~12 | 7~14 | | 5~12 | 7~14 | | 5~11 | 5~8 | 8 | 5~9 | 7~11 | |
| | 15 | | | 5~16 | 5~12 | 8, 10, NK10 | 5~14 | 7~16 | | 5~14 | 7~16 | | 5~13 | 5~10 | 8, 10, NK10 | 5~11 | 7~13 | |
| | 16 | | | 5~16 | 5~13 | 8~13 | 5~14 | 7~16 | | 5~14 | 7~16 | | 5~13 | 5~10 | 8, 10, NK10 | 5~11 | 7~13 | |
| | 18 | | | 6~20 | 6~16 | 8~15 | 6~18 | 8~20 | | 6~18 | 8~20 | | 6~17 | 5~13 | 8~13 | 6~15 | 8~17 | |
| | 19 | | | 6~20 | 6~16 | 8~15 | 6~18 | 8~20 | | 6~18 | 8~20 | | 6~17 | 6~15 | 8~13 | 6~15 | 8~17 | |
| | 20 | | | 8~23 | 8~18 | 8~16 | 8~21 | 10~23 | | 8~21 | 10~23 | | 8~20 | 8~16 | 8~15 | 8~18 | 10~20 | |
| | 21 | | | 8~23 | 8~18 | 8~18 | 8~21 | 10~23 | | 8~21 | 10~23 | | 8~20 | 8~16 | 8~16 | 8~18 | 10~20 | |
| | 22 | | | 8~26 | 8~22 | 8~20 | 8~24 | 10~26 | | 8~24 | 10~26 | | 8~22 | 8~17 | 8~16 | 8~20 | 10~23 | |
| | 24 | | | 8~26 | 8~22 | 8~22 | 8~24 | 10~26 | | 8~24 | 10~26 | | 8~22 | 8~17 | 8~16 | 8~20 | 10~23 | |
| | 25 | | | 8~31 | 8~25 | 8~22 | 8~29 | 10~31 | | 8~29 | 10~31 | | 8~26 | 8~20 | 8~19 | 8~24 | 10~26 | |
| Steel MTP MTPB MTPP | 26 | XL031 | | 8~31 | 8~25 | 8~23 | 8~29 | 10~31 | | 8~29 | 10~31 | | 8~26 | 8~20 | 8~20 | 8~24 | 10~26 | |
| | 28 | XL037 | | 8~36 | 8~31 | 8~25 | 8~34 | 10~36 | | 8~34 | 10~36 | | 8~31 | 8~25 | 8~20 | 8~29 | 10~31 | |
| | 30 | XL050 | | 10~36 | 10~31 | 10~30 | 10~34 | 12~36 | | 10~34 | 12~36 | | 8~31 | 8~25 | 8~20 | 8~29 | 10~31 | |
| | 32 | | | 10~41 | 10~35 | 10~32 | 10~39 | 12~41 | | 10~39 | 12~41 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 34 | | | 10~41 | 10~35 | 10~32 | 10~39 | 12~41 | | 10~39 | 12~41 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 36 | | | 10~46 | 10~35 | 10~35 | 10~44 | 12~46 | | 10~44 | 12~46 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 38 | | | 10~46 | 10~35 | 10~35 | 10~44 | 12~46 | | 10~44 | 12~46 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| Stainless Steel STP | 40 | | | 10~54 | 10~35 | 10~35 | 10~52 | 12~54 | | 10~52 | 12~54 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 42 | | | 10~54 | 10~35 | 10~35 | 10~52 | 12~54 | | 10~52 | 12~54 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 44 | | | 10~56 | 10~35 | 10~35 | 10~54 | 12~56 | | 10~54 | 12~56 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 46 | | | 10~56 | 10~35 | 10~35 | 10~54 | 12~56 | | 10~54 | 12~56 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 48 | | | 10~63 | 10~35 | 10~35 | 10~61 | 12~63 | | 10~61 | 12~63 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 50 | | | 10~63 | 10~35 | 10~35 | 10~61 | 12~63 | | 10~61 | 12~63 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 60 | | | 10~77 | 10~35 | 10~35 | 10~75 | 12~77 | | 10~75 | 12~77 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |
| | 72 | | | 10~85 | 10~35 | 10~35 | 10~83 | 12~94 | | 10~83 | 12~94 | | 10~36 | 10~30 | 10~25 | 10~34 | 12~36 | |

Shaft Bore Dia. 9 is not available for Shaft Bore Specs. N.
Shape A with 15 or less teeth and nominal width XL025 is not available for Shaft Bore Specs. P, and no tapped holes is not added for Shaft Bore Specs. N and C.
Shaft Bore Dia. 8, 11, 13, 14, 17, 21~35 are not available for Shaft Bore Spec. C. Shaft Bore Dia. 4.5 and 6.35 are selectable for Shaft Bore Specs. H, P, V and F.

