

# STS/STL

## Guided cylinder

### Combined functions

#### Overview

Highly precise, rigid and space saving cylinders enabled by attaching guide rods to both sides of the ultrashort compact square cylinder (SSD) with cylinder switch integrated in the body. These cylinders are suitable for use in lifting and pushing machines.

#### Features

Max. stroke 400 mm

STL long stroke supporting up to 200 mm stroke ( $\varnothing 8$  to  $\varnothing 16$ ) and 400 mm stroke ( $\varnothing 20$  to  $\varnothing 80$ ) Available for various applications.

Increases equipment accuracy when embedded

Two guide rods with metal bush bearing or ball bearing  
High non-rotating accuracy and deflection, contributing to increased accuracy of the equipment into which it is integrated.

Sleek design

Inner groove on body. Storage and fixing of not only cylinder switch but also cable bands and terminal blocks, etc.  
The body is space saving without protrusion.

Suitable for use with high load

Two guide rods. Cylinder with high rigidity and excellent lateral load capacity.

End plate material options

Aluminum (standard) or steel (option) end plate can be selected.

Enabling a compact system

Additional rotation-stop mechanism is not necessary thanks to the guide rods.  
Helps make equipment for assembly more compact.

$\varnothing 8/\varnothing 12/\varnothing 16/\varnothing 20/\varnothing 25$   
 $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80/\varnothing 100$



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The cylinder switches T2YH, T2YV, T3YH, and T3YV are scheduled for end of production at the end of December 2023.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# Series variation

# Guided cylinder STS/STL Series

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL**
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

| Variation  | Model No.<br>JIS No.   | Bore size (mm)          | Standard stroke (mm) |    |    |    |    |    |    |     |    |    |     |   |
|--|--|-------------------------|----------------------|----|----|----|----|----|----|-----|----|----|-----|---|
|  |  |                         | STS                  |    |    |    |    |    |    |     |    |    |     |   |
|  |  |                         | 10                   | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 50 | 75 | 100 |   |
| Double acting/<br>single rod   | ST <sup>S</sup> <sub>L-B</sub>   | ø8/ø12/ø16              | ●                    | ●  |    | ●  | ●  | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    | ●  |    |    | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    | ●  |    |    | ●  | ●  | ●   |    | ●  | ●   | ● |
|  |  | ø100                    |                      |    | ●  |    |    | ●  | ●  | ●   |    | ●  | ●   | ● |
| Double acting/stroke<br>adjustable<br>(push)   | ST <sup>S</sup> <sub>L-MB</sub> P  | ø8/ø12/ø16              | ●                    | ●  |    | ●  | ●  | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    | ●  |    |    | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    | ●  |    |    | ●  | ●  | ●   |    | ●  | ●   | ● |
| Double acting/heat resistance<br>Note: For ø20/ø25, ball<br>bearing B is not available | ST <sup>S</sup> <sub>L-MB</sub> T  | ø12/ø16                 | ●                    | ●  |    | ●  | ●  | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    | ●  |    |    | ●  |    |     |    | ●  | ●   | ● |
| Double acting/packing<br>material fluoro rubber  | ST <sup>S</sup> <sub>L-MB</sub> T2                                       | ø12/ø16                 | ●                    | ●  |    | ●  | ●  | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    | ●  |    |    | ●  |    |     |    | ●  | ●   | ● |
| Double acting/<br>rubber-air<br>cushioned  | ST <sup>S</sup> <sub>L-MB</sub> *C                                       | ø32/ø40/ø50             |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø63                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
| Double acting/air cushioned  | ST <sup>S</sup> <sub>L-MB</sub> C  | ø25/ø32/ø40/ø50/ø63     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
| Double acting/<br>position locking   | ST <sup>S</sup> <sub>L-MB</sub> Q  | ø20/ø25/ø32             |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø40/ø50/ø63             |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
| Double acting/<br>fine speed   | ST <sup>S</sup> <sub>L-MB</sub> F  | ø8/ø12/ø16              | ●                    | ●  |    | ●  | ●  | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø20/ø25/ø32/ø50/ø63     |                      |    | ●  |    |    | ●  |    |     |    | ●  | ●   | ● |
| Double acting/<br>low speed  | ST <sup>S</sup> <sub>L-MB</sub> O  | ø8/ø12/ø16              | ●                    | ●  |    | ●  | ●  | ●  |    |     |    | ●  | ●   | ● |
|  |  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    | ●  |    |    | ●  |    |     |    | ●  | ●   | ● |
| Double acting/rubber scraper<br>coil scraper   | ST <sup>S</sup> <sub>L-MB</sub> G<br>ST <sup>S</sup> <sub>L-MB</sub> G1  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
| Double acting/<br>coolant proof  | ST <sup>S</sup> <sub>L-MB</sub> G2<br>ST <sup>S</sup> <sub>L-MB</sub> G3 | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
| Double acting/anti-spatter<br>adherence  | ST <sup>S</sup> <sub>L-MB</sub> G4                                       | ø40/ø50/ø63             |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
|  |  | ø80                     |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |
| Double acting/<br>valve equipped   | ST <sup>S</sup> <sub>L-MB</sub> V  | ø20/ø25/ø32/ø40/ø50/ø63 |                      |    |    |    |    |    |    |     |    | ●  | ●   | ● |

●: Standard, ◎: Option, ○: Made to order, ■: Not available

| Stroke (mm) |     |     |     |     |     |     |     |     |     |     |     |                    | Min. stroke (mm) | Custom stroke (per mm) | Max. stroke (mm) | Bearing |   | Option |     |     | Switch | Page |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|------------------|------------------------|------------------|---------|---|--------|-----|-----|--------|------|
| STL         |     |     |     |     |     |     |     |     |     |     |     |                    |                  |                        |                  | M       | B | F      | M   | M1  |        |      |
| 125         | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 400 | Metal bush bearing |                  |                        |                  |         |   |        |     |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 200              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 448  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 448  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 200                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 10               | -                      | 200              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 470  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 200              | ●       | ● | ◎      | ○*1 | ○*1 | ◎      | 476  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ○*1    | ○*1 |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ○*1    | ○*1 |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 200              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 480  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 486  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 15               | -                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 492  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 375                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 500  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 375                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 350                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 200              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 512  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 200                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 200                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 150              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 514  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 300                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 300                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 518  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 526  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 400              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 536  |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 400                |                  |                        | ●                | ●       | ◎ | ◎      | ◎   |     |        |      |
| ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●                  | 5                | 5                      | 100              | ●       | ● | ◎      | ◎   | ◎   | ◎      | 544  |

\*1: Ball bearing (B) only.

\*2: For min. stroke and below, select the basic since there is no cushion effect.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-M (metal bush bearing) Series

Variation and option selection table (metal bush bearing)

- : Standard
- : Option
- : Available (made-to-order product)
- △ : Available depending on conditions (Contact CKD.)
- × : Not available

| Category     | Code | Variation                        |                          |                  |                     |                  |                         |                                |           |                |              |                             |                             |                        |            |  |                 | Port thread   |                      | Cushion                              |                                 | Option                |                      |  |  |  |  |
|--------------|------|----------------------------------|--------------------------|------------------|---------------------|------------------|-------------------------|--------------------------------|-----------|----------------|--------------|-----------------------------|-----------------------------|------------------------|------------|--|-----------------|---------------|----------------------|--------------------------------------|---------------------------------|-----------------------|----------------------|--|--|--|--|
|              |      | M                                | P                        | Q                | V                   | C                | T                       | T2                             | O         | G              | G1           | G2                          | G3                          | G4                     | F          | L1   | N               | G             | C                    | M                                    | M1                              | F                     | P6                   | P72                                      | P73  |  |  |
|              |      | Double acting basic (metal bush) | Stroke adjustable (push) | Position locking | With solenoid valve | With air cushion | Heat resistance (120°C) | Packing material fluoro rubber | Low speed | Rubber scraper | Coil scraper | Coolant proof scraper (NBR) | Coolant proof scraper (FKM) | Anti-spatter adherence | Fine speed | Strong magnetic field proof/2-color LED switch | NPT ø32 or more | G ø32 or more | Rubber-air cushioned | Corrosion proof (aluminum end plate) | Corrosion proof (SUS end plate) | Steel plate specified | Copper and PTFE free | Clean-room specifications (exhaust port) | Clean-room specifications (vacuum treatment) |  |  |
| LCM          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LCR          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LCG          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LCW          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| L CX         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| STM          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| STG          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| STS/STL      |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| STR2         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| UCA2         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| ULK*         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| JSK/M2       |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| JSG          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| JSC3/JSC4    |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| USSD         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| UFCD         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| USC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| UB           |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| JSB3         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LMB          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LML          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| HCM          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| HCA          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LBC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| CAC4         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| UCAC2        |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| CAC-N        |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| UCAC-N       |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| RCS2         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| RCC2         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| PCC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| SHC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| MCP          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| GLC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| MFC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| BBS          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| RRC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| GRC          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| RV3*         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| NHS          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| HRL          |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| LN           |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Hand         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Chuk         |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| MechHnd/Chuk |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| ShkAbs       |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| FJ           |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| FK           |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| SpdContr     |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Ending       |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Port thread  |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Cushion      |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Option       |      | ●                                | ●                        | ●                | ●                   | ●                | ●                       | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |
| Accy.        |      | ○                                | ○                        | ○                | ○                   | ○                | ○                       | ○                              | ○         | ○              | ○            | ○                           | ○                           | ○                      | ○          | ○  | ○               | ○             | ○                    | ○                                    | ○                               | ○                     | ○                    | ○  |  |  |  |

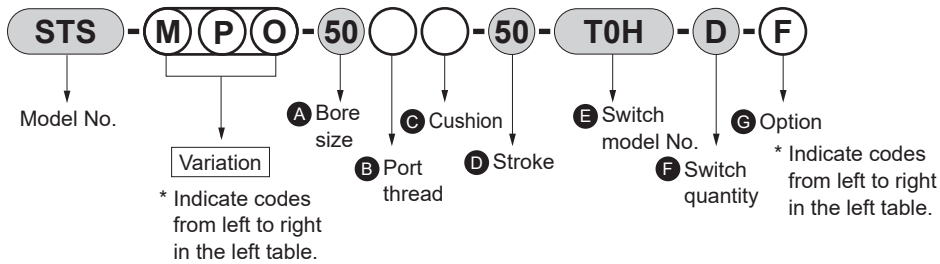
Caution

- \*1: Available for ø50 to 100 only.
- \*2: Available for the head side position locking only.
- \*3: For the combination of G3 and T2, select G3 for fluoro rubber cylinder interior packing. (T2 code is not required.)  
Similarly, G2 and G3 include the specifications of M (corrosion proof). (M code is not required.)
- \*4: G4 includes metal scraper.
- \*5: For P72 and P73 clean room specifications, refer to "Components for clean room specifications" (catalog No. CB-033SA).
- \*6: L1 specifications. (L1 code is not required.)
- \*7: Shock absorber is provided as standard. G\* is not supported.

# STS/STL-M (metal bush bearing) Series

## Variation and option combination selection table

[Example of model No.]



Note: For strong magnetic field proof and 2-color LED switches for  $\phi 40$  and over, insert "L1" with "-" between the variation model No. and bore size.  
(Example) STS-MPO-L1-50-50-T2YH3-D-F

For  $\phi 80$  and  $\phi 100$ , the 2-color LED and strong magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between A and B.  
(Example) STS-B-L1-80-50-F

- Model No. : Guided cylinder, short stroke
- Variations : Metal bush bearing, stroke adjustable, low speed
  - A Bore size :  $\phi 50$  mm
  - B Port thread : Rc thread
  - C Cushion : With rubber cushion
  - D Stroke : 50 mm
  - E Switch model No. : Reed T0H switch, lead wire 1 m
  - F Switch quantity : 2
  - G Option : End plate material: steel

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-B (ball bearing) Series

Variation and option combination selection table (ball bearing)

- : Standard
- ◎ : Option
- : Available (made-to-order product)
- △ : Available depending on conditions (Contact CKD.)
- × : Not available

| Category    | Code   | Variation                               |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 | Port thread   |                      | Cushion                              |                                 | Option                |                      |  |  |  |
|-------------|--|---|--------------------------|------------------|---------------------|------------------|----------------------------|--------------------------------|-----------|----------------|--------------|-----------------------------|-----------------------------|------------------------|------------|--|-----------------|---------------|----------------------|--------------------------------------|---------------------------------|-----------------------|----------------------|--|--|--|
|             |  | B                                       | P                        | Q                | V                   | C                | T                          | T2                             | O         | G              | G1           | G2                          | G3                          | G4                     | F          | L1   | N               | G             | C                    | M                                    | M1                              | F                     | P6                   | P72                                      | P73  |  |
|             |  | Double acting basic (bearing bush type) | Stroke adjustable (push) | Position locking | With solenoid valve | With air cushion | Heat resistance (120°C) *2 | Packing material fluoro rubber | Low speed | Rubber scraper | Coil scraper | Coolant proof scraper (NBR) | Coolant proof scraper (FKM) | Anti-spatter adherence | Fine speed | Strong magnetic field proof/2-color LED switch | NPT ø32 or more | G ø32 or more | Rubber-air cushioned | Corrosion proof (aluminum end plate) | Corrosion proof (SUS end plate) | Steel plate specified | Copper and PTFE free | Clean-room specifications (exhaust port) | Clean-room specifications (vacuum treatment) |  |
| LCM         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LCR         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LCG         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LCW         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LCX         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| STM         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| STG         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| STS/STL     |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| STR2        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| UCA2        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| ULK*        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| JSK/M2      |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| JSG         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| JSC3/JSC4   |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| USSD        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| UFCD        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| USC         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| UB          |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| JSB3        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LMB         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LML         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| HCM         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| HCA         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LBC         |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| CAC4        |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| UCAC2       |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| CAC-N       |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| UCAC-N      |  | ●                                       | ●                        | ●                | ●                   | ●                | ●                          | ●                              | ●         | ●              | ●            | ●                           | ●                           | ●                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| RCS2        |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| RCC2        |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| PCC         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| SHC         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| MCP         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| GLC         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| MFC         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| BBS         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| RRC         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| GRC         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| RV3*        |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| NHS         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| HRL         |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| LN          |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| Hand        |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| Chuk        |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| MecHnd/Chuk |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| ShkAbs      |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| FJ          |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| FK          |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| SpdContr    |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| Ending      |  | ●                                       | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
| Option      | Corrosion proof (aluminum end plate)         | M                                       |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 |               |                      | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |
|             | Corrosion proof (SUS end plate)              | M1                                      |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 |               |                      |                                      | ◎                               | ◎                     | ◎                    | ◎  |  |  |
|             | Steel plate specified                        | F                                       |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 |               |                      |                                      | ◎                               | ◎                     | ◎                    | ◎  |  |  |
|             | Copper and PTFE free                         | P6                                      |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 |               |                      |                                      |                                 | ◎                     | ◎                    | ◎  |  |  |
|             | Clean-room specifications (exhaust port)     | P72                                     |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 |               |                      |                                      |                                 |                       | ◎                    | ◎  |  |  |
|             | Clean-room specifications (vacuum treatment) | P73                                     |                          |                  |                     |                  |                            |                                |           |                |              |                             |                             |                        |            |  |                 |               |                      |                                      |                                 |                       |                      | ◎  |  |  |
| Accy.       | Cylinder switch                              | Separate list                           | ◎                        | ◎                | ◎                   | ◎                | ◎                          | ◎                              | ◎         | ◎              | ◎            | ◎                           | ◎                           | ◎                      | ◎          | ◎  | ◎               | ◎             | ◎                    | ◎                                    | ◎                               | ◎                     | ◎                    | ◎  |  |  |

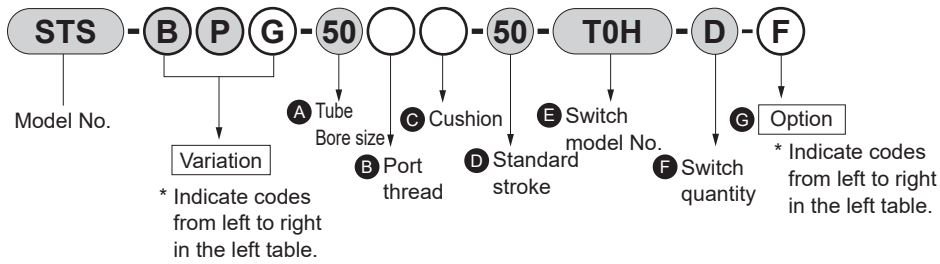
Caution

- \*1: Available for ø50 to 100 only.
- \*2: Available for the head side position locking only.
- \*3: For the combination of G3 and T2, select G3 for fluoro rubber cylinder interior packing. (T2 code is not required.)  
Similarly, P72, P73, G2 and G3 include the specifications of M (corrosion proof).  
(M code is not required.)
- \*4: G4 includes metal scraper.
- \*5: For P72 and P73 clean room specifications, refer to "Components for clean room specifications" (catalog No. CB-033SA).
- \*6: L1 specifications. (L1 code is not required.)
- \*7: Shock absorber is provided as standard. G\* is not supported.

# STS/STL-B (ball bearing) Series

## Variation and option combination selection table

[Example of model No.]



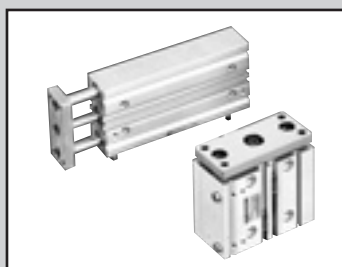
Note: For strong magnetic field proof and 2-color LED switches for  $\phi 40$  and over, insert "L1" with "." between the variation model No. and bore size.  
 (Example) STS-B-L1-63-50-T2YH3-D-F

For  $\phi 80$  and  $\phi 100$ , the 2-color LED and strong magnetic field proof switches cannot be retrofitted on a previously purchased standard product.  
 In this case, order the model No. with "L1" inserted between A and B.  
 (Example) STS-B-L1-80-50-F

- Model No. : Guided cylinder/short stroke
- Variation : Ball bearing, stroke adjustable, rubber scraper
  - A Bore size :  $\phi 50$  mm
  - B Port thread : Rc thread
  - C Cushion : With rubber cushion
  - D Stroke : 50 mm
  - E Switch model No. : Reed T0H switch, lead wire 1 m
  - F Switch quantity : 2
  - G Option : End plate material: steel

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending



Guided cylinder, double acting/single rod

# STS/STL-<sup>M</sup><sub>B</sub> Series

- Bore size:  $\varnothing 8/\varnothing 12/\varnothing 16/\varnothing 20/\varnothing 25/\varnothing 32$   
 $\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80/\varnothing 100$

JIS symbol



## Specifications

| Item                      | STS-M/B STL-M/B    |  |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
|---------------------------|--------------------|--|-----------------|------------------|------------------|------------------|------------------|--------------------------------|------------------|------------------|------------------|------------------|-------------------|
|                           | Bore size          | mm   | $\varnothing 8$ | $\varnothing 12$ | $\varnothing 16$ | $\varnothing 20$ | $\varnothing 25$ | $\varnothing 32$               | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$ | $\varnothing 100$ |
| Actuation                 | Double acting      |  |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Working fluid             | Compressed air     |  |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Max. working pressure     | MPa                | 1.0 ( $\approx 150$ psi, 10 bar)   |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Min. working pressure     | MPa                | 0.15 ( $\approx 22$ psi, 1.5 bar)  |                 |                  |                  |                  |                  | 0.1 ( $\approx 15$ psi, 1 bar) |                  |                  |                  |                  |                   |
| Proof pressure            | MPa                | 1.6 ( $\approx 230$ psi, 16 bar)   |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Ambient temperature       | $^{\circ}\text{C}$ | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing)   |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Port size                 |                    | M5   |                 |                  |                  | Rc1/8            |                  |                                | Rc1/4            |                  | Rc3/8            |                  |                   |
| Stroke tolerance          | mm                 | +2.0<br>0  |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Working piston speed      | mm/s               | 50 to 500  |                 |                  |                  |                  |                  | 50 to 300                      |                  |                  |                  |                  |                   |
| Cushion                   |                    | With rubber cushion  |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Lubrication               |                    | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |                 |                  |                  |                  |                  |                                |                  |                  |                  |                  |                   |
| Allowable absorbed energy | J                  | 0.029  | 0.056           | 0.088            | 0.157            | 0.157            | 0.401            | 0.627                          | 0.980            | 1.560            | 2.510            | 3.92             |                   |

## Stroke

- Short stroke STS

| Bore size         | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) | Min. stroke (mm)(switch)          |
|-------------------|----------------------|------------------|------------------|-----------------------------------|
| $\varnothing 8$   | 10,20,30<br>40,50    | 50               | 5                | 5<br><br>With one or two switches |
| $\varnothing 12$  |                      |                  |                  |                                   |
| $\varnothing 16$  |                      |                  |                  |                                   |
| $\varnothing 20$  |                      |                  |                  |                                   |
| $\varnothing 25$  |                      |                  |                  |                                   |
| $\varnothing 32$  |                      |                  |                  |                                   |
| $\varnothing 40$  | 25,50                | 100              | 5                | 5<br><br>With one or two switches |
| $\varnothing 50$  |                      |                  |                  |                                   |
| $\varnothing 63$  |                      |                  |                  |                                   |
| $\varnothing 80$  |                      |                  |                  |                                   |
| $\varnothing 100$ |                      |                  |                  |                                   |
|                   | 25,50,75,100         |                  |                  |                                   |

- Long stroke STL

| Bore size         | Standard stroke (mm)  | Max. stroke (mm) | Min. stroke (mm) | Min. stroke (mm)(switch)  |
|-------------------|---|------------------|------------------|---------------------------|
| $\varnothing 8$   | 50,75,100   | 200              | 50               | 50                        |
| $\varnothing 12$  | 125,150   |                  |                  | With one or two switches. |
| $\varnothing 16$  | 175,200   |                  |                  |                           |
| $\varnothing 20$  | 50,75,100<br>125,150,175<br>200,225,250<br>275,300,325<br>350,375,400 | 400              | 30               | 30                        |
| $\varnothing 25$  |   |                  |                  | With one or two switches  |
| $\varnothing 32$  |   |                  |                  |                           |
| $\varnothing 40$  |   |                  |                  |                           |
| $\varnothing 50$  |   |                  |                  |                           |
| $\varnothing 63$  |   |                  |                  |                           |
| $\varnothing 80$  | 75,100,125,150,175<br>200,225,250,275,300<br>325,350,375,400          | 200              | 55               | 55                        |
| $\varnothing 100$ | 75,100,125,150,175,200  |                  |                  | With one or two switches. |

Note : The custom stroke is available in 5 mm increments.  
However, the total length is the same as that of the next longer standard stroke.

Clean-room specifications (Catalog No. CB-033SA)

- Anti-dust generation structure for use in cleanrooms

STS/L-... P7\*

STS/L-... P5\*



### Switch specifications

● 1-color/2-color LED/for AC magnetic field proof

| Item                 | Proximity 2-wire   |                         | Proximity 2-wire                      |                             |                         | Proximity 3-wire                   |                             |                             |                         | Reed 2-wire                        |                   |   |                   |           |                                    | Proximity 2-wire            |                             |
|----------------------|--|-------------------------|---------------------------------------|-----------------------------|-------------------------|------------------------------------|-----------------------------|-----------------------------|-------------------------|------------------------------------|-------------------|---|-------------------|-----------|------------------------------------|-----------------------------|-----------------------------|
|                      | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV   | T2YH/<br>T2YV                         | T2WH/<br>T2WV               | T3H/<br>T3V             | T3PH/<br>T3PV                      | T3YH/<br>T3YV               | T3WH/<br>T3WV               | T0H/T0V                 | T5H/T5V                            |                   | T8H/T8V   |                   |           | T2YD(*4)<br>T2YDT                  |                             |                             |
| Applications         | For programmable controller, relay, compact solenoid valve |                         | Dedicated for programmable controller |                             |                         | For programmable controller, relay |                             |                             |                         | For programmable controller, relay |                   | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                   |           | For programmable controller, relay |                             | For programmable controller |
| Output method        | -  |                         |                                       |                             |                         | NPN output                         | PNP output                  | NPN output                  | NPN output              | -                                  |                   |   |                   |           |                                    |                             |                             |
| Power supply voltage | -  |                         |                                       |                             |                         | 10 to 28 VDC                       |                             |                             |                         | -                                  |                   |   |                   |           |                                    |                             |                             |
| Load voltage         | 85 to 265 VAC  |                         | 10 to 30 VDC                          |                             | 24 VDC ±10%             | 30 VDC or less                     |                             |                             |                         | 12/24 VDC                          | 100/110 VAC       | 5/12/24 VDC   | 100/110 VAC       | 12/24 VDC | 110 VAC                            | 220 VAC                     | 24 VDC ±10%                 |
| Load current         | 5 to 100mA   |                         | 5 to 20 mA (*3)                       |                             |                         | 100 mA or less                     |                             | 50 mA or less               |                         | 5 to 50mA                          | 7 to 20mA         | 50 mA or less   | 20 mA or less     | 5 to 50mA | 7 to 20mA                          | 7 to 10mA                   | 5 to 20mA                   |
| Indicator lamp       | LED (Lit when ON)  | LED (Lit when ON)       | Red/green LED (Lit when ON)           | Red/green LED (Lit when ON) | LED (Lit when ON)       | Yellow LED (Lit when ON)           | Red/green LED (Lit when ON) | Red/green LED (Lit when ON) | LED (Lit when ON)       |                                    | No indicator lamp |   | LED (Lit when ON) |           |                                    | Red/green LED (Lit when ON) |                             |
| Leakage current      | 1 mA or less with 100 VAC, 2 mA or less with 200 VAC       |                         | 1 mA or less                          |                             |                         | 10 µA or less                      |                             |                             |                         | 0mA                                |                   |   |                   |           |                                    | 1 mA or less                |                             |
| Weight g             | 1 m: 33 3 m: 87 5 m: 142                                   | 1 m: 18 3 m: 49 5 m: 80 | 1 m: 33 3 m: 87 5 m: 142              | 1 m: 18 3 m: 49 5 m: 80     | 1 m: 18 3 m: 49 5 m: 80 |                                    | 1 m: 33 3 m: 87 5 m: 142    | 1 m: 18 3 m: 49 5 m: 80     | 1 m: 18 3 m: 49 5 m: 80 |                                    |                   | 1 m: 33 3 m: 87 5 m: 142  |                   |           | 1 m: 61 3 m: 166 5 m: 272          |                             |                             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.1                    | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø8             | Push                | -                      | 7.54                   | 10.1                   | 15.1                   | 20.1                   | 25.1                   | 30.2                   | 35.2                   | 40.2                   | 45.2                   | 50.3                   |
|                | Pull                | -                      | 5.65                   | 7.54                   | 11.3                   | 15.1                   | 18.8                   | 22.6                   | 26.4                   | 30.2                   | 33.9                   | 37.7                   |
| ø12            | Push                | -                      | 17.0                   | 22.6                   | 33.9                   | 45.2                   | 56.5                   | 67.9                   | 79.2                   | 90.5                   | 1.02 x 10 <sup>2</sup> | 1.13 x 10 <sup>2</sup> |
|                | Pull                | -                      | 12.7                   | 17.0                   | 25.4                   | 33.9                   | 42.4                   | 50.9                   | 59.4                   | 67.9                   | 76.3                   | 84.8                   |
| ø16            | Push                | -                      | 30.2                   | 40.2                   | 60.3                   | 80.4                   | 1.01 x 10 <sup>2</sup> | 1.21 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.01 x 10 <sup>2</sup> |
|                | Pull                | -                      | 22.6                   | 30.2                   | 45.2                   | 60.3                   | 75.4                   | 90.5                   | 1.06 x 10 <sup>2</sup> | 1.21 x 10 <sup>2</sup> | 1.36 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> |
| ø20            | Push                | -                      | 47.1                   | 62.8                   | 94.2                   | 1.26 x 10 <sup>2</sup> | 1.57 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.20 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 2.83 x 10 <sup>2</sup> | 3.14 x 10 <sup>2</sup> |
|                | Pull                | -                      | 35.3                   | 47.1                   | 70.7                   | 94.2                   | 1.18 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.65 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.12 x 10 <sup>2</sup> | 2.36 x 10 <sup>2</sup> |
| ø25            | Push                | -                      | 73.6                   | 98.2                   | 1.47 x 10 <sup>2</sup> | 1.96 x 10 <sup>2</sup> | 2.45 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.44 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 4.42 x 10 <sup>2</sup> | 4.91 x 10 <sup>2</sup> |
|                | Pull                | -                      | 56.7                   | 75.6                   | 1.13 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> | 1.89 x 10 <sup>2</sup> | 2.27 x 10 <sup>2</sup> | 2.64 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.40 x 10 <sup>2</sup> | 3.78 x 10 <sup>2</sup> |
| ø32            | Push                | 80.4                   | 1.21 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                | Pull                | 60.3                   | 90.5                   | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40            | Push                | 1.26 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                | Pull                | 1.06 x 10 <sup>2</sup> | 1.58 x 10 <sup>2</sup> | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50            | Push                | 1.96 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                | Pull                | 1.65 x 10 <sup>2</sup> | 2.47 x 10 <sup>2</sup> | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63            | Push                | 3.12 x 10 <sup>2</sup> | 4.68 x 10 <sup>2</sup> | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                | Pull                | 2.80 x 10 <sup>2</sup> | 4.20 x 10 <sup>2</sup> | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80            | Push                | 5.03 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                | Pull                | 4.54 x 10 <sup>2</sup> | 6.80 x 10 <sup>2</sup> | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |
| ø100           | Push                | 7.85 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 2.36 x 10 <sup>3</sup> | 3.14 x 10 <sup>3</sup> | 3.93 x 10 <sup>3</sup> | 4.71 x 10 <sup>3</sup> | 5.50 x 10 <sup>3</sup> | 6.28 x 10 <sup>3</sup> | 7.07 x 10 <sup>3</sup> | 7.85 x 10 <sup>3</sup> |
|                | Pull                | 7.15 x 10 <sup>2</sup> | 1.07 x 10 <sup>3</sup> | 1.43 x 10 <sup>3</sup> | 2.14 x 10 <sup>3</sup> | 2.86 x 10 <sup>3</sup> | 3.57 x 10 <sup>3</sup> | 4.29 x 10 <sup>3</sup> | 5.00 x 10 <sup>3</sup> | 5.72 x 10 <sup>3</sup> | 6.43 x 10 <sup>3</sup> | 7.15 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

# STS/STL-M-B Series

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)

**STS** - **M** - **8** - **10** - **F**

With switch (built-in magnet for switch)

**STS** - **M** - **8** - **10** - **T2H** - **R** - **F**

### ● Long stroke

Without switch (built-in magnet for switch)

**STL** - **M** - **8** - **50** - **F**

With switch (built-in magnet for switch)

**STL** - **M** - **8** - **50** - **T2H** - **R** - **F**

Model No.

**A** Bearing

**B** Bore size

**C** Port thread

**D** Stroke

### ■ Custom stroke

Available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.

**E** Switch model No.  
\*1 \*3 \*5

For the 2-color LED, T1H/V, T8H/V and strong magnetic field proof switches for ø40 and over, insert "L1" with "-" between **A** and **B**.  
Example) STS-M-L1-63-50-T2YH3-D-F  
For ø80 and ø100, the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product.  
In this case, order the model No. with "L1" inserted between **A** and **B**.  
(Example) STS-M-L1-80-50-F

**F** Switch quantity

**G** Option

### ⚠ Precautions for model No. selection

- \*1 : Switches other than **E** Switch model No. are also available. (Made-to-order product)  
Refer to Ending Page 1 for details.
- \*2 : Refer to page 444 (metal bush bearing M) and page 446 (ball bearing B) for combinations of variations/options.
- \*3 : T8H/V switch cannot be installed on ø8 to ø16.
- \*4 : Refer to page 458 for material details.
- \*5 : ø8 to ø25 with ball bearing B are copper and PTFE free as standard.
- \*6 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

### [Example of model No.]

#### STS-M-8-30-T0H-R-F

Model: Guided cylinder, short stroke, standard single rod

- A** Bearing : Metal bush bearing
- B** Bore size : ø8 mm
- C** Port thread : M5
- D** Stroke : 30 mm
- E** Switch model No. : Reed switch T0H, 1 m lead wire length
- F** Switch quantity : 1 on rod side
- G** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| <b>M</b>         | Metal bush bearing |
| <b>B</b>         | Ball bearing       |

| <b>B Bore size (mm)</b> |                      |
|-------------------------|----------------------|
| <b>8</b>                | ø8                   |
| <b>12</b>               | ø12                  |
| <b>16</b>               | ø16                  |
| <b>20</b>               | ø20                  |
| <b>25</b>               | ø25                  |
| <b>32</b>               | ø32                  |
| <b>40</b>               | ø40                  |
| <b>50</b>               | ø50                  |
| <b>63</b>               | ø63                  |
| <b>80</b>               | ø80                  |
| <b>100</b>              | ø100 (made to order) |

| <b>C Port thread</b> |   |
|----------------------|---|
| <b>Blank</b>         | M5 (ø8 to ø25)<br>Rc thread (ø32 to ø100)       |
| <b>NN</b>            | NPT thread (ø32 and over) made-to-order product |
| <b>GN</b>            | G thread (ø32 and over) made-to-order product   |

| <b>D Stroke (mm)</b>                             |
|--|
| Refer to the stroke table on the following page. |

| <b>E Switch model No.</b> |                    |           |         |    |                       |           |
|---------------------------|--------------------|-----------|---------|----|-----------------------|-----------|
| Straight lead wire        | L-shaped lead wire | Contact   | Voltage |    | Indicator             | Lead wire |
|                           |                    |           | AC      | DC |                       |           |
| <b>T0H*</b>               | <b>T0V*</b>        | Reed      | ●       | ●  | 1-color LED           | 2-wire    |
| <b>T5H*</b>               | <b>T5V*</b>        |           | ●       | ●  | No indicator lamp     |           |
| <b>T8H*</b>               | <b>T8V*</b>        |           | ●       | ●  | 1-color LED           |           |
| <b>T1H*</b>               | <b>T1V*</b>        | ●         | ●       |    |                       |           |
| <b>T2H*</b>               | <b>T2V*</b>        | Proximity |         | ●  | 1-color LED           | 3-wire    |
| <b>T3H*</b>               | <b>T3V*</b>        |           |         | ●  |                       |           |
| <b>T3PH*</b>              | <b>T3PV*</b>       |           |         | ●  | 1-color LED           | 3-wire    |
| <b>T2WH*</b>              | <b>T2WV*</b>       |           |         | ●  | 2-color LED           | 2-wire    |
| <b>T2YH*</b>              | <b>T2YV*</b>       |           |         | ●  |                       | 2-wire    |
| <b>T3WH*</b>              | <b>T3WV*</b>       |           |         | ●  |                       | 3-wire    |
| <b>T3YH*</b>              | <b>T3YV*</b>       |           |         | ●  |                       | 3-wire    |
| <b>T2JH*</b>              | <b>T2JV*</b>       |           |         | ●  | 1-color LED off-delay | 2-wire    |
| <b>T2YD*</b>              | -                  |           |         | ●  | 2-color LED           | 2-wire    |
| <b>T2YDT*</b>             | -                  |           |         | ●  |                       |           |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| <b>Blank</b>              | 1 m (standard) |
| <b>3</b>                  | 3 m (option)   |
| <b>5</b>                  | 5 m (option)   |

| <b>F Switch quantity</b> |                |
|--------------------------|----------------|
| <b>R</b>                 | 1 on rod side  |
| <b>H</b>                 | 1 on head side |
| <b>D</b>                 | 2              |
| <b>T</b>                 | 3              |

| <b>G Option</b> |  |
|-----------------|--|
| <b>F</b>        | End plate material: steel  |
| <b>M</b>        | Corrosion proof (Piston rod and guide rod material: SUS) *4            |
| <b>M1</b>       | Corrosion proof (Piston rod, guide rod and end plate material: SUS) *4 |
| <b>P6</b>       | Copper and PTFE free specifications *5                                 |

### D Stroke

| Series        | Stroke (mm)     | Applicable bore size |       |                    |     |     |     |     |     |     |     |      |   |
|---------------|-----------------|----------------------|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|---|
|               |                 | ø8                   | ø12   | ø16                | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 | ø100 |   |
| STS           | Standard stroke | 10                   | ●     | ●                  | ●   |     |     |     |     |     |     |      |   |
|               |                 | 20                   | ●     | ●                  | ●   |     |     |     |     |     |     |      |   |
|               |                 | 25                   |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 30                   | ●     | ●                  | ●   |     |     |     |     |     |     |      |   |
|               |                 | 40                   | ●     | ●                  | ●   |     |     |     |     |     |     |      |   |
|               |                 | 50                   | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 75                   |       |                    |     |     |     |     |     |     |     | ●    | ● |
|               |                 | 100                  |       |                    |     |     |     |     |     |     |     | ●    | ● |
|               |                 | Min. stroke          | *1    | 5                  |     |     |     |     |     |     |     |      |   |
|               |                 | Custom stroke        | *1, 2 | In 5 mm increments |     |     |     |     |     |     |     |      |   |
| STL           | Standard stroke | 50                   | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   |      |   |
|               |                 | 75                   | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 100                  | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 125                  | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 150                  | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 175                  | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 200                  | ●     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ● |
|               |                 | 225                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
|               |                 | 250                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
|               |                 | 275                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
|               |                 | 300                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
|               |                 | 325                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
|               |                 | 350                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
|               |                 | 375                  |       |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    |   |
| 400           |                 |                      |       | ●                  | ●   | ●   | ●   | ●   | ●   | ●   |     |      |   |
| Min. stroke   | *1              | 50                   |       |                    | 30  |     |     |     | 55  |     |     |      |   |
| Custom stroke | *1, 2           | In 5 mm increments   |       |                    |     |     |     |     |     |     |     |      |   |

\*1: The total dimensions are the same as the longer standard stroke.

