# High Torque Timing Pulleys - S2M

Compatible with S2M type from Mitsuboshi Belting Ltd. as well as Bando Chemical Industries Ltd.

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

For High Torque Timing Belts, see P.1499. For Idlers with Teeth, see P.1483.

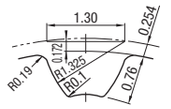
RoHS10

| Type | Belt Width 4mm | Belt Width 6mm | Belt Width 10mm | Material*1 Pulley | Material*1 Flange | Surface Treatment | Accessory*1 Set Screws |
|---|---|---|---|---|---|---|---|
| | S2M040 | S2M060 | S2M100 | | | | |
| HTPA | ● | ● | ● | A2000 Aluminum Alloy | Aluminum Alloy | Clear Anodize | SUS304 |
| HTPB | ● | ● | ● | | | Black Anodize | |
| HTPK | ● | ● | ● | | | Hard Clear Anodize*2 | |
| HTPN | ● | ● | ● | | | Electroless Nickel Plating | |
| HTPT | ● | ● | - | S45C Equivalent | SPCC | - | SCM435 (Black Oxide) |
| HTPM | ● | ● | - | | | Black Oxide | |
| HTPP | ● | ● | - | | | Electroless Nickel Plating | |
| HTPS | ● | ● | - | SUS304 | SUS304 | - | SUS304 |

Flange is already swaged, and set screws are included with for Shaft Bores P, N and C.

*1. The above material and accessory might be changed to the ones equivalent to the originals.
*2. Hard Clear Anodize: Film Hardness 300HV ~

### Standard Tooth Profile

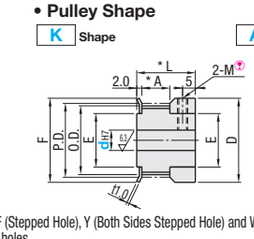



Tooth groove dimensions slightly vary according to the number of teeth.

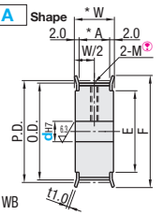
**(Pitch:2.0mm)**

### • Pulley Shape

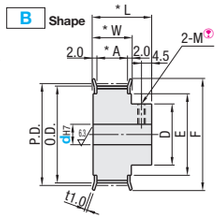
K Shape




A Shape




B Shape




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 |
|---|---|---|
| 3~5 | M3 | M3x3 |
| 6~24 | M4 | M4x3 |
| 25~30 | M5 | M5x4 |

### ■Number of Teeth / Dimension

| mm | Number of Teeth 14 | 15 | 16 | 18 | 20 | 22 | 23 | 24 | 25 | 26 | 28 | 30 | 32 | 34 | 36 | 40 | 44 | 48 | 50 | 60 | 72 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P.D. | 8.91 | 9.55 | 10.19 | 11.46 | 12.73 | 14.01 | 14.64 | 15.28 | 15.92 | 16.55 | 17.83 | 19.10 | 20.37 | 21.65 | 22.92 | 25.46 | 28.01 | 30.56 | 31.83 | 38.20 | 45.84 |
| O.D. | 8.40 | 9.04 | 9.68 | 10.95 | 12.22 | 13.50 | 14.13 | 14.77 | 15.41 | 16.04 | 17.32 | 18.59 | 19.86 | 21.14 | 22.41 | 24.96 | 27.50 | 30.05 | 31.32 | 37.69 | 45.33 |
| D | 12 | 12 | 14 | 14 | 16 | 18 | 18 | 20 | 20 | 22 | 22 | 22 | 12 | 14 | 14 | 18 | 20 | 20 | 20 | 30 | 34 |
| F | 12 | 12 | 14 | 14 | 16 | 18 | 18 | 20 | 20 | 22 | 22 | 22 | 25 | 25 | 28 | 30 | 32 | 35 | 35 | 44 | 50 |
| E | 6 | 6 | 8 | 8 | 10 | 11 | 11 | 13 | 13 | 14 | 14 | 14 | 16 | 16 | 18 | 20 | 23 | 25 | 25 | 32 | 38 |

### ■Belt Nominal Width / Dimension

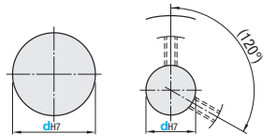
| mm | Nominal S2M040 | S2M060 | S2M100 |
|---|---|---|---|
| A | 5 | 7 | 11 |
| W | 9 | 11 | 15 |
| L | 17 | 19 | 23 |

### • Shaft Bore Specs.

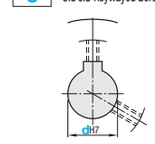
Select shaft bore spec mark and each dim. from the table below. Surface treatment may not be applied to shaft bores.

**H** Round Hole — 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.

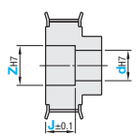
**P** Round Hole + Tap — For A-Shape pulley, the screw holes are set at around 120° to keep away from peaks. Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.



