

# High Torque Timing Pulleys - S3M

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

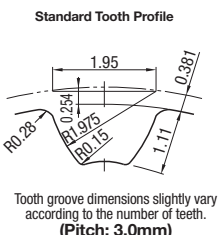
For e-Catalog non-standard products, see P131.

For High Torque Timing Belts, see P1499. For Keyless High Torque Timing Pulleys, see P1465, 1466. For Idlers with Teeth, see P1483.

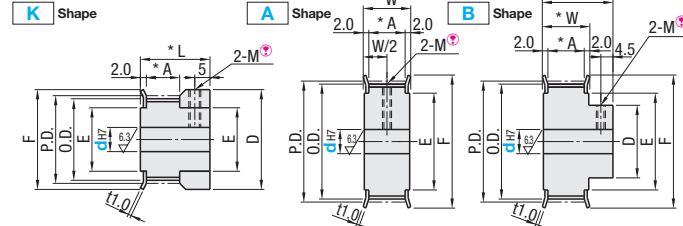


| Type | Belt Width |             |             | Material        |                | Surface Treatment | Accessory <sup>1</sup> Set Screws |
|------|------------|-------------|-------------|-----------------|----------------|-------------------|-----------------------------------|
|      | 6mm S3M060 | 10mm S3M100 | 15mm S3M150 | Pulley          | Flange         |                   |                                   |
| HTPA |            |             |             | Aluminum Alloy  | Aluminum Alloy | Clear Anodize     | SUS304                            |
| HTPB |            |             |             |                 |                |                   |                                   |
| HTPK |            |             |             |                 |                |                   |                                   |
| HTPN |            |             |             |                 |                |                   |                                   |
| HTPT |            |             |             |                 |                |                   |                                   |
| HTPM |            |             |             |                 |                |                   |                                   |
| HTPP |            |             |             | S45C Equivalent | SPCC           | -<br>Black Oxide  | SCM435 (Black Oxide)              |
| 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 -



### Pulley Shape



### Tapped Hole Dimensions

| Shaft Bore I.D. | M  | Accessory Set Screw |
|-----------------|----|---------------------|
| 4-5             | M3 | M3x3                |
| 6-17            | M4 | M4x3                |
| 18-33           | M5 | M5x4                |
| 34-46           | M6 | M6x5                |

### Belt Nominal Width / Dimension

| mm | Nominal |        |        |
|----|---------|--------|--------|
|    | S3M060  | S3M100 | S3M150 |
| A  | 7       | 11     | 17     |
| W  | 11      | 15     | 21     |
| L  | 19      | 23     | 29     |

### Number of Teeth / Dimension

| mm   | Number of Teeth |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      | 14              | 15    | 16    | 18    | 19    | 20    | 22    | 24    | 25    | 26    | 28    | 30    | 32    | 34    | 36    | 40    | 44    | 48    | 50    | 60    | 72    |
| P.D. | 13.37           | 14.32 | 15.28 | 17.19 | 18.14 | 19.10 | 21.01 | 22.92 | 23.87 | 24.83 | 26.74 | 28.65 | 30.56 | 32.47 | 34.38 | 38.20 | 42.02 | 45.84 | 47.75 | 57.30 | 68.75 |
| O.D. | 12.61           | 13.56 | 14.52 | 16.43 | 17.38 | 18.34 | 20.25 | 22.16 | 23.11 | 24.07 | 25.98 | 27.89 | 29.80 | 31.71 | 33.62 | 37.44 | 41.25 | 45.07 | 46.98 | 56.53 | 67.99 |
| D    | 16              | 18    | 18    | 20    | 22    | 22    | 25    | 14    | 16    | 18    | 20    | 20    | 26    | 26    | 30    | 32    | 34    | 34    | 34    | 39    | 50    |
| F    | 16              | 18    | 18    | 20    | 22    | 22    | 25    | 25    | 28    | 28    | 30    | 32    | 35    | 40    | 40    | 44    | 48    | 50    | 52    | 61    | 74    |
| E    | 10              | 11    | 11    | 13    | 14    | 14    | 16    | 16    | 18    | 18    | 20    | 23    | 25    | 28    | 28    | 32    | 36    | 38    | 40    | 46    | 58    |