\*2: Special total length for custom stroke can be provided when a custom stroke is used. (Made to order)

### How to order switch

SW - T0V

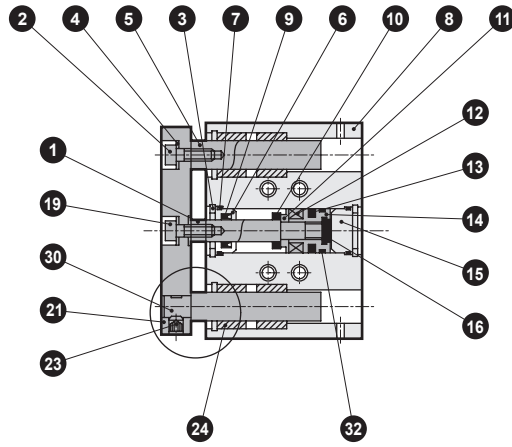
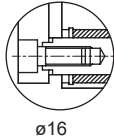
Switch model No.  
(Item E on page 450)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

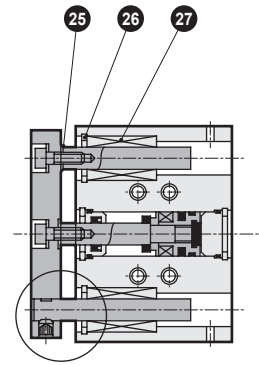
## Internal structure and parts list (ø8 to ø80)

● Double acting/  
standard single rod  
STS-M<sub>B</sub>

ø8/ø12/ø16

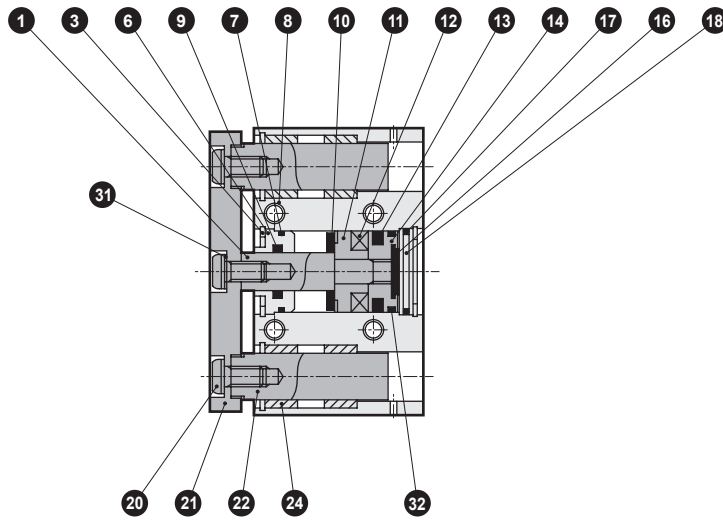


Metal bush bearing

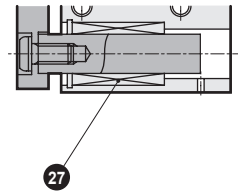


Ball bearing

ø20/ø25

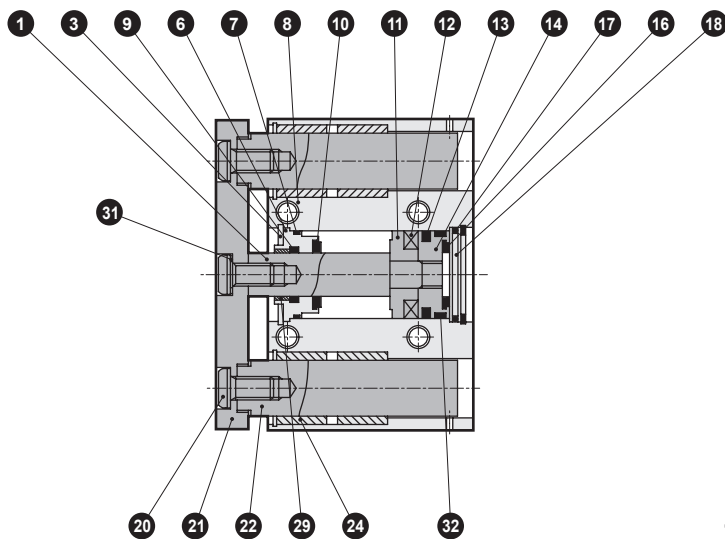


Metal bush bearing

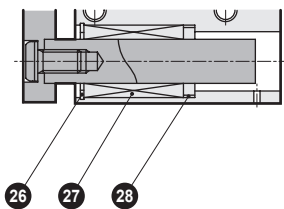


Ball bearing

ø32/ø40/ø50/ø63



Metal bush bearing

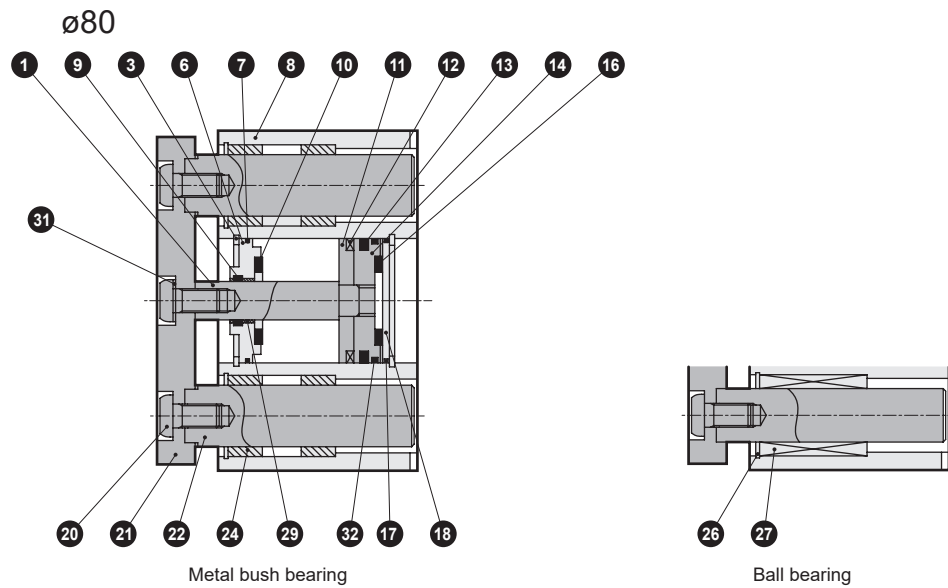


Ball bearing

|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| LCX         |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

### Internal structure and parts list (ø8 to ø80)

- Double acting/  
standard single rod  
STS-M<sub>B</sub>



| No.  | Part name                     | Material  | Remarks                              | No. | Part name                            | Material                       | Remarks                              |
|--|-------------------------------|---|--------------------------------------|-----|--------------------------------------|--------------------------------|--------------------------------------|
| <b>STS-M<sub>B</sub> (Standard single rod)</b> |                               |   |                                      |     |                                      |                                |                                      |
| 1  | Piston rod                    | Stainless steel (ø8 to ø25)<br>Steel (ø32 to ø80) | Industrial chrome plating            | 16  | Cushion rubber (H)                   | Urethane rubber                |                                      |
| 2  | Hexagon socket head cap screw | Steel   | Zinc chromate                        | 17  | O-ring                               | Nitrile rubber                 |                                      |
| 3  | C-snap ring                   | Steel   | Zinc phosphate                       | 18  | Base plate                           | Aluminum alloy<br>(ø20 to ø63) | Chromate                             |
| 4  | Plain washer                  | Steel   | Black finish                         |     |                                      | Steel (ø80)                    | Zinc chromate                        |
| 5  | Guide rod (1)                 | M: Stainless steel                                | Industrial chrome plating (ø12, ø16) | 19  | Hexagon nut (ø8)                     | Steel                          | Zinc chromate                        |
|  |                               | B: Alloy steel                                    | Industrial chrome plating            |     | Hex socket head cap screw (ø12, ø16) | Steel                          | Zinc chromate                        |
| 6  | Rod metal                     | Special aluminum alloy                            | Alumite (*1)                         | 20  | Hexagon socket button head bolt      | Steel                          | Zinc chromate                        |
| 7  | Metal gasket                  | Nitrile rubber                                    |                                      | 21  | End plate                            | Aluminum alloy                 | Alumite                              |
| 8  | Cylinder body                 | Aluminum alloy                                    | Hard alumite                         | 22  | Guide rod<br>(ø20 to ø80)            | Steel                          | Industrial chrome plating            |
| 9  | Rod packing                   | Nitrile rubber                                    |                                      | 23  | Hexagon socket set screw (ø8, ø12)   | Steel                          | Black finish                         |
| 10   | Cushion rubber (R)            | Urethane rubber                                   |                                      | 24  | Metal                                | Oil impregnated bearing alloy  |                                      |
| 11   | Spacer                        | Aluminum alloy<br>(ø8 to ø12, ø63, ø80)           | Chromate<br>(ø8 to ø12, ø63, ø80)    | 25  | Plain washer                         | Steel                          | Black finish                         |
|  |                               | Polyamide (ø20 to ø50)                            |                                      |     | 26                                   | C-snap ring                    | Steel                                |
| 12   | Magnet                        |   |                                      | 27  | Ball bush                            |                                |                                      |
| 13   | Piston packing                | Nitrile rubber                                    |                                      | 28  | Collar                               | Aluminum alloy                 |                                      |
| 14   | Piston                        | Special aluminum alloy (ø8)                       | Chromate                             | 29  | Bush                                 | Oiles drymet                   |                                      |
|  |                               | Aluminum alloy<br>(ø12 to ø80)                    | (ø8, ø20 to ø80)                     |     | 30                                   | Guide rod (2)<br>(ø8, ø12)     | M: Stainless steel<br>B: Alloy steel |
| 15   | Cover                         | Aluminum alloy                                    |                                      | 31  | Disc spring washer                   | Steel                          |                                      |
|  |                               |   |                                      | 32  | Wear ring                            | Acetal resin                   | ø12 to ø80                           |

\*1: Chromate-coated for ø32 to ø50 only.

### Repair parts list

| Bore size<br>(mm) | Kit No.            | Repair parts No. |
|-------------------|--------------------|------------------|
|                   | STS-M <sub>B</sub> |                  |
| ø8                | STS-8K             | 7 9 10 13 16     |
| ø12               | STS-12K            | 7 9 10 13 16 32  |
| ø16               | STS-16K            |                  |
| ø20               | STS-20K            |                  |
| ø25               | STS-25K            |                  |
| ø32               | STS-32K            | 7 9 10 13        |
| ø40               | STS-40K            |                  |
| ø50               | STS-50K            | 16 17 32         |
| ø63               | STS-63K            |                  |
| ø80               | STS-80K            |                  |

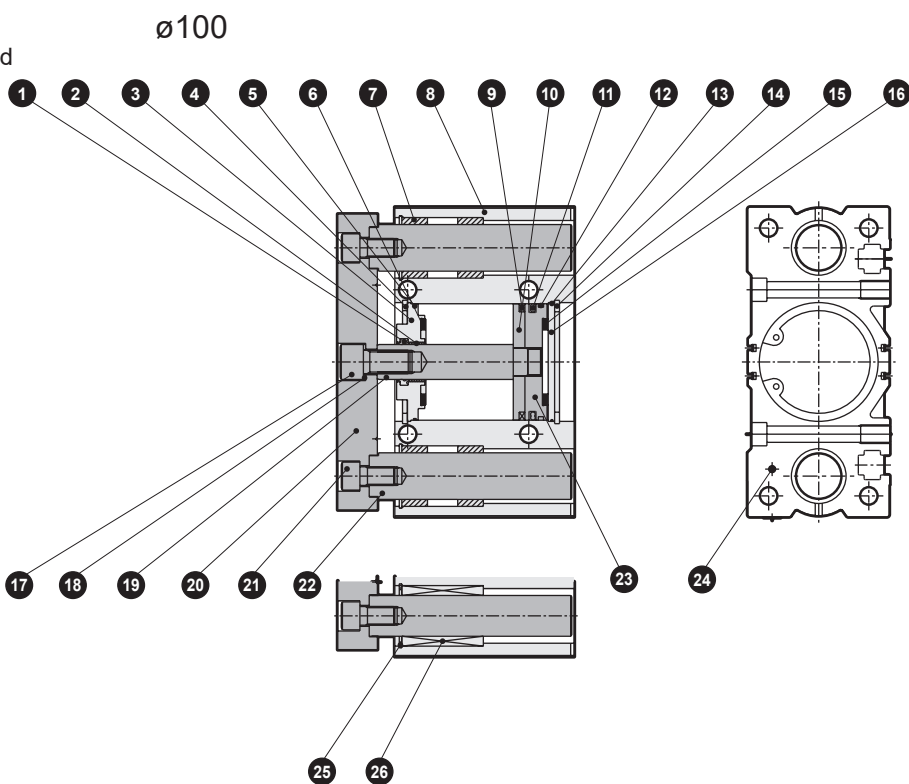
Note: Specify the kit No. when placing an order.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

- LCM
- LCR
- LCG
- LCW
- L CX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## Internal structure and parts list (ø100)

● Double acting/  
standard single rod  
STS-M<sub>B</sub>



| Mod No.                | Part name          | Material                      | Remarks        | Mod No. | Part name                     | Material        | Remarks                   |
|------------------------|--------------------|-------------------------------|----------------|---------|-------------------------------|-----------------|---------------------------|
| STS/L-M (Standard rod) |                    |                               |                |         |                               |                 |                           |
| 1                      | Rod packing        | Nitrile rubber                |                | 14      | C-snap ring                   | Steel           | Zinc phosphate            |
| 2                      | Bush               | Oiles drymet                  |                | 15      | Cushion rubber (H)            | Urethane rubber |                           |
| 3                      | Rod metal          | Aluminum alloy                | Chromate       | 16      | Base plate                    | Steel           | Zinc chromate             |
| 4                      | C-snap ring        | Steel                         | Zinc phosphate | 17      | Hexagon socket head cap screw | Steel           | Zinc chromate             |
| 5                      | Metal gasket       | Nitrile rubber                |                | 18      | Disc spring washer            | Steel           | Zinc chromate             |
| 6                      | Cushion rubber (R) | Urethane rubber               |                | 19      | Piston rod                    | Steel           | Industrial chrome plating |
| 7                      | Metal              | Oil impregnated bearing alloy |                | 20      | End plate                     | Aluminum alloy  | Alumite                   |
| 8                      | Tube body          | Aluminum alloy                | Hard alumite   | 21      | Hexagon socket head cap screw | Steel           | Zinc chromate             |
| 9                      | Magnet             |                               |                | 22      | Guide rod                     | Steel           | Industrial chrome plating |
| 10                     | Spacer             | Aluminum alloy                | Chromate       | 23      | Piston                        | Aluminum alloy  | Chromate                  |
| 11                     | Piston packing     | Nitrile rubber                |                | 24      | Hexagon socket set screw      | Steel           | Black finish              |
| 12                     | Wear ring          | Acetal resin                  |                | 25      | C-snap ring                   | Steel           | Zinc phosphate            |
| 13                     | O-ring             | Nitrile rubber                |                | 26      | Ball bearing                  |                 |                           |

## Repair parts kit

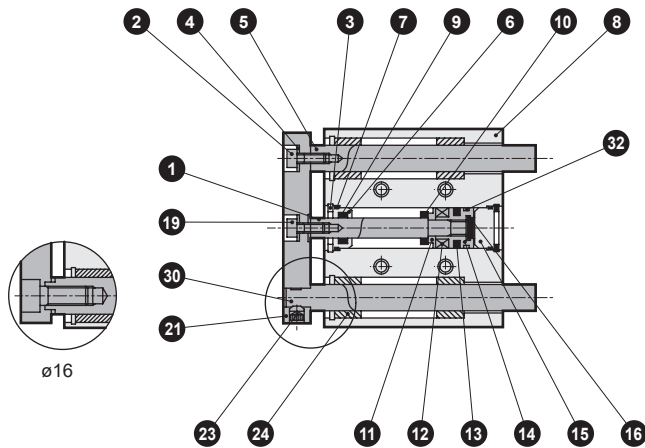
| Bore size<br>(mm) | Kit No.            | Repair parts No.  |
|-------------------|--------------------|-------------------|
|                   | STS-M <sub>B</sub> |                   |
| ø100              | STS-100K           | 1 5 6 11 12 13 15 |

Note: Specify the kit No. when placing an order.

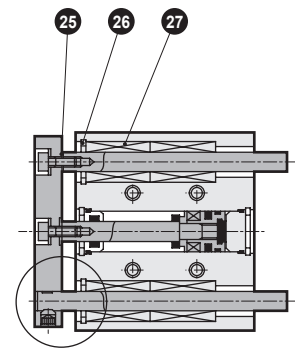
### Internal structure and parts list (ø8 to ø80)

● Double acting/standard single rod  
STL-M<sub>B</sub>

ø8 / ø12 / ø16

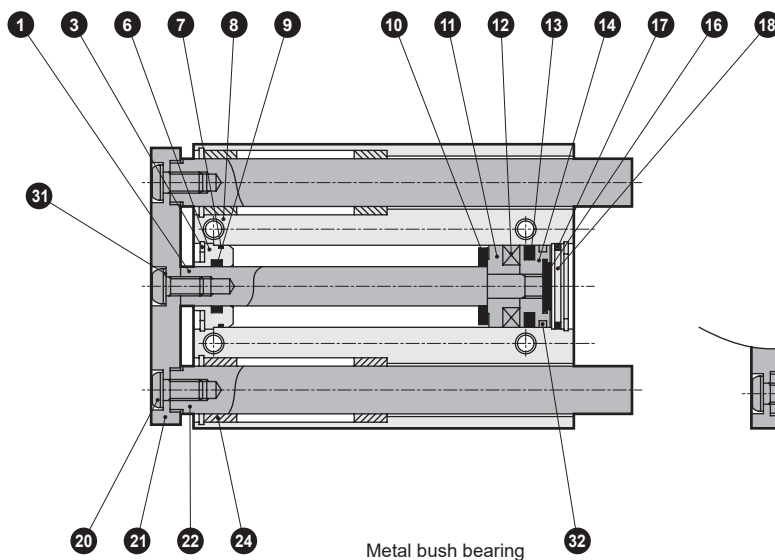


Metal bush bearing

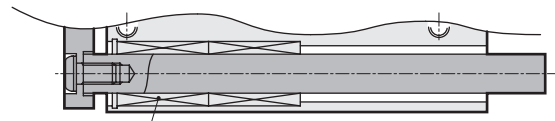


Ball bearing

ø20 / ø25

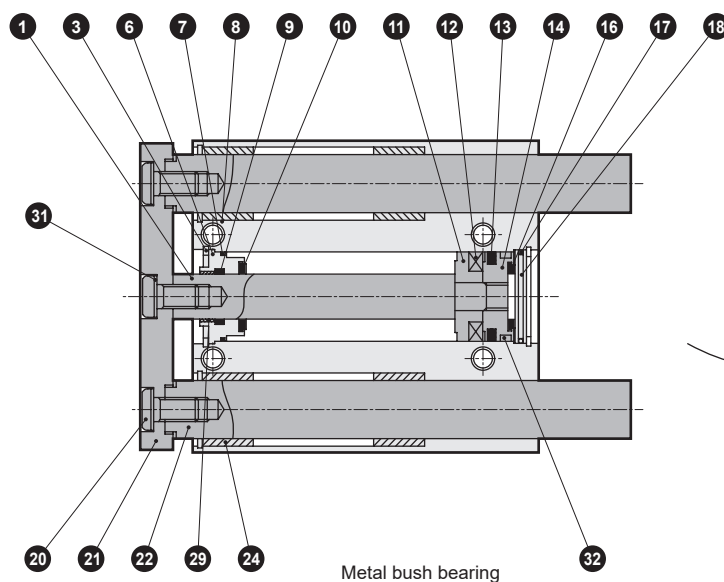


Metal bush bearing

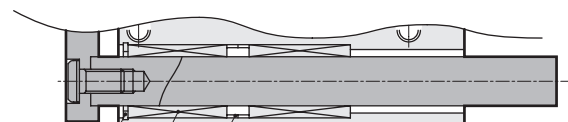


Ball bearing

ø32 / ø40 / ø50 / ø63



Metal bush bearing



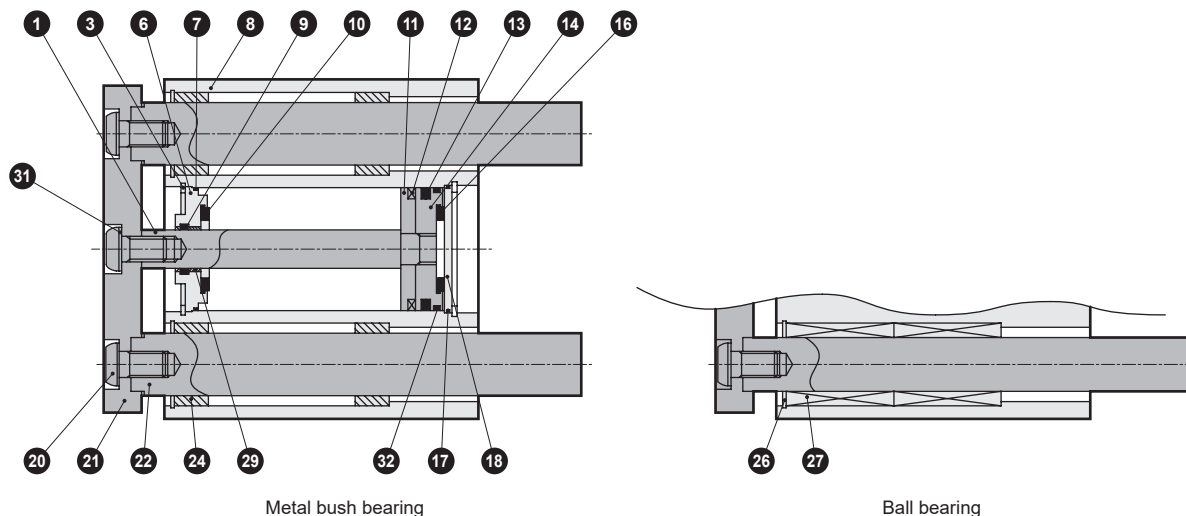
Ball bearing

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

## Internal structure and parts list (ø8 to ø80)

### ● Standard single rod ø80

STL-M<sub>B</sub>



| No.  | Part name                     | Material   | Remarks   | No. | Part name                            | Material                                   | Remarks  |
|--|-------------------------------|--|---|-----|--------------------------------------|--|--|
| <b>STL-M<sub>B</sub> (Double acting/standard single rod)</b> |                               |  |   |     |                                      |  |  |
| 1  | Piston rod                    | Stainless steel (ø8 to ø25)<br>Steel (ø32 to ø80)              | Industrial chrome plating   | 16  | Cushion rubber (H)                   | Urethane rubber                            |  |
| 2  | Hexagon socket head cap screw | Steel  | Zinc chromate   | 17  | O-ring                               | Nitrile rubber                             |  |
| 3  | C-snap ring                   | Steel  | Zinc phosphate  | 18  | Base plate                           | Aluminum alloy (ø20 to ø63)<br>Steel (ø80) | Chromate (ø20 to ø63)<br>Zinc chromate (ø80)                 |
| 4  | Plain washer                  | Steel  | Black finish  | 19  | Hexagon nut (ø8)                     | Steel                                      | Zinc chromate  |
| 5  | Guide rod (1)                 | M: Stainless steel<br>B: Steel                                 | Industrial chrome plating (ø12, ø16)<br>Industrial chrome plating |     | Hex socket head cap screw (ø12, ø16) | Steel                                      |  |
| 6  | Rod metal                     | Special aluminum alloy   | Alumite (*1)  | 20  | Hexagon socket button head bolt      | Steel                                      | Zinc chromate  |
| 7  | Metal gasket                  | Nitrile rubber   |   | 21  | End plate                            | Aluminum alloy                             | Alumite  |
| 8  | Cylinder body                 | Aluminum alloy   | Hard alumite  | 22  | Guide rod (ø20 to ø80)               | Steel                                      | Industrial chrome plating                                    |
| 9  | Rod packing                   | Nitrile rubber   |   | 23  | Hexagon socket set screw (ø8, ø12)   | Steel                                      | Black finish   |
| 10   | Cushion rubber (R)            | Urethane rubber  |   | 24  | Metal                                | Oil impregnated bearing alloy              |  |
| 11   | Spacer                        | Aluminum alloy (ø8 to ø12, ø63, ø80)<br>Polyamide (ø20 to ø50) | Chromate (ø8, ø12, ø63, ø80)                                      | 25  | Plain washer                         | Steel                                      | Black finish   |
| 12   | Magnet                        |  |   | 26  | C-snap ring                          | Steel                                      | Zinc phosphate   |
| 13   | Piston packing                | Nitrile rubber   |   | 27  | Ball bush                            |  |  |
| 14   | Piston                        | Special aluminum alloy (ø8)<br>Aluminum alloy (ø12 to ø80)     | Chromate  | 28  | Collar                               | Aluminum alloy                             |  |
| 15   | Cover                         | Aluminum alloy   |   | 29  | Bush                                 | Oiles drymet                               |  |
|  |                               |  |   | 30  | Guide rod (2) (ø8, ø12)              | M: Stainless steel<br>B: Steel             | Industrial chrome plating (ø12)<br>Industrial chrome plating |
|  |                               |  |   | 31  | Disc spring washer                   | Steel                                      |  |
|  |                               |  |   | 32  | Wear ring                            | Acetal resin                               | ø12 to ø80   |

\*1: Chromate-coated for ø32 to ø50 only.

## Repair parts list

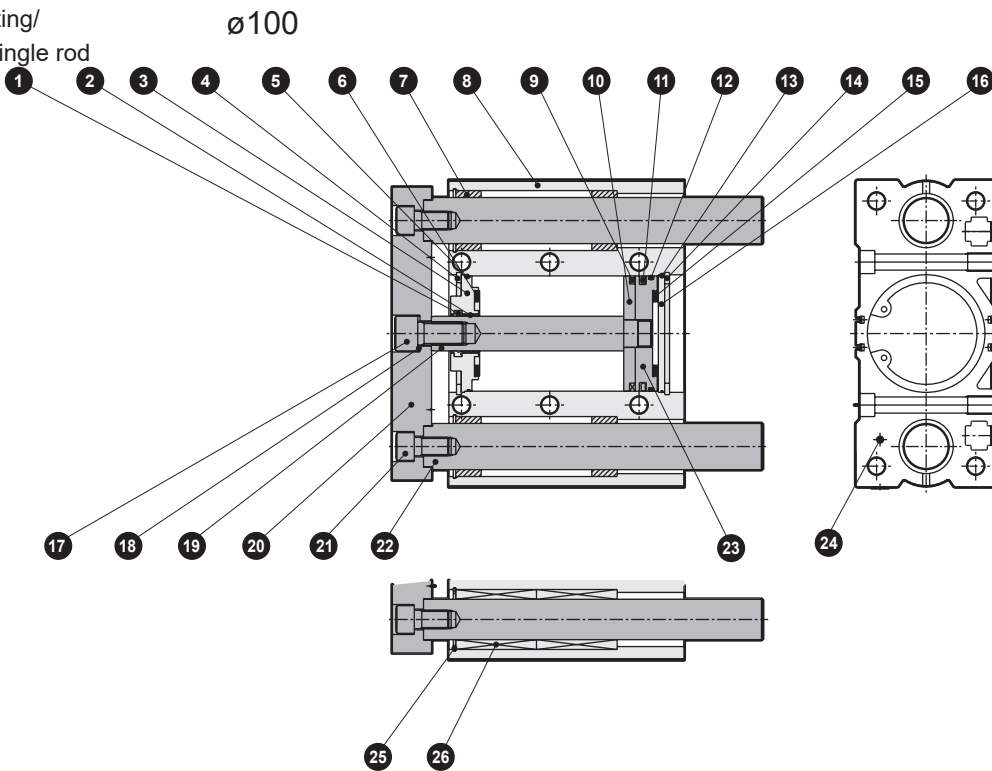
| Bore size (mm) | Kit No.            | Repair parts No. |
|----------------|--------------------|------------------|
|                | STL-M <sub>B</sub> |                  |
| ø8             | STS-8K             | 7 9 10 13 16     |
| ø12            | STS-12K            | 7 9 10 13 16 32  |
| ø16            | STS-16K            | 7 9 10 13 16 32  |
| ø20            | STS-20K            |                  |
| ø25            | STS-25K            |                  |
| ø32            | STS-32K            | 7 9 10           |
| ø40            | STS-40K            |                  |
| ø50            | STS-50K            | 13 16 17 32      |
| ø63            | STS-63K            |                  |
| ø80            | STS-80K            |                  |

Note: Specify the kit No. when placing an order.



### Internal structure and parts list (ø100)

● Double acting/  
standard single rod  
STL-M<sub>B</sub>



| Mod No.                             | Part name          | Material                      | Remarks        | Mod No. | Part name                     | Material        | Remarks                   |
|-------------------------------------|--------------------|-------------------------------|----------------|---------|-------------------------------|-----------------|---------------------------|
| STS/L-M <sub>B</sub> (Standard rod) |                    |                               |                |         |                               |                 |                           |
| 1                                   | Rod packing        | Nitrile rubber                |                | 14      | C-snap ring                   | Steel           | Zinc phosphate            |
| 2                                   | Bush               | Oiles drymet                  |                | 15      | Cushion rubber (H)            | Urethane rubber |                           |
| 3                                   | Rod metal          | Aluminum alloy                | Chromate       | 16      | Base plate                    | Steel           | Zinc chromate             |
| 4                                   | C-snap ring        | Steel                         | Zinc phosphate | 17      | Hexagon socket head cap screw | Steel           | Zinc chromate             |
| 5                                   | Metal gasket       | Nitrile rubber                |                | 18      | Disc spring washer            | Steel           |                           |
| 6                                   | Cushion rubber (R) | Urethane rubber               |                | 19      | Piston rod                    | Steel           | Industrial chrome plating |
| 7                                   | Metal              | Oil impregnated bearing alloy |                | 20      | End plate                     | Aluminum alloy  | Alumite                   |
| 8                                   | Tube body          | Aluminum alloy                | Hard alumite   | 21      | Hexagon socket head cap screw | Steel           | Zinc chromate             |
| 9                                   | Magnet             |                               |                | 22      | Guide rod                     | Steel           | Industrial chrome plating |
| 10                                  | Spacer             | Aluminum alloy                | Chromate       | 23      | Piston                        | Aluminum alloy  | Chromate                  |
| 11                                  | Piston packing     | Nitrile rubber                |                | 24      | Hexagon socket set screw      | Steel           | Black finish              |
| 12                                  | Wear ring          | Acetal resin                  |                | 25      | C-snap ring                   | Steel           | Zinc phosphate            |
| 13                                  | O-ring             | Nitrile rubber                |                | 26      | Ball bearing                  |                 |                           |

### Repair parts kit

| Bore size<br>(mm) | Kit No.            | Repair parts No.  |
|-------------------|--------------------|-------------------|
|                   | STL-M <sub>B</sub> |                   |
| ø100              | STS-100K           | 1 5 6 11 12 13 15 |

Note: Specify the kit No. when placing an order.

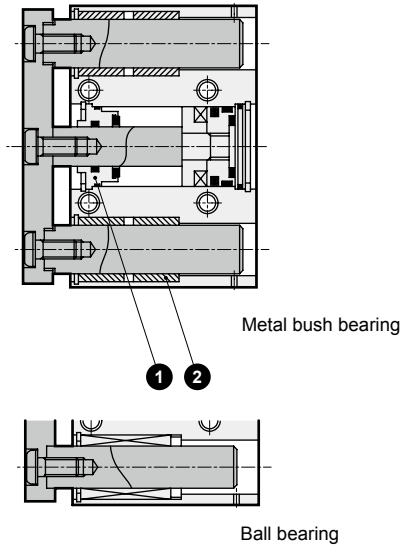
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-<sup>M</sup><sub>B</sub> Series

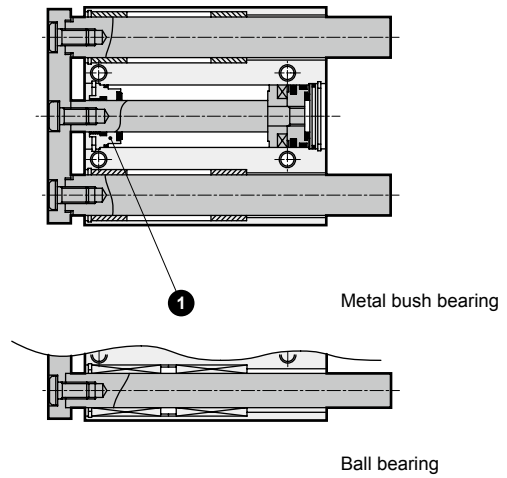
## Internal structure and parts list (Copper and PTFE free/Corrosion proof ø8 to ø100)

|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| LX          |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

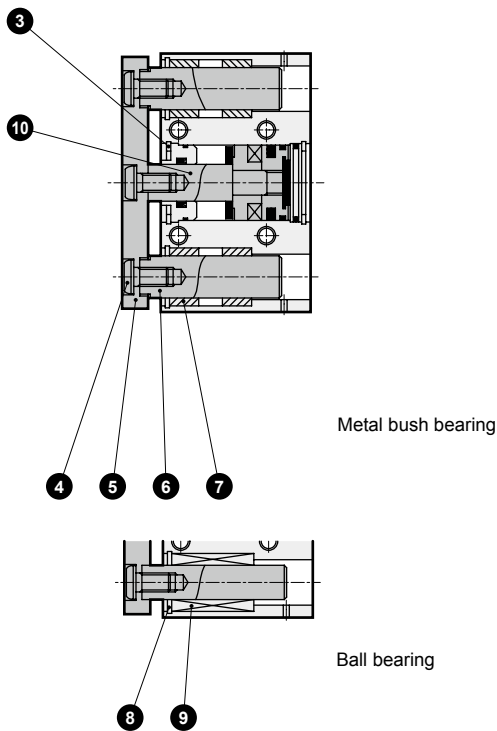
● Copper and PTFE free  
STS-<sup>M</sup><sub>B</sub>-P6 \* P6 does not include a 29 bush.



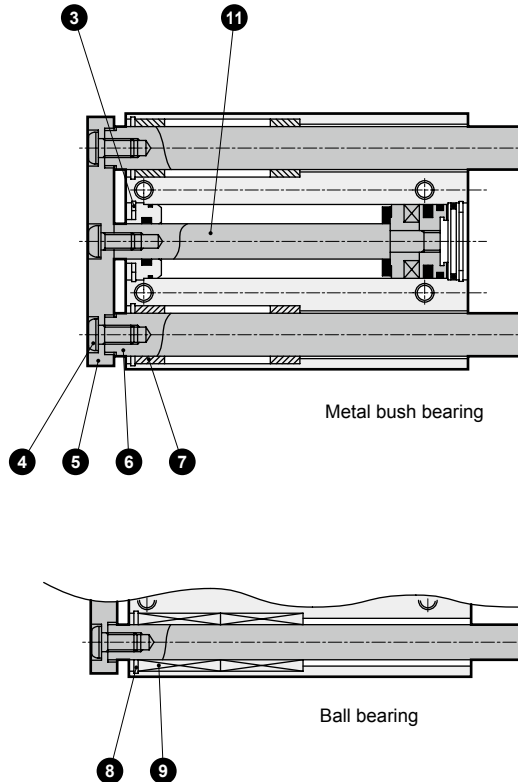
● Copper and PTFE free  
STL-<sup>M</sup><sub>B</sub>-P6 \* P6 does not include a 29 bush.



● Corrosion proof  
STS-<sup>M</sup><sub>B</sub>-M/M1



● Corrosion proof  
STL-<sup>M</sup><sub>B</sub>-M/M1



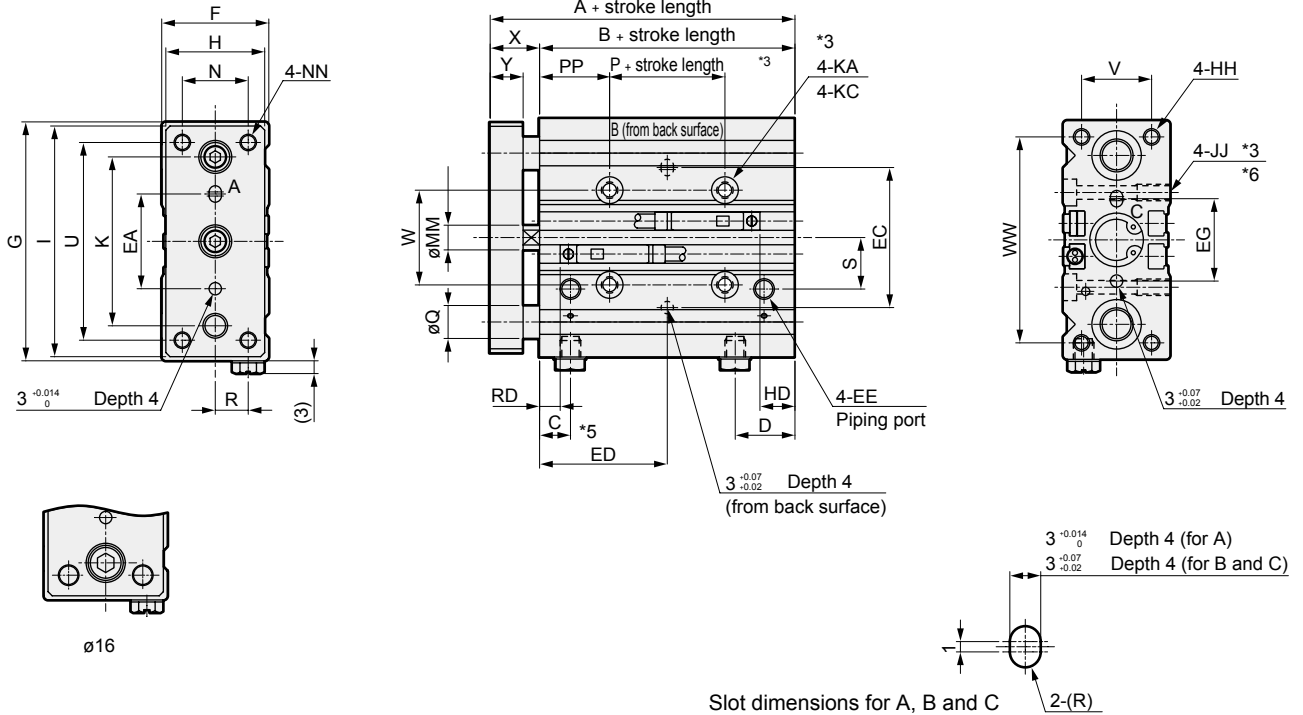
Parts list (Parts not listed below are the same as those of the double acting/standard single rod. Refer to pages 453 to 457.)

| No.  | Part name                               | Material                                 | Remarks | No. | Part name           | Material                           | Remarks                                 |
|--|---|--|---------|-----|---------------------|------------------------------------|---|
| <b>ST<sup>S</sup><sub>L</sub>-<sup>M</sup><sub>B</sub>-P6 (copper and PTFE free)</b> |   |  |         | 6   | Guide rod           | Stainless steel                    | Industrial chrome plating (M type only) |
| 1  | Rod metal                               | Special aluminum alloy                   |         | 7   | Metal               | Bearing with solid lubricant       |   |
| 2  | Metal                                   | Cast iron oil-impregnated bearing        |         | 8   | Adaptor (ø8 to ø16) | Aluminum alloy                     |   |
| <b>ST<sup>S</sup><sub>L</sub>-<sup>M</sup><sub>B</sub>-M/M1 (corrosion proof)</b>    |   |  |         |     |                     |                                    |   |
| 3  | C type snap ring                        | Stainless steel                          |         | 9   | Ball bush           | Made of stainless steel            |   |
| 4  | Hex socket button head bolt (ø8 to ø80) | Stainless steel                          |         | 10  | Piston rod          | Stainless steel Steel (ø8 to ø100) | Industrial chrome plating               |
|  | Hex socket head cap screw (ø100)        |  |         |     |                     |                                    |   |
| 5  | End plate                               | M: Aluminum alloy<br>M1: Stainless steel | Alumite | 11  | Piston rod          | Stainless steel Steel (ø8 to ø100) | Industrial chrome plating               |

Dimensions: ø8/ø12/ø16



- Standard single rod STS-M<sub>B</sub>
- Corrosion proof STS-M<sub>B</sub>-M/M1



| Code | Standard stroke length (mm) |    | A  | B   | C   | D    | DD  | EE | EA | EC  | ED  | EG | F  | G  | H           | HH         |
|------|-----------------------------|----|----|-----|-----|------|-----|----|----|---|---|----|----|----|-------------|------------|
| ø8   | 10, 20, 30                  | 40 | 40 | 28  | 11  | 14.5 | 6.5 | M5 | 20 | 25  | 15+<br><small>Stroke length<br/>2</small> | 20 | 24 | 53 | 22          | M4 depth 8 |
| ø12  |                             |    | 44 | 32  | 7.5 | 14.5 | 7.5 | M5 | 23 | 34  | 16+<br><small>Stroke length<br/>2</small> | 20 | 26 | 58 | 24          | M4 depth 8 |
| ø16  | 40, 50                      | 45 | 32 | 7.5 | 17  | 7.5  | M5  | 24 | 36 | 16+<br><small>Stroke length<br/>2</small> | 24  | 30 | 64 | 28 | M5 depth 10 |            |

| Code           | I     | JJ          | K     | KA          | KC                      | MM | N  | NN         | P   | PP | Q  |   | R   |
|----------------|-------|-------------|-------|-------------|-------------------------|----|----|------------|-----|----|----|---|-----|
| Bore size (mm) | ST5-M |             | ST5-B |             |                         |    |    |            |     |    |    |   |     |
| ø8             | 51    | M4 depth 10 | 40    | 3.3 through | 6.5 spot face depth 3.3 | 4  | 15 | M4 through | -10 | 20 | 6  | 5 | 7.5 |
| ø12            | 56    | M4 depth 10 | 41    | 3.3 through | 6.5 spot face depth 3.3 | 6  | 16 | M4 through | -2  | 17 | 8  | 6 | 8   |
| ø16            | 62    | M5 depth 10 | 46    | 4.3 through | 8 spot face depth 4.4   | 8  | 18 | M5 through | -2  | 17 | 10 | 8 | 10  |

| Code           | S    | U  | V  | W  | WW | X                               | Y  | T0/T5/T2/T3 | T2W/T3W |     |      |
|----------------|------|----|----|----|----|---------------------------------|----|-------------|---------|-----|------|
| Bore size (mm) | RD   |    | RD |    | RD |                                 | RD |             | RD      |     |      |
| ø8             | 13.5 | 43 | 16 | 25 | 45 | 12 <sup>0</sup> <sub>-1.5</sub> | 8  | 6.5         | 2.5     | 8.5 | 4.5  |
| ø12            | 12.5 | 48 | 17 | 23 | 50 | 12 <sup>0</sup> <sub>-1.5</sub> | 8  | 5           | 8.5     | 7   | 10.5 |
| ø16            | 13   | 52 | 22 | 25 | 54 | 13 <sup>0</sup> <sub>-1.5</sub> | 9  | 4.5         | 9.5     | 6   | 11.5 |

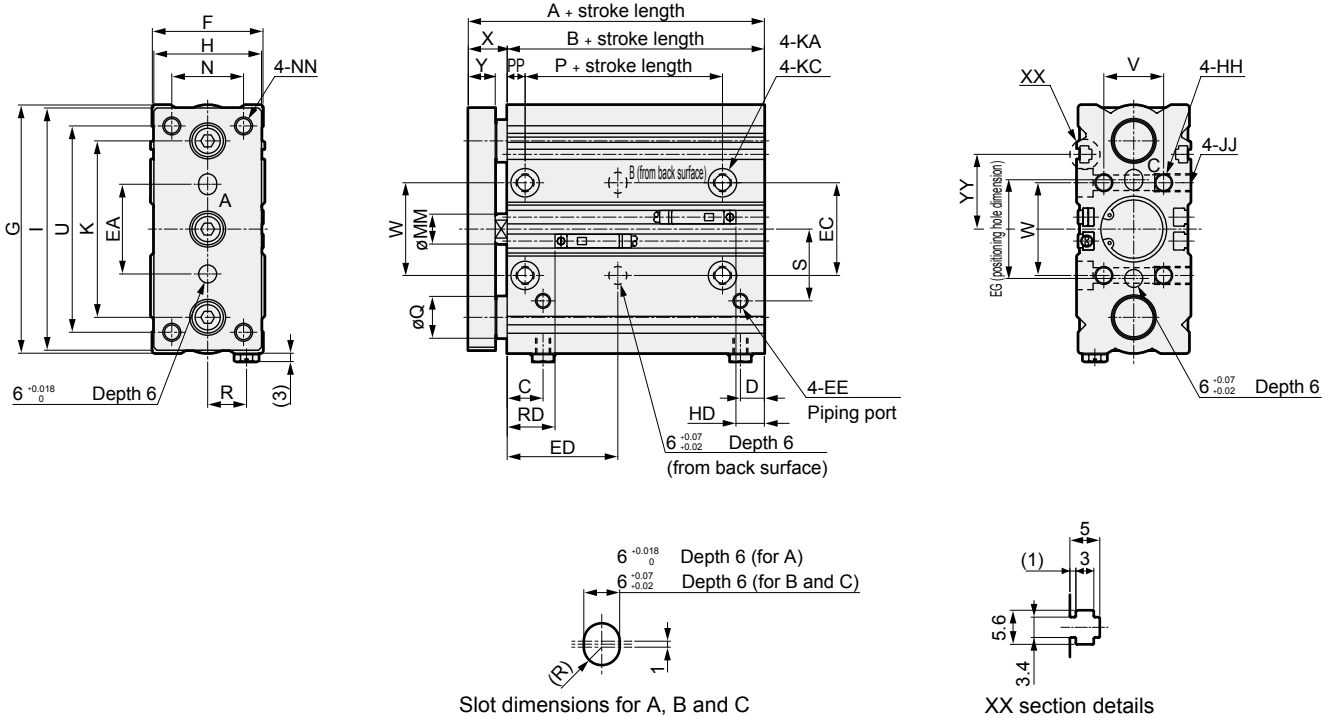
- \*1 : HD and RD dimensions for 10 mm stroke length differ from these dimensions according to the setting.
- \*2 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.
- \*3 : 2-KA, 2-KC and 2-JJ (two mounting holes) for STS-M<sub>B</sub>-8-10 (10 mm stroke length).
- \*4 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.
- \*5 : ED is 5 for STS-M<sub>B</sub>-8-10 (10 mm stroke length).
- \*6 : For STS-M<sub>B</sub>-16-10 (10 mm stroke length), use only two mounting holes for JJ M5 screw, although there are four mounting holes in the figure.