Ordering Example

| | Part Number | Pulley Shape | Shaft Bore Specs., I.D. | Z | J | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|---|
| (Shaft Bore Specs.: H, P, N, C) | ATP24XL037 | B | N10 | | | | | | |
| (Shaft Bore Specs.: V, F) | ATP60XL050 | A | V20 | Z28 | J16.0 | | | | |
| (Shaft Bore Specs: Y, WB) | ATP40XL050 | A | Y20 | | | Q32 | R32 | S7 | T7 |

| Number of Teeth | Body Price ATP(x1.0) BTP, KTP(x1.1) NTP(x1.2) XL025 Shape A | XL025 Shape B | XL031 Shape A | XL031 Shape B | XL037 Shape A | XL037 Shape B | XL050 Shape A | XL050 Shape B | MTP(x1.0) MTPB(x1.1) MTPP(x1.2) XL025 Shape A | XL025 Shape B | XL037 Shape A | XL037 Shape B | XL050 Shape A | XL050 Shape B | STP(x1.0) XL025 Shape A | XL025 Shape B | XL037 Shape A | XL037 Shape B | XL050 Shape A | XL050 Shape B | Shaft Bore Machining Charge (Body Price +) ATP, BTP, KTP, NTP MTP, MTPB, MTPP P Hole | N, C, V, F Hole | Y, WB Hole | STP P Hole | N, C, V, F Hole | Y, WB Hole |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | | | | | | | | | | | | | |

Alterations

| Part Number | Pulley Shape | Shaft Bore Specs., I.D. | Z | J | Q | R | S | T | |
|---|---|---|---|---|---|---|---|---|---|
| ATP36XL037 | B | H15 | | | | | | | (KC90···etc.) |
| | | | | | | | | | KSC25 - K5 |

| Alterations | Set Screw Angle | Flange Not Swaged | Flange Swaged on One Side | Flange Cut |
|---|---|---|---|---|
| Code | KC90 | NFC | RFC, LFC | FC |
| Spec. | Changes an angle of set screw to 90. For A-Shape pulley, the screw holes are set at around 90° to keep away from peaks. (90°) | (Flange 2 pcs. Included) Ordering Code NFC | (Flange 1 pc. Included) Ordering Code RFC RFC LFC | Cut the flange O.D. in 0.5mm increment. Ordering Code FC17 Application Notes FC≥(O.D.)+1 FC≤F-2 No surface treatment is applied on flange circumference. FC F |

| Alterations | Retaining Ring Groove | Adds taper for retaining bearing | Hub Shortening | Tapped Hole Dimensions | Changes the length of the included set screws |
|---|---|---|---|---|---|
| Code | SRG | BTC | BC | TPC | SLH |
| Spec. | Retaining Ring Groove applicable to the shaft dia. of stepped hole is machined. Retaining Ring Groove Dim. P.1413 SRG+0.1 0 Specify SRG 2.5~11.5mm 0.5mm Increments Application Notes Minimum Thickness: 2mm Applicable to Shaft Bore Specs. V and F only. Standards of retaining ring groove for Z dim. is applied. n≤J-SRG-m Ordering Code SRG7 n m ZH7 J±0.1 | Add taper for retaining bearing inner ring Ordering Code BTC4-TL1.5 Application Notes Applicable to Shape A only. Available for Shaft Bore Specs. H, P only TL<L-W TL dH7 BTC+0.1 0 D | Cuts the hub length in 0.5mm increment. Ordering Code BC6.5 Application Notes Shaft Bore Specs.H, V, F: 3≤BC<L-W Shaft Bore Specs.P, N, C: M+3≤BC<L-W Not available for Shape A BC/2 BC | Ordering Code TPC5 Application Notes Applicable to Shaft Bore Specs. P, N, C only. | Ordering Code SLH10 Application Notes Applicable to Shaft Bore Specs. P, N, C only. |

| M | TPC |
|---|---|
| M3 | M4 |
| M4 | M3, M5 |
| M5 | M4, M6 |
| M6 | M5 |

| Set Screws | SLH |
|---|---|
| M3x3 | 6 |
| M4x3 | 5, 8 |
| M5x4 | 6, 10 |
| M6x5 | 10 |

For details, see Shaft Alteration Overview. P.1414

| Alterations | Add Side Holes Conditions may vary depending on the shaft bore specs. P.1414 Side Tapped Hole | Side Through Hole | Side Counterbored |
|---|---|---|---|
| Code | QTC, QFC, QSC | KTC, KFC, KSC | ZTC, ZFC, ZSC |
| Spec. | Machines tapped hole on the side surface of hub side. Ordering Code QTC28-M4 Q□C Selection Specify the hole position (P. C. D. dim.). M Selection M3, M4, M5, M6, M8 Application Notes Minimum Thickness: 2mm Formula P.1414 Conditions may vary depending on the shaft bore specs. P.1414 Mx2 (6 places) QSC (4 places) QFC (3 places) QTC 6-M 4-M 3-M | Machines through hole on the side surface. Ordering Code KTC28-K4.5 K, C Selection Specify the hole position (P. C. D. dim.). Code K K4.0 ~ 13.0 (0.5mm Increments) Application Notes Minimum Thickness: 2mm Formula P.1414 Conditions may vary depending on the shaft bore specs. P.1414 (6 places) KSC (4 places) KFC (3 places) KTC 6-K Through 4-K Through 3-K Through | Machines counterbored hole on the side surface. Ordering Code ZTC28-Z4 Z□C Selection Specify the hole position (P. C. D. dim.). Z Selection ZM3, ZM4, ZM5, ZM6, ZM8 Application Notes Minimum Thickness: 2mm Formula P.1414 Conditions may vary depending on the shaft bore specs. P.1414 (6 places) ZSC (4 places) ZFC (3 places) ZTC 6-ZM 4-ZM 3-ZM |

For details, see Shaft Alteration Overview. P.1414