### Shaft Bore Specs

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

| Spec | Diagram                | Notes  |
|------|------------------------|--|
| H    | Round Hole             | No tapped holes or set screws.   |
| P    | Round Hole + Tap       | For A-Shape pulley, the screw holes are set at around 120° to keep away from peaks.                                    |
| N    | New JIS Keyway         | When selecting the shaft bore dia. 10 and the keyway width 4.0mm (height 1.8mm) for New JIS Keyway Bore, specify NK10. |
| C    | Old JIS Keyway         | -  |
| V    | Stepped Hole           | Not applicable to Shape K.   |
| F    | Stepped Hole           | Applicable to Shape B only.  |
| Y    | Both Ends Stepped Hole | Applicable to Shape A only.  |
| WB   | Two-stepped Hole       | Applicable to Shape A only.  |

| Number of Teeth | Body Price  |         |                   |         |             |         | Shaft Bore Machining Charge (Body Price +) |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
|-----------------|-------------|---------|-------------------|---------|-------------|---------|--|---------|--------------|---------|--------------|---------|-------------|---------|------------------------|--------------|------------------|--------|--------------|------------|--------|--------------|------------|
|                 | HTPA (x1.0) |         | HTPB, HTPK (x1.1) |         | HTPN (x1.2) |         | HTPT (x1.0)                                |         | HTPM (x1.05) |         | HTPP (x1.15) |         | HTPS (x1.0) |         | HTPA, HTPB, HTPK, HTPN |              | HTPT, HTPM, HTPP |        | HTPS         |            |        |              |            |
|                 | Shape       | Shapes  | Shape             | Shapes  | Shape       | Shapes  | Shape                                      | Shapes  | Shape        | Shapes  | Shape        | Shapes  | Shape       | Shapes  | P Hole                 | N, C, V Hole | Y, WB Hole       | P Hole | N, C, V Hole | Y, WB Hole | P Hole | N, C, V Hole | Y, WB Hole |
| 14              | A           | B and K | A                 | B and K | A           | B and K | A  | B and K | A            | B and K | A            | B and K | A           | B and K |                        |              |                  |        |              |            |        |              |            |
| 15              |             |         |                   |         |             |         |  |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
| 16              |             |         |                   |         |             |         |  |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
| 18              |             |         |                   |         |             |         |  |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
| 19              |             |         |                   |         |             |         |  |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
| 20              |             |         |                   |         |             |         |  |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
| 22              |             |         |                   |         |             |         |  |         |              |         |              |         |             |         |                        |              |                  |        |              |            |        |              |            |
| 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.)

HTPA60S3M100 - A - H16 - Z - J - Q - R - S - T - KC90 - K4

| 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. | (Flange 2 pcs. Included) Ordering Code   NFC | (Flange 1 pc. Included) Ordering Code   RFC<br>Application Notes: Not applicable to Shape K. | Cut the flange O.D. in 0.5mm increment. Ordering Code   FC17<br>Application Notes: FC2(O.D.)+1 FC3F-2<br>No surface treatment is applied on flange circumference. |