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Dimensions:  $\varnothing 20/\varnothing 25$



- Standard single rod STS-M
- Corrosion proof STS-M-MM1



| Code           | Standard stroke length (mm) | A           | B  | C           | D                       | EE | EA | EC          | EG  | ED                                     | F          | G  | H  | HH          |       |    |
|----------------|-----------------------------|-------------|----|-------------|-------------------------|----|----|-------------|-----|--|------------|----|----|-------------|-------|----|
| Bore size (mm) | 25, 50                      | 53          | 40 | 12          | 8                       | M5 | 30 | 31          | 33  | 14+ $\frac{\text{Stroke length}}{2}$   | 38         | 83 | 36 | M6 depth 12 |       |    |
|                |                             | 54          | 41 | 12          | 9                       | M5 | 32 | 35          | 37  | 14.5+ $\frac{\text{Stroke length}}{2}$ | 42         | 86 | 38 | M6 depth 12 |       |    |
| Code           | I                           | JJ          | K  | KA          | KC                      |    |    |             | MM  | N                                      | NN         | P  | PP | Q           |       | R  |
| Bore size (mm) |                             |             |    |             |                         |    |    |             |     |  |            |    |    | STS-M       | STS-B |    |
|                | 81                          | M6 depth 12 | 59 | 5.2 through | 9.5 spot face depth 5.4 |    |    |             | 10  | 24                                     | M6 through | 20 | 6  | 14          | 12    | 13 |
|                | 84                          | M6 depth 12 | 63 | 5.2 through | 9.5 spot face depth 5.4 |    |    |             | 12  | 26                                     | M6 through | 20 | 6  | 14          | 12    | 14 |
| Code           | S                           | U           | V  | W           | X                       | Y  | YY | T0/T5/T2/T3 |     | T2W/T3W                                |            |    |    |             |       |    |
| Bore size (mm) |                             |             |    |             |                         |    |    | RD          | HD  | RD                                     | HD         |    |    |             |       |    |
|                | 24                          | 69          | 20 | 31          | 13 $\frac{0}{-2}$       | 9  | 25 | 12          | 9.5 | 12.5                                   | 12.5       |    |    |             |       |    |
|                | 26                          | 72          | 24 | 35          | 13 $\frac{0}{-2}$       | 9  | 27 | 13          | 9   | 14.5                                   | 11         |    |    |             |       |    |

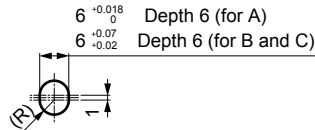
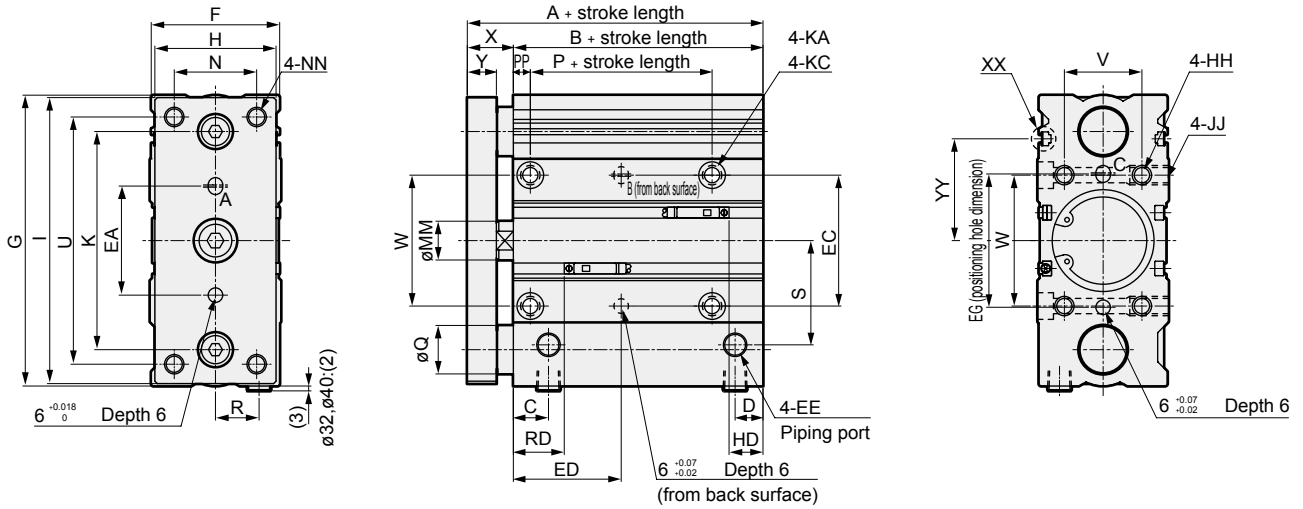
\*1 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

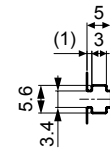
Dimensions: ø32/ø40/ø50/ø63



- Standard single rod STS-M
- Corrosion proof STS-M-M/M1



Slot dimensions for A, B and C



XX section details

| Code | Standard stroke length (mm) | A  | B  | C    | D    | EE    | EA | EC | EG | ED                          | F  | G   | H  | HH           |
|------|-----------------------------|----|----|------|------|-------|----|----|----|-----------------------------|----|-----|----|--------------|
| ø32  | 25, 50                      | 68 | 49 | 14   | 10.5 | Rc1/8 | 42 | 45 | 46 | 17.5+<br>Stroke length<br>2 | 47 | 111 | 45 | M8 depth 16  |
| ø40  |                             | 72 | 53 | 14.5 | 12   | Rc1/8 | 45 | 54 | 55 | 19.5+<br>Stroke length<br>2 | 54 | 120 | 50 | M8 depth 16  |
| ø50  |                             | 77 | 55 | 16   | 12.5 | Rc1/4 | 55 | 66 | 69 | 19.5+<br>Stroke length<br>2 | 66 | 147 | 64 | M10 depth 20 |
| ø63  |                             | 83 | 61 | 17.5 | 17.5 | Rc1/4 | 62 | 79 | 82 | 22.5+<br>Stroke length<br>2 | 79 | 162 | 75 | M10 depth 20 |

| Code           | I   | JJ           | K   | KA          | KC                     | MM | N  | NN          | P  | PP | Q     |       | R  |
|----------------|-----|--------------|-----|-------------|------------------------|----|----|-------------|----|----|-------|-------|----|
| Bore size (mm) |     |              |     |             |                        |    |    |             |    |    | STS-M | STS-B |    |
| ø32            | 109 | M8 depth 16  | 81  | 6.3 through | 11 spot face depth 6.5 | 16 | 29 | M8 through  | 22 | 7  | 20    | 16    | 16 |
| ø40            | 118 | M8 depth 16  | 90  | 6.3 through | 11 spot face depth 6.5 | 16 | 34 | M8 through  | 25 | 7  | 20    | 16    | 18 |
| ø50            | 145 | M10 depth 20 | 110 | 8.6 through | 14 spot face depth 8.6 | 20 | 44 | M10 through | 26 | 8  | 25    | 20    | 22 |
| ø63            | 160 | M10 depth 20 | 124 | 8.6 through | 14 spot face depth 8.6 | 20 | 55 | M10 through | 26 | 8  | 25    | 20    | 26 |

| Code           | S  | U   | V  | W  | X                              | Y  | YY | T0/T5/T2/T3 | T2W/T3W |      |      |
|----------------|----|-----|----|----|--------------------------------|----|----|-------------|---------|------|------|
| Bore size (mm) |    |     |    |    |                                |    |    | RD          | HD      |      |      |
| ø32            | 39 | 93  | 25 | 45 | 19 <sup>0</sup> / <sub>2</sub> | 12 | 39 | 17.5        | 13.5    | 19   | 15   |
| ø40            | 43 | 102 | 32 | 54 | 19 <sup>0</sup> / <sub>2</sub> | 12 | 42 | 21          | 14      | 22.5 | 16   |
| ø50            | 49 | 125 | 38 | 66 | 22 <sup>0</sup> / <sub>2</sub> | 16 | 45 | 22          | 16      | 23.5 | 16.5 |
| ø63            | 56 | 140 | 50 | 79 | 22 <sup>0</sup> / <sub>2</sub> | 16 | 52 | 20          | 23      | 21.5 | 24.5 |

\*1 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

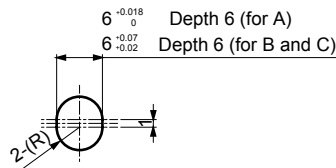
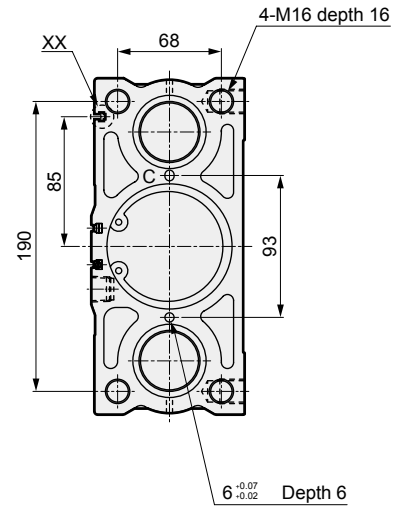
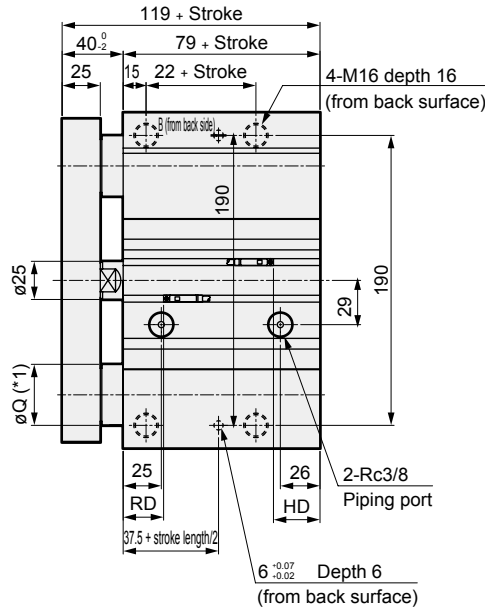
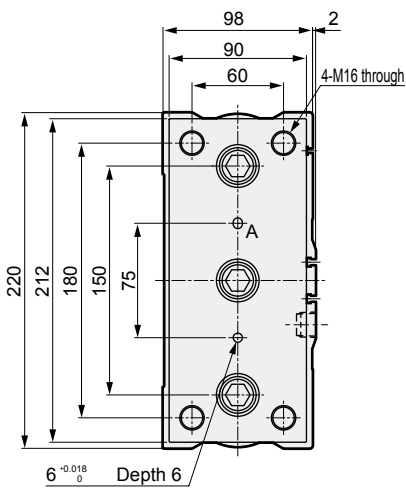
\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

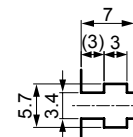


Dimensions:  $\varnothing 80$

- Standard single rod STS-M<sub>B</sub>
- Corrosion proof STS-M<sub>B</sub>-M/M1



Slot dimensions for A, B and C



XX section details

| Code             | T0/T5/T2/T3 |      | T2W/T3W |      |
|------------------|-------------|------|---------|------|
|                  | RD          | HD   | RD      | HD   |
| Bore size (mm)   |             |      |         |      |
| $\varnothing 80$ | 26.5        | 30.5 | 28      | 35.5 |

\*1 :  $\varnothing 40$  for M (metal bush bearing) and  $\varnothing 35$  for B (ball bearing).

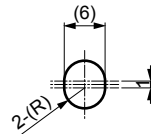
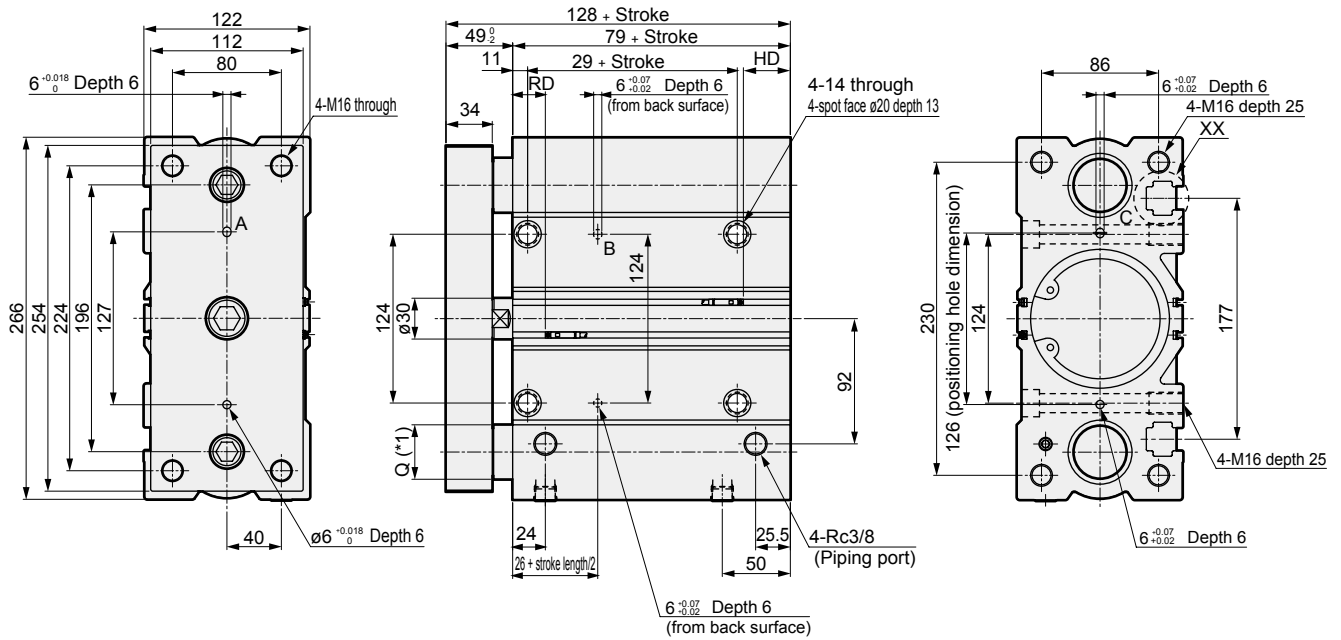
\*2 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length. The standard stroke lengths of  $\varnothing 80$  are 25, 50, 75 and 100 mm.

\*3 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

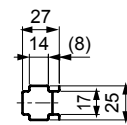
Dimensions: ø100



- Standard single rod STS-M<sub>B</sub>
- Corrosion proof STS-M<sub>B</sub>-M/M1
- Copper and PTFE free STS-M<sub>B</sub>-P6



Slot dimensions for A, B and C



XX section details

| Code | T0/T5/T2/T3 |      | T2W/T3W |    |
|------|-------------|------|---------|----|
|      | RD          | HD   | RD      | HD |
| ø100 | 24          | 34.5 | 27      | 37 |

\*1 : Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

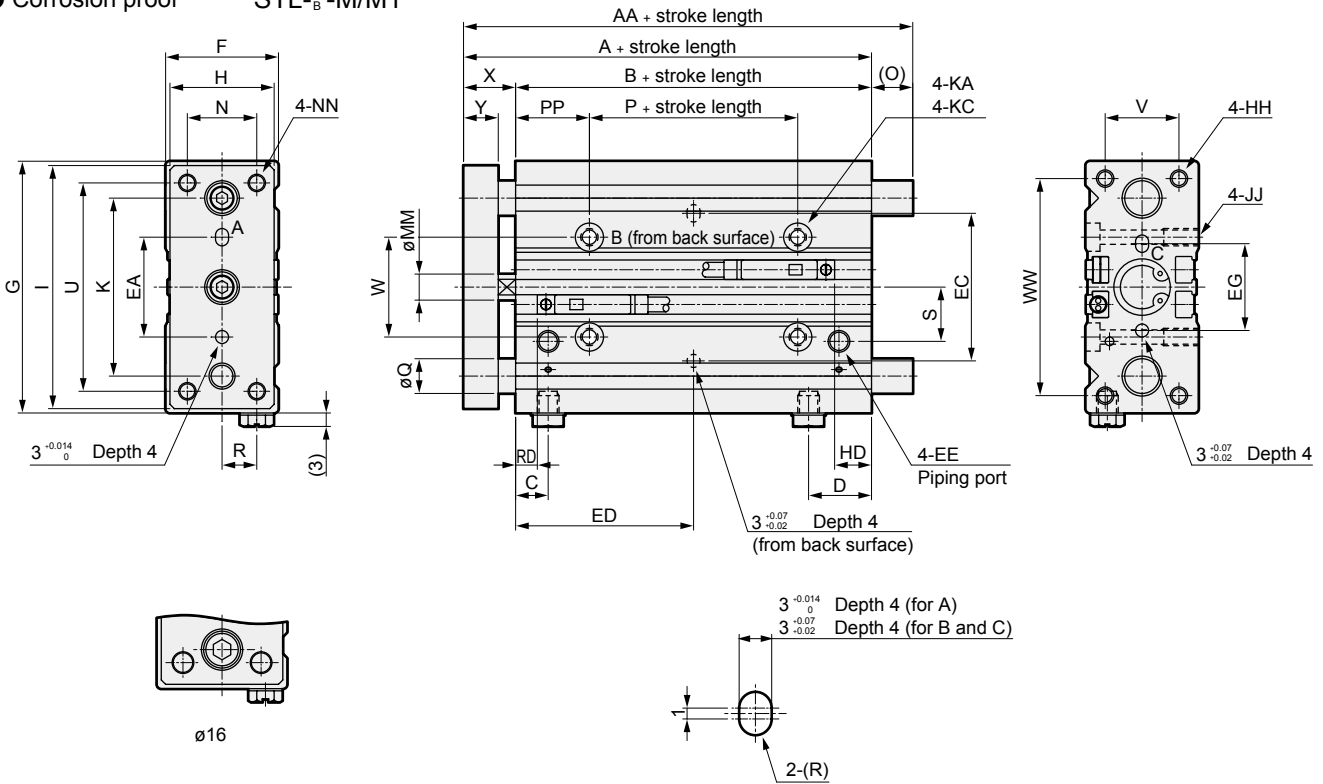
\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

Dimensions:  $\varnothing 8/\varnothing 12/\varnothing 16$



- Standard single rod STL-M<sub>B</sub>
- Corrosion proof STL-M<sub>B</sub>-M/M1



| Code             | Standard stroke length (mm)        | A  | AA   | B  | C   | D    | DD  | EE | EA | EC | ED                        | EG | F  | G  | H  | HH          |
|------------------|------------------------------------|----|------|----|-----|------|-----|----|----|----|---------------------------|----|----|----|----|-------------|
| $\varnothing 8$  | 50, 75, 100, 125,<br>150, 175, 200 | 40 | 46   | 28 | 11  | 14.5 | 6.5 | M5 | 20 | 25 | 15+<br>Stroke length<br>2 | 20 | 24 | 53 | 22 | M4 depth 8  |
| $\varnothing 12$ |                                    | 44 | 53.5 | 32 | 7.5 | 14.5 | 7.5 | M5 | 23 | 34 | 16+<br>Stroke length<br>2 | 20 | 26 | 58 | 24 | M4 depth 8  |
| $\varnothing 16$ |                                    | 45 | 64   | 32 | 7.5 | 17   | 7.5 | M5 | 24 | 36 | 16+<br>Stroke length<br>2 | 24 | 30 | 64 | 28 | M5 depth 10 |

| Code             | I     | JJ          | K     | KA          | KC                      | MM | N  | NN         | O   | P   | PP | Q  |   | R   |
|------------------|-------|-------------|-------|-------------|-------------------------|----|----|------------|-----|-----|----|----|---|-----|
| Bore size (mm)   | STL-M |             | STL-B |             |                         |    |    |            |     |     |    |    |   |     |
| $\varnothing 8$  | 51    | M4 depth 10 | 40    | 3.3 through | 6.5 spot face depth 3.3 | 4  | 15 | M4 through | 6   | -10 | 20 | 6  | 5 | 7.5 |
| $\varnothing 12$ | 56    | M4 depth 10 | 41    | 3.3 through | 6.5 spot face depth 3.3 | 6  | 16 | M4 through | 9.5 | -2  | 17 | 8  | 6 | 8   |
| $\varnothing 16$ | 62    | M5 depth 10 | 46    | 4.3 through | 8 spot face depth 4.4   | 8  | 18 | M5 through | 19  | -2  | 17 | 10 | 8 | 10  |

| Code             | S    | U  | V  | W  | WW | X                | Y  | T0/T5/T2/T3 |     | T2W/T3W |      |  |
|------------------|------|----|----|----|----|------------------|----|-------------|-----|---------|------|--|
| Bore size (mm)   | RD   |    | HD |    | RD |                  | HD |             |     |         |      |  |
| $\varnothing 8$  | 13.5 | 43 | 16 | 25 | 45 | $12^{+0}_{-1.5}$ | 8  | 6.5         | 2.5 | 8.5     | 4.5  |  |
| $\varnothing 12$ | 12.5 | 48 | 17 | 23 | 50 | $12^{+0}_{-1.5}$ | 8  | 5           | 8.5 | 7       | 10.5 |  |
| $\varnothing 16$ | 13   | 52 | 22 | 25 | 54 | $13^{+0}_{-1.5}$ | 9  | 4.5         | 9.5 | 6       | 11.5 |  |

\*1 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

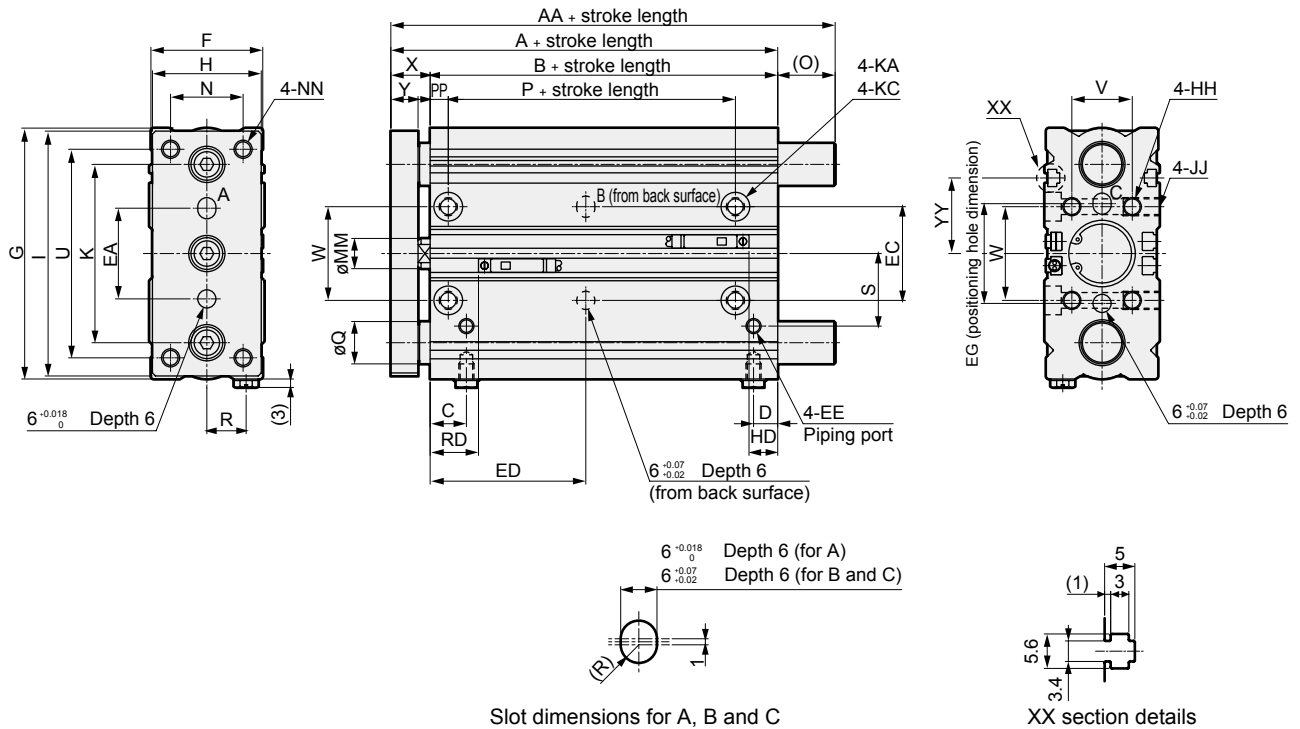
\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.



Dimensions:  $\varnothing 20/\varnothing 25$



- Standard single rod STL-M<sub>B</sub>
- Corrosion proof STL-M<sub>B</sub>-M/M1



|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| LCX         |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MechAndChuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

| Code             | Standard stroke length (mm)           |    |             |    |                   |                         |    |             |            |         |    |    |    | A  | AA | B  | C  | D | EE | EA | EC | EG | ED    | F                  | G  | H  |    |
|------------------|---------------------------------------|----|-------------|----|-------------------|-------------------------|----|-------------|------------|---------|----|----|----|----|----|----|----|---|----|----|----|----|-------|--------------------|----|----|----|
| $\varnothing 20$ | 50, 75, 100, 125, 150, 175, 200, 225, |    |             |    |                   |                         |    |             |            |         |    |    |    | 53 | 72 | 40 | 12 | 8 | M5 | 30 | 31 | 33 | 14.0+ | Stroke length<br>2 | 38 | 83 | 36 |
| $\varnothing 25$ | 250, 275, 300, 325, 350, 375, 400     |    |             |    |                   |                         |    |             |            |         |    |    |    | 54 | 72 | 41 | 12 | 9 | M5 | 32 | 35 | 37 | 14.5+ | Stroke length<br>2 | 42 | 86 | 38 |
| Code             | HH                                    | I  | JJ          | K  | KA                | KC                      | MM | N           | NN         | O       | P  | PP | Q  |    | R  |    |    |   |    |    |    |    |       |                    |    |    |    |
| $\varnothing 20$ | M6 depth 12                           | 81 | M6 depth 12 | 59 | 5.2 through       | 9.5 spot face depth 5.4 | 10 | 24          | M6 through | 19      | 20 | 6  | 14 | 12 | 13 |    |    |   |    |    |    |    |       |                    |    |    |    |
| $\varnothing 25$ | M6 depth 12                           | 84 | M6 depth 12 | 63 | 5.2 through       | 9.5 spot face depth 5.4 | 12 | 26          | M6 through | 18      | 20 | 6  | 14 | 12 | 14 |    |    |   |    |    |    |    |       |                    |    |    |    |
| Code             | S                                     | U  | V           | W  | X                 | Y                       | YY | T0/T5/T2/T3 |            | T2W/T3W |    |    |    |    |    |    |    |   |    |    |    |    |       |                    |    |    |    |
| $\varnothing 20$ | 24                                    | 69 | 20          | 31 | 13 <sub>0.2</sub> | 9                       | 25 | RD          | HD         | RD      | HD |    |    |    |    |    |    |   |    |    |    |    |       |                    |    |    |    |
| $\varnothing 25$ | 26                                    | 72 | 24          | 35 | 13 <sub>0.2</sub> | 9                       | 27 | 13          | 9          | 14.5    | 11 |    |    |    |    |    |    |   |    |    |    |    |       |                    |    |    |    |

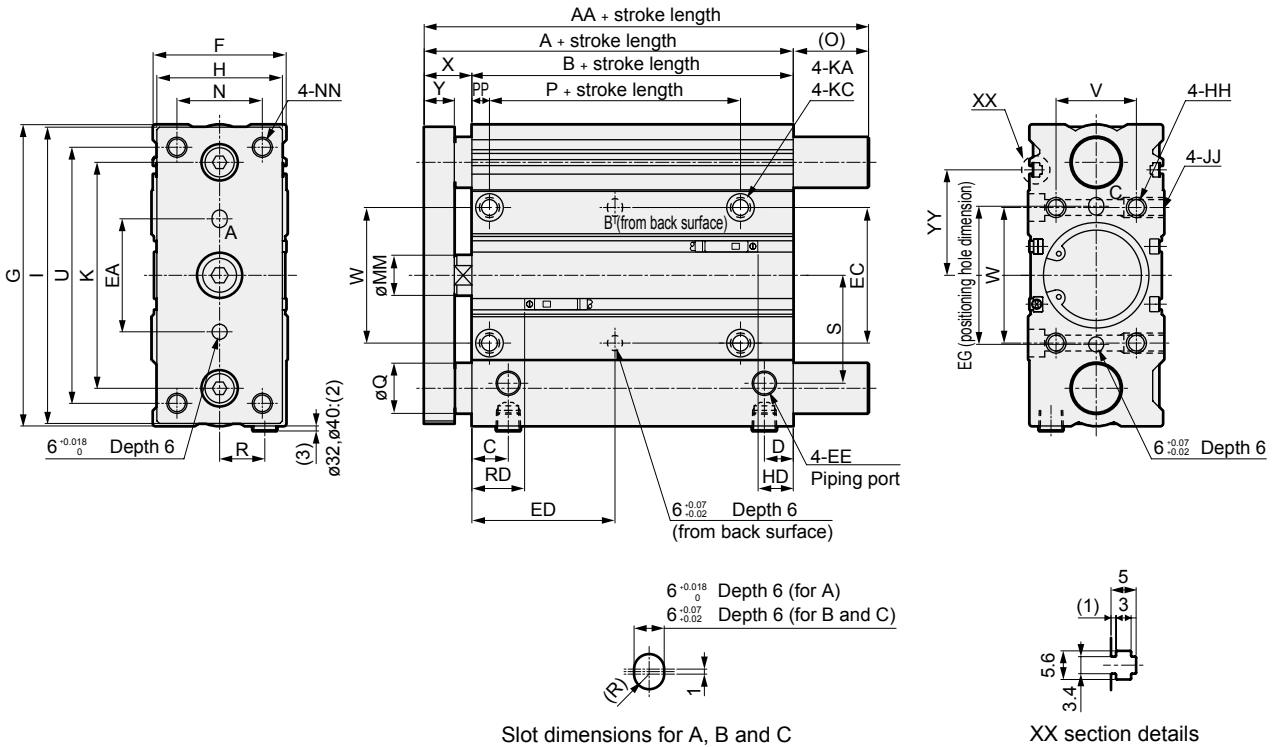
\*1 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

Dimensions:  $\phi 32/\phi 40/\phi 50/\phi 63$




- Standard single rod STL-M<sub>B</sub>
- Corrosion proof STL-M<sub>B</sub>-M/M1



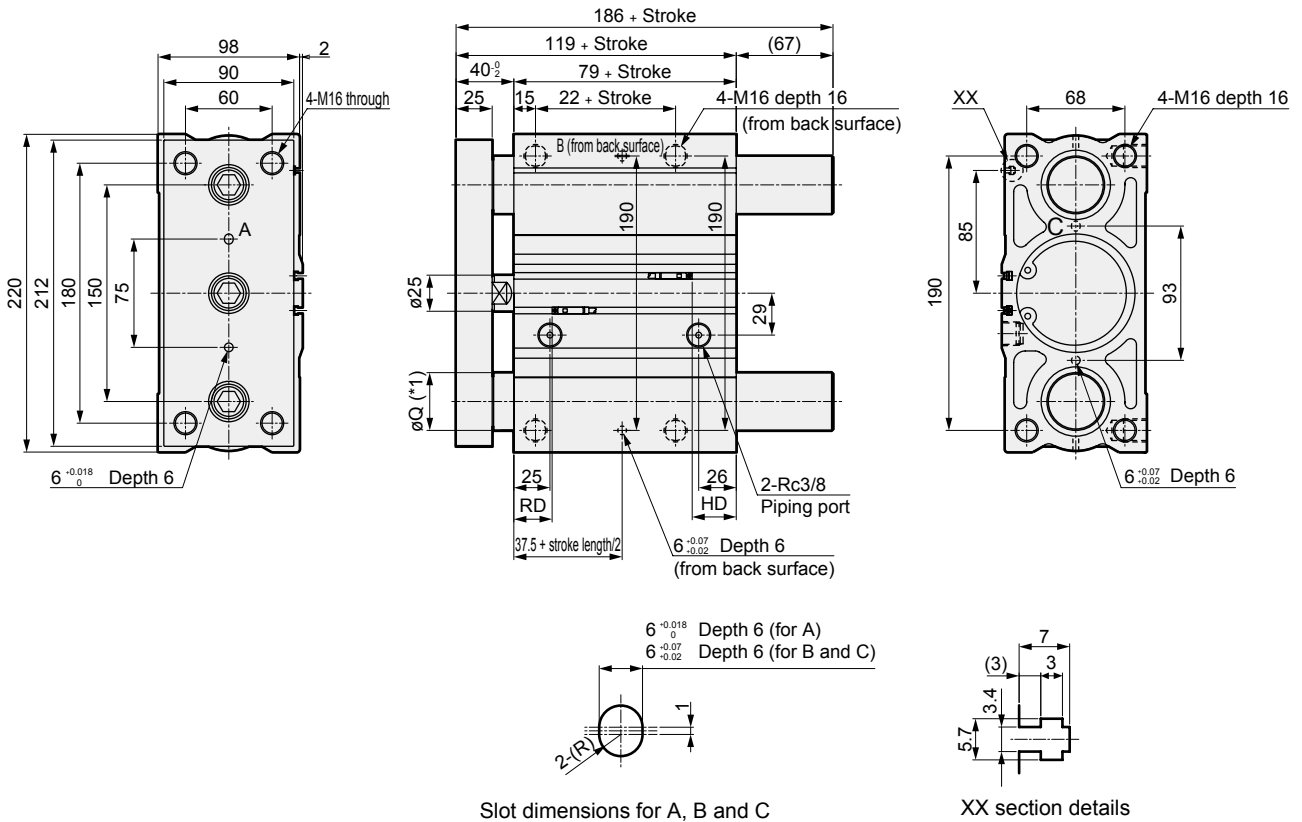
| Code        | Standard stroke length (mm) | A                              | AA           | B           | C           | D                      | EE    | EA   | EC          | EG | ED                          | F  | G     | H     | HH           |    |     |    |    |
|-------------|-----------------------------|--------------------------------|--------------|-------------|-------------|------------------------|-------|------|-------------|----|-----------------------------|----|-------|-------|--------------|----|-----|----|----|
| Hand        | $\phi 32$                   | 68                             | 102          | 49          | 14          | 10.5                   | Rc1/8 | 42   | 45          | 46 | 17.5+<br>Stroke length<br>2 | 47 | 111   | 45    | M8 depth 16  |    |     |    |    |
| Chuk        | $\phi 40$                   | 72                             | 102          | 53          | 14.5        | 12                     | Rc1/8 | 45   | 54          | 55 | 19.5+<br>Stroke length<br>2 | 54 | 120   | 50    | M8 depth 16  |    |     |    |    |
| MecHnd/Chuk | $\phi 50$                   | 77                             | 125          | 55          | 16          | 12.5                   | Rc1/4 | 55   | 66          | 69 | 19.5+<br>Stroke length<br>2 | 66 | 147   | 64    | M10 depth 20 |    |     |    |    |
| ShkAbs      | $\phi 63$                   | 83                             | 125          | 61          | 17.5        | 17.5                   | Rc1/4 | 62   | 79          | 82 | 22.5+<br>Stroke length<br>2 | 79 | 162   | 75    | M10 depth 20 |    |     |    |    |
| Code        | I                           | JJ                             | K            | KA          | KC          | MM                     | N     | NN   | O           | P  | PP                          | Q  |       | R     | S            | U  | V   | W  |    |
| SpdContr    | $\phi 32$                   | 109                            | M8 depth 16  | 81          | 6.3 through | 11 spot face depth 6.5 | 16    | 29   | M8 through  | 34 | 22                          | 7  | STL-M | STL-B | 16           | 39 | 93  | 25 | 45 |
| Ending      | $\phi 40$                   | 118                            | M8 depth 16  | 90          | 6.3 through | 11 spot face depth 6.5 | 16    | 34   | M8 through  | 30 | 25                          | 7  | 20    | 16    | 18           | 43 | 102 | 32 | 54 |
|             | $\phi 50$                   | 145                            | M10 depth 20 | 110         | 8.6 through | 14 spot face depth 8.6 | 20    | 44   | M10 through | 48 | 26                          | 8  | 25    | 20    | 22           | 49 | 125 | 38 | 66 |
|             | $\phi 63$                   | 160                            | M10 depth 20 | 124         | 8.6 through | 14 spot face depth 8.6 | 20    | 55   | M10 through | 42 | 26                          | 8  | 25    | 20    | 26           | 56 | 140 | 50 | 79 |
| Code        | X                           | Y                              | YY           | T0/T5/T2/T3 |             | T2W/T3W                |       |      |             |    |                             |    |       |       |              |    |     |    |    |
|             | $\phi 32$                   | 19 <sup>0</sup> / <sub>2</sub> | 12           | 39          | RD          | HD                     | RD    | HD   |             |    |                             |    |       |       |              |    |     |    |    |
|             | $\phi 40$                   | 19 <sup>0</sup> / <sub>2</sub> | 12           | 42          | 17.5        | 13.5                   | 19    | 15   |             |    |                             |    |       |       |              |    |     |    |    |
|             | $\phi 50$                   | 22 <sup>0</sup> / <sub>2</sub> | 16           | 45          | 21          | 14                     | 22.5  | 16   |             |    |                             |    |       |       |              |    |     |    |    |
|             | $\phi 63$                   | 22 <sup>0</sup> / <sub>2</sub> | 16           | 52          | 20          | 23                     | 21.5  | 24.5 |             |    |                             |    |       |       |              |    |     |    |    |

\*1 : All dimensions not shown are the same as those of the standard. When using a custom stroke length, the dimensions are the same as the longer standard stroke length.  
 \*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

Dimensions: ø80 

- Standard single rod STL-M<sub>B</sub>
- Corrosion proof STL-M<sub>B</sub>-M/M1

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |



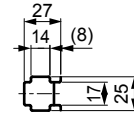
| Code           | T0/T5/T2/T3 |      | T2W/T3W |      |
|----------------|-------------|------|---------|------|
| Bore size (mm) | RD          | HD   | RD      | HD   |
| ø80            | 26.5        | 30.5 | 28      | 35.5 |

- \*1 : ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
- \*2 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length. The standard stroke length of ø80 can be selected from 75 to 400 mm in 25 mm increments.
- \*3 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.



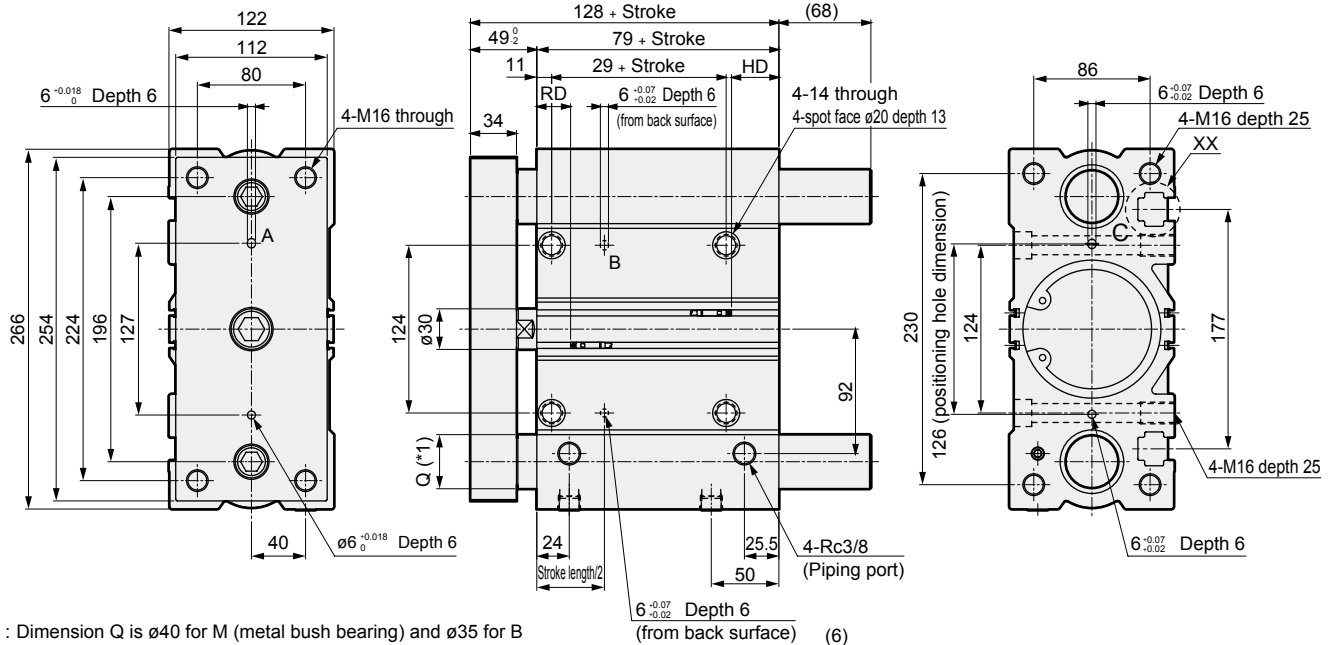
Dimensions:  $\varnothing 100$

- Standard single rod STL-M<sub>B</sub>
- Corrosion proof STL-M<sub>B</sub>-M/M1
- Copper and PTFE free STL-M<sub>B</sub> P6



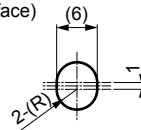
XX section details

[100 or less stroke length]



\*1 : Dimension Q is  $\varnothing 40$  for M (metal bush bearing) and  $\varnothing 35$  for B (ball bearing).

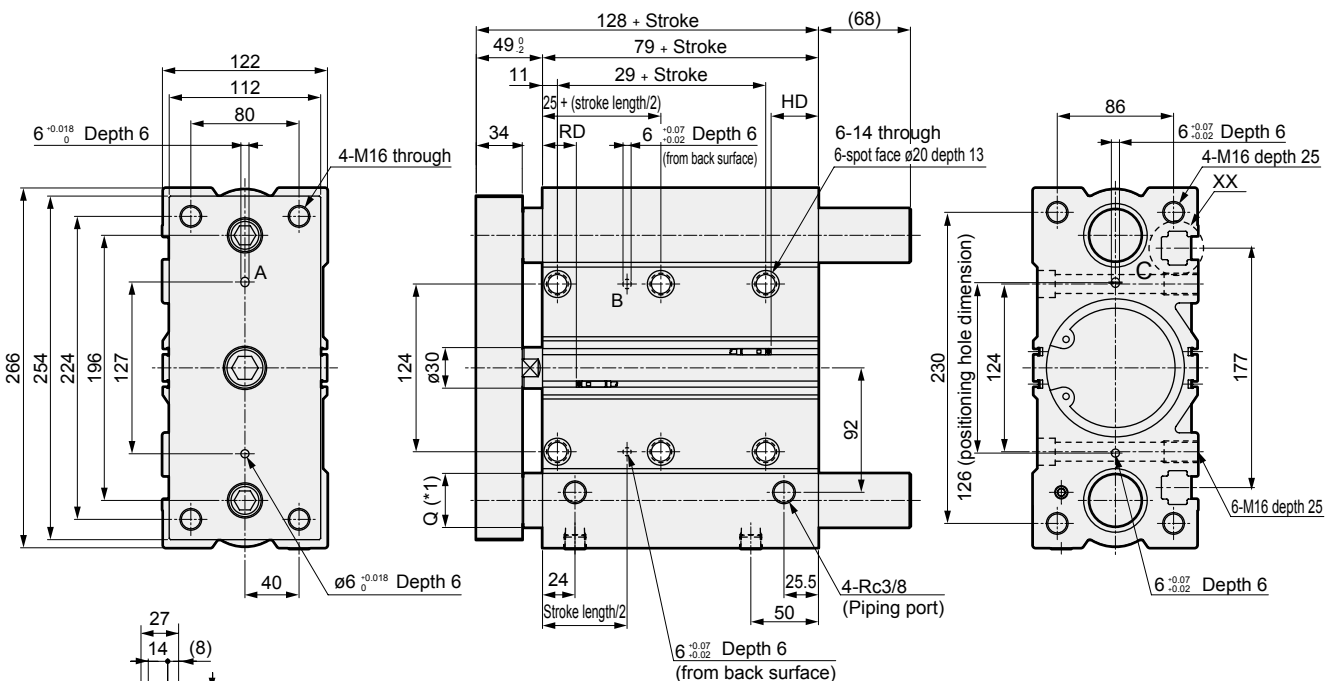
\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.