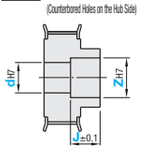

**N** New JIS Keywayed Bore + Tap
**C** Old JIS Keywayed Bore + Tap — For Keyway Dimension Details, see P.1413. Specify NK10 when selecting "New JIS Keywayed Bore" + "Shaft Bore Dia. 10" + "Keyway Width 4.0mm (Height 1.8mm)".



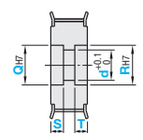

**V** Stepped Hole — Not applicable to Shape K. No tapped holes or set screws. Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.



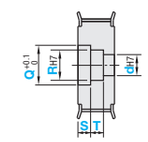

**F** Stepped Hole (Counterbored Holes on the Hub Side) — Applicable to Shape B only. No tapped holes or set screws. Shaft Bore Dia. 4.5 and 6.35 are selectable when the shaft bore dim. d is within the selection range.




**Y** Both Ends Stepped Hole — Applicable to Shape A only. Shaft Bore Dia. d is +0.1 / 0 No tapped holes or set screws.




**WB** Two-stepped Hole — 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 | N(d), C(d) Keyway + Tap | V Stepped Hole V(d) | V Stepped Hole Z d≥2 | V Stepped Hole J (0.1mm Increment) | Y Both Ends Stepped Hole Y(d), WB(d) | Q, R Q(R)-d≥4 | WB Two-stepped Hole S, T (0.1mm Increment) | Pulley Shape B, K — 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) | V, F Stepped Hole Z d≥2 | V, F Stepped Hole J (0.1mm Increment) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 14 | | | 3, 4 | | | - | - | | - | - | - | 3, 4 | 3, 4 | | | | |
| | 15 | | | 3, 4 | | | | | | | | | 3, 4 | 3, 4 | | | | |
| | 16 | | | 3~5 | - | - | 3 | 5 | | 3 | 5 | | 3~5 | 3~5 | - | - | - | |
| | 18 | | | 3~5 | | | 3 | 5 | | 3 | 5 | | 3~5 | 3~5 | | | | |
| | 20 | | | 3~6 | | | 3, 4 | 5, 6 | | 3, 4 | 5, 6 | | 3~6 | 3~6 | | | | |
| Aluminum | 22 | | | 3~7 | | | 3~5 | 5~7 | | 3~5 | 5~7 | | 3~6 | 3~6 | | | | |
| HTPA | 23 | | | 3~7 | | | 3~5 | 5~7 | | 3~5 | 5~7 | | 3~6 | 3~6 | | | | |
| HTPB | 24 | | | 3~9 | | | 3~7 | 5~9 | | 3~7 | 5~9 | | 3~7 | 3~7 | | | | |
| HTPK | 25 | | A | 3~9 | - | - | 3~7 | 5~9 | | 3~7 | 5~9 | | 3~7 | 3~7 | - | - | - | |
| HTPN | 26 | | K | 3~10 | | | 3~8 | 5~10 | | 3~8 | 5~10 | | 3~8 | 3~8 | | | | |
| | 28 | S2M040 | | 3~10 | | | 3~8 | 5~10 | | 3~8 | 5~10 | | 3~8 | 3~8 | | | | |
| Steel | 30 | S2M060 | | 3~10 | | | 3~8 | 5~10 | 2.0≤J≤W-2.0 | 3~8 | 5~10 | 3~6 S+T≤W-3 | 3~8 | 3~8 | | | | - |
| HTPT | 32 | S2M100 | | 4~12 | 4~10 | 8 | 4~10 | 6~12 | | 4~10 | 6~12 | | 4~8 | 4~6 | | 4~6 | 6~8 | |
| HTPM | 34 | | | 4~12 | 4~10 | 8, 10, NK10 | 4~10 | 6~12 | | 4~10 | 6~12 | | 4~10 | 4~8 | - | 4~8 | 6~10 | |
| HTPP | 36 | | | 4~14 | 4~10 | 8, 10, NK10 | 4~12 | 6~14 | | 4~12 | 6~14 | | 4~10 | 4~8 | | 4~8 | 6~10 | |
| Stainless Steel | 40 | | A | 4~16 | 4~12 | 8~12 | 4~14 | 6~16 | | 4~14 | 6~16 | | 4~14 | 4~10 | 8 | 4~12 | 6~14 | |
| HTPS | 44 | | B | 5~19 | 5~15 | 8~13 | 5~17 | 7~19 | | 5~17 | 7~19 | | 5~16 | 5~12 | 8~11 | 5~14 | 7~16 | 2.0≤J≤L-2.0 |
| | 48 | | | 5~21 | 5~17 | 8~16 | 5~19 | 7~21 | | 5~19 | 7~21 | | 5~16 | 5~12 | 8~11 | 5~14 | 7~16 | |
| | 50 | | | 5~21 | 5~17 | 8~16 | 5~19 | 7~24 | | 5~19 | 7~24 | | 5~16 | 5~12 | 8~11 | 5~14 | 7~16 | |
| | 60 | | | 5~28 | 5~24 | 8~22 | 5~26 | 7~28 | | 5~26 | 7~28 | | 5~26 | 5~22 | 8~17 | 5~24 | 7~26 | |
| | 72 | | | 5~34 | 5~30 | 8~26 | 5~32 | 7~34 | | 5~32 | 7~34 | | 5~30 | 5~26 | 8~20 | 5~28 | 7~30 | |