| Part Number | Type | Number of Teeth | Type Nominal Width | Pulley Shape | Shaft Bore Specs. *1: 1mm Increments *2: Selectable |                       |                      |                |                          |                     |   |                       |                      |                |                          |                     |  |  |  |  |  |  |  |  |
|-------------|------|-----------------|--------------------|--------------|---|-----------------------|----------------------|----------------|--------------------------|---------------------|---|-----------------------|----------------------|----------------|--------------------------|---------------------|--|--|--|--|--|--|--|--|
|             |      |                 |                    |              | Shaft Bore Specs. *1: 1mm Increments *2: Selectable |                       |                      |                |                          |                     | Shaft Bore Specs. *1: 1mm Increments *2: Selectable |                       |                      |                |                          |                     |  |  |  |  |  |  |  |  |
|             |      |                 |                    |              | H(c) Round Hole                                     | P(c) Round Hole + Tap | N(c) Keyway + Tapped | V Stopped Hole | Y Both Ends Stepped Hole | WB Two-stepped Hole | H(c) Round Hole                                     | P(c) Round Hole + Tap | N(c) Keyway + Tapped | V Stopped Hole | Y Both Ends Stepped Hole | WB Two-stepped Hole |  |  |  |  |  |  |  |  |
|             |      |                 |                    |              |   |                       |                      |                |                          |                     |   |                       |                      |                |                          |                     |  |  |  |  |  |  |  |  |
| Aluminum    |      |                 |                    |              |   |                       |                      |                |                          |                     |   |                       |                      |                |                          |                     |  |  |  |  |  |  |  |  |
|             |      |                 |                    |              |   |                       |                      |                |                          |                     |   |                       |                      |                |                          |                     |  |  |  |  |  |  |  |  |

Shaft Bore Dia. 4.5 and 6.35 are selectable for Shaft Bore Specs. H, P, V and F. Shaft Bore Specs. P is not available for Shape A with 22 or less teeth and nominal width S3M060. Shaft Bore Dia. 9 is not available for Shaft Bore Specs. N. Shaft Bore Dia. 8, 11, 13, 14, 17, 21-45 are not available for Shaft Bore Spec. C.

Ordering Example (Shaft Bore Specs.: H, P, N, C)

Part Number - Pulley Shape - Shaft Bore Specs, I.D. - Z - J - Q - R - S - T

HTPA32S3M100 - A - C16

(Shaft Bore Specs.: V, F) HTPA48S3M150 - A - V12 - Z26 - J17.0

(Shaft Bore Specs.: Y, WB) HTPA36S3M100 - A - Y10 - Q19 - R15 - S5 - T4

| Alterations | Retaining Ring Groove  | Adds taper for retaining bearing  | Hub Shortening   | Tapped Hole Dimensions  |
|-------------|--|---|--|---|
| Code        | SRG  | BTC   | BC   | TPC   |
| Spec.       | Retaining Ring Groove applicable to the shaft dia. of stepped hole is machined. Retaining Ring Groove Dim. P1413 SRG: 2.5-14.5mm (Specify SRG) 0.5mm increments<br>Application Notes: Minimum Thickness: 2mm<br>Applicable to Shaft Bore Specs. V and F only.<br>Standards of retaining ring groove for Z dim. is applied.<br>n.SJ-SRG-m | Add taper for retaining bearing<br>Ordering Code   BTC4-TL1.5<br>Application Notes: Applicable to Shape A only.<br>Applicable to Shaft Bore Specs. H and P only.<br>TL<L-W<br>Flange 1 pc. (one side installed) included for 22 teeth or less | Cuts the hub length in 0.5mm increment.<br>Ordering Code   BC6.5<br>Application Notes: Shaft Bore Specs. H, V, F: 3:BC<L-W<br>Shaft Bore Specs. P, N, C: M+3:BC<L-W<br>Not available for Shapes K and A. | Ordering Code   TPC5<br>Application Notes: Applicable to Shaft Bore Specs. P, N, C only.<br>Applicable to Shaft Bore Specs. P, N, C only. |

| Alterations | Add Side Holes | 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.<br>Ordering Code   QTC28-M4<br>Specify the hole position (P. C. D. dim.).<br>M Selection   M3, M4, M5, M6, M8 | Machines tapped hole on the side surface.<br>Ordering Code   KTC28-K4.5<br>Specify the hole position (P. C. D. dim.).<br>K Selection   K4.0 ~ 13.0 (0.5mm increments) | Machines counterbored hole on the side surface.<br>Ordering Code   ZTC28-Z4<br>Specify the hole position (P. C. D. dim.).<br>Z Selection   ZM3, ZM4, ZM5, ZM6, ZM8 |

For details, see Shaft Alteration Overview. P1414