Slot dimensions for A, B and C

| Code              | T0/T5/T2/T3 |    | T2W/T3W |    |
|-------------------|-------------|----|---------|----|
|                   | RD          | HD | RD      | HD |
| Bore size (mm)    | 25          | 35 | 27      | 37 |
| $\varnothing 100$ |             |    |         |    |

[125 and over stroke length]



XX section details

\*1 : Dimension Q is  $\varnothing 40$  for M (metal bush bearing) and  $\varnothing 35$  for B (ball bearing).

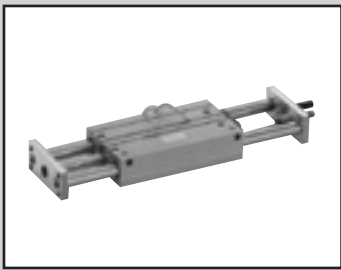
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# MEMO

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|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

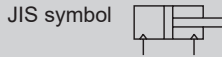
LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending



Guided cylinder Double acting/stroke adjustable

# STS/STL-M<sub>B</sub>P Series

● Bore size:  $\varnothing 8/\varnothing 12/\varnothing 16/\varnothing 20/\varnothing 25/\varnothing 32$   
 $\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80$



## Specifications

| Item                      | STS-MP/BP STL-MP/BP  |  |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
|---------------------------|--|--|-----------------|------------------|------------------|------------------|-----------------------------------|------------------|------------------|------------------|------------------|------------------|
|                           | Bore size  | mm   | $\varnothing 8$ | $\varnothing 12$ | $\varnothing 16$ | $\varnothing 20$ | $\varnothing 25$                  | $\varnothing 32$ | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$ |
| Actuation                 | Double acting/stroke adjustable  |  |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Working fluid             | Compressed air   |  |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Max. working pressure     | MPa  | 1.0 ( $\approx 150$ psi, 10 bar)   |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Min. working pressure     | MPa  | 0.2 ( $\approx 29$ psi, 2 bar)   |                 |                  |                  |                  | 0.15 ( $\approx 22$ psi, 1.5 bar) |                  |                  |                  |                  |                  |
| Proof pressure            | MPa  | 1.6 ( $\approx 230$ psi, 16 bar)   |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Ambient temperature       | $^{\circ}\text{C}$   | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing) |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Port size                 |  | M5   |                 |                  |                  |                  | Rc1/8                             |                  | Rc1/4            |                  | Rc3/8            |                  |
| Stroke tolerance          | mm   | +2.0<br>0  |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Working piston speed      | mm/s   | 50 to 500  |                 |                  |                  |                  |                                   |                  |                  | 50 to 300        |                  |                  |
| Cushion                   | With rubber cushion, with shock absorber for push                            |  |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Adjustable stroke range   | mm   | 25   |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Lubrication               | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |  |                 |                  |                  |                  |                                   |                  |                  |                  |                  |                  |
| Allowable absorbed energy | J  | 0.029  | 0.056           | 0.088            | 0.157            | 0.157            | 0.401                             | 0.627            | 0.980            | 1.560            | 2.510            |                  |

## Stroke

● Short stroke STS

| Bore size        | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm) |
|------------------|----------------------|------------------|------------------|------------------------------|
| $\varnothing 8$  | 10,20,30,40,50       | 50               | 10               | 10                           |
| $\varnothing 12$ |                      |                  |                  |                              |
| $\varnothing 16$ |                      |                  |                  |                              |
| $\varnothing 20$ | 25,50                | 400              | 25               | 25                           |
| $\varnothing 25$ |                      |                  |                  |                              |
| $\varnothing 32$ |                      |                  |                  |                              |
| $\varnothing 40$ |                      |                  |                  |                              |
| $\varnothing 50$ |                      |                  |                  |                              |
| $\varnothing 63$ | 25,50,75,100         | 100              | 75               | With one or two switches     |
| $\varnothing 80$ |                      |                  |                  |                              |

● Long stroke STL

| Bore size        | Standard stroke (mm)   | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm) |
|------------------|--|------------------|------------------|------------------------------|
| $\varnothing 8$  | 50,75,100,125,150<br>175,200                                       | 200              | 50               | 50                           |
| $\varnothing 12$ |  |                  |                  |                              |
| $\varnothing 16$ |  |                  |                  |                              |
| $\varnothing 20$ | 50,75,100,125,150<br>175,200,225,250<br>275,300,325,350<br>375,400 | 400              | 75               | With one or two switches     |
| $\varnothing 25$ |  |                  |                  |                              |
| $\varnothing 32$ |  |                  |                  |                              |
| $\varnothing 40$ |  |                  |                  |                              |
| $\varnothing 50$ |  |                  |                  |                              |
| $\varnothing 63$ | 75,100,125,150,175<br>200,225,250,275,300<br>325,350,375,400       | 75               | 75               | With one or two switches     |
| $\varnothing 80$ |  |                  |                  |                              |

### Switch specifications

● 1-color/2-color LED/for AC magnetic field proof

| Item            | Proximity 2-wire   |                                       | Proximity 2-wire                  |                                   | Proximity 3-wire                   |                                |                                   |                                   | Reed 2-wire                        |   |                   |                                    | Proximity 2-wire     |                             |                                   |             |
|-----------------|--|---------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|--------------------------------|-----------------------------------|-----------------------------------|------------------------------------|---|-------------------|------------------------------------|----------------------|-----------------------------|-----------------------------------|-------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV                 | T2YH/<br>T2YV                     | T2WH/<br>T2WV                     | T3H/<br>T3V                        | T3PH/<br>T3PV                  | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                            | T5H/T5V   | T8H/T8V           |                                    | T2YD(*4)<br>T2YDT    |                             |                                   |             |
| Applications    | For programmable controller, relay, compact solenoid valve | Dedicated for programmable controller |                                   |                                   | For programmable controller, relay |                                |                                   |                                   | For programmable controller, relay | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                   | For programmable controller, relay |                      | For programmable controller |                                   |             |
| Output method   | -  |                                       |                                   |                                   | NPN output                         | PNP output                     | NPN output                        | NPN output                        | -                                  |   |                   |                                    |                      |                             |                                   |             |
| Pwr. supp. V.   | -  |                                       |                                   |                                   | 10 to 28 VDC                       |                                |                                   |                                   | -                                  |   |                   |                                    |                      |                             |                                   |             |
| Load voltage    | 85 to 265 VAC  | 10 to 30 VDC                          | 24 VDC ±10%                       |                                   | 30 VDC or less                     |                                |                                   |                                   | 12/24 VDC                          | 100/110 VAC   | 5/12/24 VDC       | 100/110 VAC                        | 12/24 VDC            | 110 VAC                     | 220 VAC                           | 24 VDC ±10% |
| Load current    | 5 to 100mA   | 5 to 20 mA (*3)                       |                                   |                                   | 100 mA or less                     |                                | 50 mA or less                     |                                   | 5 to 50mA                          | 7 to 20mA   | 50 mA or less     | 20 mA or less                      | 5 to 50mA            | 7 to 20mA                   | 7 to 10mA                         | 5 to 20mA   |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)                  | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)               | Yellow<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)               |   | No indicator lamp |                                    | LED<br>(Lit when ON) |                             | Red/green<br>LED<br>(Lit when ON) |             |
| Leakage current | 1 mA or less with 100 VAC, 2 mA or less with 200 VAC       | 1 mA or less                          |                                   |                                   | 10 µA or less                      |                                |                                   |                                   | 0mA                                |   |                   |                                    | 1 mA or less         |                             |                                   |             |
| Weight g        | 1 m: 33 3 m: 87 5 m: 142                                   | 1 m: 18 3 m: 49 5 m: 80               | 1 m: 33 3 m: 87 5 m: 142          | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80            |                                | 1 m: 33 3 m: 87 5 m: 142          | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80            |   |                   | 1 m: 33 3 m: 87 5 m: 142           |                      | 1 m: 61 3 m: 166 5 m: 272   |                                   |             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø8             | Push                | -                      | 10.1                   | 15.1                   | 20.1                   | 25.1                   | 30.2                   | 35.2                   | 40.2                   | 45.2                   | 50.3                   |
|                | Pull                | -                      | 7.54                   | 11.3                   | 15.1                   | 18.8                   | 22.6                   | 26.4                   | 30.2                   | 33.9                   | 37.7                   |
| ø12            | Push                | -                      | 22.6                   | 33.9                   | 45.2                   | 56.5                   | 67.9                   | 79.2                   | 90.5                   | 1.02 x 10 <sup>2</sup> | 1.13 x 10 <sup>2</sup> |
|                | Pull                | -                      | 17.0                   | 25.4                   | 33.9                   | 42.4                   | 50.9                   | 59.4                   | 67.9                   | 76.3                   | 84.8                   |
| ø16            | Push                | -                      | 40.2                   | 60.3                   | 80.4                   | 1.01 x 10 <sup>2</sup> | 1.21 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.01 x 10 <sup>2</sup> |
|                | Pull                | -                      | 30.2                   | 45.2                   | 60.3                   | 75.4                   | 90.5                   | 1.06 x 10 <sup>2</sup> | 1.21 x 10 <sup>2</sup> | 1.36 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> |
| ø20            | Push                | -                      | 62.8                   | 94.2                   | 1.26 x 10 <sup>2</sup> | 1.57 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.20 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 2.83 x 10 <sup>2</sup> | 3.14 x 10 <sup>2</sup> |
|                | Pull                | -                      | 47.1                   | 70.7                   | 94.2                   | 1.18 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.65 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.12 x 10 <sup>2</sup> | 2.36 x 10 <sup>2</sup> |
| ø25            | Push                | -                      | 98.2                   | 1.47 x 10 <sup>2</sup> | 1.96 x 10 <sup>2</sup> | 2.45 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.44 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 4.42 x 10 <sup>2</sup> | 4.91 x 10 <sup>2</sup> |
|                | Pull                | -                      | 75.6                   | 1.13 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> | 1.89 x 10 <sup>2</sup> | 2.27 x 10 <sup>2</sup> | 2.64 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.40 x 10 <sup>2</sup> | 3.78 x 10 <sup>2</sup> |
| ø32            | Push                | 1.21 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                | Pull                | 90.5                   | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40            | Push                | 1.88 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                | Pull                | 1.58 x 10 <sup>2</sup> | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50            | Push                | 2.95 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                | Pull                | 2.47 x 10 <sup>2</sup> | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63            | Push                | 4.68 x 10 <sup>2</sup> | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                | Pull                | 4.20 x 10 <sup>2</sup> | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80            | Push                | 7.54 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                | Pull                | 6.80 x 10 <sup>2</sup> | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)

**STS** - **M** P - **8** - **10** - **F**

With switch (built-in magnet for switch)

**STS** - **M** P - **8** - **10** - **T2H** - **R** - **F**

### ● Long stroke

Without switch (built-in magnet for switch)

**STL** - **M** P - **8** - **50** - **F**

With switch (built-in magnet for switch)

**STL** - **M** P - **8** - **50** - **T2H** - **R** - **F**

Model No.

**A** Bearing

**B** Bore size

**C** Port thread

**D** Stroke

**E** Switch model No.

\*1 \*3 \*4

For the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches for ø40 and over, insert "L1" with "-" between **A** and **B**.  
(Example) STS-MP-L1-63-50-T2YH3-D-F

For ø80, the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product.

In this case, order the model No. with "L1" inserted between **A** and **B**.  
(Example) STS-MP-L1-80-50-F

**F** Switch quantity

**G** Option

### ⚠ Precautions for model No. selection

\*1 : Switches other than **E** Switch model No. are also available. (Made-to-order product)  
Refer to Ending Page 1 for details.

\*2 : Refer to pages 444 to 447 for combinations of variations/options.

\*3 : T8H/V switch cannot be installed on ø8 to ø16.

\*4 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

[Example of model No.]

**STS-MP-8-30-T0H-R-F**

Model: Guided cylinder, short stroke, standard/stroke adjustable

- A** Bearing : Metal bush bearing
- B** Bore size : ø8 mm
- C** Port thread : M5
- D** Stroke : 30 mm
- E** Switch model No. : Reed T0H, lead wire length 1 m
- F** Switch quantity : 1 on rod side
- G** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| <b>M</b>         | Metal bush bearing |
| <b>B</b>         | Ball bearing       |

| <b>B Bore size (mm)</b> |     |
|-------------------------|-----|
| <b>8</b>                | ø8  |
| <b>12</b>               | ø12 |
| <b>16</b>               | ø16 |
| <b>20</b>               | ø20 |
| <b>25</b>               | ø25 |
| <b>32</b>               | ø32 |
| <b>40</b>               | ø40 |
| <b>50</b>               | ø50 |
| <b>63</b>               | ø63 |
| <b>80</b>               | ø80 |

| <b>C Port thread</b> |   |
|----------------------|---|
| <b>Blank</b>         | M5 (ø8 to ø25)<br>Rc thread (ø32 to ø80)        |
| <b>NN</b>            | NPT thread (ø32 and over) made-to-order product |
| <b>GN</b>            | G thread (ø32 and over) made-to-order product   |

| <b>D Stroke (mm)</b>                             |  |
|--|--|
| Refer to the stroke table on the following page. |  |

| <b>E Switch model No.</b> |                    |         |    |                                   |                   |           |
|---------------------------|--------------------|---------|----|-----------------------------------|-------------------|-----------|
| Straight lead wire        | L-shaped lead wire | Voltage |    | Contact                           | Indicator         | Lead wire |
|                           |                    | AC      | DC |                                   |                   |           |
| <b>T0H*</b>               | <b>T0V*</b>        | ●       | ●  | Reed                              | 1-color LED       | 2-wire    |
| <b>T5H*</b>               | <b>T5V*</b>        | ●       | ●  |                                   | No indicator lamp |           |
| <b>T8H*</b>               | <b>T8V*</b>        | ●       | ●  | Proximity                         | 1-color LED       | 3-wire    |
| <b>T1H*</b>               | <b>T1V*</b>        | ●       |    |                                   |                   |           |
| <b>T2H*</b>               | <b>T2V*</b>        |         | ●  |                                   |                   |           |
| <b>T3H*</b>               | <b>T3V*</b>        |         | ●  |                                   |                   |           |
| <b>T3PH*</b>              | <b>T3PV*</b>       |         | ●  | 1-color LED                       | 3-wire            |           |
| <b>T2WH*</b>              | <b>T2WV*</b>       |         | ●  |                                   |                   |           |
| <b>T2YH*</b>              | <b>T2YV*</b>       |         | ●  | 2-color LED                       | 2-wire            | 2-wire    |
| <b>T3WH*</b>              | <b>T3WV*</b>       |         | ●  |                                   | 3-wire            | 3-wire    |
| <b>T3YH*</b>              | <b>T3YV*</b>       |         | ●  | 1-color LED off-delay             | 2-wire            |           |
| <b>T2JH*</b>              | <b>T2JV*</b>       |         | ●  |                                   |                   |           |
| <b>T2YD*</b>              | -                  |         | ●  | 2-color LED for AC magnetic field | 2-wire            |           |
| <b>T2YDT*</b>             | -                  |         | ●  |                                   |                   |           |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| <b>Blank</b>              | 1 m (standard) |
| <b>3</b>                  | 3 m (option)   |
| <b>5</b>                  | 5 m (option)   |

| <b>F Switch quantity</b> |                |
|--------------------------|----------------|
| <b>R</b>                 | 1 on rod side  |
| <b>H</b>                 | 1 on head side |
| <b>D</b>                 | 2              |
| <b>T</b>                 | 3              |

| <b>G Option</b> |                           |
|-----------------|---------------------------|
| <b>F</b>        | End plate material: steel |

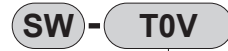


### D Stroke

| Series | Stroke (mm) | Applicable bore size |     |     |     |     |     |     |     |     |     |
|--------|-------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|        |             | ø8                   | ø12 | ø16 | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 |
| STS    | 10          | ●                    | ●   | ●   |     |     |     |     |     |     |     |
|        | 20          | ●                    | ●   | ●   |     |     |     |     |     |     |     |
|        | 25          |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 30          | ●                    | ●   | ●   |     |     |     |     |     |     |     |
|        | 40          | ●                    | ●   | ●   |     |     |     |     |     |     |     |
|        | 50          | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 75          |                      |     |     |     |     |     |     |     |     | ●   |
|        | 100         |                      |     |     |     |     |     |     |     |     | ●   |
|        | Min. stroke | 5                    |     |     |     |     |     |     |     |     |     |
| STL    | 50          | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 75          | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 100         | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 125         | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 150         | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 175         | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 200         | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 225         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 250         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 275         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 300         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 325         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 350         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 375         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
|        | 400         |                      |     |     | ●   | ●   | ●   | ●   | ●   | ●   |     |
|        | Min. stroke | 50                   |     |     |     |     |     |     |     |     |     |

Note: Custom stroke is not available. Adjust the stroke with the stroke adjustment mechanism.

### How to order switch



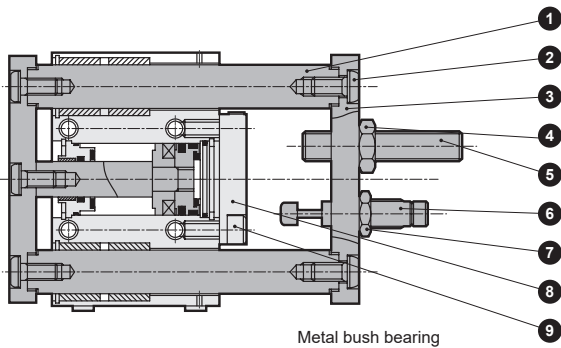
Switch model No.  
(Item E on page 472)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

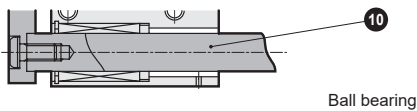
### Internal structure and parts list

#### ● Stroke adjustable

STS-M<sub>B</sub>P

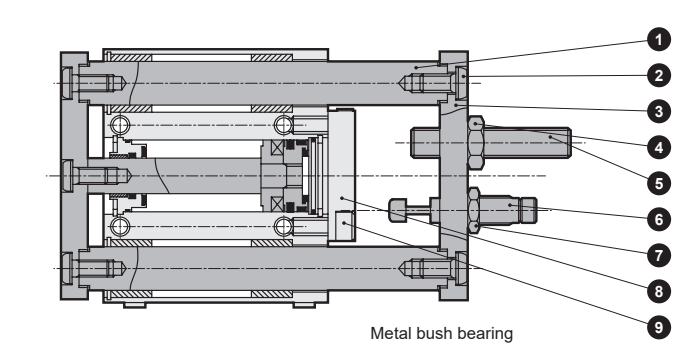


Metal bush bearing

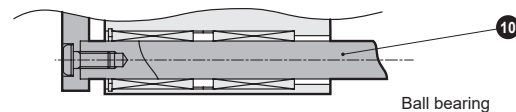


Ball bearing

STL-M<sub>B</sub>P



Metal bush bearing



Ball bearing

### Parts list

(Parts not listed below are the same as those of the standard. Refer to pages 453 to 456.)

| No.  | Part name                       | Material       | Remarks                   |
|--|---------------------------------|----------------|---------------------------|
| <b>ST<sub>L</sub><sup>S</sup>-M<sub>B</sub>P (Stroke adjustable)</b> |                                 |                |                           |
| 1  | Guide rod                       | Steel          | Industrial chrome plating |
| 2  | Hexagon socket button head bolt | Steel          | Zinc chromate             |
| 3  | End plate (H)                   | Aluminum alloy | Alumite                   |
| 4  | Hexagon nut                     | Steel          | Black finish              |
| 5  | Hexagon socket set screw        | Steel          | Black finish              |
| 6  | Shock absorber                  | -              |                           |
| 7  | Hexagon nut                     | Steel          | Zinc chromate             |
| 8  | Stopper plate                   | Steel          | Zinc chromate             |
| 9  | Hexagon socket head cap screw   | Steel          | Zinc chromate             |
| 10   | Guide rod                       | Steel          | Industrial chrome plating |

### Repair parts list

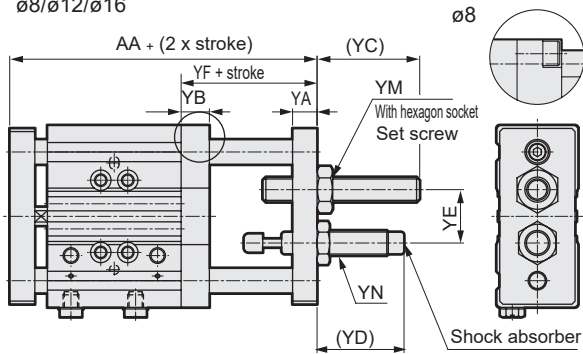
The repair parts list is common with the double acting/single rod. Refer to page 453 for STS Series and page 456 for STL Series.



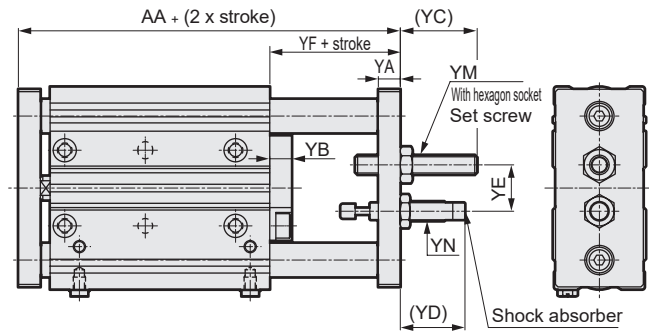
## Dimensions

● Stroke adjustable (Dimensions not listed below are the same as those of the double acting/single rod.)

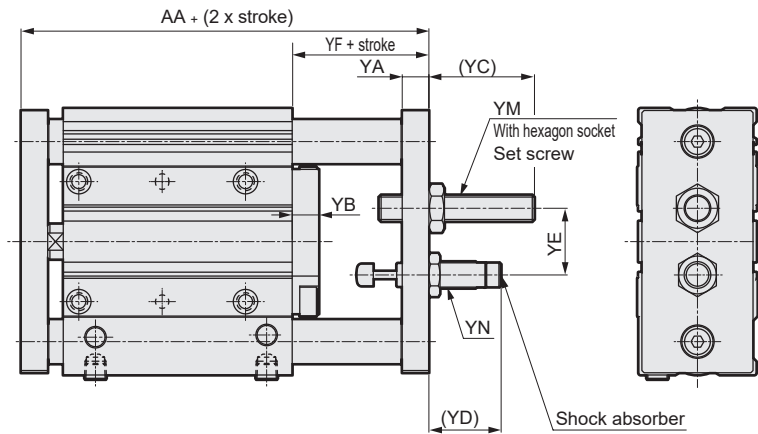
ø8/ø12/ø16



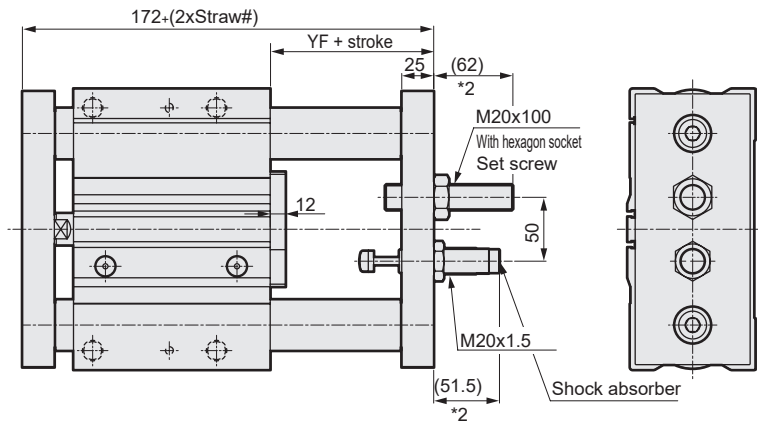
ø20/ø25



ø32/ø40/ø50/ø63



ø80



| Code | AA    | YA | YB | YC *2 | YD *2 | YE | YF   | YM      | YN      | Shock absorber model No. |
|------|-------|----|----|-------|-------|----|------|---------|---------|--------------------------|
| ø8   | 67.5  | 8  | 9  | 32.5  | 27.5  | 17 | 27.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø12  | 71.5  | 8  | 9  | 32.5  | 27.5  | 17 | 27.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø16  | 73.5  | 9  | 9  | 31.5  | 26.5  | 17 | 28.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø20  | 81.5  | 9  | 9  | 31.5  | 26.5  | 19 | 28.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø25  | 84    | 9  | 9  | 30    | 29    | 19 | 30   | M8X50   | M10X1   | NCK-00-0.7-C             |
| ø32  | 104.5 | 12 | 12 | 47.5  | 32.5  | 30 | 36.5 | M12X70  | M12X1   | NCK-00-1.2-C             |
| ø40  | 108.5 | 12 | 12 | 47.5  | 32.5  | 30 | 36.5 | M12X70  | M12X1   | NCK-00-1.2-C             |
| ø50  | 124   | 16 | 16 | 51    | 52    | 40 | 47   | M16X80  | M14X1.5 | NCK-00-2.6-C             |
| ø63  | 130   | 16 | 16 | 51    | 52    | 40 | 47   | M16X80  | M14X1.5 | NCK-00-2.6-C             |
| ø80  | 172   | 25 | 12 | 62    | 51.5  | 50 | 53   | M20X100 | M20X1.5 | NCK-00-7.0-C             |

\*1: Custom stroke is not available.

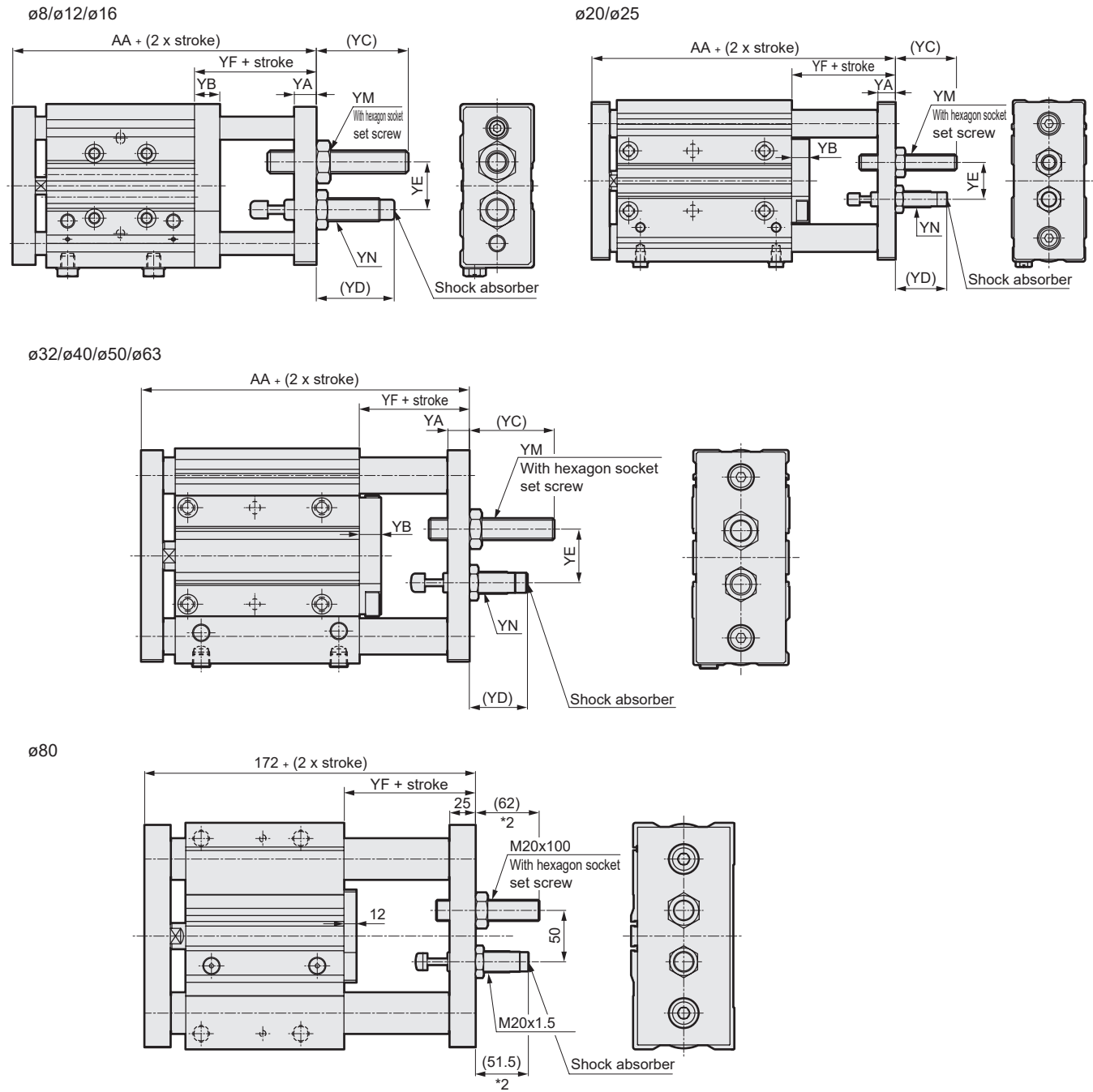
\*2: YC and YD are dimensions at shipment.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

### Dimensions



● Stroke adjustable (Dimensions not listed below are the same as those of the double acting/single rod.)



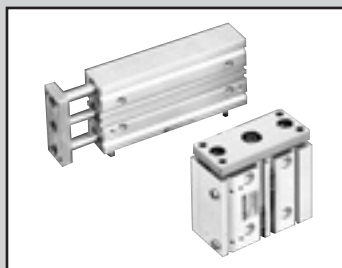
| Code | AA    | YA | YB | YC *2 | YD *2 | YE | YF   | YM      | YN      | Shock absorber model No. |
|------|-------|----|----|-------|-------|----|------|---------|---------|--------------------------|
| ø8   | 67.5  | 8  | 9  | 32.5  | 27.5  | 17 | 27.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø12  | 71.5  | 8  | 9  | 32.5  | 27.5  | 17 | 27.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø16  | 73.5  | 9  | 9  | 31.5  | 26.5  | 17 | 28.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø20  | 81.5  | 9  | 9  | 31.5  | 26.5  | 19 | 28.5 | M8X50   | M8X0.75 | NCK-00-0.3-C             |
| ø25  | 84    | 9  | 9  | 30    | 29    | 19 | 30   | M8X50   | M10X1   | NCK-00-0.7-C             |
| ø32  | 104.5 | 12 | 12 | 47.5  | 32.5  | 30 | 36.5 | M12X70  | M12X1   | NCK-00-1.2-C             |
| ø40  | 108.5 | 12 | 12 | 47.5  | 32.5  | 30 | 36.5 | M12X70  | M12X1   | NCK-00-1.2-C             |
| ø50  | 124   | 16 | 16 | 51    | 52    | 40 | 47   | M16X80  | M14X1.5 | NCK-00-2.6-C             |
| ø63  | 130   | 16 | 16 | 51    | 52    | 40 | 47   | M16X80  | M14X1.5 | NCK-00-2.6-C             |
| ø80  | 172   | 25 | 12 | 62    | 51.5  | 50 | 53   | M20X100 | M20X1.5 | NCK-00-7.0-C             |

\*1 : Custom stroke is not available.

\*2 : YC and YD are dimensions at shipment.

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending



Guided cylinder Double acting/heat resistant

# STS/STL-MT Series

● Bore size:  $\phi 12/\phi 16/\phi 20/\phi 25/\phi 32/\phi 40$   
 $\phi 50/\phi 63/\phi 80$

JIS symbol



## Specifications

| Item                                   | STS-MT/BT STL-MT/BT   |           |           |           |           |                                   |           |           |           |       |
|--|---|-----------|-----------|-----------|-----------|-----------------------------------|-----------|-----------|-----------|-------|
| Bore size mm                           | $\phi 12$   | $\phi 16$ | $\phi 20$ | $\phi 25$ | $\phi 32$ | $\phi 40$                         | $\phi 50$ | $\phi 63$ | $\phi 80$ |       |
| Actuation                              | Double acting/heat resistant  |           |           |           |           |                                   |           |           |           |       |
| Working fluid                          | Compressed air  |           |           |           |           |                                   |           |           |           |       |
| Max. working pressure MPa              | 1.0 ( $\approx 150$ psi, 10 bar)                                    |           |           |           |           |                                   |           |           |           |       |
| Min. working pressure MPa              | 0.2 ( $\approx 29$ psi, 2 bar)                                      |           |           |           |           | 0.15 ( $\approx 22$ psi, 1.5 bar) |           |           |           |       |
| Proof pressure MPa                     | 1.6 ( $\approx 230$ psi, 16 bar)                                    |           |           |           |           |                                   |           |           |           |       |
| Ambient temperature $^{\circ}\text{C}$ | 5 ( $41^{\circ}\text{F}$ ) to 120 ( $248^{\circ}\text{F}$ )         |           |           |           |           |                                   |           |           |           |       |
| Port size                              | M5  |           |           |           | Rc1/8     |                                   |           | Rc1/4     |           | Rc3/8 |
| Stroke tolerance mm                    | +2.0  |           |           |           |           |                                   |           |           |           |       |
|  | 0   |           |           |           |           |                                   |           |           |           |       |
| Working piston speed mm/s              | 50 to 500   |           |           |           |           |                                   |           | 50 to 300 |           |       |
| Cushion                                | None  |           |           |           |           |                                   |           |           |           |       |
| Lubrication                            | Not required (Periodically apply additional heat-resistant grease.) |           |           |           |           |                                   |           |           |           |       |
| Allowable absorbed energy J            | 0.004   | 0.01      | 0.016     | 0.021     | 0.025     | 0.092                             | 0.1       | 0.12      | 0.27      |       |

## Stroke

● Short stroke STS

| Bore size | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) |
|-----------|----------------------|------------------|------------------|
| $\phi 12$ | 10,20,30,40,50       | 50               | 5                |
| $\phi 16$ |                      |                  |                  |
| $\phi 20$ | 25,50                |                  |                  |
| $\phi 25$ |                      |                  |                  |
| $\phi 32$ |                      |                  |                  |
| $\phi 40$ |                      |                  |                  |
| $\phi 50$ | 25,50,75,100         | 100              |                  |
| $\phi 63$ |                      |                  |                  |
| $\phi 80$ |                      |                  |                  |

● Long stroke STL

| Bore size | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) |                 |
|-----------|----------------------|------------------|------------------|-----------------|
| $\phi 12$ | 50,75,100,125,150    | 200              | 50               |                 |
| $\phi 16$ | 175,200              |                  |                  |                 |
| $\phi 20$ | 50,75,100,125,150    | 400              | 30               |                 |
| $\phi 25$ |                      |                  |                  |                 |
| $\phi 32$ |                      |                  |                  | 175,200,225,250 |
| $\phi 40$ |                      |                  |                  | 275,300,325,350 |
| $\phi 50$ | 375,400              |                  |                  |                 |
| $\phi 63$ |                      |                  |                  |                 |
| $\phi 80$ | 75,100,125,150,175   | 55               |                  |                 |
|           | 200,225,250,275,300  |                  |                  |                 |
|           | 325,350,375,400      |                  |                  |                 |

Note: The custom stroke is available in 5 mm increments.  
However, the total length is the same as that of the next longer standard stroke.

## Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|----------------|---------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                |                     | 0.15                 | 0.2                | 0.3                | 0.4                | 0.5                | 0.6                | 0.7                | 0.8                | 0.9                | 1.0                |
| $\phi 12$      | Push                | -                    | 22.6               | 33.9               | 45.2               | 56.5               | 67.9               | 79.2               | 90.5               | $1.02 \times 10^2$ | $1.13 \times 10^2$ |
|                | Pull                | -                    | 17.0               | 25.4               | 33.9               | 42.4               | 50.9               | 59.4               | 67.9               | 76.3               | 84.8               |
| $\phi 16$      | Push                | -                    | 40.2               | 60.3               | 80.4               | $1.01 \times 10^2$ | $1.21 \times 10^2$ | $1.41 \times 10^2$ | $1.61 \times 10^2$ | $1.81 \times 10^2$ | $2.01 \times 10^2$ |
|                | Pull                | -                    | 30.2               | 45.2               | 60.3               | 75.4               | 90.5               | $1.06 \times 10^2$ | $1.21 \times 10^2$ | $1.36 \times 10^2$ | $1.51 \times 10^2$ |
| $\phi 20$      | Push                | -                    | 62.8               | 94.2               | $1.26 \times 10^2$ | $1.57 \times 10^2$ | $1.88 \times 10^2$ | $2.20 \times 10^2$ | $2.51 \times 10^2$ | $2.83 \times 10^2$ | $3.14 \times 10^2$ |
|                | Pull                | -                    | 47.1               | 70.7               | 94.2               | $1.18 \times 10^2$ | $1.41 \times 10^2$ | $1.65 \times 10^2$ | $1.88 \times 10^2$ | $2.12 \times 10^2$ | $2.36 \times 10^2$ |
| $\phi 25$      | Push                | -                    | 98.2               | $1.47 \times 10^2$ | $1.96 \times 10^2$ | $2.45 \times 10^2$ | $2.95 \times 10^2$ | $3.44 \times 10^2$ | $3.93 \times 10^2$ | $4.42 \times 10^2$ | $4.91 \times 10^2$ |
|                | Pull                | -                    | 75.6               | $1.13 \times 10^2$ | $1.51 \times 10^2$ | $1.89 \times 10^2$ | $2.27 \times 10^2$ | $2.64 \times 10^2$ | $3.02 \times 10^2$ | $3.40 \times 10^2$ | $3.78 \times 10^2$ |
| $\phi 32$      | Push                | $1.21 \times 10^2$   | $1.61 \times 10^2$ | $2.41 \times 10^2$ | $3.22 \times 10^2$ | $4.02 \times 10^2$ | $4.83 \times 10^2$ | $5.63 \times 10^2$ | $6.43 \times 10^2$ | $7.24 \times 10^2$ | $8.04 \times 10^2$ |
|                | Pull                | 90.5                 | $1.21 \times 10^2$ | $1.81 \times 10^2$ | $2.41 \times 10^2$ | $3.02 \times 10^2$ | $3.62 \times 10^2$ | $4.22 \times 10^2$ | $4.83 \times 10^2$ | $5.43 \times 10^2$ | $6.03 \times 10^2$ |
| $\phi 40$      | Push                | $1.88 \times 10^2$   | $2.51 \times 10^2$ | $3.77 \times 10^2$ | $5.03 \times 10^2$ | $6.28 \times 10^2$ | $7.54 \times 10^2$ | $8.80 \times 10^2$ | $1.01 \times 10^3$ | $1.13 \times 10^3$ | $1.26 \times 10^3$ |
|                | Pull                | $1.58 \times 10^2$   | $2.11 \times 10^2$ | $3.17 \times 10^2$ | $4.22 \times 10^2$ | $5.28 \times 10^2$ | $6.33 \times 10^2$ | $7.39 \times 10^2$ | $8.44 \times 10^2$ | $9.50 \times 10^2$ | $1.06 \times 10^3$ |
| $\phi 50$      | Push                | $2.95 \times 10^2$   | $3.93 \times 10^2$ | $5.89 \times 10^2$ | $7.85 \times 10^2$ | $9.82 \times 10^2$ | $1.18 \times 10^3$ | $1.37 \times 10^3$ | $1.57 \times 10^3$ | $1.77 \times 10^3$ | $1.96 \times 10^3$ |
|                | Pull                | $2.47 \times 10^2$   | $3.30 \times 10^2$ | $4.95 \times 10^2$ | $6.60 \times 10^2$ | $8.25 \times 10^2$ | $9.90 \times 10^2$ | $1.15 \times 10^3$ | $1.32 \times 10^3$ | $1.48 \times 10^3$ | $1.65 \times 10^3$ |
| $\phi 63$      | Push                | $4.68 \times 10^2$   | $6.23 \times 10^2$ | $9.35 \times 10^2$ | $1.25 \times 10^3$ | $1.56 \times 10^3$ | $1.87 \times 10^3$ | $2.18 \times 10^3$ | $2.49 \times 10^3$ | $2.81 \times 10^3$ | $3.12 \times 10^3$ |
|                | Pull                | $4.20 \times 10^2$   | $5.61 \times 10^2$ | $8.41 \times 10^2$ | $1.12 \times 10^3$ | $1.40 \times 10^3$ | $1.68 \times 10^3$ | $1.96 \times 10^3$ | $2.24 \times 10^3$ | $2.52 \times 10^3$ | $2.80 \times 10^3$ |
| $\phi 80$      | Push                | $7.54 \times 10^2$   | $1.01 \times 10^3$ | $1.51 \times 10^3$ | $2.01 \times 10^3$ | $2.51 \times 10^3$ | $3.02 \times 10^3$ | $3.52 \times 10^3$ | $4.02 \times 10^3$ | $4.52 \times 10^3$ | $5.03 \times 10^3$ |
|                | Pull                | $6.80 \times 10^2$   | $9.07 \times 10^2$ | $1.36 \times 10^3$ | $1.81 \times 10^3$ | $2.27 \times 10^3$ | $2.72 \times 10^3$ | $3.17 \times 10^3$ | $3.63 \times 10^3$ | $4.08 \times 10^3$ | $4.54 \times 10^3$ |

For cylinder weight, refer to pages 558 to 561.