Shaft Bore Dia. 9 is not available for Shaft Bore Specs. N. Shaft Bore Dia. 4.5 and 6.35 are selectable for Shaft Bore Specs. H, P, V and F.
Shaft Bore Dia. 8, 11, 13, 14, 17, 21~26 are not available for Shaft Bore Spec. C.

**Ordering Example**

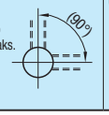
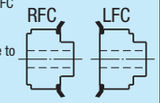
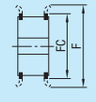
| Part Number | Pulley Shape | Shaft Bore Specs., I.D. | Z | J | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|
| (Shaft Bore Specs.: H, P, N, C) HTPA48S2M040 | B | N10 | | | | | | |
| (Shaft Bore Specs.: V, F) HTPA60S2M060 | B | V10 | Z17 | J14.2 | | | | |
| (Shaft Bore Specs: Y, WB) HTPA36S2M100 | A | Y6 | | | Q10 | R10 | S3 | T3 |

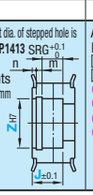
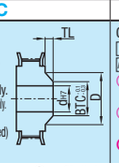
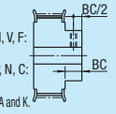


| Number of Teeth | Body Price HTPA (x1.0) HTPB, HTPK (x1.1) HTPN (x1.2) S2M040 Shape A | S2M040 Shapes B and K | S2M060 Shape A | S2M060 Shapes B and K | S2M100 Shape A | S2M100 Shapes B and K | HTPT (x1.0) HTPM (x1.05) HTPP (x1.15) S2M040 Shape A | S2M040 Shapes B and K | S2M060 Shape A | S2M060 Shapes B and K | HTPS (x1.0) S2M040 Shape A | S2M040 Shapes B and K | S2M060 Shape A | S2M060 Shapes B and K | Shaft Bore Machining Charge (Body Price +) HTPA, HTPB, HTPK, HTPN HTPT, HTPM, HTPP P Hole | HTPA, HTPB, HTPK, HTPN HTPT, HTPM, HTPP N, C, V, F Hole | HTPA, HTPB, HTPK, HTPN HTPT, HTPM, HTPP Y, WB Hole | HTPS P Hole | HTPS N, C, V, F Hole | HTPS Y, WB Hole |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | | | | | | | | | | | | | | | | - | - | | - | - |
| 15 | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | | | | | | | |

Alterations

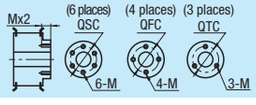
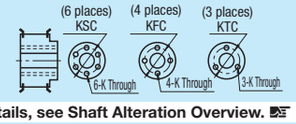
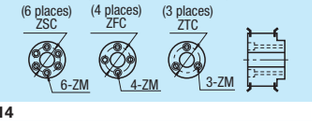
| Part Number | Pulley Shape | Shaft Bore Specs., I.D. | Z | J | Q | R | S | T | (KC90··· etc.) |
|---|---|---|---|---|---|---|---|---|---|
| HTPM48S2M040 | B | H10 | | | | | | | NFC |

| Alterations | Set Screw Angle | No Flange Swaged | Single Flange | 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.   | (Flange 2 pcs. Included) Ordering Code NFC | (Flange 1 pc. Included) Ordering Code RFC Application Notes Not applicable to Shape K.   | 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.   |

| 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 Specify SRG 2.5~10mm 0.5mm Increments Application Notes 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   | Add taper for retaining bearing inner ring Ordering Code BTC4-TL1.5 Application Notes Applicable to Shape A only. Applicable to Shaft Bore Specs. H and P only. TL<L-W Flange 1 pc. (one side installed) included for 30 teeth or less   For details, see Shaft Alteration Overview. P.1414 | 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 applicable to Shapes A and K.   | 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 |

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

| 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 Not applicable to Shape K. Minimum Thickness: 2mm Formula P.1414 Conditions may vary depending on the shaft bore specs. P.1414   | 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 Not applicable to Shape K. Minimum Thickness: 2mm Formula P.1414 Conditions may vary depending on the shaft bore specs. P.1414   | 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 Not applicable to Shape K. Minimum Thickness: 2mm Formula P.1414 Conditions may vary depending on the shaft bore specs. P.1414   |

For details, see Shaft Alteration Overview. P.1414