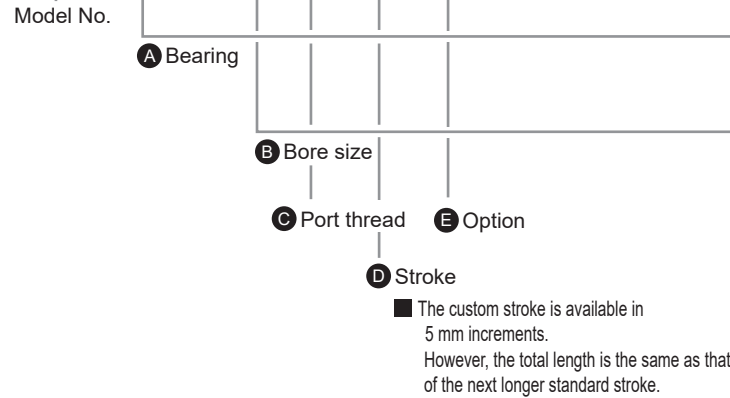
## How to order

Short stroke (switch not mountable)

**STS** - **M** T - **12** - **10** - **F**

Long stroke (switch not mountable)

**STL** - **M** T - **12** - **50** - **F**



### ⚠ Precautions for model No. selection

\*1 : Refer to pages 444 to 447 for combinations of variations/options.

\*2 : Ball bearing (B) only.

Refer to page 458 for material details.

[Example of model No.]

### STS-MT-12-30-F

Model: Guided cylinder, short stroke, standard/heat resistance

- A** Bearing : Metal bush bearing
- B** Bore size :  $\phi 12$  mm
- C** Port thread : M5
- D** Stroke : 30 mm
- E** Option : End plate material: steel

### **D** Stroke

| Series | Stroke (mm)         | Applicable bore size |           |           |           |           |           |           |           |           |
|--------|---------------------|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|        |                     | $\phi 12$            | $\phi 16$ | $\phi 20$ | $\phi 25$ | $\phi 32$ | $\phi 40$ | $\phi 50$ | $\phi 63$ | $\phi 80$ |
| STS    | 10                  | ●                    | ●         |           |           |           |           |           |           |           |
|        | 20                  | ●                    | ●         |           |           |           |           |           |           |           |
|        | 25                  |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 30                  | ●                    | ●         |           |           |           |           |           |           |           |
|        | 40                  | ●                    | ●         |           |           |           |           |           |           |           |
|        | 50                  | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 75                  |                      |           |           |           |           |           |           |           | ●         |
|        | 100                 |                      |           |           |           |           |           |           | ●         |           |
|        | Min. stroke *1      | 5                    |           |           |           |           |           |           |           |           |
|        | Custom stroke *1, 2 | In 5 mm increments   |           |           |           |           |           |           |           |           |
| STL    | 50                  | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 75                  | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 100                 | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 125                 | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 150                 | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 175                 | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 200                 | ●                    | ●         | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 225                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 250                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 275                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 300                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 325                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 350                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
|        | 375                 |                      |           | ●         | ●         | ●         | ●         | ●         | ●         | ●         |
| 400    |                     |                      | ●         | ●         | ●         | ●         | ●         | ●         | ●         |           |
|        | Min. stroke *1      | 50                   |           | 30        |           |           |           |           | 55        |           |
|        | Custom stroke *1, 2 | In 5 mm increments   |           |           |           |           |           |           |           |           |

\*1 : The total dimensions are the same as the longer standard stroke.

\*2 : Special total length for custom stroke can be provided when a custom stroke is used. (Made to order)

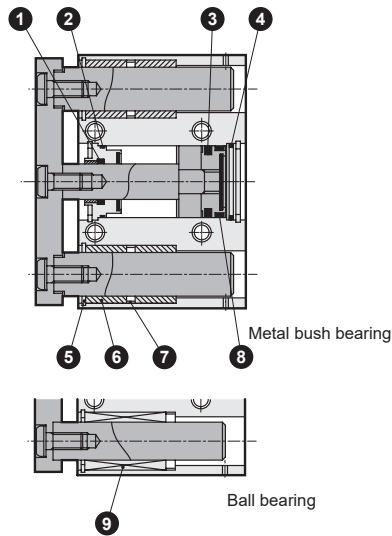
| Code                             | Description  |
|----------------------------------|--|
| <b>A Bearing</b>                 |  |
| <b>M</b>                         | Metal bush bearing   |
| <b>B</b>                         | Ball bearing (not available for $\phi 20$ and $\phi 25$ )                                      |
| <b>B Bore size (mm)</b>          |  |
| <b>12</b>                        | $\phi 12$  |
| <b>16</b>                        | $\phi 16$  |
| <b>20</b>                        | $\phi 20$  |
| <b>25</b>                        | $\phi 25$  |
| <b>32</b>                        | $\phi 32$  |
| <b>40</b>                        | $\phi 40$  |
| <b>50</b>                        | $\phi 50$  |
| <b>63</b>                        | $\phi 63$  |
| <b>80</b>                        | $\phi 80$  |
| <b>C Port thread</b>             |  |
| <b>Blank</b>                     | M5 ( $\phi 12$ to $\phi 25$ )<br>Rc thread ( $\phi 32$ to $\phi 80$ )                          |
| <b>NN</b>                        | NPT thread ( $\phi 32$ and over) made-to-order product   |
| <b>GN</b>                        | G thread ( $\phi 32$ and over) made-to-order product   |
| <b>D Stroke (mm)</b>             |  |
| Refer to the stroke table below. |  |
| <b>E Option</b>                  |  |
| <b>F</b>                         | End plate material: steel  |
| <b>M</b>                         | Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product) *2            |
| <b>M1</b>                        | Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) *2 |

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

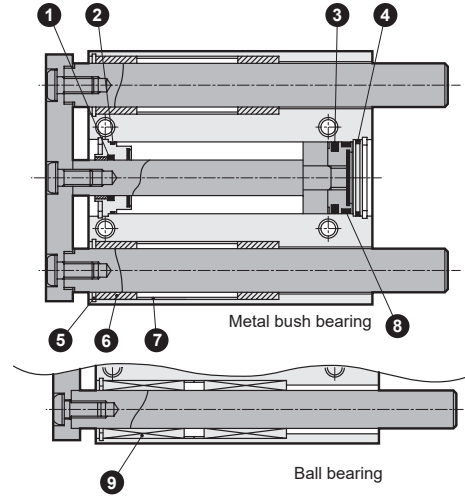
## Internal structure and parts list

● Heat resistance

STS-<sup>M</sup><sub>B</sub>T



STL-<sup>M</sup><sub>B</sub>T



\*1: Ball bearing is not available for the heat resistant  $\phi 20$  and  $\phi 25$ .

## Parts list (Dimensions other than those listed below are the same as those of double acting/single rod. Refer to pages 453 to 457.)

| No.   | Part name              | Material  | Remarks      |
|---|------------------------|---|--------------|
| <b>ST<sup>S</sup><sub>L</sub>-<sup>M</sup><sub>B</sub>T (heat resistance)</b> |                        |   |              |
| 1   | Rod packing            | Fluoro rubber   |              |
| 2   | Metal gasket           | Fluoro rubber   |              |
| 3   | Piston packing         | Fluoro rubber   |              |
| 4   | O-ring                 | Fluoro rubber   |              |
| 5   | Round R type snap ring | Steel   | Black finish |
| 6   | Metal                  | Bearing with solid lubricant  |              |
| 7   | Collar                 | Aluminum alloy  |              |
| 8   | Wear ring              | Tetrafluoroethylene resin ( $\phi 12$ , $\phi 16$ )<br>Special resin ( $\phi 20$ to $\phi 80$ ) |              |
| 9   | Ball bush              |   |              |

## Repair parts list

● ST<sup>S</sup><sub>L</sub>-<sup>M</sup><sub>B</sub>T (heat resistance)

| Bore size (mm) | Kit No.   | Repair parts No. |
|----------------|-----------|------------------|
| $\phi 12$      | STS-T-12K |                  |
| $\phi 16$      | STS-T-16K |                  |
| $\phi 20$      | STS-T-20K |                  |
| $\phi 25$      | STS-T-25K | 1 2 3            |
| $\phi 32$      | STS-T-32K |                  |
| $\phi 40$      | STS-T-40K | 4 8              |
| $\phi 50$      | STS-T-50K |                  |
| $\phi 63$      | STS-T-63K |                  |
| $\phi 80$      | STS-T-80K |                  |

Note: Specify the kit No. when placing an order.

## Dimensions

Same as STS/STL Series (double acting/single rod). Refer to the pages below.

STS Series : Page 459 ( $\phi 8$  to  $\phi 16$ ), page 460 ( $\phi 20$  and  $\phi 25$ ), page 461 ( $\phi 32$  to  $\phi 63$ ) and page 462 ( $\phi 80$ )

STL Series : Page 464 ( $\phi 8$  to  $\phi 16$ ), page 465 ( $\phi 20$  and  $\phi 25$ ), page 466 ( $\phi 32$  to  $\phi 63$ ) and page 467 ( $\phi 80$ )

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# MEMO

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|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

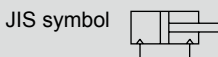
LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending



Guided cylinder Double acting/packing seal material fluoro rubber

# STS/STL-M<sub>B</sub>T2 Series

● Bore size:  $\varnothing 12/\varnothing 16/\varnothing 20/\varnothing 25/\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80$



## Specifications

| Item                      | STS-MT2, BT2 STL-MT2, BT2                    |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
|---------------------------|--|--|------------------|------------------|------------------|------------------|--------------------------------|------------------|------------------|------------------|------------------|
|                           | Bore size                                    | mm   | $\varnothing 12$ | $\varnothing 16$ | $\varnothing 20$ | $\varnothing 25$ | $\varnothing 32$               | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$ |
| Actuation                 | Double acting/packing material fluoro rubber |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Working fluid             | Compressed air                               |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Max. working pressure     | MPa  | 1.0 ( $\approx 150$ psi, 10 bar)   |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Min. working pressure     | MPa  | 0.15 ( $\approx 22$ psi, 1.5 bar)  |                  |                  |                  |                  | 0.1 ( $\approx 15$ psi, 1 bar) |                  |                  |                  |                  |
| Proof pressure            | MPa  | 1.6 ( $\approx 230$ psi, 16 bar)   |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Ambient temperature       | $^{\circ}\text{C}$                           | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing)   |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Port size                 |  | M5   |                  |                  | Rc1/8            |                  |                                | Rc1/4            |                  | Rc3/8            |                  |
| Stroke tolerance          | mm   | +2.0<br>0  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Working piston speed      | mm/s   | 50 to 500  |                  |                  |                  |                  |                                |                  | 50 to 300        |                  |                  |
| Cushion                   |  | With rubber cushion  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Lubrication               |  | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Allowable absorbed energy | J  | 0.056  | 0.088            | 0.157            | 0.157            | 0.401            | 0.627                          | 0.980            | 1.560            | 2.510            |                  |

## Stroke length

● Short stroke STS

| Bore size        | Stroke length (mm)          | Max. stroke length (mm) | Min. stroke length (mm) | Min. stroke with switch (mm)      |
|------------------|-----------------------------|-------------------------|-------------------------|-----------------------------------|
| $\varnothing 12$ | 10,20,30,40,50<br><br>25,50 | 50                      | 5                       | 5<br><br>With one or two switches |
| $\varnothing 16$ |                             |                         |                         |                                   |
| $\varnothing 20$ |                             |                         |                         |                                   |
| $\varnothing 25$ |                             |                         |                         |                                   |
| $\varnothing 32$ |                             |                         |                         |                                   |
| $\varnothing 40$ |                             |                         |                         |                                   |
| $\varnothing 50$ |                             |                         |                         |                                   |
| $\varnothing 63$ |                             |                         |                         |                                   |
| $\varnothing 80$ | 25,50,75,100                | 100                     |                         |                                   |

● Long stroke length STL

| Bore size        | Stroke length (mm)   | Max. stroke length (mm) | Min. stroke length (mm) | Min. stroke with switch (mm)       |
|------------------|--|-------------------------|-------------------------|------------------------------------|
| $\varnothing 12$ | 50,75,100,125,150<br>175,200                                       | 200                     | 50                      | 50<br>With one or two switches     |
| $\varnothing 16$ |  |                         |                         |                                    |
| $\varnothing 20$ | 50,75,100,125,150<br>175,200,225,250<br>275,300,325,350<br>375,400 | 400                     | 30                      | 30<br><br>With one or two switches |
| $\varnothing 25$ |  |                         |                         |                                    |
| $\varnothing 32$ |  |                         |                         |                                    |
| $\varnothing 40$ |  |                         |                         |                                    |
| $\varnothing 50$ |  |                         |                         |                                    |
| $\varnothing 63$ |  |                         |                         |                                    |
| $\varnothing 80$ | 75,100,125,150,175<br>200,225,250,275,300<br>325,350,375,400       |                         | 55                      | 55<br>With one or two switches     |

Note: The custom stroke length is available in 5 mm increments.  
However, the total length is the same as that of the next longer standard stroke length.



### Switch specifications

● 1-color/2-color display/for AC magnetic field proof

| Item            | Proximity 2-wire   |                            | Proximity 2-wire                      |                                   |                            | Proximity 3-wire                   |                                   |                                   |                            | Reed 2-wire                        |   |             |                                    |                                   |                   | Proximity 2-wire             |             |
|-----------------|--|----------------------------|---------------------------------------|-----------------------------------|----------------------------|------------------------------------|-----------------------------------|-----------------------------------|----------------------------|------------------------------------|---|-------------|------------------------------------|-----------------------------------|-------------------|------------------------------|-------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV      | T2YH/<br>T2YV                         | T2WH/<br>T2WV                     | T3H/<br>T3V                | T3PH/<br>T3PV                      | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                    | T5H/T5V                            |   | T8H/T8V     |                                    |                                   | T2YD(*4)<br>T2YDT |                              |             |
| Applications    | For programmable controller, relay, compact solenoid valve |                            | Dedicated for programmable controller |                                   |                            | For programmable controller, relay |                                   |                                   |                            | For programmable controller, relay | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |             | For programmable controller, relay |                                   |                   | For programmable controller  |             |
| Output method   | -  |                            |                                       |                                   |                            | NPN output                         | PNP output                        | NPN output                        | NPN output                 | -                                  |   |             |                                    |                                   |                   |                              |             |
| Pwr. supp. V.   | -  |                            |                                       |                                   |                            | 10 to 28 VDC                       |                                   |                                   |                            | -                                  |   |             |                                    |                                   |                   |                              |             |
| Load voltage    | 85 to 265 VAC  |                            | 10 to 30 VDC                          |                                   | 24 VDC ±10%                | 30 VDC or less                     |                                   |                                   |                            | 12/24 VDC                          | 100/110 VAC   | 5/12/24 VDC | 100/110 VAC                        | 12/24 VDC                         | 110 VAC           | 220 VAC                      | 24 VDC ±10% |
| Load current    | 5 to 100 mA  |                            | 5 to 20 mA (*3)                       |                                   |                            | 100 mA or less                     |                                   | 50 mA or less                     |                            | 5 to 50 mA                         | 7 to 20 mA  | ≤50 mA      | ≤20 mA                             | 5 to 50 mA                        | 7 to 20 mA        | 7 to 10 mA                   | 5 to 20 mA  |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)       | Red/green<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)       | Yellow LED<br>(Lit when ON)        | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)       | Without indicator lamp             | LED<br>(Lit when ON)  |             |                                    | Red/green<br>LED<br>(Lit when ON) |                   |                              |             |
| Leakage current | ≤1 mA at 100 VAC,<br>≤2 mA at 200 VAC                      |                            | 1 mA or less                          |                                   |                            | 10 µA or less                      |                                   |                                   |                            | 0 mA                               |   |             |                                    |                                   |                   | 1 mA or less                 |             |
| Weight g        | 1 m:33<br>3 m:87<br>5 m:142                                | 1 m:18<br>3 m:49<br>5 m:80 | 1 m:33<br>3 m:87<br>5 m:142           | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:18<br>3 m:49<br>5 m:80 | 1 m:33<br>3 m:87<br>5 m:142        | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:33<br>3 m:87<br>5 m:142       | 1 m:18<br>3 m:49<br>5 m:80 | 1 m:18 3 m:49 5 m:80               |   |             | 1 m:33 3 m:87 5 m:142              |                                   |                   | 1 m:61<br>3 m:166<br>5 m:272 |             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.1                    | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø20            | Push                | -                      | 47.1                   | 62.8                   | 94.2                   | 1.26 × 10 <sup>2</sup> | 1.57 × 10 <sup>2</sup> | 1.88 × 10 <sup>2</sup> | 2.20 × 10 <sup>2</sup> | 2.51 × 10 <sup>2</sup> | 2.83 × 10 <sup>2</sup> | 3.14 × 10 <sup>2</sup> |
|                | Pull                | -                      | 35.3                   | 47.1                   | 70.7                   | 94.2                   | 1.18 × 10 <sup>2</sup> | 1.41 × 10 <sup>2</sup> | 1.65 × 10 <sup>2</sup> | 1.88 × 10 <sup>2</sup> | 2.12 × 10 <sup>2</sup> | 2.36 × 10 <sup>2</sup> |
| ø25            | Push                | -                      | 73.6                   | 98.2                   | 1.47 × 10 <sup>2</sup> | 1.96 × 10 <sup>2</sup> | 2.45 × 10 <sup>2</sup> | 2.95 × 10 <sup>2</sup> | 3.44 × 10 <sup>2</sup> | 3.93 × 10 <sup>2</sup> | 4.42 × 10 <sup>2</sup> | 4.91 × 10 <sup>2</sup> |
|                | Pull                | -                      | 56.7                   | 75.6                   | 1.13 × 10 <sup>2</sup> | 1.51 × 10 <sup>2</sup> | 1.89 × 10 <sup>2</sup> | 2.27 × 10 <sup>2</sup> | 2.64 × 10 <sup>2</sup> | 3.02 × 10 <sup>2</sup> | 3.40 × 10 <sup>2</sup> | 3.78 × 10 <sup>2</sup> |
| ø32            | Push                | 80.4                   | 1.21 × 10 <sup>2</sup> | 1.61 × 10 <sup>2</sup> | 2.41 × 10 <sup>2</sup> | 3.22 × 10 <sup>2</sup> | 4.02 × 10 <sup>2</sup> | 4.83 × 10 <sup>2</sup> | 5.63 × 10 <sup>2</sup> | 6.43 × 10 <sup>2</sup> | 7.24 × 10 <sup>2</sup> | 8.04 × 10 <sup>2</sup> |
|                | Pull                | 60.3                   | 90.5                   | 1.21 × 10 <sup>2</sup> | 1.81 × 10 <sup>2</sup> | 2.41 × 10 <sup>2</sup> | 3.02 × 10 <sup>2</sup> | 3.62 × 10 <sup>2</sup> | 4.22 × 10 <sup>2</sup> | 4.83 × 10 <sup>2</sup> | 5.43 × 10 <sup>2</sup> | 6.03 × 10 <sup>2</sup> |
| ø40            | Push                | 1.26 × 10 <sup>2</sup> | 1.88 × 10 <sup>2</sup> | 2.51 × 10 <sup>2</sup> | 3.77 × 10 <sup>2</sup> | 5.03 × 10 <sup>2</sup> | 6.28 × 10 <sup>2</sup> | 7.54 × 10 <sup>2</sup> | 8.80 × 10 <sup>2</sup> | 1.01 × 10 <sup>3</sup> | 1.13 × 10 <sup>3</sup> | 1.26 × 10 <sup>3</sup> |
|                | Pull                | 1.06 × 10 <sup>2</sup> | 1.58 × 10 <sup>2</sup> | 2.11 × 10 <sup>2</sup> | 3.17 × 10 <sup>2</sup> | 4.22 × 10 <sup>2</sup> | 5.28 × 10 <sup>2</sup> | 6.33 × 10 <sup>2</sup> | 7.39 × 10 <sup>2</sup> | 8.44 × 10 <sup>2</sup> | 9.50 × 10 <sup>2</sup> | 1.06 × 10 <sup>3</sup> |
| ø50            | Push                | 1.96 × 10 <sup>2</sup> | 2.95 × 10 <sup>2</sup> | 3.93 × 10 <sup>2</sup> | 5.89 × 10 <sup>2</sup> | 7.85 × 10 <sup>2</sup> | 9.82 × 10 <sup>2</sup> | 1.18 × 10 <sup>3</sup> | 1.37 × 10 <sup>3</sup> | 1.57 × 10 <sup>3</sup> | 1.77 × 10 <sup>3</sup> | 1.96 × 10 <sup>3</sup> |
|                | Pull                | 1.65 × 10 <sup>2</sup> | 2.47 × 10 <sup>2</sup> | 3.30 × 10 <sup>2</sup> | 4.95 × 10 <sup>2</sup> | 6.60 × 10 <sup>2</sup> | 8.25 × 10 <sup>2</sup> | 9.90 × 10 <sup>2</sup> | 1.15 × 10 <sup>3</sup> | 1.32 × 10 <sup>3</sup> | 1.48 × 10 <sup>3</sup> | 1.65 × 10 <sup>3</sup> |
| ø63            | Push                | 3.12 × 10 <sup>2</sup> | 4.68 × 10 <sup>2</sup> | 6.23 × 10 <sup>2</sup> | 9.35 × 10 <sup>2</sup> | 1.25 × 10 <sup>3</sup> | 1.56 × 10 <sup>3</sup> | 1.87 × 10 <sup>3</sup> | 2.18 × 10 <sup>3</sup> | 2.49 × 10 <sup>3</sup> | 2.81 × 10 <sup>3</sup> | 3.12 × 10 <sup>3</sup> |
|                | Pull                | 2.80 × 10 <sup>2</sup> | 4.20 × 10 <sup>2</sup> | 5.61 × 10 <sup>2</sup> | 8.41 × 10 <sup>2</sup> | 1.12 × 10 <sup>3</sup> | 1.40 × 10 <sup>3</sup> | 1.68 × 10 <sup>3</sup> | 1.96 × 10 <sup>3</sup> | 2.24 × 10 <sup>3</sup> | 2.52 × 10 <sup>3</sup> | 2.80 × 10 <sup>3</sup> |
| ø80            | Push                | 5.03 × 10 <sup>2</sup> | 7.54 × 10 <sup>2</sup> | 1.01 × 10 <sup>3</sup> | 1.51 × 10 <sup>3</sup> | 2.01 × 10 <sup>3</sup> | 2.51 × 10 <sup>3</sup> | 3.02 × 10 <sup>3</sup> | 3.52 × 10 <sup>3</sup> | 4.02 × 10 <sup>3</sup> | 4.52 × 10 <sup>3</sup> | 5.03 × 10 <sup>3</sup> |
|                | Pull                | 4.54 × 10 <sup>2</sup> | 6.80 × 10 <sup>2</sup> | 9.07 × 10 <sup>2</sup> | 1.36 × 10 <sup>3</sup> | 1.81 × 10 <sup>3</sup> | 2.27 × 10 <sup>3</sup> | 2.72 × 10 <sup>3</sup> | 3.17 × 10 <sup>3</sup> | 3.63 × 10 <sup>3</sup> | 4.08 × 10 <sup>3</sup> | 4.54 × 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

# STS/STL-M<sup>T</sup>2 Series

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)

**STS - M T2 - 12 - 10 - F**

With switch (built-in magnet for switch)

**STS - M T2 - 12 - 10 - T2H - R - F**

### ● Long stroke length

Without switch (built-in magnet for switch)

**STL - M T2 - 12 - 50 - F**

With switch (built-in magnet for switch)

**STL - M T2 - 12 - 50 - T2H - R - F**

Model No.

**A** Bearing

**B** Bore size

**C** Port thread

**D** Stroke length

■ Custom stroke length  
Available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke length.

**E** Switch model No.  
\*1 \*3 \*4

For the 2-color display, T1H/V, T8H/V and AC magnetic field proof switches for ø40 and over, insert "L1" with "-" between **A** and **E**.

Example) For STS-MT2-L1-63-50-T2YH3-D-F ø80, the 2-color display, T1H/V, T8H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between **A** and **E**.

Example) STS-MT2-L1-80-50-F

**F** Switch quantity

**G** Option

### ⚠ Precautions for model No. selection

- \*1 : Switches other than switch model No. are also available. (Made-to-order product)  
Refer to Ending Page 1 for details.
- \*2 : Refer to pages 444 to 447 for combinations of variations/options.
- \*3 : T8H/V cannot be installed on ø12 and ø16.
- \*4 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
- \*5 : Refer to page 458 for material details.

[Example of model No.]

**STS-MT2-12-30-T0H-R-F**

Model: Guided cylinder, short stroke length, standard/packing seal material fluoro rubber

- A** Bearing : Metal bush bearing
- B** Bore size : ø12 mm
- C** Port thread : M5
- D** Stroke length : 30 mm
- E** Switch model No. : Reed switch T0H, 1 m lead wire length
- F** Switch quantity : 1 on rod side
- G** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| <b>M</b>         | Metal bush bearing |
| <b>B</b>         | Ball bearing       |

| <b>B Bore size (mm)</b> |     |
|-------------------------|-----|
| <b>12</b>               | ø12 |
| <b>16</b>               | ø16 |
| <b>20</b>               | ø20 |
| <b>25</b>               | ø25 |
| <b>32</b>               | ø32 |
| <b>40</b>               | ø40 |
| <b>50</b>               | ø50 |
| <b>63</b>               | ø63 |
| <b>80</b>               | ø80 |

| <b>C Port thread</b> |   |
|----------------------|---|
| <b>Blank</b>         | M5 (ø12 to ø25)<br>Rc thread (ø32 to ø80)       |
| <b>NN</b>            | NPT thread (ø32 and over) made-to-order product |
| <b>GN</b>            | G thread (ø32 and over) made-to-order product   |

| <b>D Stroke length (mm)</b>                             |  |
|---|--|
| Refer to the stroke length table on the following page. |  |

| <b>E Switch model No.</b> |                  |           |         |                 |                           |                   |
|---------------------------|------------------|-----------|---------|-----------------|---------------------------|-------------------|
| Axial lead wire           | Radial lead wire | Contact   | Voltage |                 | Indicator                 | Lead wire         |
|                           |                  |           | AC      | DC              |                           |                   |
| <b>T0H*</b>               | <b>T0V*</b>      | Reed      | ●       | ●               | 1-color display           | 2-wire            |
| <b>T5H*</b>               | <b>T5V*</b>      |           | ●       | ●               | Without indicator lamp    |                   |
| <b>T8H*</b>               | <b>T8V*</b>      |           | ●       | ●               | 1-color display           |                   |
| <b>T1H*</b>               | <b>T1V*</b>      | ●         | ●       |                 |                           |                   |
| <b>T2H*</b>               | <b>T2V*</b>      | Proximity |         | ●               | 1-color display           | 3-wire            |
| <b>T3H*</b>               | <b>T3V*</b>      |           |         | ●               |                           |                   |
| <b>T3PH*</b>              | <b>T3PV*</b>     |           |         | ●               | 1-color display           | 3-wire            |
| <b>T2WH*</b>              | <b>T2WV*</b>     |           |         | ●               | 2-color display           | 2-wire            |
| <b>T2YH*</b>              | <b>T2YV*</b>     |           |         | ●               |                           | 3-wire            |
| <b>T3WH*</b>              | <b>T3WV*</b>     |           |         | ●               | 2-color display           | 3-wire            |
| <b>T3YH*</b>              | <b>T3YV*</b>     |           |         | ●               |                           | 3-wire            |
| <b>T2JH*</b>              | <b>T2JV*</b>     |           |         | ●               | 1-color display off-delay | 2-wire            |
| <b>T2YD*</b>              | -                |           | ●       | 2-color display | 2-wire                    |                   |
| <b>T2YDT*</b>             | -                |           | ●       |                 |                           | AC magnetic field |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| <b>Blank</b>              | 1 m (standard) |
| <b>3</b>                  | 3 m (option)   |
| <b>5</b>                  | 5 m (option)   |

| <b>F Switch quantity</b> |                |
|--------------------------|----------------|
| <b>R</b>                 | 1 on rod side  |
| <b>H</b>                 | 1 on head side |
| <b>D</b>                 | 2              |
| <b>T</b>                 | 3              |

| <b>G Option</b> |  |
|-----------------|--|
| <b>F</b>        | End plate material: steel  |
| <b>M</b>        | Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product) *5            |
| <b>M1</b>       | Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) *5 |

### D Stroke length

| Series                | Stroke length (mm)     | Applicable bore size  |                    |     |     |     |     |     |     |     |   |
|-----------------------|------------------------|-----------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|---|
|                       |                        | ø12                   | ø16                | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 |   |
| STS                   | Standard stroke length | 10                    | ●                  | ●   |     |     |     |     |     |     |   |
|                       |                        | 20                    | ●                  | ●   |     |     |     |     |     |     |   |
|                       |                        | 25                    |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 30                    | ●                  | ●   |     |     |     |     |     |     |   |
|                       |                        | 40                    | ●                  | ●   |     |     |     |     |     |     |   |
|                       |                        | 50                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 75                    |                    |     |     |     |     |     |     |     | ● |
|                       |                        | 100                   |                    |     |     |     |     |     |     |     | ● |
|                       |                        | Min. stroke length *1 | 5                  |     |     |     |     |     |     |     |   |
|                       |                        | Custom stroke *1, 2   | In 5 mm increments |     |     |     |     |     |     |     |   |
| STL                   | Standard stroke length | 50                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 75                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 100                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 125                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 150                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 175                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 200                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 225                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 250                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 275                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 300                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 325                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 350                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 375                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                       |                        | 400                   |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |
| Min. stroke length *1 | 50                     | 30                    |                    |     |     |     |     | 55  |     |     |   |
| Custom stroke *1, 2   | In 5 mm increments     |                       |                    |     |     |     |     |     |     |     |   |

\*1: The total dimensions are the same as the longer standard stroke length.

\*2: Special total length for custom stroke length can be provided when a custom stroke length is used. (Made to order)

### How to order switch

SW - T0V

Switch model No.  
(Item E) on page 482)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

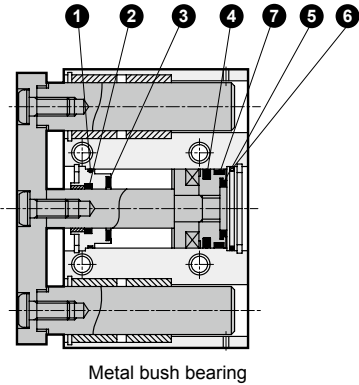
# STS/STL-<sup>M</sup><sub>B</sub>T2 Series

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

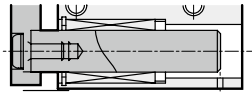
## Internal structure and parts list

● Packing material fluoro rubber  
STS-<sup>M</sup><sub>B</sub>T2

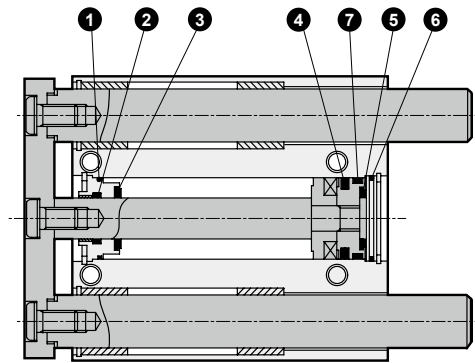
STL-<sup>M</sup><sub>B</sub>T2



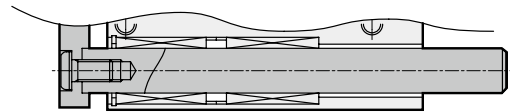
Metal bush bearing



Ball bearing



Metal bush bearing



Ball bearing

**Parts list** (Parts not listed below are the same as those of the double acting/standard single rod. Refer to pages 453 to 457.)

| No.   | Part name          | Material        | Remarks |
|---|--------------------|-----------------|---------|
| <b>ST<sup>S</sup><sub>L</sub>-<sup>M</sup><sub>B</sub>T2 (packing material fluoro rubber)</b> |                    |                 |         |
| 1   | Metal gasket       | Fluoro rubber   |         |
| 2   | Rod packing        | Fluoro rubber   |         |
| 3   | Cushion rubber (R) | Urethane rubber |         |
| 4   | Piston packing     | Fluoro rubber   |         |
| 5   | Cushion rubber (H) | Urethane rubber |         |
| 6   | O-ring             | Fluoro rubber   |         |
| 7   | Wear ring          | Acetal resin    |         |

## Repair parts list

● ST<sup>S</sup><sub>L</sub>-<sup>M</sup><sub>B</sub>T2 (packing material fluoro rubber)

| Bore size (mm) | Kit No.    | Repair parts No. |
|----------------|------------|------------------|
| ø12            | STS-T2-12K |                  |
| ø16            | STS-T2-16K |                  |
| ø20            | STS-T2-20K | 1 2 3 4          |
| ø25            | STS-T2-25K |                  |
| ø32            | STS-T2-32K | 5 6 7            |
| ø40            | STS-T2-40K |                  |
| ø50            | STS-T2-50K |                  |
| ø63            | STS-T2-63K |                  |
| ø80            | STS-T2-80K |                  |

Note: Specify the kit No. when placing an order.

## Dimensions

Same as STS/STL Series (double acting/single rod). Refer to the pages below.

STS Series: Page 459 (ø8 to ø16), page 460 (ø20 and ø25), page 461 (ø32 to ø63) and page 462 (ø80)

STL Series: Page 464 (ø8 to ø16), page 465 (ø20 and ø25), page 466 (ø32 to ø63) and page 467 (ø80)

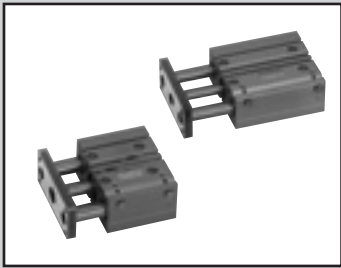
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# MEMO

---

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending



Guided cylinder Rubber-air cushioned

# STS/STL-M-B-\*C Series

● Bore size:  $\phi 32/\phi 40/\phi 50/\phi 63/\phi 80$



## Specifications

| Item                      |                    | STS/L-M/B-*C   |           |           |           |           |
|---------------------------|--------------------|--|-----------|-----------|-----------|-----------|
| Bore size                 | mm                 | $\phi 32$  | $\phi 40$ | $\phi 50$ | $\phi 63$ | $\phi 80$ |
| Actuation                 |                    | Double acting  |           |           |           |           |
| Working fluid             |                    | Compressed air   |           |           |           |           |
| Max. working pressure     | MPa                | 1.0 ( $\approx 150$ psi, 10 bar)   |           |           |           |           |
| Min. working pressure     | MPa                | 0.2 ( $\approx 29$ psi, 2 bar)   |           |           |           |           |
| Proof pressure            | MPa                | 1.6 ( $\approx 230$ psi, 16 bar)   |           |           |           |           |
| Ambient temperature       | $^{\circ}\text{C}$ | -10 (14 $^{\circ}\text{F}$ ) to 60 (140 $^{\circ}\text{F}$ ) (no freezing)   |           |           |           |           |
| Port size                 |                    | Rc1/8  |           | Rc1/4     |           | Rc3/8     |
| Stroke tolerance          | mm                 | +2.0<br>0  |           |           |           |           |
| Working piston speed      | mm/s               | 50 to 500  |           |           | 50 to 300 |           |
| Cushion                   |                    | Rubber-air cushioned   |           |           |           |           |
| Lubrication               |                    | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |           |           |           |           |
| Allowable absorbed energy | J                  | 0.401  | 0.627     | 0.980     | 1.560     | 2.510     |

## Stroke

· Short stroke STS

| Bore size (mm) | Stroke (mm)     | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm) |
|----------------|-----------------|------------------|------------------|------------------------------|
| $\phi 32$      | 25, 50          | 50               | 5                | 5                            |
| $\phi 40$      |                 |                  |                  |                              |
| $\phi 50$      |                 |                  |                  |                              |
| $\phi 63$      | 25, 50, 75, 100 | 100              | 10               | 10                           |
| $\phi 80$      |                 |                  |                  |                              |

With one or two switches

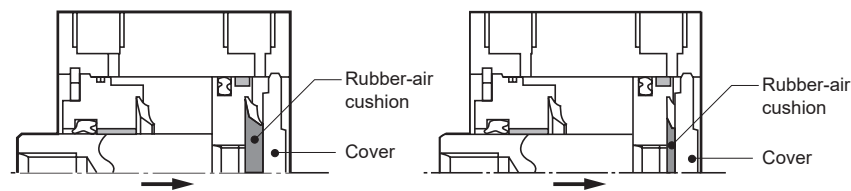
· Long stroke STL

| Bore size (mm) | Stroke (mm)   | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm) |
|----------------|---|------------------|------------------|------------------------------|
| $\phi 32$      | 50, 75, 100, 125, 150   | 400              | 30               | 30                           |
| $\phi 40$      | 175, 200, 225, 250  |                  |                  |                              |
| $\phi 50$      | 275, 300, 325, 350  |                  |                  |                              |
| $\phi 63$      | 375, 400  |                  |                  |                              |
| $\phi 80$      | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300<br>325, 350, 375, 400 |                  | 55               | 55                           |

Note : The custom stroke is available in 5 mm increments.

With one or two switches

## Rubber-air cushion mechanism

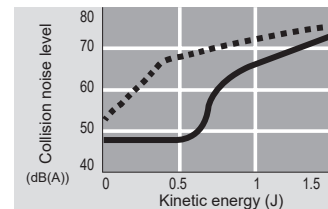


### When pulled

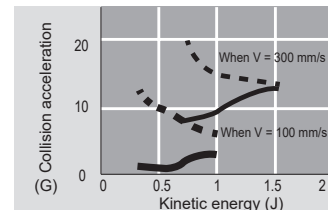
An airtight space is created in the  area when the piston operates and the rubber-air cushion and cover make contact. Air in the airtight area is further compressed, absorbing energy as the piston operates. At the end of the stroke, energy generated by compression distortion of the air cushion is also added.

--- Cylinder with rubber cushion  
— Cylinder with rubber-air cushion

Data of the reduction of collision noise level (an example case)



Data of the reduction of collision acceleration level (an example case)



### Switch specifications

● 1-color/2-color LED/for AC magnetic field proof

| Item            | Proximity 2-wire  |                                       | Proximity 2-wire                  |                                   |                                    | Proximity 3-wire               |                                   |                                   |                                    | Reed 2-wire   |                      |                          |                                    |                                       |                                 | Proximity 2-wire |
|-----------------|---|---------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|--------------------------------|-----------------------------------|-----------------------------------|------------------------------------|---|----------------------|--------------------------|------------------------------------|---------------------------------------|---------------------------------|------------------|
|                 | T1H/<br>T1V   | T2H/T2V/<br>T2JH/T2JV                 | T2YH/<br>T2YV                     | T2WH/<br>T2WV                     | T3H/<br>T3V                        | T3PH/<br>T3PV                  | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                            | T5H/T5V   | T8H/T8V              |                          |                                    | T2YD(*4)<br>T2YDT                     |                                 |                  |
| Applications    | For programming controller, relay, compact solenoid valve | Dedicated for programmable controller |                                   |                                   | For programmable controller, relay |                                |                                   |                                   | For programmable controller, relay | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                      |                          | For programmable controller, relay | Dedicated for programmable controller |                                 |                  |
| Output method   | -   |                                       |                                   | NPN output                        | PNP output                         | NPN output                     | NPN output                        | -                                 |                                    |   |                      |                          |                                    |                                       |                                 |                  |
| Pwr. supp. V.   | -   |                                       |                                   | 10 to 28 VDC                      |                                    |                                |                                   | -                                 |                                    |   |                      |                          |                                    |                                       |                                 |                  |
| Load voltage    | 85 to 265 VAC   | 10 to 30 VDC                          | 24 VDC ±10%                       | 30 VDC or less                    |                                    |                                |                                   | 12/24 VDC                         | 100/110 VAC                        | 5/12/24 VDC   | 100/110 VAC          | 12/24 VDC                | 110 VAC                            | 220 VAC                               | 24 VDC ±10%                     |                  |
| Load current    | 5 to 100mA  | 5 to 20 mA (*3)                       |                                   |                                   | 100 mA or less                     |                                | 50 mA or less                     |                                   | 5 to 50mA                          | 7 to 20mA   | 50 mA or less        | 20 mA or less            | 5 to 50mA                          | 7 to 20mA                             | 7 to 10mA                       | 5 to 20mA        |
| Indicator lamp  | LED<br>(Lit when ON)                                      | LED<br>(Lit when ON)                  | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)               | Yellow<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)               | No indicator lamp   | LED<br>(Lit when ON) |                          |                                    | Red/green<br>LED<br>(Lit when ON)     |                                 |                  |
| Leakage current | 1 mA or less with 100 VAC,<br>2 mA or less with 200 VAC   | 1 mA or less                          |                                   |                                   | 10 µA or less                      |                                |                                   |                                   | 0mA                                |   |                      |                          |                                    |                                       | 1 mA or less                    |                  |
| Weight g        | 1 m: 33 3 m:<br>87 5 m: 142                               | 1 m: 18<br>3 m: 49<br>5 m: 80         | 1 m: 33<br>3 m: 87<br>5 m: 142    | 1 m: 18<br>3 m: 49<br>5 m: 80     | 1 m: 18 3 m:<br>49 5 m: 80         |                                | 1 m: 33<br>3 m: 87<br>5 m: 142    | 1 m: 18<br>3 m: 49<br>5 m: 80     | 1 m: 18 3 m: 49 5 m: 80            |   |                      | 1 m: 33 3 m: 87 5 m: 142 |                                    |                                       | 1 m: 61<br>3 m: 166<br>5 m: 272 |                  |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size<br>(mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |
|-------------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                   |                     | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø32               | Push                | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                   | Pull                | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40               | Push                | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                   | Pull                | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50               | Push                | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                   | Pull                | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63               | Push                | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                   | Pull                | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80               | Push                | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                   | Pull                | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

# STS/STL-M-B-\*C Series

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)

**STS - M - 32 - C - 50 - F**

With switch (built-in magnet for switch)

**STS - M - 32 - C - 50 - T0H - R - F**

### ● Long stroke

Without switch (built-in magnet for switch)

**STL - M - 32 - C - 100 - F**

With switch (built-in magnet for switch)

**STL - M - 32 - C - 100 - T0H - D - F**

**A** Bearing

**B** Bore size

**C** Port thread

Rubber-air cushioned

**D** Stroke

- The custom stroke is available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.
- Total length dimension with custom stroke is handled as custom stroke dedicated length. (Made to order)

### ⚠ Precautions for model No. selection

- \*1 : The total dimensions are the same as the longer standard stroke.
- \*2 : Refer to pages 444 to 447 for combinations of variations/options.
- \*3 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
- \*4 : Refer to page 458 for material details.

### [Example of model No.] STS-M-32C-50-T0H-R

Model : Guided cylinder, short stroke  
Rubber-air cushioned

- A** Bearing : Metal bush bearing
- B** Bore size :  $\phi 32$  mm
- C** Port thread : Rc thread
- D** Stroke : 50 mm
- E** Switch model No. : Reed TOH switch, lead wire 1 m
- F** Switch quantity : 1 on rod side

### How to order switch

**SW - T0H**

Switch model No.  
(Item **E** above)

**E** Switch model No.

\*3

For the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches for  $\phi 40$  and over, insert "L1" with "-" between Items **A** and **B**.  
(Example)  
STS-M-L1-63C-50-T2YH3-D-F  
For  $\phi 80$ , the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between **A** and **B**.  
(Example) STS-M-L1-80C-50-F

**F** Switch quantity

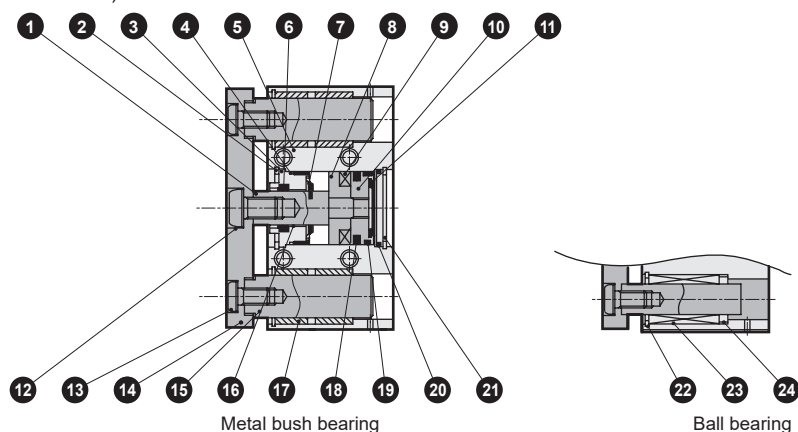
**G** Option

| Code                          | Description  |                      |               |                   |                       |        |   |
|-------------------------------|--|----------------------|---------------|-------------------|-----------------------|--------|---|
| <b>A Bearing</b>              |  |                      |               |                   |                       |        |   |
| <b>M</b>                      | Metal bush bearing   |                      |               |                   |                       |        |   |
| <b>B</b>                      | Ball bearing   |                      |               |                   |                       |        |   |
| <b>B Bore size (mm)</b>       |  |                      |               |                   |                       |        |   |
| <b>32</b>                     | $\phi 32$  |                      |               |                   |                       |        |   |
| <b>40</b>                     | $\phi 40$  |                      |               |                   |                       |        |   |
| <b>50</b>                     | $\phi 50$  |                      |               |                   |                       |        |   |
| <b>63</b>                     | $\phi 63$  |                      |               |                   |                       |        |   |
| <b>80</b>                     | $\phi 80$  |                      |               |                   |                       |        |   |
| <b>C Port thread</b>          |  |                      |               |                   |                       |        |   |
| <b>Blank</b>                  | Rc thread  |                      |               |                   |                       |        |   |
| <b>N</b>                      | NPT thread (made-to-order product)   |                      |               |                   |                       |        |   |
| <b>G</b>                      | G thread (made-to-order product)   |                      |               |                   |                       |        |   |
| <b>D Stroke</b>               |  |                      |               |                   |                       |        |   |
| Series                        | Stroke (mm)  | Applicable bore size |               |                   |                       |        |   |
| STS                           | Standard stroke  | 25                   | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 50                   | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 75                   |               |                   |                       |        | ● |
|                               | Stroke   | 100                  |               |                   |                       |        | ● |
|                               | Min. stroke *1   |                      | 5             |                   |                       | 10     |   |
| Custom stroke *1              |  | In 5 mm increments   |               |                   |                       |        |   |
| STL                           | Standard stroke  | 50                   | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 75                   | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 100                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 125                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 150                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 175                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 200                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 225                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 250                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 275                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 300                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 325                  | ●             | ●                 | ●                     | ●      | ● |
|                               |  | 350                  | ●             | ●                 | ●                     | ●      | ● |
| 375                           | ●  | ●                    | ●             | ●                 | ●                     |        |   |
| 400                           | ●  | ●                    | ●             | ●                 | ●                     |        |   |
| Min. stroke *1                |  | 30                   |               |                   | 55                    |        |   |
| Custom stroke *1              |  | In 5 mm increments   |               |                   |                       |        |   |
| <b>E Switch model No.</b>     |  |                      |               |                   |                       |        |   |
| Straight lead wire            | L-shaped lead wire   | Contact              | Voltage AC/DC | Indicator         | Lead wire             |        |   |
| <b>T0H*</b>                   | <b>T0V*</b>  | Reed                 | ●             | ●                 | 1-color LED           | 2-wire |   |
| <b>T5H*</b>                   | <b>T5V*</b>  |                      | ●             | ●                 | No indicator lamp     |        |   |
| <b>T8H*</b>                   | <b>T8V*</b>  |                      | ●             | ●                 | 1-color LED           |        |   |
| <b>T1H*</b>                   | <b>T1V*</b>  |                      | ●             | ●                 |                       |        |   |
| <b>T2H*</b>                   | <b>T2V*</b>  | Proximity            | ●             | ●                 | 1-color LED           | 3-wire |   |
| <b>T3H*</b>                   | <b>T3V*</b>  |                      | ●             | ●                 |                       |        |   |
| <b>T3PH*</b>                  | <b>T3PV*</b>   |                      | ●             | ●                 | 1-color LED           | 3-wire |   |
| <b>T2WH*</b>                  | <b>T2WV*</b>   |                      | ●             | ●                 | 2-color LED           | 2-wire |   |
| <b>T2YH*</b>                  | <b>T2YV*</b>   |                      | ●             | ●                 |                       | 2-wire |   |
| <b>T3WH*</b>                  | <b>T3WV*</b>   |                      | ●             | ●                 |                       | 3-wire |   |
| <b>T3YH*</b>                  | <b>T3YV*</b>   |                      | ●             | ●                 | 3-wire                |        |   |
| <b>T2JH*</b>                  | <b>T2JV*</b>   |                      | ●             | ●                 | 1-color LED off-delay | 2-wire |   |
| <b>T2YD*</b>                  | -  | ●                    | ●             | 2-color LED       | 2-wire                |        |   |
| <b>T2YDT*</b>                 | -  | ●                    | ●             | AC magnetic field |                       |        |   |
| <b>* Lead wire length (m)</b> |  |                      |               |                   |                       |        |   |
| <b>Blank</b>                  | 1 m (standard)   |                      |               |                   |                       |        |   |
| <b>3</b>                      | 3 m (option)   |                      |               |                   |                       |        |   |
| <b>5</b>                      | 5 m (option)   |                      |               |                   |                       |        |   |
| <b>F Switch quantity</b>      |  |                      |               |                   |                       |        |   |
| <b>R</b>                      | 1 on rod side  |                      |               |                   |                       |        |   |
| <b>H</b>                      | 1 on head side   |                      |               |                   |                       |        |   |
| <b>D</b>                      | 2  |                      |               |                   |                       |        |   |
| <b>G Option</b>               |  |                      |               |                   |                       |        |   |
| <b>F</b>                      | End plate material (steel)   |                      |               |                   |                       |        |   |
| <b>M</b>                      | Corrosion proof (Piston rod and guide rod material: SUS) (made to order) *4            |                      |               |                   |                       |        |   |
| <b>M1</b>                     | Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made to order) *4 |                      |               |                   |                       |        |   |
| <b>P6</b>                     | Copper and PTFE free (made to order)   |                      |               |                   |                       |        |   |

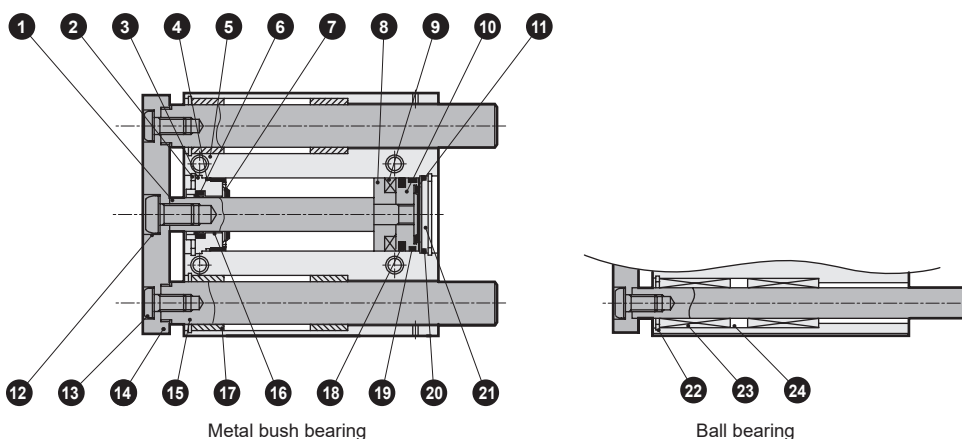


## Internal structure and parts list

### ● STS-M<sub>B</sub>-32C to 80C (short stroke)



### ● STL-M<sub>B</sub>-32C to 80C (long stroke)



| No. | Part name              | Material               | Remarks                   | No. | Part name                       | Material                                 | Remarks                   |
|-----|------------------------|------------------------|---------------------------|-----|---------------------------------|--|---------------------------|
| 1   | Piston rod             | Steel                  | Industrial chrome plating | 13  | Hexagon socket button head bolt | Steel                                    | Zinc chromate             |
| 2   | C-snap ring            | Steel                  | Zinc phosphate            | 14  | End plate                       | Aluminum alloy                           | Alumite                   |
| 3   | Rod metal              | Special aluminum alloy | Alumite                   | 15  | Guide rod                       | Steel                                    | Industrial chrome plating |
| 4   | Metal gasket           | Nitrile rubber         |                           | 16  | Bush                            | Oiles drymet                             |                           |
| 5   | Cylinder body          | Aluminum alloy         | Hard alumite              | 17  | Metal                           | Oil impregnated bearing alloy            |                           |
| 6   | Rod packing            | Nitrile rubber         |                           | 18  | Piston packing                  | Nitrile rubber                           |                           |
| 7   | Rubber air cushion (R) | Urethane rubber        |                           | 19  | Wear ring                       | Acetal resin                             |                           |
| 8   | Spacer                 | Aluminum alloy         |                           | 20  | O-ring                          | Nitrile rubber                           |                           |
| 9   | Magnet                 | Plastic                |                           | 21  | Base plate                      | Aluminum alloy (ø32 to ø63), steel (ø80) | Zinc chromate (ø80)       |
| 10  | Piston                 | Aluminum alloy         |                           | 22  | C-snap ring                     | Steel                                    | Zinc phosphate            |
| 11  | Rubber air cushion (H) | Special rubber         |                           | 23  | Ball bush                       |  |                           |
| 12  | Disc spring washer     | Steel                  |                           | 24  | Collar                          | Aluminum alloy                           | (Not provided for ø80)    |

## Repair parts list

| Bore size (mm) | Kit No.  | Repair parts No. |
|----------------|----------|------------------|
| ø32            | STS-32CK |                  |
| ø40            | STS-40CK | 4 6 7 11         |
| ø50            | STS-50CK | 18 19 20         |
| ø63            | STS-63CK |                  |
| ø80            | STS-80CK |                  |

## Dimensions

Same as STS/STL Series (double acting/single rod). Refer to the pages below.

STS Series : Page 459 (ø8 to ø16), page 460 (ø20 and ø25), page 461 (ø32 to ø63) and page 462 (ø80)

STL Series : Page 464 (ø8 to ø16), page 465 (ø20 and ø25), page 466 (ø32 to ø63) and page 467 (ø80)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

## Technical data

Refer to page 554 for guided cylinder selection guide.

### [Comparison of collision noise level]

Values are comparison samples obtained under the conditions below.

As the values vary with base rigidity, etc., they are not guaranteed.



#### (Test conditions)

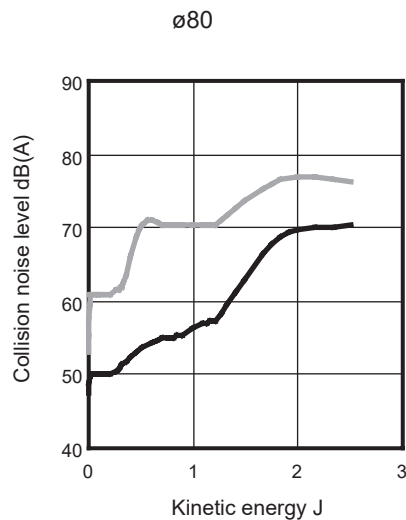
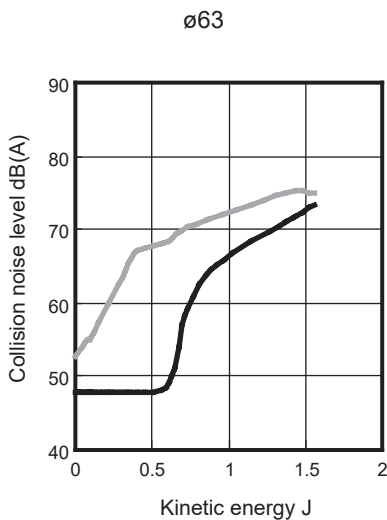
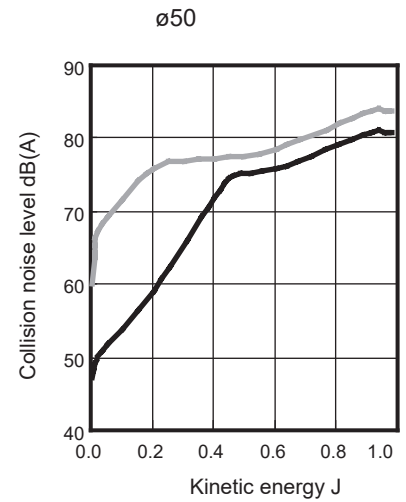
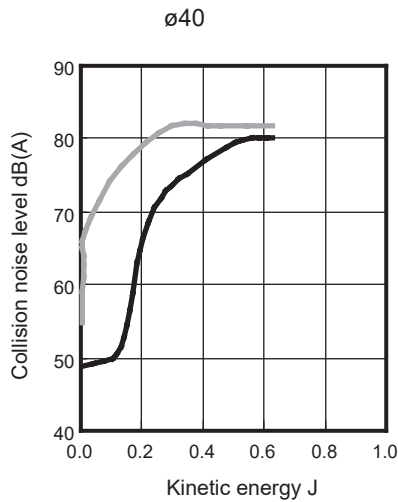
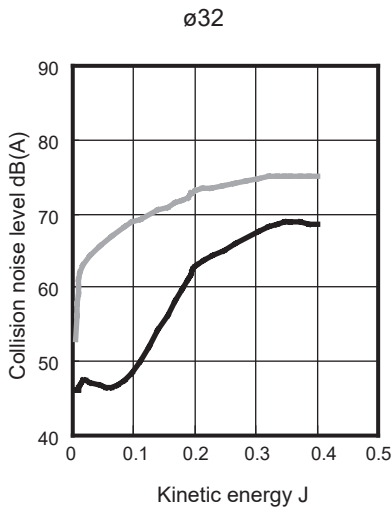
Cylinder : STS/L

Mounting direction of cylinder : Vertical with rod upward

Cylinder supply pressure : 0.5 MPa

Position of sound level meter : 1 m from sample

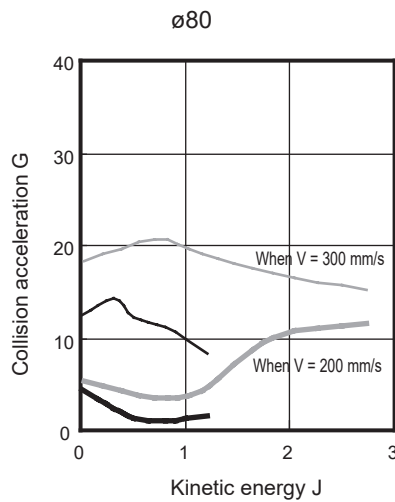
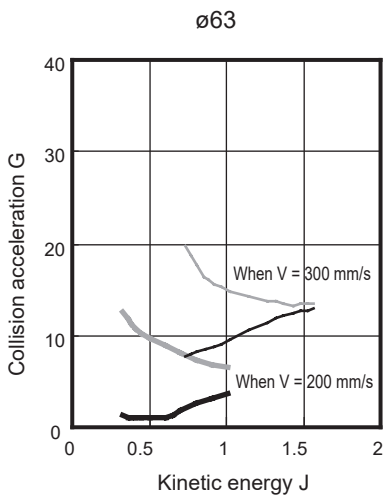
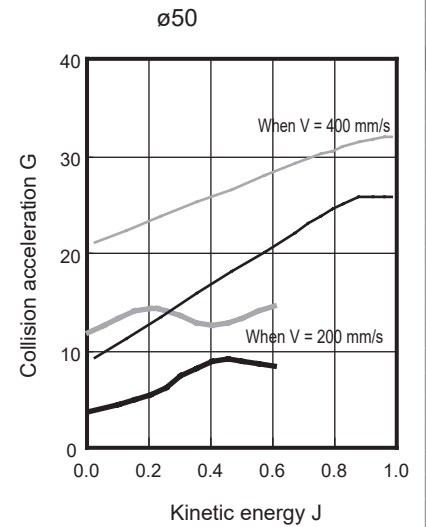
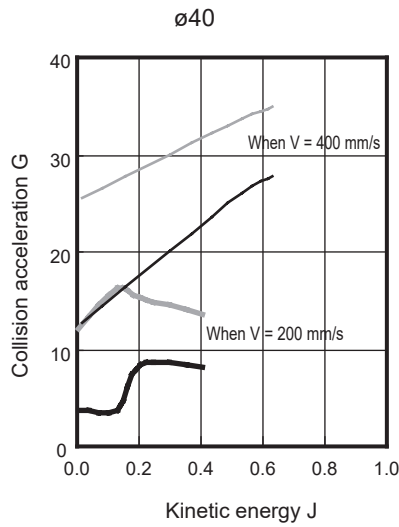
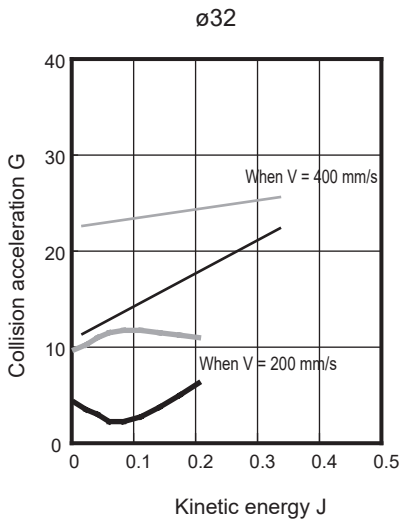
Standard rubber cushion:   
 Rubber-air cushion : 



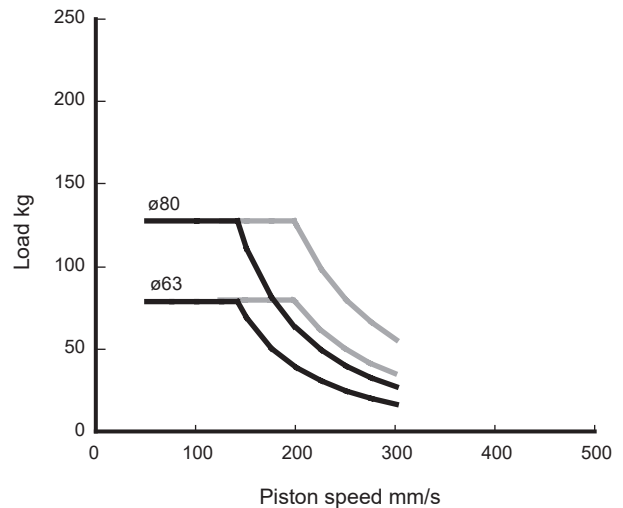
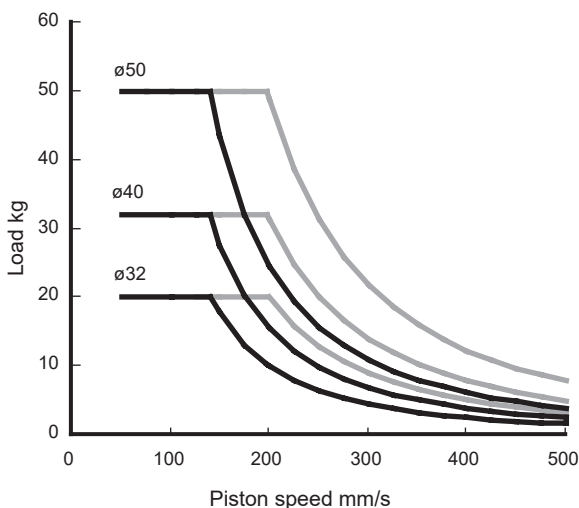
## Technical data

### [Comparison of collision acceleration]

Standard rubber cushion:   
 Rubber-air cushion:



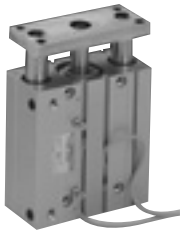
### [Allowable energy value]



Usable in the range below and to the left of the curve.

Although it can be used in the range marked with , the use within the range marked with solid line is recommended to maximize the noise reduction effect.

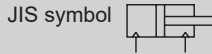
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |



Guided cylinder, double acting/air cushioned

# STS/STL-<sup>M</sup><sub>B</sub>C Series

● Bore size:  $\varnothing 25/\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80$



- LCM
- LCR
- LCG
- LCW
- L CX
- STM
- STG
- STS/STL**
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## Specifications

1 MPa = 10 bar

| Item                      | STS-MC/BC, STL-MC/BC |  |                  |                  |                  |                  |                                |
|---------------------------|----------------------|--|------------------|------------------|------------------|------------------|--------------------------------|
|                           | mm                   | $\varnothing 25$   | $\varnothing 32$ | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$               |
| Bore size                 | mm                   | $\varnothing 25$   | $\varnothing 32$ | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$               |
| Actuation                 |                      | Double acting/air cushioned  |                  |                  |                  |                  |                                |
| Working fluid             |                      | Compressed air   |                  |                  |                  |                  |                                |
| Max. working pressure     | MPa                  | 1.0 ( $\approx 150$ psi, 10 bar)   |                  |                  |                  |                  |                                |
| Min. working pressure     | MPa                  | 0.15 ( $\approx 22$ psi)   |                  |                  |                  |                  | 0.1 ( $\approx 15$ psi, 1 bar) |
| Proof pressure            | MPa                  | 1.6 ( $\approx 230$ psi, 16 bar)   |                  |                  |                  |                  |                                |
| Ambient temperature       | $^{\circ}\text{C}$   | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing)   |                  |                  |                  |                  |                                |
| Port size                 |                      | M5   | Rc1/8            |                  | Rc1/4            |                  | Rc3/8                          |
| Stroke tolerance          | mm                   | $^{+2.0}_0$  |                  |                  |                  |                  |                                |
| Working piston speed      | mm/s                 | 50 to 500  |                  |                  |                  | 50 to 300        |                                |
| Cushion                   |                      | With air cushion   |                  |                  |                  |                  |                                |
| Effective cushion length  | mm                   | 8.1  | 8.6              |                  | 13.4             |                  | 15.4                           |
| Lubrication               |                      | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |                  |                  |                  |                  |                                |
| Allowable absorbed energy | J                    | 1.18   | 2.27             | 3.05             | 3.81             | 15.64            | 20.18                          |

## Stroke

· Short stroke STS

| Bore size (mm)   | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) Note | Min. stroke with switch (mm) Note |
|------------------|----------------------|------------------|-----------------------|-----------------------------------|
| $\varnothing 25$ | 25, 50               | 50               | 15                    | 15<br>With one or two switches    |
| $\varnothing 32$ |                      |                  |                       |                                   |
| $\varnothing 40$ |                      |                  |                       |                                   |
| $\varnothing 50$ |                      |                  |                       |                                   |
| $\varnothing 63$ |                      |                  |                       |                                   |
| $\varnothing 80$ | 25, 50, 75, 100      | 100              |                       |                                   |

Note: For min. stroke and below, select the basic since there is no cushion effect.

· Long stroke STL

| Bore size (mm)   | Standard stroke (mm)  | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)   |
|------------------|---|------------------|------------------|--------------------------------|
| $\varnothing 25$ | 50, 75, 100, 125, 150<br>175, 200, 225, 250<br>275, 300, 325, 350<br>375, 400 | 400              | 30               | 30<br>With one or two switches |
| $\varnothing 32$ |   |                  |                  |                                |
| $\varnothing 40$ |   |                  |                  |                                |
| $\varnothing 50$ |   |                  |                  |                                |
| $\varnothing 63$ |   |                  |                  |                                |
| $\varnothing 80$ | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300<br>325, 350, 375            | 375              | 55               | 55<br>With one or two switches |

Note: The custom stroke is available in 1 mm increments. (Made to order)

### Switch specifications

● 1-color/2-color LED/for AC magnetic field proof

| Item            | Proximity 2-wire   |                               | Proximity 2-wire                      |                                   |                            | Proximity 3-wire                   |                                   |                                   |                         | Reed 2-wire                        |                   |   |                      |           |                                    | Proximity 2-wire                  |                             |
|-----------------|--|-------------------------------|---------------------------------------|-----------------------------------|----------------------------|------------------------------------|-----------------------------------|-----------------------------------|-------------------------|------------------------------------|-------------------|---|----------------------|-----------|------------------------------------|-----------------------------------|-----------------------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV         | T2YH/<br>T2YV                         | T2WH/<br>T2WV                     | T3H/<br>T3V                | T3PH/<br>T3PV                      | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                 | T5H/T5V                            |                   | T8H/T8V   |                      |           | T2YD(*4)<br>T2YDT                  |                                   |                             |
| Applications    | For programmable controller, relay, compact solenoid valve |                               | Dedicated for programmable controller |                                   |                            | For programmable controller, relay |                                   |                                   |                         | For programmable controller, relay |                   | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                      |           | For programmable controller, relay |                                   | For programmable controller |
| Output method   | -  |                               |                                       |                                   |                            | NPN output                         | PNP output                        | NPN output                        | NPN output              | -                                  |                   |   |                      |           |                                    |                                   |                             |
| Pwr. supp. V.   | -  |                               |                                       |                                   |                            | 10 to 28 VDC                       |                                   |                                   |                         | -                                  |                   |   |                      |           |                                    |                                   |                             |
| Load voltage    | 85 to 265 VAC  |                               | 10 to 30 VDC                          |                                   | 24 VDC ±10%                | 30 VDC or less                     |                                   |                                   |                         | 12/24 VDC                          | 100/110 VAC       | 5/12/24 VDC   | 100/110 VAC          | 12/24 VDC | 110 VAC                            | 220 VAC                           | 24 VDC ±10%                 |
| Load current    | 5 to 100mA   |                               | 5 to 20 mA (*3)                       |                                   |                            | 100 mA or less                     |                                   | 50 mA or less                     |                         | 5 to 50mA                          | 7 to 20mA         | 50 mA or less   | 20 mA or less        | 5 to 50mA | 7 to 20mA                          | 7 to 10mA                         | 5 to 20mA                   |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)          | Red/green<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)       | Yellow<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)    |                                    | No indicator lamp |   | LED<br>(Lit when ON) |           |                                    | Red/green<br>LED<br>(Lit when ON) |                             |
| Leakage current | 1 mA or less with 100 VAC,<br>2 mA or less with 200 VAC    |                               | 1 mA or less                          |                                   |                            | 10 µA or less                      |                                   |                                   |                         | 0mA                                |                   |   |                      |           |                                    | 1 mA or less                      |                             |
| Weight g        | 1 m: 33 3 m:<br>87 5 m: 142                                | 1 m: 18<br>3 m: 49<br>5 m: 80 | 1 m: 33<br>3 m: 87<br>5 m: 142        | 1 m: 18<br>3 m: 49<br>5 m: 80     | 1 m: 18 3 m:<br>49 5 m: 80 |                                    | 1 m: 33<br>3 m: 87<br>5 m: 142    | 1 m: 18<br>3 m: 49<br>5 m: 80     | 1 m: 18 3 m: 49 5 m: 80 |                                    |                   | 1 m: 33 3 m: 87 5 m: 142  |                      |           | 1 m: 61<br>3 m: 166<br>5 m: 272    |                                   |                             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.1                    | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø25            | Push                | -                      | 73.6                   | 98.2                   | 1.47 x 10 <sup>2</sup> | 1.96 x 10 <sup>2</sup> | 2.45 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.44 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 4.42 x 10 <sup>2</sup> | 4.91 x 10 <sup>2</sup> |
|                | Pull                | -                      | 56.7                   | 75.6                   | 1.13 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> | 1.89 x 10 <sup>2</sup> | 2.27 x 10 <sup>2</sup> | 2.64 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.40 x 10 <sup>2</sup> | 3.78 x 10 <sup>2</sup> |
| ø32            | Push                | 80.4                   | 1.21 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                | Pull                | 60.3                   | 90.5                   | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40            | Push                | 1.26 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                | Pull                | 1.06 x 10 <sup>2</sup> | 1.58 x 10 <sup>2</sup> | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50            | Push                | 1.96 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                | Pull                | 1.65 x 10 <sup>2</sup> | 2.47 x 10 <sup>2</sup> | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63            | Push                | 3.12 x 10 <sup>2</sup> | 4.68 x 10 <sup>2</sup> | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                | Pull                | 2.80 x 10 <sup>2</sup> | 4.20 x 10 <sup>2</sup> | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80            | Push                | 5.03 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                | Pull                | 4.54 x 10 <sup>2</sup> | 6.80 x 10 <sup>2</sup> | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

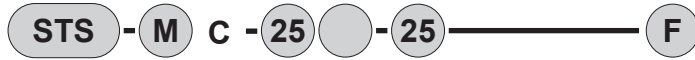
LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

# STS/STL-M<sup>B</sup>C Series

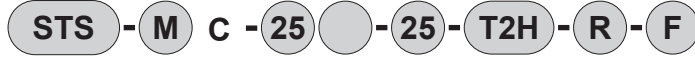
## How to order

### ● Short stroke

Without switch (built-in magnet for switch)

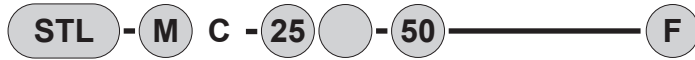


With switch (built-in magnet for switch)

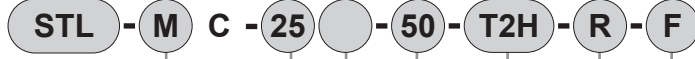


### ● Long stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



**A** Bearing

**B** Bore size

**C** Port thread

**D** Stroke

**E** Switch model No.  
\*1, \*5

For the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches for ø40 and over, insert "L1" with "-" between **A** and **E**.

(Example) STS-MC-L1-63-50-T2YH3-D-F  
For ø80, the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between **A** and **E**. (Example) STS-MC-L1-80-50-F

**F** Switch quantity

**G** Option

### ⚠ Precautions for model No. selection

- \*1 : Switches other than **E** Switch model No. are also available. (Made-to-order product)  
Refer to Ending Page 1 for details.
- \*2 : Refer to pages 444 to 447 for combinations of variations/options.
- \*3 : Refer to page 458 for material details.
- \*4 : ø25 with ball bearing B is copper and PTFE free as standard.
- \*5 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

### [Example of model No.]

#### STS-MC-25-50-T0H-R-F

Model: Guided cylinder, short stroke, standard/air cushioned

- A** Bearing : Metal bush bearing
- B** Bore size : ø25 mm
- C** Port thread : M5
- D** Stroke : 50 mm
- E** Switch model No. : Reed switch T0H, 1 m lead wire length
- F** Switch quantity : 1 on rod side
- G** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| M                | Metal bush bearing |
| B                | Ball bearing       |

| <b>B Bore size (mm)</b> |     |
|-------------------------|-----|
| 25                      | ø25 |
| 32                      | ø32 |
| 40                      | ø40 |
| 50                      | ø50 |
| 63                      | ø63 |
| 80                      | ø80 |

| <b>C Port thread</b> |   |
|----------------------|---|
| Blank                | M5(ø25)   |
|                      | Rc thread (ø32 to ø80)                          |
| NN                   | NPT thread (ø32 and over) made-to-order product |
| GN                   | G thread (ø32 and over) made-to-order product   |

| <b>D Stroke (mm)</b>                             |  |
|--|--|
| Refer to the stroke table on the following page. |  |

| <b>E Switch model No.</b> |                    |           |         |    |                       |           |
|---------------------------|--------------------|-----------|---------|----|-----------------------|-----------|
| Straight Lead wire        | L-shaped Lead wire | Contact   | Voltage |    | Indicator             | Lead Line |
|                           |                    |           | AC      | DC |                       |           |
| T0H*                      | T0V*               | Reed      | ●       | ●  | 1-color LED           | 2-wire    |
| T5H*                      | T5V*               |           | ●       | ●  | No indicator lamp     |           |
| T8H*                      | T8V*               |           | ●       | ●  | 1-color LED           |           |
| T1H*                      | T1V*               |           | ●       | ●  |                       |           |
| T2H*                      | T2V*               | Proximity |         | ●  | 2-color LED           | 2-wire    |
| T3H*                      | T3V*               |           |         | ●  |                       |           |
| T3PH*                     | T3PV*              |           |         | ●  | 1-color LED           | 3-wire    |
| T2WH*                     | T2WV*              |           |         | ●  | 2-color LED           | 2-wire    |
| T2YH*                     | T2YV*              |           |         | ●  |                       |           |
| T3WH*                     | T3WV*              |           |         | ●  | 2-color LED           | 3-wire    |
| T3YH*                     | T3YV*              |           |         | ●  |                       |           |
| T2JH*                     | T2JV*              |           |         | ●  | 1-color LED off-delay | 2-wire    |
| T2YD*                     | —                  |           |         | ●  | 2-color LED           | 2-wire    |
| T2YDT*                    | —                  |           |         | ●  |                       |           |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| Blank                     | 1 m (standard) |
| 3                         | 3 m (option)   |
| 5                         | 5 m (option)   |

| <b>F Switch quantity</b> |                |
|--------------------------|----------------|
| R                        | 1 on rod side  |
| H                        | 1 on head side |
| D                        | 2              |
| T                        | 3              |

| <b>G Option</b> |   |
|-----------------|---|
| F               | End plate material (steel)  |
| M               | *3 Corrosion proof (piston rod, guide rod material: SUS) (made-to-order product)            |
| M1              | *3 Corrosion proof (piston rod, guide rod, end plate material: SUS) (made-to-order product) |
| P6              | *4 Copper and PTFE free specification (made to order)                                       |

### D Stroke

| Series      | Stroke (mm)     | Applicable bore size |     |     |     |     |     |   |
|-------------|-----------------|----------------------|-----|-----|-----|-----|-----|---|
|             |                 | ø25                  | ø32 | ø40 | ø50 | ø63 | ø80 |   |
| STS         | Standard stroke | 25                   | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 50                   | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 75                   |     |     |     |     |     | ● |
|             |                 | 100                  |     |     |     |     |     | ● |
|             | Min. stroke     | 15                   |     |     |     |     |     |   |
| STL         | Standard stroke | 50                   | ●   | ●   | ●   | ●   | ●   |   |
|             |                 | 75                   | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 100                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 125                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 150                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 175                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 200                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 225                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 250                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 275                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 300                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 325                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 350                  | ●   | ●   | ●   | ●   | ●   | ● |
|             |                 | 375                  | ●   | ●   | ●   | ●   | ●   | ● |
|             | 400             | ●                    | ●   | ●   | ●   | ●   |     |   |
| Min. stroke | 30              |                      |     |     |     | 55  |     |   |

Note: Custom stroke is available as made to order.

### How to order switch

SW - T0V

Switch model No.  
(Item (E) on page 494)

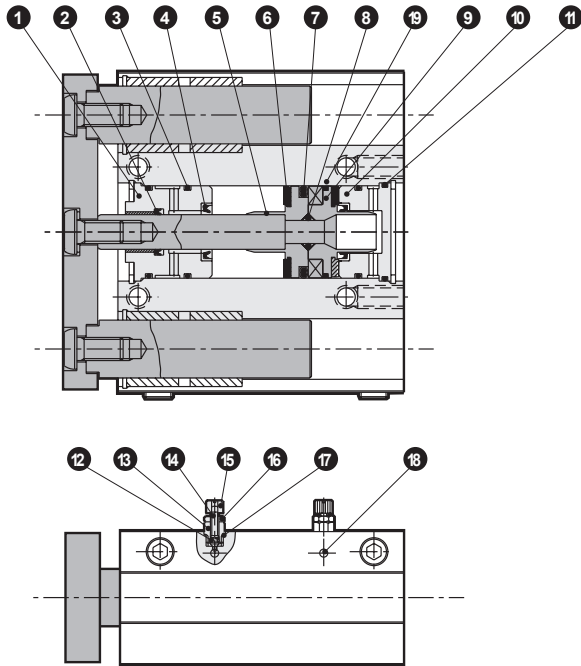
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-<sup>M</sup>BC Series

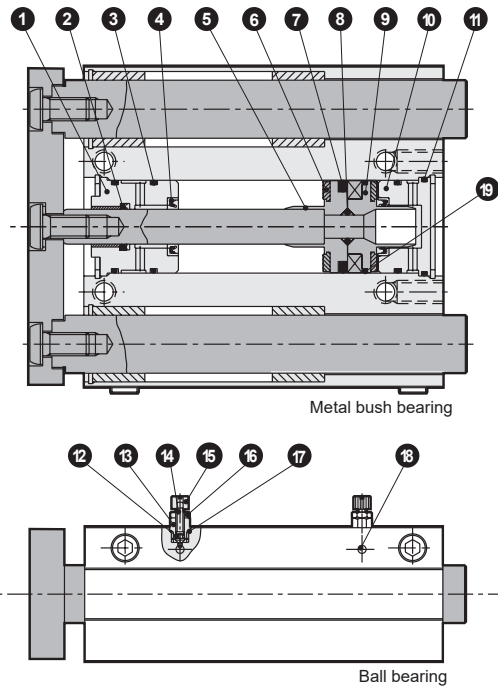
LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

## Internal structure and parts list

● With air cushion  
STS-<sup>M</sup><sub>B</sub>C



● With air cushion  
STL-<sup>M</sup><sub>B</sub>C



**Parts list** (Parts not listed below are the same as those of the double acting/standard single rod. Refer to pages 453 to 457.)

| No.  | Part name       | Material               | Remarks | No. | Part name     | Material        | Remarks   |
|--|-----------------|------------------------|---------|-----|---------------|-----------------|-----------|
| <b>STS-<sup>M</sup><sub>B</sub>C (air-cushioned)</b> |                 |                        |         |     |               |                 |           |
| 1  | Rod metal       | Special aluminum alloy | Alumite | 10  | Base plate    | Aluminum alloy  | Chromate  |
| 2  | Rod packing     | Nitrile rubber         |         | 11  | O-ring        | Nitrile rubber  |           |
| 3  | Metal gasket    | Nitrile rubber         |         | 12  | O-ring        | Nitrile rubber  |           |
| 4  | Cushion packing | Nitrile rubber/steel   |         | 13  | Needle holder | Aluminum alloy  |           |
| 5  | Piston R        | Aluminum alloy         |         | 14  | Needle        | Stainless steel |           |
| 6  | Cushion rubber  | Urethane rubber        |         | 15  | Knob          | Aluminum alloy  |           |
| 7  | Piston packing  | Nitrile rubber         |         | 16  | Lock nut      | Steel           | Nickeling |
| 8  | O-ring          | Nitrile rubber         |         | 17  | O-ring        | Nitrile rubber  |           |
| 9  | Piston H        | Aluminum alloy         |         | 18  | Steel ball    | Steel           |           |
|  |                 |                        |         | 19  | Wear ring     | Acetal resin    |           |

## Repair parts list

● STS-<sup>M</sup><sub>B</sub>C (air-cushioned)

| Bore size (mm) | Kit No.   | Repair parts No. |
|----------------|-----------|------------------|
| ø25            | STS-C-25K |                  |
| ø32            | STS-C-32K |                  |
| ø40            | STS-C-40K | 2 3 4 6          |
| ø50            | STS-C-50K | 7 11 19          |
| ø63            | STS-C-63K |                  |
| ø80            | STS-C-80K |                  |

Note: Specify the kit No. when placing an order.



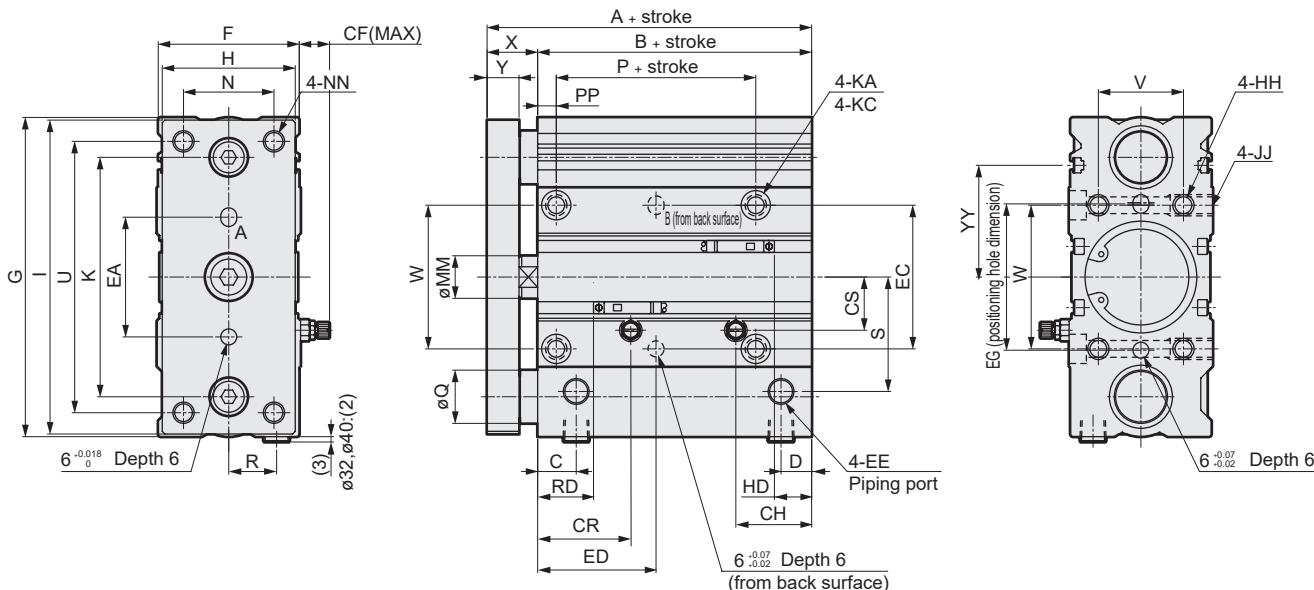
## Dimensions



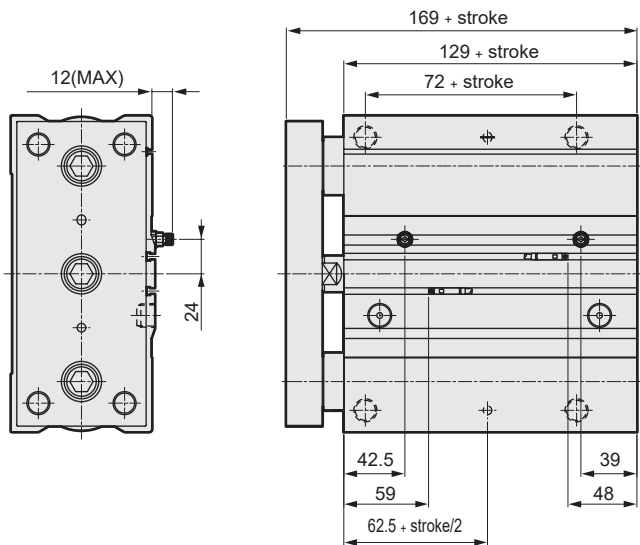
- With air cushion

STS-M<sub>B</sub>C (Dimensions not listed below are the same as those of the double acting/standard single rod.)

·  $\phi 25/\phi 32/\phi 40/\phi 50/\phi 63$



·  $\phi 80$



- STS-M/BC( $\phi 25$  to  $\phi 63$ )

| Code      | A   | B  | C    | D    | EE              | EA | EC | EG | ED                 | F  | G   | H  | HH           | I   | JJ           | K   | KA          | KC                      |
|-----------|-----|----|------|------|-----------------|----|----|----|--------------------|----|-----|----|--------------|-----|--------------|-----|-------------|-------------------------|
| $\phi 25$ | 79  | 66 | 12   | 9    | M5 $\times$ 0.8 | 32 | 35 | 37 | 27+<br>Stroke<br>2 | 42 | 86  | 38 | M6 depth 12  | 84  | M6 depth 12  | 63  | 5.2 through | 9.5 spot face depth 5.4 |
| $\phi 32$ | 93  | 74 | 14   | 10.5 | Rc1/8           | 42 | 45 | 46 | 30+<br>Stroke<br>2 | 47 | 111 | 45 | M8 depth 16  | 109 | M8 depth 16  | 81  | 6.3 through | 11 spot face depth 6.5  |
| $\phi 40$ | 97  | 78 | 14.5 | 11.5 | Rc1/8           | 45 | 54 | 55 | 32+<br>Stroke<br>2 | 54 | 120 | 50 | M8 depth 16  | 118 | M8 depth 16  | 90  | 6.3 through | 11 spot face depth 6.5  |
| $\phi 50$ | 102 | 80 | 16   | 12.5 | Rc1/4           | 55 | 66 | 69 | 32+<br>Stroke<br>2 | 66 | 147 | 64 | M10 depth 20 | 145 | M10 depth 20 | 110 | 8.6 through | 14 spot face depth 8.6  |
| $\phi 63$ | 108 | 86 | 12.5 | 17.5 | Rc1/4           | 62 | 79 | 82 | 35+<br>Stroke<br>2 | 79 | 162 | 75 | M10 depth 20 | 160 | M10 depth 20 | 124 | 8.6 through | 14 spot face depth 8.6  |

| Code           | MM | N  | NN          | P  | PP | Q     |       | R  | S  | U   | V  | W  | X                               | Y  | YY | CF | CH   | CR   | CS | T0/T5/T2/T3 | T2W/T3W |      |      |
|----------------|----|----|-------------|----|----|-------|-------|----|----|-----|----|----|---------------------------------|----|----|----|------|------|----|-------------|---------|------|------|
| Bore size (mm) |    |    |             |    |    | STS-M | STS-B |    |    |     |    |    |                                 |    |    |    |      |      |    | HD          | RD      | HD   | RD   |
| $\phi 25$      | 12 | 26 | M6 through  | 45 | 6  | 14    | 12    | 14 | 26 | 72  | 24 | 35 | 13 <sup>0</sup> / <sub>-2</sub> | 9  | 27 | 15 | 24.5 | 27   | 25 | 19          | 28      | 29.5 | 21   |
| $\phi 32$      | 16 | 29 | M8 through  | 47 | 7  | 20    | 16    | 16 | 39 | 93  | 25 | 45 | 19 <sup>0</sup> / <sub>-2</sub> | 12 | 39 | 14 | 28   | 33   | 34 | 21.5        | 34.5    | 36   | 22   |
| $\phi 40$      | 16 | 34 | M8 through  | 50 | 7  | 20    | 16    | 18 | 43 | 102 | 32 | 54 | 19 <sup>0</sup> / <sub>-2</sub> | 12 | 42 | 14 | 29   | 35   | 20 | 22          | 38      | 40   | 24   |
| $\phi 50$      | 20 | 44 | M10 through | 51 | 8  | 25    | 20    | 22 | 49 | 125 | 38 | 66 | 22 <sup>0</sup> / <sub>-2</sub> | 16 | 45 | 17 | 29   | 36   | 23 | 24.5        | 38.5    | 40   | 24.5 |
| $\phi 63$      | 20 | 55 | M10 through | 51 | 8  | 25    | 20    | 26 | 56 | 140 | 50 | 79 | 22 <sup>0</sup> / <sub>-2</sub> | 16 | 52 | 17 | 29   | 41.5 | 25 | 26          | 44      | 45.5 | 27.5 |

\*1 : The custom stroke is available in 1 mm increments. (Made to order)

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

\*3 : Port plug of  $\phi 25$  is hexagonal.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |



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# MEMO

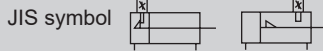
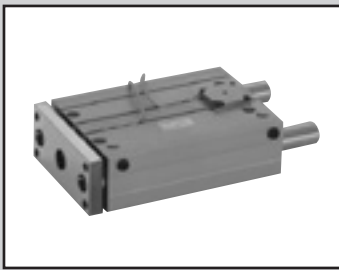
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|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

Guided cylinder, double acting/position locking

# STS/STL-<sup>M</sup><sub>B</sub> Q Series

● Bore size:  $\varnothing 20/\varnothing 25/\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80$



LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

## Specifications

| Item                                   | STS-MQ/BQ, STL-MQ/BQ   |                  |                  |                                   |                  |                  |                  |  |
|--|--|------------------|------------------|-----------------------------------|------------------|------------------|------------------|--|
| Bore size mm                           | $\varnothing 20$   | $\varnothing 25$ | $\varnothing 32$ | $\varnothing 40$                  | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$ |  |
| Actuation                              | Double acting/position locking   |                  |                  |                                   |                  |                  |                  |  |
| Working fluid                          | Compressed air   |                  |                  |                                   |                  |                  |                  |  |
| Max. working pressure MPa              | 1.0 ( $\approx 150$ psi, 10 bar)   |                  |                  |                                   |                  |                  |                  |  |
| Min. working pressure MPa              | 0.2 ( $\approx 29$ psi, 2 bar)   |                  |                  | 0.15 ( $\approx 22$ psi, 1.5 bar) |                  |                  |                  |  |
| Proof pressure MPa                     | 1.6 ( $\approx 230$ psi, 16 bar)   |                  |                  |                                   |                  |                  |                  |  |
| Ambient temperature $^{\circ}\text{C}$ | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing)   |                  |                  |                                   |                  |                  |                  |  |
| Port size                              | M5   |                  | Rc1/8            |                                   | Rc1/4            |                  | Rc3/8            |  |
| Stroke tolerance mm                    | $^{+2.0}$ <sub>0</sub>   |                  |                  |                                   |                  |                  |                  |  |
| Working piston speed mm/s              | 50 to 500  |                  |                  |                                   |                  | 50 to 300        |                  |  |
| Cushion                                | With rubber cushion  |                  |                  |                                   |                  |                  |                  |  |
| Position locking mechanism             | Rod side or head side  |                  |                  |                                   |                  |                  |                  |  |
| Holding force N                        | Max. thrust x 0.7  |                  |                  |                                   |                  |                  |                  |  |
| Lubrication                            | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |                  |                  |                                   |                  |                  |                  |  |
| Allowable absorbed energy J            | 0.157  | 0.157            | 0.401            | 0.627                             | 0.980            | 1.560            | 2.510            |  |

## Stroke

· Short stroke STS

| Bore size (mm)   | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)  |
|------------------|----------------------|------------------|------------------|-------------------------------|
| $\varnothing 20$ | 25, 50               | 50               | 5                | 5<br>With one or two switches |
| $\varnothing 25$ |                      |                  |                  |                               |
| $\varnothing 32$ |                      |                  |                  |                               |
| $\varnothing 40$ |                      |                  |                  |                               |
| $\varnothing 50$ |                      |                  |                  |                               |
| $\varnothing 63$ | 25, 50, 75, 100      | 100              |                  |                               |
| $\varnothing 80$ |                      |                  |                  |                               |

· Long stroke STL

| Bore size (mm)   | Standard stroke (mm)  | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)   |
|------------------|---|------------------|------------------|--------------------------------|
| $\varnothing 20$ | 50, 75, 100, 125, 150, 175                                    | 400              | 30               | 30<br>With one or two switches |
| $\varnothing 25$ | 200, 225, 250, 275, 300                                       |                  |                  |                                |
| $\varnothing 32$ | 325, 350, 375, 400  |                  |                  |                                |
| $\varnothing 40$ | 50, 75, 100, 125, 150, 175                                    | 375              |                  |                                |
| $\varnothing 50$ | 200, 225, 250, 275, 300                                       |                  |                  |                                |
| $\varnothing 63$ | 325, 350, 375   |                  |                  |                                |
| $\varnothing 80$ | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300<br>325, 350 | 350              | 55               | 55<br>With one or two switches |

Note: The custom stroke is available in 5 mm increments.

However, the total length is the same as that of the next longer standard stroke.

▲ Be sure to read the "Safety precautions" Position locking on pages 570 to 573 before use.

### Switch specifications

● 1-color/2-color LED/exchangeMagnetic fieldfor

| Item            | Proximity 2-wire   |                         | Proximity 2-wire                      |                                   |                         | Proximity 3-wire                   |                                   |                                   |                         | Reed 2-wire                        |                      |   |               |                                   |                                    | Proximity 2-wire |                             |
|-----------------|--|-------------------------|---------------------------------------|-----------------------------------|-------------------------|------------------------------------|-----------------------------------|-----------------------------------|-------------------------|------------------------------------|----------------------|---|---------------|-----------------------------------|------------------------------------|------------------|-----------------------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV   | T2YH/<br>T2YV                         | T2WH/<br>T2WV                     | T3H/<br>T3V             | T3PH/<br>T3PV                      | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                 | T5H/T5V                            | T8H/T8V              |   |               | T2YD(*4)<br>T2YDT                 |                                    |                  |                             |
| Applications    | For programmable controller, relay, compact solenoid valve |                         | Dedicated for programmable controller |                                   |                         | For programmable controller, relay |                                   |                                   |                         | For programmable controller, relay |                      | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |               |                                   | For programmable controller, relay |                  | For programmable controller |
| Output method   | -  |                         |                                       |                                   |                         | NPN output                         | PNP output                        | NPN output                        | NPN output              | -                                  |                      |   |               |                                   |                                    |                  |                             |
| Pwr. supp. V.   | -  |                         |                                       |                                   |                         | 10 to 28 VDC                       |                                   |                                   |                         | -                                  |                      |   |               |                                   |                                    |                  |                             |
| Load voltage    | 85 to 265 VAC  |                         | 10 to 30 VDC                          |                                   | 24 VDC ±10%             | 30 VDC or less                     |                                   |                                   |                         | 12/24 VDC                          | 100/110 VAC          | 5/12/24 VDC   | 100/110 VAC   | 12/24 VDC                         | 110 VAC                            | 220 VAC          | 24 VDC ±10%                 |
| Load current    | 5~100mA  |                         | 5 to 20 mA (*3)                       |                                   |                         | 100 mA or less                     |                                   | 50 mA or less                     |                         | 5~50mA                             | 7~20mA               | 50 mA or less   | 20 mA or less | 5~50mA                            | 7~20mA                             | 7~10mA           | 5 to 20mA                   |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)    | Red/green<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)    | Yellow<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)    | No indicator lamp                  | LED<br>(Lit when ON) |   |               | Red/green<br>LED<br>(Lit when ON) |                                    |                  |                             |
| Leakage current | 1 mA or less with 100 VAC, 2 mA or less with 200 VAC       |                         | 1 mA or less                          |                                   |                         | 10 µA or less                      |                                   |                                   |                         | 0mA                                |                      |   |               |                                   |                                    | 1 mA or less     |                             |
| Weight g        | 1 m: 33 3 m: 87 5 m: 142                                   | 1 m: 18 3 m: 49 5 m: 80 | 1 m: 33 3 m: 87 5 m: 142              | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80 |                                    | 1 m: 33 3 m: 87 5 m: 142          | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80 |                                    |                      | 1 m: 33 3 m: 87 5 m: 142  |               |                                   | 1 m: 61 3 m: 166 5 m: 272          |                  |                             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø20            | Push                | -                      | 62.8                   | 94.2                   | 1.26 x 10 <sup>2</sup> | 1.57 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.20 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 2.83 x 10 <sup>2</sup> | 3.14 x 10 <sup>2</sup> |
|                | Pull                | -                      | 47.1                   | 70.7                   | 94.2                   | 1.18 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.65 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.12 x 10 <sup>2</sup> | 2.36 x 10 <sup>2</sup> |
| ø25            | Push                | -                      | 98.2                   | 1.47 x 10 <sup>2</sup> | 1.96 x 10 <sup>2</sup> | 2.45 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.44 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 4.42 x 10 <sup>2</sup> | 4.91 x 10 <sup>2</sup> |
|                | Pull                | -                      | 75.6                   | 1.13 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> | 1.89 x 10 <sup>2</sup> | 2.27 x 10 <sup>2</sup> | 2.64 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.40 x 10 <sup>2</sup> | 3.78 x 10 <sup>2</sup> |
| ø32            | Push                | 1.21 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                | Pull                | 90.5                   | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40            | Push                | 1.88 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                | Pull                | 1.58 x 10 <sup>2</sup> | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50            | Push                | 2.95 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                | Pull                | 2.47 x 10 <sup>2</sup> | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63            | Push                | 4.68 x 10 <sup>2</sup> | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                | Pull                | 4.20 x 10 <sup>2</sup> | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80            | Push                | 7.54 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                | Pull                | 6.80 x 10 <sup>2</sup> | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

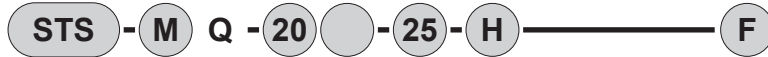
- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

# STS/STL-M<sup>B</sup>Q Series

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



### ● Long stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



**A** Bearing

**B** Bore size

**C** Port thread

**D** Stroke

**E** Position locking mechanism

**F** Switch model No.

■ The custom stroke is available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.

\*1  
\*3  
\*4

### ⚠ Precautions for model No. selection

\*1 : Switches other than **F** Switch model No. are also available. (Made-to-order product)  
Refer to Ending Page 1 for details.

\*2 : Refer to pages 444 to 447 for combinations of variations/options.

\*3 : In some cases, a switch cannot be inserted from the rod side of the head side position locking of 25 mm stroke or less.

In this case, temporarily remove the end plate and install the switch.

Contact CKD to inquire about the removal and assembling method of the end plate.

\*4 : Switches are shipped with the product.  
Contact CKD if assembling before shipment is necessary.

\*5 : Refer to page 458 for material details.

\*6 :  $\phi 20$  and  $\phi 25$  with ball bearing B are copper and PTFE free as standard.

For the 2-color LED, T1H/V and AC magnetic field proof switches for  $\phi 40$  and over, insert "L1" with "-" between Items **A** and **E**.

(Example) STS-MQ-L1-63-50-T2YH3-D-F  
For  $\phi 80$ , the 2-color LED, T1H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between **A** and **B**.

(Example) STS-MQ-L1-80-50-F

### [Example of model No.]

#### STS-MQ-20-25-H-T0H-R-F

Model: Guided cylinder, short stroke, position locking

- A** Bearing : Metal bush bearing
- B** Bore size :  $\phi 20$  mm
- C** Port thread : M5
- D** Stroke : 25 mm
- E** Position locking mechanism : With head side position locking
- F** Switch model No. : Reed switch T0H, 1 m lead wire length
- G** Switch quantity : 1 on rod side
- H** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| M                | Metal bush bearing |
| B                | Ball bearing       |

| <b>B Bore size (mm)</b> |           |
|-------------------------|-----------|
| 20                      | $\phi 20$ |
| 25                      | $\phi 25$ |
| 32                      | $\phi 32$ |
| 40                      | $\phi 40$ |
| 50                      | $\phi 50$ |
| 63                      | $\phi 63$ |
| 80                      | $\phi 80$ |

| <b>C Port thread</b> |  |
|----------------------|--|
| Blank                | M5 ( $\phi 20, \phi 25$ )                              |
|                      | Rc thread ( $\phi 32$ to $\phi 80$ )                   |
| NN                   | NPT thread ( $\phi 32$ and over) made-to-order product |
| GN                   | G thread ( $\phi 32$ and over) made-to-order product   |

| <b>D Stroke (mm)</b>                             |  |
|--|--|
| Refer to the stroke table on the following page. |  |

| <b>E Position locking mechanism</b> |                                      |
|-------------------------------------|--------------------------------------|
| H                                   | Head side position locking mechanism |
| R                                   | Rod side position locking mechanism  |

| <b>F Switch model No.</b> |                    |         |              |                                 |           |
|---------------------------|--------------------|---------|--------------|---------------------------------|-----------|
| Straight lead wire        | L-shaped lead wire | Contact | Voltage ACDC | Indicator                       | Lead wire |
|                           |                    |         |              |                                 |           |
| T0H*                      | T0V*               | ●       | ●            | 1-color LED                     | 2-wire    |
| T5H*                      | T5V*               | ●       | ●            | no indicator lamp               | 2-wire    |
| T1H*                      | T1V*               | ●       | ●            | 1-color LED                     | 2-wire    |
| T2H*                      | T2V*               | ●       | ●            |                                 | 2-wire    |
| T3H*                      | T3V*               | ●       | ●            | LED                             | 3-wire    |
| T3PH*                     | T3PV*              | ●       | ●            | 1-color LED                     | 3-wire    |
| T2WH*                     | T2WV*              | ●       | ●            | 2-color LED                     | 2-wire    |
| T2YH*                     | T2YV*              | ●       | ●            |                                 | 2-wire    |
| T3WH*                     | T3WV*              | ●       | ●            | LED                             | 3-wire    |
| T3YH*                     | T3YV*              | ●       | ●            |                                 | 3-wire    |
| T2JH*                     | T2JV*              | ●       | ●            | 1-color LED off-delay           | 2-wire    |
| T2YD*                     | -                  | ●       | ●            | 2-color LED (AC magnetic field) | 2-wire    |
| T2YDT*                    | -                  | ●       | ●            |                                 |           |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| Blank                     | 1 m (standard) |
| 3                         | 3 m (option)   |
| 5                         | 5 m (option)   |

| <b>G Switch quantity</b> |                |
|--------------------------|----------------|
| R                        | 1 on rod side  |
| H                        | 1 on head side |
| D                        | 2              |
| T                        | 3              |

| <b>H Option</b> |   |
|-----------------|---|
| F               | End plate material (steel)  |
| M *5            | Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product)    |
| M1 *5           | Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made to order) |
| P6 *6           | Copper/PTFE free specs (made to order)  |

**G** Switch quantity

**H** Option

### D Stroke

| Series              | Stroke (mm)        | Applicable bore size |     |     |     |     |     |     |   |
|---------------------|--------------------|----------------------|-----|-----|-----|-----|-----|-----|---|
|                     |                    | ø20                  | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 |   |
| STS                 | Standard stroke    | 25                   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 50                   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 75                   |     |     |     |     |     |     | ● |
|                     |                    | 100                  |     |     |     |     |     |     | ● |
|                     | Min. stroke *1     | 5                    |     |     |     |     |     |     |   |
| Custom stroke *1, 2 | In 5 mm increments |                      |     |     |     |     |     |     |   |
| STL                 | Standard stroke    | 50                   | ●   | ●   | ●   | ●   | ●   | ●   |   |
|                     |                    | 75                   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 100                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 125                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 150                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 175                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 200                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 225                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 250                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 275                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 300                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 325                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 350                  | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|                     |                    | 375                  | ●   | ●   | ●   | ●   | ●   | ●   |   |
|                     |                    | 400                  | ●   | ●   | ●   |     |     |     |   |
| Min. stroke *1      | 30                 |                      |     |     |     |     | 55  |     |   |
| Custom stroke *1, 2 | In 5 mm increments |                      |     |     |     |     |     |     |   |

\*1: The total dimensions are the same as the longer standard stroke.

\*2: Special total length for custom stroke can be provided when a custom stroke is used. (Made to order)

### How to order switch

SW - T0V

Switch model No.  
(Item ⑥ on page 502)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

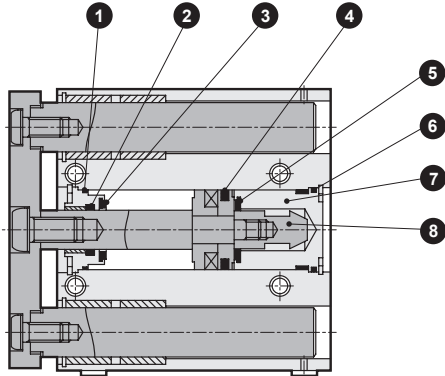
# STS/STL-<sup>M</sup><sub>B</sub>Q Series

## Internal structure and parts list

|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| LX          |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

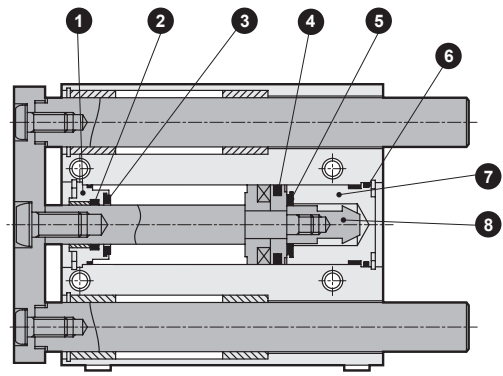
### ● Position locking/head side

STS-<sup>M</sup><sub>B</sub>Q-H

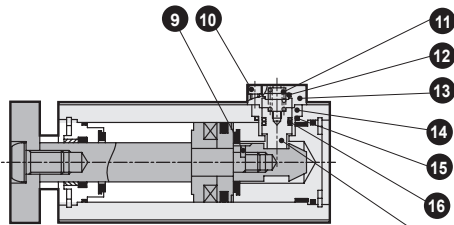


Metal bush bearing

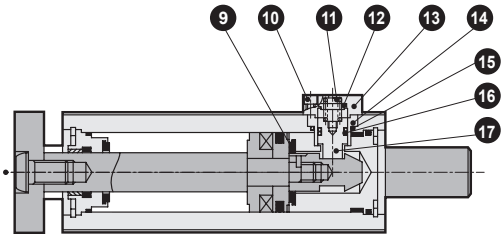
STL-<sup>M</sup><sub>B</sub>Q-H



Metal bush bearing



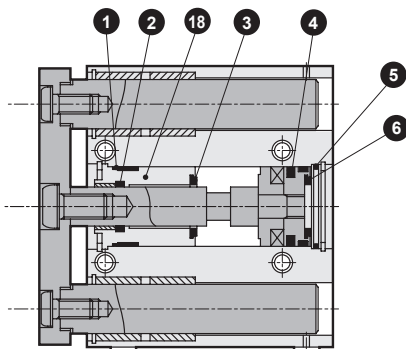
Ball bearing



Ball bearing

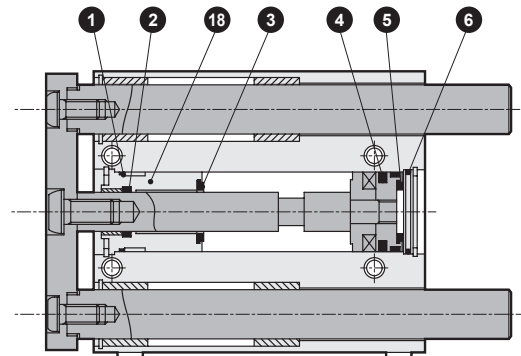
### ● Position locking/rod side

STS-<sup>M</sup><sub>B</sub>Q-R

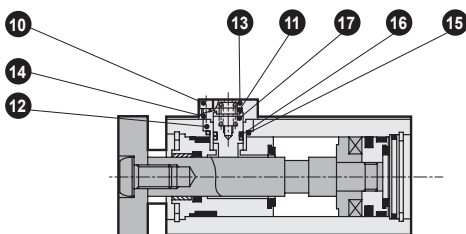


Metal bush bearing

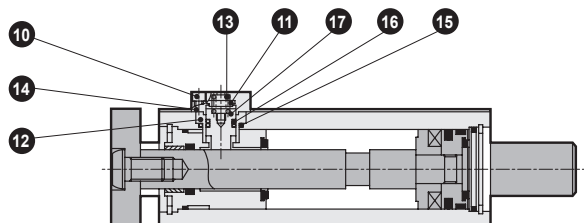
STL-<sup>M</sup><sub>B</sub>Q-R



Metal bush bearing



Ball bearing



Ball bearing



Parts list (Parts not listed below are the same as those of the double acting/standard single rod. Refer to pages 453 to 457.)

| No.   | Part name                     | Material        | Remarks           | No.  | Part name                     | Material        | Remarks           |
|---|-------------------------------|-----------------|-------------------|--|-------------------------------|-----------------|-------------------|
| <b>ST<sup>S</sup><sub>L</sub><sup>M</sup>Q-H (position locking/head side)</b> |                               |                 |                   | <b>ST<sup>S</sup><sub>L</sub><sup>M</sup>Q-R (position locking/rod side)</b> |                               |                 |                   |
| 1   | Metal gasket                  | Nitrile rubber  |                   | 1  | Metal gasket                  | Nitrile rubber  |                   |
| 2   | Rod packing                   | Nitrile rubber  |                   | 2  | Rod packing                   | Nitrile rubber  |                   |
| 3   | Cushion rubber (R)            | Urethane rubber |                   | 3  | Cushion rubber (R)            | Urethane rubber |                   |
| 4   | Piston packing                | Nitrile rubber  |                   | 4  | Piston packing                | Nitrile rubber  |                   |
| 5   | Cushion rubber (H)            | Urethane rubber |                   | 5  | Cushion rubber (H)            | Urethane rubber |                   |
| 6   | O-ring                        | Nitrile rubber  |                   | 6  | O-ring                        | Nitrile rubber  |                   |
| 7   | Head cover                    | Aluminum alloy  |                   | 10   | Hexagon socket head cap screw | Alloy steel     | Zinc chromate     |
| 8   | Sleeve                        | Steel           | Nitriding         | 11   | Coil spring                   | Steel           | Electrodeposition |
| 9   | Spring pin                    | Steel           | Black finish      | 12   | Cushion rubber                | Urethane rubber |                   |
| 10  | Hexagon socket head cap screw | Alloy steel     | Zinc chromate     | 13   | Stopper cover                 | Aluminum alloy  | Alumite           |
| 11  | Coil spring                   | Steel           | Electrodeposition | 14   | Stopper housing               | Aluminum alloy  | Alumite           |
| 12  | Cushion rubber                | Urethane rubber |                   | 15   | O-ring                        | Nitrile rubber  |                   |
| 13  | Stopper cover                 | Aluminum alloy  | Alumite           | 16   | Stopper packing               | Nitrile rubber  |                   |
| 14  | Stopper housing               | Aluminum alloy  | Alumite           | 17   | Stopper piston                | Stainless steel |                   |
| 15  | O-ring                        | Nitrile rubber  |                   | 18   | Rod cover                     | Aluminum alloy  | Alumite           |
| 16  | Stopper packing               | Nitrile rubber  |                   |  |                               |                 |                   |
| 17  | Stopper piston                | Steel           | Nitriding         |  |                               |                 |                   |

## Repair parts list

● ST<sup>S</sup><sub>L</sub><sup>M</sup>Q (position locking)

| Bore size (mm) | Kit No.                    | Repair parts No. |
|----------------|----------------------------|------------------|
| ø20            | STS-Q-H-20K<br>STS-Q-R-20K |                  |
| ø25            | STS-Q-H-25K<br>STS-Q-R-25K | 1 2 3            |
| ø32            | STS-Q-32K                  | 4 5 6            |
| ø40            | STS-Q-40K                  | 12 15 16         |
| ø50            | STS-Q-50K                  |                  |
| ø63            | STS-Q-63K                  |                  |
| ø80            | STS-Q-80K                  |                  |

Note: Specify the kit No. when placing an order.  
The kit No. of ø20 and ø25 differs depending on the side of position locking.

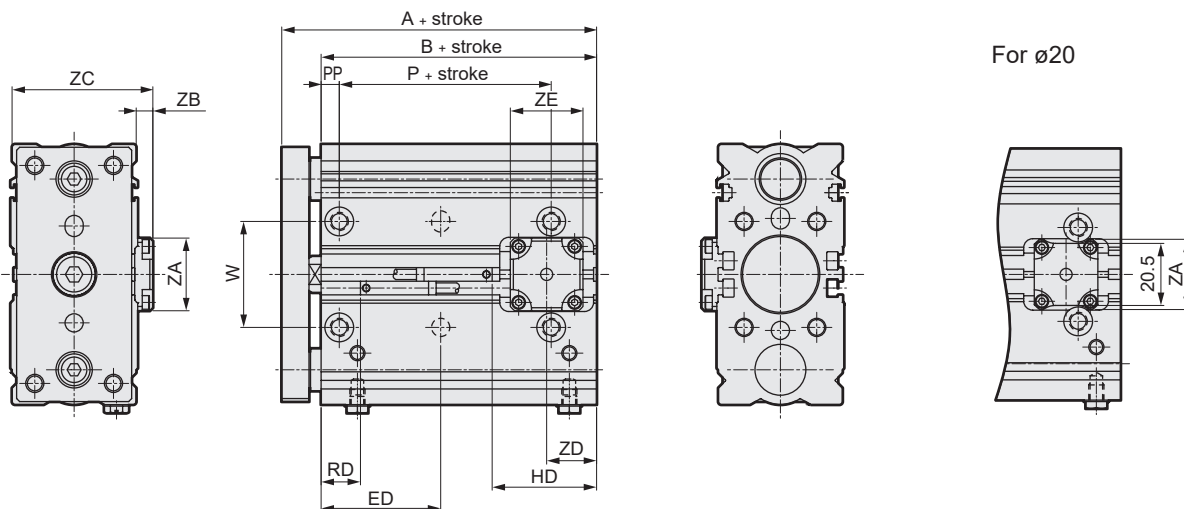
LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
JLK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

Dimensions: ø20, ø25



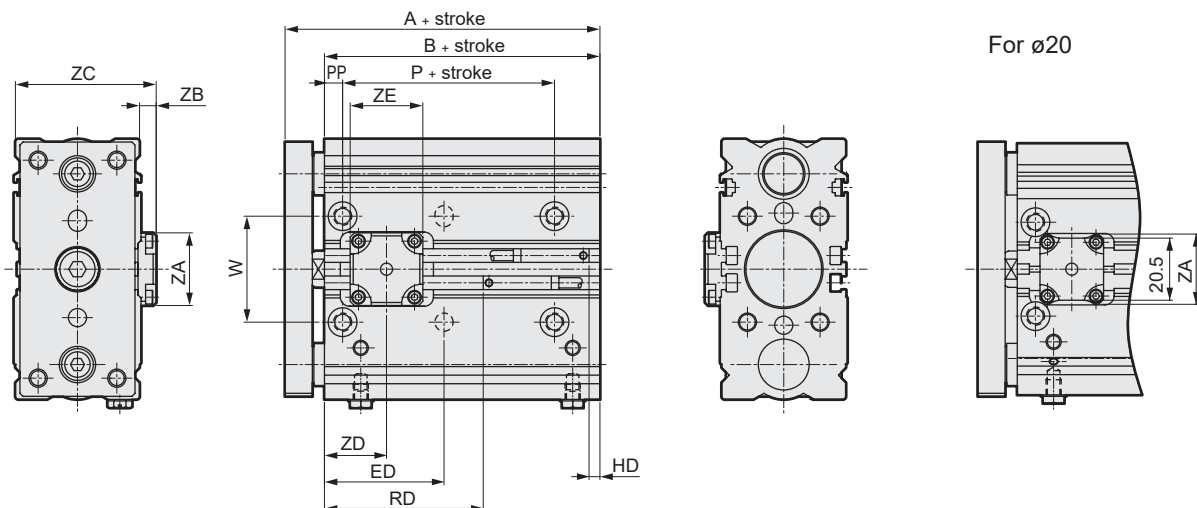
- Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)

STS-M<sub>B</sub>Q-H



- Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)

STS-M<sub>B</sub>Q-R



| Code | A  | B  | EA | EC | EG | ED                              | P  | PP | W  | ZA   | ZB | ZC | ZE | STS-M <sub>B</sub> Q-H |             |      |         | STS-M <sub>B</sub> Q-R |      |             |     |         |      |
|------|----|----|----|----|----|---------------------------------|----|----|----|------|----|----|----|------------------------|-------------|------|---------|------------------------|------|-------------|-----|---------|------|
|      |    |    |    |    |    |                                 |    |    |    |      |    |    |    | ZD                     | T0/T5/T2/T3 |      | T2W/T3W |                        | ZD   | T0/T5/T2/T3 |     | T2W/T3W |      |
|      |    |    |    |    |    |                                 |    |    |    |      |    |    |    |                        | RD          | HD   | RD      | HD                     |      | RD          | HD  |         |      |
| ø20  | 78 | 65 | 30 | 31 | 33 | 26.5+ $\frac{\text{Stroke}}{2}$ | 45 | 6  | 31 | 23.2 | 6  | 44 | 21 | 18                     | 12          | 34.5 | 12.5    | 37.5                   | 20   | 37          | 9.5 | 37.5    | 12.5 |
| ø25  | 79 | 66 | 32 | 35 | 37 | 27+ $\frac{\text{Stroke}}{2}$   | 45 | 6  | 35 | 24   | 5  | 47 | 24 | 16.5                   | 13          | 34   | 14.5    | 36                     | 20.5 | 38          | 9   | 39.5    | 11   |

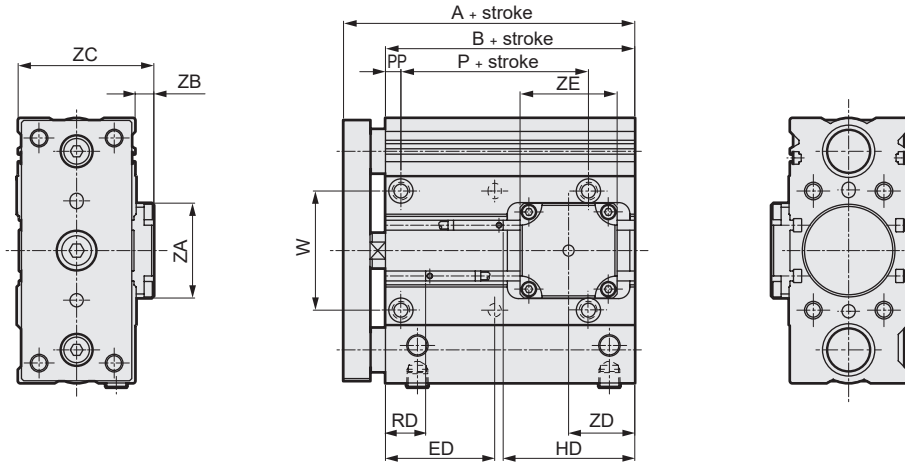
\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.

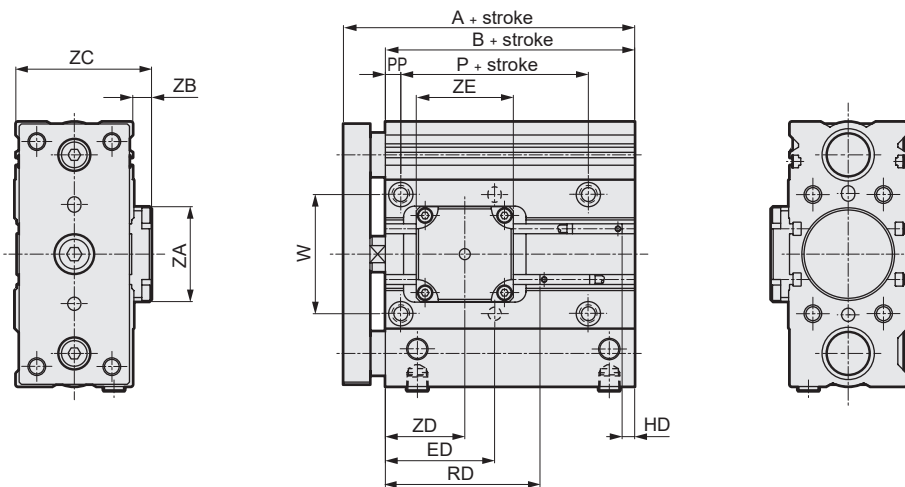
Dimensions: ø32/ø40/ø50/ø63



- Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)  
STS-M<sub>B</sub>Q-H



- Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)  
STS-M<sub>B</sub>Q-R




|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

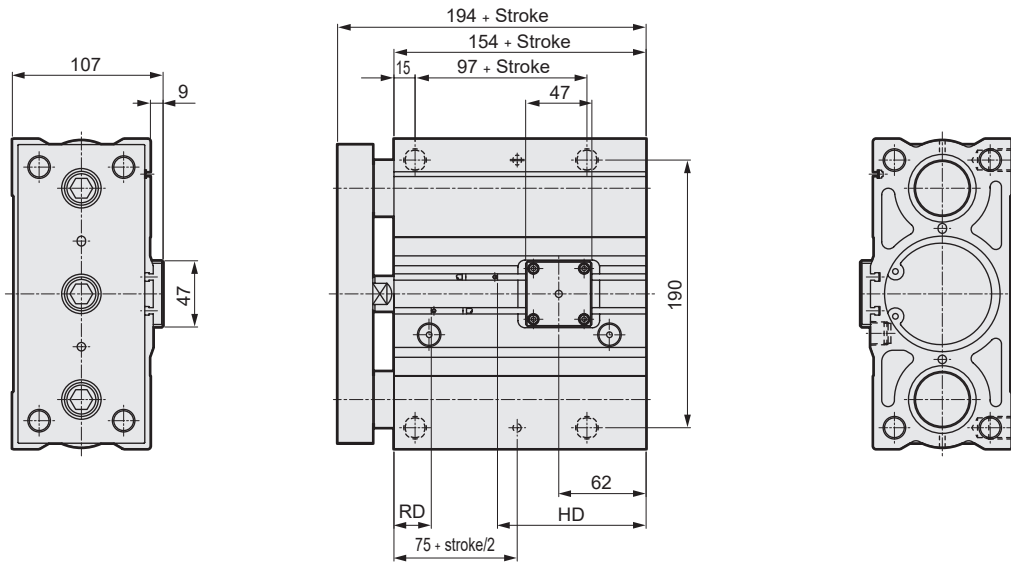
| Code<br>Bore size<br>(mm) | A   | B   | EA | EC | EG | ED                    | P  | PP | W  | ZA | ZB  | ZC   | ZE | STS-M <sub>B</sub> Q-H |             |      |         | STS-M <sub>B</sub> Q-R |    |             |      |         |      |
|---------------------------|-----|-----|----|----|----|-----------------------|----|----|----|----|-----|------|----|------------------------|-------------|------|---------|------------------------|----|-------------|------|---------|------|
|                           |     |     |    |    |    |                       |    |    |    |    |     |      |    | ZD                     | T0/T5/T2/T3 |      | T2W/T3W |                        | ZD | T0/T5/T2/T3 |      | T2W/T3W |      |
|                           |     |     |    |    |    |                       |    |    |    |    |     |      |    |                        | RD          | HD   | RD      | HD                     |    | RD          | HD   | RD      | HD   |
| ø32                       | 93  | 74  | 42 | 45 | 46 | 30 +<br>Stroke<br>2   | 47 | 7  | 45 | 32 | 6.5 | 53.5 | 24 | 21                     | 17.5        | 38.5 | 19      | 40                     | 25 | 42.5        | 13.5 | 44      | 15   |
| ø40                       | 122 | 103 | 45 | 54 | 55 | 44.5 +<br>Stroke<br>2 | 75 | 7  | 54 | 43 | 8   | 62   | 44 | 30                     | 21          | 64   | 22.5    | 66                     | 36 | 71          | 14   | 72.5    | 16   |
| ø50                       | 127 | 105 | 55 | 66 | 69 | 44.5 +<br>Stroke<br>2 | 76 | 8  | 66 | 43 | 7.5 | 73.5 | 44 | 33                     | 22          | 66   | 23.5    | 66.5                   | 40 | 72          | 16   | 73.5    | 16.5 |
| ø63                       | 133 | 111 | 62 | 79 | 82 | 47.5 +<br>Stroke<br>2 | 76 | 8  | 79 | 47 | 7.5 | 86.5 | 47 | 35                     | 20          | 73   | 21.5    | 74.5                   | 40 | 70          | 23   | 71.5    | 24.5 |

\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

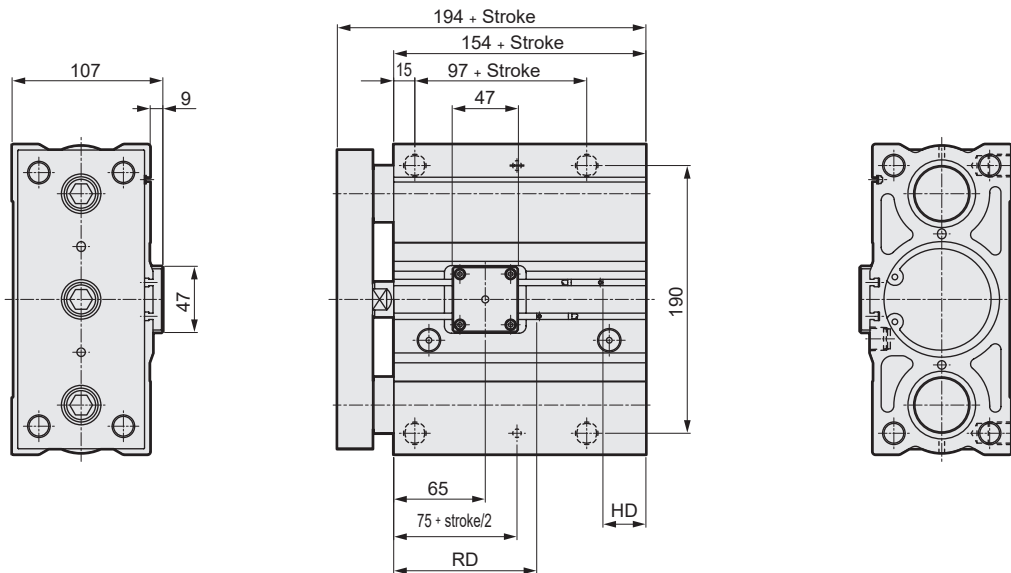
\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.

Dimensions:  $\varnothing 80$  

- Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)  
STS-M<sub>B</sub>Q-H



- Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)  
STS-M<sub>B</sub>Q-R



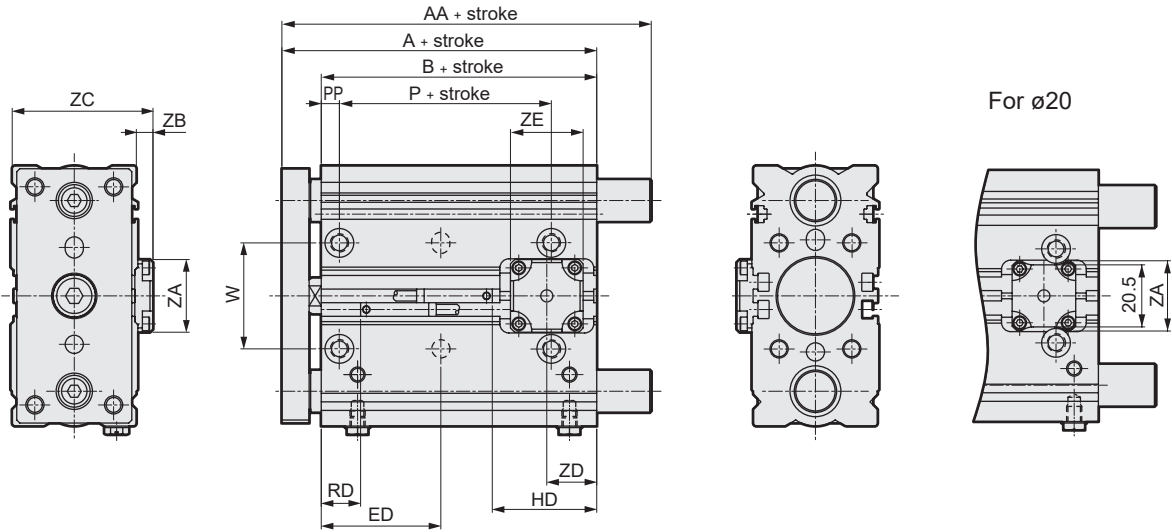
\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.

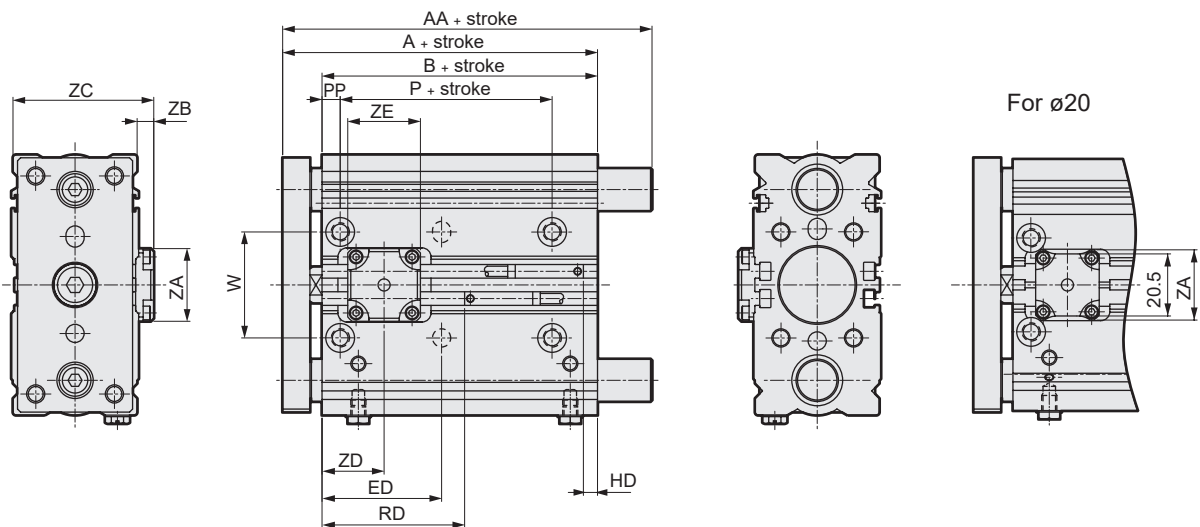
Dimensions:  $\varnothing 20/\varnothing 25$



- Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)  
STL-M<sub>B</sub>Q-H



- Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)  
STL-M<sub>B</sub>Q-R



|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

| Code<br>Bore size<br>(mm) | A  | AA | EA | EC | EG | ED                              | B  | P  | PP | W  | ZA   | ZB | ZC | ZE | STL-M <sub>B</sub> Q-H |             |      |         | STL-M <sub>B</sub> Q-R |      |             |     |         |      |
|---------------------------|----|----|----|----|----|---------------------------------|----|----|----|----|------|----|----|----|------------------------|-------------|------|---------|------------------------|------|-------------|-----|---------|------|
|                           |    |    |    |    |    |                                 |    |    |    |    |      |    |    |    | ZD                     | T0/T5/T2/T3 |      | T2W/T3W |                        | ZD   | T0/T5/T2/T3 |     | T2W/T3W |      |
|                           |    |    |    |    |    |                                 |    |    |    |    |      |    |    |    |                        | RD          | HD   | RD      | HD                     |      | RD          | HD  | RD      | HD   |
| $\varnothing 20$          | 78 | 97 | 30 | 31 | 33 | 26.5+ $\frac{\text{Stroke}}{2}$ | 65 | 45 | 6  | 31 | 23.2 | 6  | 44 | 21 | 18                     | 12          | 34.5 | 37.5    | 12.5                   | 20   | 37          | 9.5 | 12.5    | 37.5 |
| $\varnothing 25$          | 79 | 97 | 32 | 35 | 37 | 27+ $\frac{\text{Stroke}}{2}$   | 66 | 45 | 6  | 35 | 24   | 5  | 47 | 24 | 16.5                   | 13          | 34   | 39.5    | 11                     | 20.5 | 38          | 9   | 14.5    | 36   |

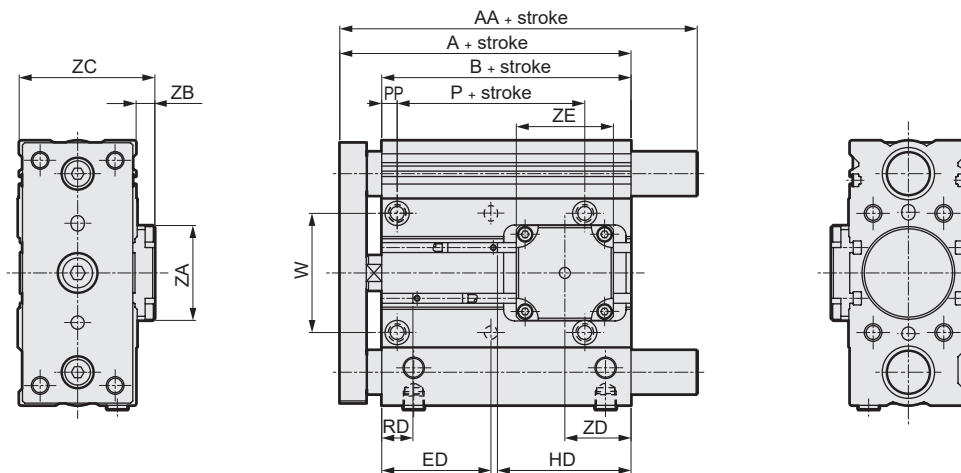
\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.

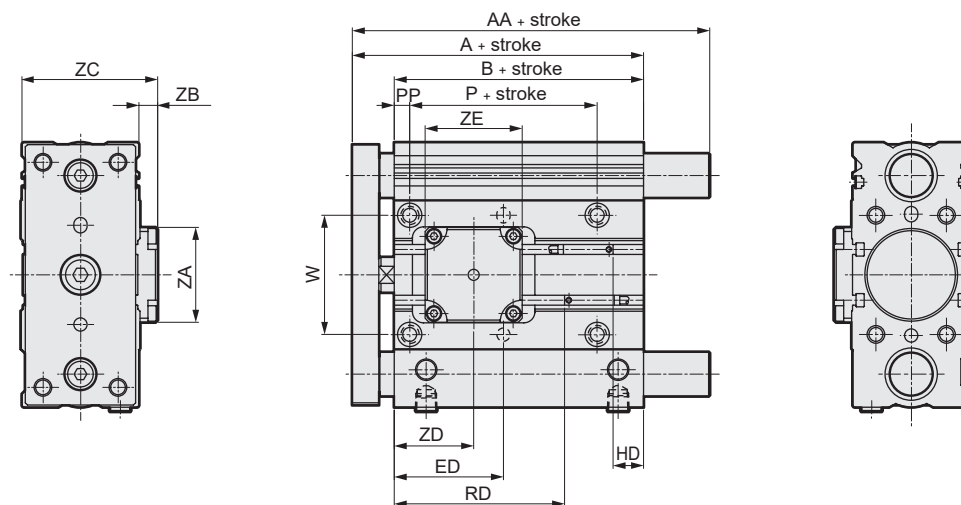
Dimensions:  $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$



- Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)  
STL-M<sub>B</sub>Q-H



- Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)  
STL-M<sub>B</sub>Q-R



| Code | Bore size (mm) | A   | AA | EA | EC | EG   | ED                         | B   | P  | PP | W  | ZA | ZB  | ZC   | ZE | ZD | STL-M <sub>B</sub> Q-H |      |         |      | STL-M <sub>B</sub> Q-R |             |      |         |      |
|------|----------------|-----|----|----|----|------|----------------------------|-----|----|----|----|----|-----|------|----|----|------------------------|------|---------|------|------------------------|-------------|------|---------|------|
|      |                |     |    |    |    |      |                            |     |    |    |    |    |     |      |    |    | T0/T5/T2/T3            |      | T2W/T3W |      | ZD                     | T0/T5/T2/T3 |      | T2W/T3W |      |
|      |                |     |    |    |    |      |                            |     |    |    |    |    |     |      |    |    | RD                     | HD   | RD      | HD   |                        | RD          | HD   | RD      | HD   |
| ø32  | 93             | 127 | 42 | 45 | 46 | 30   | $+\frac{\text{Stroke}}{2}$ | 74  | 47 | 7  | 45 | 32 | 6.5 | 53.5 | 24 | 21 | 17.5                   | 38.5 | 44      | 15   | 25                     | 42.5        | 13.5 | 19      | 40   |
| ø40  | 122            | 152 | 45 | 54 | 55 | 44.5 | $+\frac{\text{Stroke}}{2}$ | 103 | 75 | 7  | 54 | 43 | 8   | 62   | 44 | 30 | 21                     | 64   | 72.5    | 16   | 36                     | 71          | 14   | 22.5    | 66   |
| ø50  | 127            | 175 | 55 | 66 | 69 | 44.5 | $+\frac{\text{Stroke}}{2}$ | 105 | 76 | 8  | 66 | 43 | 7.5 | 73.5 | 44 | 33 | 22                     | 66   | 73.5    | 16.5 | 40                     | 72          | 16   | 23.5    | 66.5 |
| ø63  | 133            | 175 | 62 | 79 | 82 | 47.5 | $+\frac{\text{Stroke}}{2}$ | 111 | 76 | 8  | 79 | 47 | 7.5 | 86.5 | 47 | 35 | 20                     | 73   | 71.5    | 24.5 | 40                     | 70          | 23   | 21.5    | 74.5 |

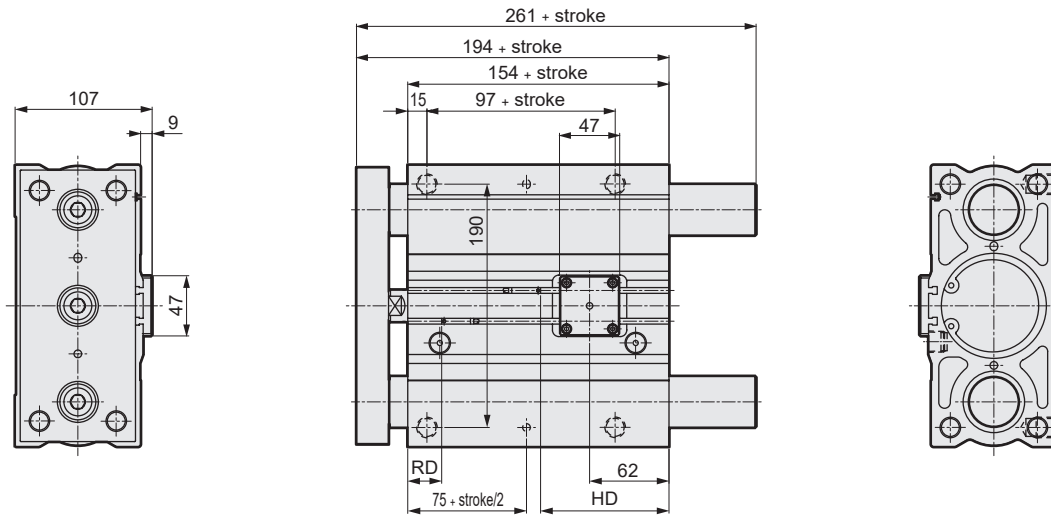
\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.

Dimensions:  $\varnothing 80$

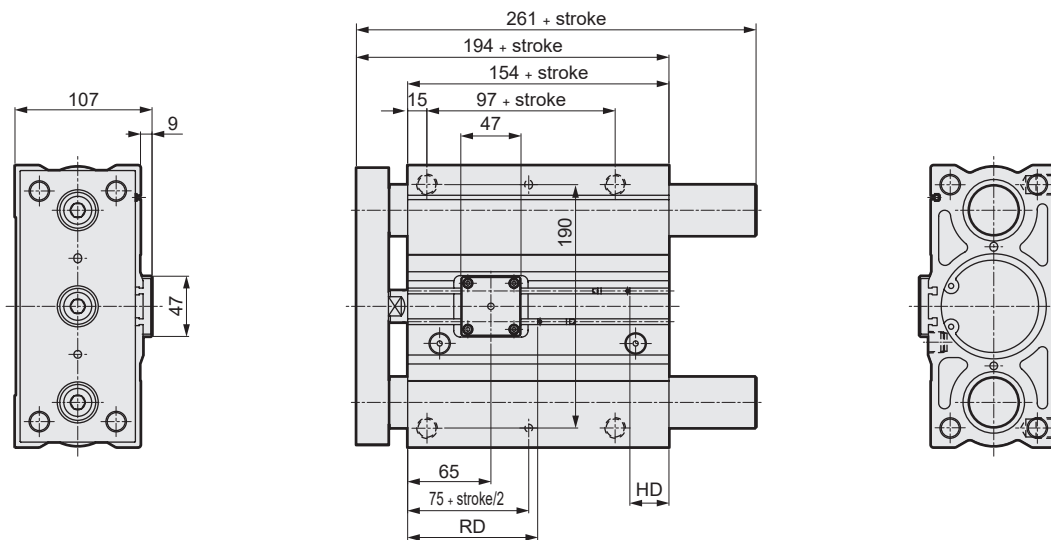


- Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)  
STL-M<sub>B</sub>Q-H



| T0/T5/T2/T3 |       | T2W/T3W |       |
|-------------|-------|---------|-------|
| RD          | HD    | RD      | HD    |
| 26.5        | 105.5 | 28      | 110.5 |

- Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)  
STL-M<sub>B</sub>Q-R



| T0/T5/T2/T3 |      | T2W/T3W |      |
|-------------|------|---------|------|
| RD          | HD   | RD      | HD   |
| 101.5       | 30.5 | 103     | 35.5 |

\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.


\*2 : Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color LED (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof and T1H/V switches.

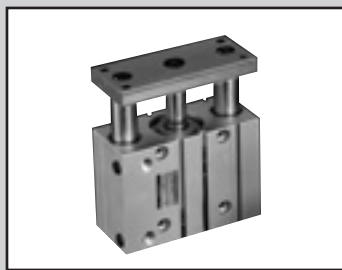
- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Guided cylinder/fine speed

# STS/STL-MF Series

- Bore size:  $\varnothing 8$ ,  $\varnothing 12$ ,  $\varnothing 16$ ,  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$ ,  $\varnothing 40$ ,  $\varnothing 50$ ,  $\varnothing 63$ ,  $\varnothing 80$

JIS symbol 



## Specifications

| Item                      | STS-MF, STS-BF (short stroke)/STL-MF, STL-BF (long stroke) |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
|---------------------------|--|--|------------------|------------------|------------------|------------------|--------------------------------|------------------|------------------|------------------|------------------|
| Bore size                 | mm   | $\varnothing 8$  | $\varnothing 12$ | $\varnothing 16$ | $\varnothing 20$ | $\varnothing 25$ | $\varnothing 32$               | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$ |
| Actuation                 | Double acting  |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Working fluid             | Compressed air   |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Max. working pressure     | MPa  | 1.0 ( $\approx 150$ psi, 10 bar)                           |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Min. working pressure     | MPa  | 0.15 ( $\approx 22$ psi, 1.5 bar)                          |                  |                  |                  |                  | 0.1 ( $\approx 15$ psi, 1 bar) |                  |                  |                  |                  |
| Proof pressure            | MPa  | 1.6 ( $\approx 230$ psi, 16 bar)                           |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Ambient temperature       | $^{\circ}\text{C}$   | 5 ( $41^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Port size                 |  | M5   |                  |                  |                  |                  | Rc1/8                          |                  | Rc1/4            |                  | Rc3/8            |
| Stroke tolerance          | mm   | $^{+2.0}_0$  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Working piston speed      | mm/s   | 1 to 200   |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Cushion                   | Rubber cushion   |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Lubrication               | Not available  |  |                  |                  |                  |                  |                                |                  |                  |                  |                  |
| Allowable absorbed energy | J  | 0.029  | 0.056            | 0.088            | 0.157            | 0.157            | 0.401                          | 0.627            | 0.980            | 0.1560           | 2.510            |

\*1: Refer to page 449 for theoretical thrust table.

## Stroke

| Model No. | Bore size (mm)  | Standard stroke (mm)            | Max. stroke (mm) | Min. stroke (mm) |
|-----------|---|---------------------------------|------------------|------------------|
| STS-MF    | $\varnothing 8$ , $\varnothing 12$ , $\varnothing 16$   | 10, 20, 30, 40, 50              | 50               | 5                |
|           | $\varnothing 20$ , $\varnothing 25$ , $\varnothing 32$ , $\varnothing 40$ , $\varnothing 50$ , $\varnothing 63$ | 25, 50                          |                  |                  |
| STS-BF    | $\varnothing 80$  | 25, 50, 75, 100                 | 100              |                  |
| STL-MF    | $\varnothing 8$ , $\varnothing 12$ , $\varnothing 16$   | 50, 75, 100, 125, 150, 175, 200 | 200              | 50               |
|           | $\varnothing 20$ , $\varnothing 25$ , $\varnothing 32$ , $\varnothing 40$ , $\varnothing 50$ , $\varnothing 63$ | 50, 75, 100, 125, 150, 175, 200 |                  | 30               |
| STL-BF    | $\varnothing 80$  | 75, 100, 125, 150, 175, 200     |                  | 55               |

\*1: The custom stroke is available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.

## Switch specifications

- 1-color/2-color LED/for AC magnetic field proof

| Item            | Proximity 2-wire   |                            | Proximity 2-wire                      |                                   |                            |                                | Proximity 3-wire                   |                                   |                      |                   | Reed 2-wire                        |                       |   |                                   | Proximity 2-wire                   |                   |                             |
|-----------------|--|----------------------------|---------------------------------------|-----------------------------------|----------------------------|--------------------------------|------------------------------------|-----------------------------------|----------------------|-------------------|------------------------------------|-----------------------|---|-----------------------------------|------------------------------------|-------------------|-----------------------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV      | T2YH/<br>T2YV                         | T2WH/<br>T2WV                     | T3H/<br>T3V                | T3PH/<br>T3PV                  | T3YH/<br>T3YV                      | T3WH/<br>T3WV                     | T0H/T0V              | T5H/T5V           |                                    | T8H/T8V               |   | T2YD(*4)<br>T2YDT                 |                                    |                   |                             |
| Applications    | For programmable controller, relay, compact solenoid valve |                            | Dedicated for programmable controller |                                   |                            |                                | For programmable controller, relay |                                   |                      |                   | For programmable controller, relay |                       | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                                   | For programmable controller, relay |                   | For programmable controller |
| Output method   | -  |                            | NPN output                            |                                   |                            |                                | PNP output                         |                                   |                      |                   | -                                  |                       | -   |                                   | -                                  |                   |                             |
| Pwr. supp. V.   | -  |                            | 10 to 28 VDC                          |                                   |                            |                                | -                                  |                                   |                      |                   | -                                  |                       | -   |                                   | -                                  |                   |                             |
| Load voltage    | 85 to 265 VAC  | 10 to 30 VDC               | 24 VDC $\pm 10\%$                     |                                   | 30 VDC or less             |                                |                                    |                                   | 12/24 VDC            | 100/110 VAC       | 5/12/24 VDC                        | 100/110 VAC           | 12/24 VDC   | 110 VAC                           | 220 VAC                            | 24 VDC $\pm 10\%$ |                             |
| Load current    | 5 to 100 mA  | 5 to 20 mA (*3)            |                                       | 100 mA or less                    |                            | 50 mA or less                  |                                    | 5 to 50 mA                        | 7 to 20 mA           | $\leq 50$ mA      | $\leq 20$ mA                       | 5 to 50 mA            | 7 to 20 mA  | 7 to 10 mA                        | 5 to 20 mA                         |                   |                             |
| Indicator       | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)       | Red/green<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)       | Yellow<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON)  | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON) | No indicator lamp |                                    | LED<br>(Lit when ON)  |   | Red/green<br>LED<br>(Lit when ON) |                                    |                   |                             |
| Leakage current | $\leq 1$ mA at 100 VAC,<br>$\leq 2$ mA at 200 VAC          | 1 mA or less               |                                       | 10 $\mu\text{A}$ or less          |                            |                                |                                    | 0 mA                              |                      |                   |                                    | 1 mA or less          |   |                                   |                                    |                   |                             |
| Weight g        | 1 m:33<br>3 m:87<br>5 m:142                                | 1 m:18<br>3 m:49<br>5 m:80 | 1 m:33<br>3 m:87<br>5 m:142           | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:18<br>3 m:49<br>5 m:80 | 1 m:33<br>3 m:87<br>5 m:142    | 1 m:18<br>3 m:49<br>5 m:80         | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:18 3 m:49 5 m:80 |                   |                                    | 1 m:33 3 m:87 5 m:142 |   | 1 m:61<br>3 m:166<br>5 m:272      |                                    |                   |                             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25 $^{\circ}\text{C}$ . The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25 $^{\circ}\text{C}$ . (5 to 10 mA at 60 $^{\circ}\text{C}$ )

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

For cylinder weight, refer to pages 558 to 561.

## Technical data

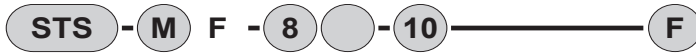
Refer to Measuring methods (in Pneumatic Cylinders I (Catalog No.CB-029SA) on page 1161), for technical data regarding measuring dimensions.



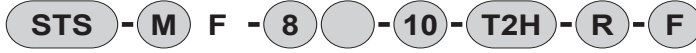
### How to order

#### ● Short stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)

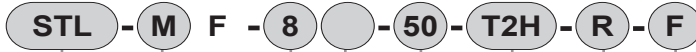


#### ● Long stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



Model No.

● A Bearing ● B Bore size

● C Port thread

● D Stroke

● E Switch model No. \*3 \*4

■ The custom stroke is available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.

#### ⚠ Precautions for model No. selection

- \*1: Refer to pages 444 to 447 for combinations of variations/options.
- \*2: Refer to page 458 for material details.

#### [Example of model No.]

#### STL-MF-8-50-T2H-R-F

Model: Guided cylinder, long stroke, fine speed

- A Bearing : Metal bush bearing
- B Bore size : ø8 mm
- C Port thread : M5
- D Stroke : 50 mm
- E Switch model No.: Proximity switch T2H, lead wire 1 m
- F Switch quantity : 1 on rod side
- G Option : End plate material: steel

#### ● D Stroke

| Series | Stroke (mm)        | Applicable bore size |     |     |     |     |     |     |     |     |     |   |
|--------|--------------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
|        |                    | ø8                   | ø12 | ø16 | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 |   |
| STS    | Standard stroke    | 10                   | ●   | ●   | ●   |     |     |     |     |     |     |   |
|        |                    | 20                   | ●   | ●   | ●   |     |     |     |     |     |     |   |
|        |                    | 25                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 30                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 40                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 50                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 75                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
| 100    | ●                  | ●                    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |     |   |
|        | Min. stroke *1     | 5                    |     |     |     |     |     |     |     |     |     |   |
|        | Custom stroke *1,2 | In 5 mm increments   |     |     |     |     |     |     |     |     |     |   |
| STL    | Standard stroke    | 50                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 75                   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 100                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 125                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 150                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 175                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        |                    | 200                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |
|        | Min. stroke *1     | 50                   |     |     | 30  |     |     |     | 55  |     |     |   |
|        | Custom stroke *1,2 | In 5 mm increments   |     |     |     |     |     |     |     |     |     |   |

- \*1 : The total dimensions are the same as the longer standard stroke.
- \*2 : Special total length for custom stroke can be provided when a custom stroke is used. (Made to order)
- \*3 : T8H/V switch cannot be installed on ø8 to ø16.
- \*4 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

### Dimensions

Same as STS/STL Series (double acting/single rod).

STS Series : Page 459 (ø8 to ø16), page 460 (ø20 and ø25), page 461 (ø32 to ø63) and page 462 (ø80)

STL Series : Page 464 (ø8 to ø16), page 465 (ø20 and ø25), page 466 (ø32 to ø63) and page 467 (ø80)

| Code                    | Description                                     |
|-------------------------|---|
| <b>A Bearing</b>        |   |
| M                       | Metal bush bearing                              |
| B                       | Ball bearing                                    |
| <b>B Bore size (mm)</b> |   |
| 8                       | ø8  |
| 12                      | ø12   |
| 16                      | ø16   |
| 20                      | ø20   |
| 25                      | ø25   |
| 32                      | ø32   |
| 40                      | ø40   |
| 50                      | ø50   |
| 63                      | ø63   |
| 80                      | ø80   |
| <b>C Port thread</b>    |   |
| Blank                   | M5 (ø8 to ø25)<br>Rc thread (ø32 to ø80)        |
| NN                      | NPT thread (ø32 and over) made-to-order product |
| GN                      | G thread (ø32 and over) made-to-order product   |

| D Stroke (mm)                    |  |
|----------------------------------|--|
| Refer to the stroke table below. |  |

| E Switch model No. |                    |           |         |    |                                 |           |
|--------------------|--------------------|-----------|---------|----|---------------------------------|-----------|
| Straight lead wire | L-shaped lead wire | Contact   | Voltage |    | Indicator                       | Lead wire |
|                    |                    |           | AC      | DC |                                 |           |
| T0H*               | T0V*               | Reed      | ●       | ●  | 1-color LED                     | 2-wire    |
| T5H*               | T5V*               | Reed      | ●       | ●  | no indicator lamp               | 2-wire    |
| T8H*               | T8V*               | Reed      | ●       | ●  | 1-color LED                     | 2-wire    |
| T1H*               | T1V*               | Proximity | ●       | ●  |                                 |           |
| T2H*               | T2V*               | Proximity | ●       | ●  |                                 |           |
| T3H*               | T3V*               | Proximity | ●       | ●  |                                 |           |
| T3PH*              | T3PV*              | Proximity | ●       | ●  | 1-color LED                     | 3-wire    |
| T2WH*              | T2WV*              | Proximity | ●       | ●  | 2-color LED                     | 2-wire    |
| T2YH*              | T2YV*              | Proximity | ●       | ●  |                                 |           |
| T3WH*              | T3WV*              | Proximity | ●       | ●  |                                 |           |
| T3YH*              | T3YV*              | Proximity | ●       | ●  | 2-color LED (AC magnetic field) | 2-wire    |
| T2JH*              | T2JV*              | Proximity | ●       | ●  |                                 |           |
| T2YD*              | -                  | Proximity | ●       | ●  | 1-color LED off-delay           | 2-wire    |
| T2YDT*             | -                  | Proximity | ●       | ●  | 2-color LED                     | 2-wire    |

| * Lead wire length |                |
|--------------------|----------------|
| Blank              | 1 m (standard) |
| 3                  | 3 m (option)   |
| 5                  | 5 m (option)   |

| F Switch quantity |                |
|-------------------|----------------|
| R                 | 1 on rod side  |
| H                 | 1 on head side |
| D                 | 2              |
| T                 | 3              |

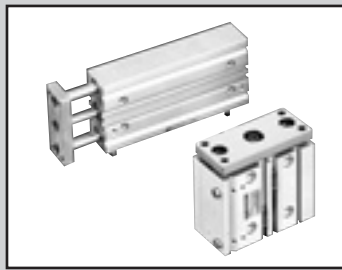
| G Option |  |
|----------|--|
| F        | End plate material (steel)   |
| M        | *2 Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product)            |
| M1       | *2 Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) |

### How to order switch



Switch model No. (Item E above)


|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |



Guided cylinder Double acting/low speed

# STS/STL-<sup>M</sup><sub>B</sub>O Series

● Bore size:  $\varnothing 8/\varnothing 12/\varnothing 16/\varnothing 20/\varnothing 25/\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80$

JIS symbol 



LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

## Specifications

| Item                      | STS-MO/BO, STL-MO/BO    |  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
|---------------------------|-------------------------|--|-----------------|------------------|------------------|------------------|--------------------------------|------------------|------------------|------------------|------------------|------------------|
|                           | Bore size               | mm   | $\varnothing 8$ | $\varnothing 12$ | $\varnothing 16$ | $\varnothing 20$ | $\varnothing 25$               | $\varnothing 32$ | $\varnothing 40$ | $\varnothing 50$ | $\varnothing 63$ | $\varnothing 80$ |
| Actuation                 | Double acting/low speed |  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Working fluid             | Compressed air          |  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Max. working pressure     | MPa                     | 1.0 ( $\approx 150$ psi, 10 bar)   |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Min. working pressure     | MPa                     | 0.15 ( $\approx 22$ psi, 1.5 bar)  |                 |                  |                  |                  | 0.1 ( $\approx 15$ psi, 1 bar) |                  |                  |                  |                  |                  |
| Proof pressure            | MPa                     | 1.6 ( $\approx 230$ psi, 16 bar)   |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Ambient temperature       | $^{\circ}\text{C}$      | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing) |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Port size                 |                         | M5   |                 |                  |                  |                  | Rc1/8                          |                  |                  | Rc1/4            |                  | Rc3/8            |
| Stroke tolerance          | mm                      | $^{+2.0}_0$  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Working piston speed      | mm/s                    | 10 to 200  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Cushion                   |                         | With rubber cushion  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Lubrication               |                         | Not available  |                 |                  |                  |                  |                                |                  |                  |                  |                  |                  |
| Allowable absorbed energy | J                       | 0.029  | 0.056           | 0.088            | 0.157            | 0.157            | 0.401                          | 0.627            | 0.980            | 0.1560           | 2.510            |                  |

## Stroke

· Short stroke STS

| Bore size (mm)   | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)  |
|------------------|----------------------|------------------|------------------|-------------------------------|
| $\varnothing 8$  | 10, 20, 30, 40, 50   | 50               | 5                | 5<br>With one or two switches |
| $\varnothing 12$ |                      |                  |                  |                               |
| $\varnothing 16$ |                      |                  |                  |                               |
| $\varnothing 20$ |                      |                  |                  |                               |
| $\varnothing 25$ | 25, 50               | 50               | 5                | 5<br>With one or two switches |
| $\varnothing 32$ |                      |                  |                  |                               |
| $\varnothing 40$ |                      |                  |                  |                               |
| $\varnothing 50$ |                      |                  |                  |                               |
| $\varnothing 63$ | 25, 50, 75, 100      | 100              | 5                | 5<br>With one or two switches |
| $\varnothing 80$ |                      |                  |                  |                               |

· Long stroke STL

| Bore size (mm)   | Standard stroke (mm)                                    | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)   |
|------------------|---|------------------|------------------|--------------------------------|
| $\varnothing 8$  | 50, 75, 100, 125, 150                                   | 150              | 50               | 50                             |
| $\varnothing 12$ |   |                  |                  |                                |
| $\varnothing 16$ |   |                  |                  |                                |
| $\varnothing 20$ | 50, 75, 100, 125, 150<br>175, 200, 225, 250<br>275, 300 | 300              | 30               | 30<br>With one or two switches |
| $\varnothing 25$ |   |                  |                  |                                |
| $\varnothing 32$ |   |                  |                  |                                |
| $\varnothing 40$ |   |                  |                  |                                |
| $\varnothing 50$ |   |                  |                  |                                |
| $\varnothing 63$ |   |                  |                  |                                |
| $\varnothing 80$ | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300       | 300              | 55               | 55<br>With one or two switches |

Note : The custom stroke is available in 5 mm increments.  
However, the total length is the same as that of the next longer standard stroke.

### Switch specifications

● 1-color/2-color LED/for AC magnetic field proof

| Item            | Proximity 2-wire   |                                       | Proximity 2-wire                  |                                   |                                    | Proximity 3-wire               |                                   |                                   |                                    | Reed 2-wire   |                   |                          |                                    |                   |                                   | Proximity 2-wire            |
|-----------------|--|---------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|--------------------------------|-----------------------------------|-----------------------------------|------------------------------------|---|-------------------|--------------------------|------------------------------------|-------------------|-----------------------------------|-----------------------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV                 | T2YH/<br>T2YV                     | T2WH/<br>T2WV                     | T3H/<br>T3V                        | T3PH/<br>T3PV                  | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                            | T5H/T5V   | T8H/T8V           |                          |                                    | T2YD(*4)<br>T2YDT |                                   |                             |
| Applications    | For programmable controller, relay, compact solenoid valve | Dedicated for programmable controller |                                   |                                   | For programmable controller, relay |                                |                                   |                                   | For programmable controller, relay | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                   |                          | For programmable controller, relay |                   |                                   | For programmable controller |
| Output method   | -  |                                       |                                   | NPN output                        | PNP output                         | NPN output                     | NPN output                        | -                                 |                                    |   |                   |                          |                                    |                   |                                   |                             |
| Pwr. supp. V.   | -  |                                       |                                   | 10 to 28 VDC                      |                                    |                                |                                   | -                                 |                                    |   |                   |                          |                                    |                   |                                   |                             |
| Load voltage    | 85 to 265 VAC  | 10 to 30 VDC                          |                                   | 24 VDC ±10%                       | 30 VDC or less                     |                                |                                   |                                   | 12/24 VDC                          | 100/110 VAC   | 5/12/24 VDC       | 100/110 VAC              | 12/24 VDC                          | 110 VAC           | 220 VAC                           | 24 VDC ±10%                 |
| Load current    | 5 to 100mA   | 5 to 20 mA (*3)                       |                                   |                                   | 100 mA or less                     |                                | 50 mA or less                     |                                   | 5 to 50mA                          | 7 to 20mA   | 50 mA or less     | 20 mA or less            | 5 to 50mA                          | 7 to 20mA         | 7 to 10mA                         | 5 to 20mA                   |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)                  | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)               | Yellow<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)               |   | No indicator lamp |                          | LED<br>(Lit when ON)               |                   | Red/green<br>LED<br>(Lit when ON) |                             |
| Leakage current | 1 mA or less with 100 VAC, 2 mA or less with 200 VAC       | 1 mA or less                          |                                   |                                   | 10 µA or less                      |                                |                                   |                                   | 0mA                                |   |                   |                          |                                    |                   | 1 mA or less                      |                             |
| Weight g        | 1 m: 33 3 m: 87 5 m: 142                                   | 1 m: 18 3 m: 49 5 m: 80               | 1 m: 33 3 m: 87 5 m: 142          | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80            |                                | 1 m: 33 3 m: 87 5 m: 142          | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80            |   |                   | 1 m: 33 3 m: 87 5 m: 142 |                                    |                   | 1 m: 61 3 m: 166 5 m: 272         |                             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.1                    | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø8             | Push                | -                      | 7.54                   | 10.1                   | 15.1                   | 20.1                   | 25.1                   | 30.2                   | 35.2                   | 40.2                   | 45.2                   | 50.3                   |
|                | Pull                | -                      | 5.65                   | 7.54                   | 11.3                   | 15.1                   | 18.8                   | 22.6                   | 26.4                   | 30.2                   | 33.9                   | 37.7                   |
| ø12            | Push                | -                      | 17.0                   | 22.6                   | 33.9                   | 45.2                   | 56.5                   | 67.9                   | 79.2                   | 90.5                   | 1.02 x 10 <sup>2</sup> | 1.13 x 10 <sup>2</sup> |
|                | Pull                | -                      | 12.7                   | 17.0                   | 25.4                   | 33.9                   | 42.4                   | 50.9                   | 59.4                   | 67.9                   | 76.3                   | 84.8                   |
| ø16            | Push                | -                      | 30.2                   | 40.2                   | 60.3                   | 80.4                   | 1.01 x 10 <sup>2</sup> | 1.21 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.01 x 10 <sup>2</sup> |
|                | Pull                | -                      | 22.6                   | 30.2                   | 45.2                   | 60.3                   | 75.4                   | 90.5                   | 1.06 x 10 <sup>2</sup> | 1.21 x 10 <sup>2</sup> | 1.36 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> |
| ø20            | Push                | -                      | 47.1                   | 62.8                   | 94.2                   | 1.26 x 10 <sup>2</sup> | 1.57 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.20 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 2.83 x 10 <sup>2</sup> | 3.14 x 10 <sup>2</sup> |
|                | Pull                | -                      | 35.3                   | 47.1                   | 70.7                   | 94.2                   | 1.18 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.65 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.12 x 10 <sup>2</sup> | 2.36 x 10 <sup>2</sup> |
| ø25            | Push                | -                      | 73.6                   | 98.2                   | 1.47 x 10 <sup>2</sup> | 1.96 x 10 <sup>2</sup> | 2.45 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.44 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 4.42 x 10 <sup>2</sup> | 4.91 x 10 <sup>2</sup> |
|                | Pull                | -                      | 56.7                   | 75.6                   | 1.13 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> | 1.89 x 10 <sup>2</sup> | 2.27 x 10 <sup>2</sup> | 2.64 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.40 x 10 <sup>2</sup> | 3.78 x 10 <sup>2</sup> |
| ø32            | Push                | 80.4                   | 1.21 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                | Pull                | 60.3                   | 90.5                   | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40            | Push                | 1.26 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                | Pull                | 1.06 x 10 <sup>2</sup> | 1.58 x 10 <sup>2</sup> | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50            | Push                | 1.96 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                | Pull                | 1.65 x 10 <sup>2</sup> | 2.47 x 10 <sup>2</sup> | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63            | Push                | 3.12 x 10 <sup>2</sup> | 4.68 x 10 <sup>2</sup> | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                | Pull                | 2.80 x 10 <sup>2</sup> | 4.20 x 10 <sup>2</sup> | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80            | Push                | 5.03 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                | Pull                | 4.54 x 10 <sup>2</sup> | 6.80 x 10 <sup>2</sup> | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

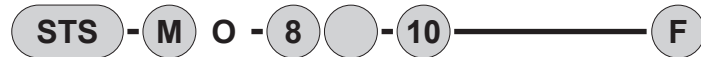
# STS/STL-MO Series

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)

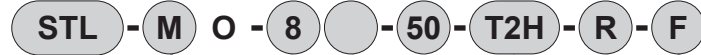


### ● Long stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



**A** Bearing

**B** Bore size

**C** Port thread

**D** Stroke

■ Custom stroke

Available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.

**E** Switch model No.

\*1, \*3, \*4

For the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches for ø40 and over, insert "L1" with "-" between **A** and **B**.

(Example) STS-MO-L1-63-50-T2YH3-D-F  
For ø80, the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product.

In this case, order the model No. with "L1" inserted between **A** and **B**.

(Example) STS-MO-L1-80-50-F

**F** Switch quantity

**G** Option

### ⚠ Precautions for model No. selection

- \*1 : Switches other than **E** Switch model No. are also available. (Made-to-order product)  
Refer to Ending Page 1 for details.
- \*2 : Refer to pages 444 to 447 for combinations of variations/options.
- \*3 : T8H/V switch cannot be installed on ø8 to ø16.
- \*4 : Switches are shipped with the product.  
Contact CKD if assembling before shipment is necessary.
- \*5 : Refer to page 458 for material details.

[Example of model No.]

### STS-MO-8-30-T0H-R-F

Model: Guided cylinder, short stroke, standard/low speed

- A** Bearing : Metal bush bearing
- B** Bore size : ø8 mm
- C** Port thread : M5
- D** Stroke : 30 mm
- E** Switch model No.: Reed T0H, lead wire length 1 m
- F** Switch quantity : 1 on rod side
- G** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| M                | Metal bush bearing |
| B                | Ball bearing       |

| <b>B Bore size (mm)</b> |     |
|-------------------------|-----|
| 8                       | ø 8 |
| 12                      | ø12 |
| 16                      | ø16 |
| 20                      | ø20 |
| 25                      | ø25 |
| 32                      | ø32 |
| 40                      | ø40 |
| 50                      | ø50 |
| 63                      | ø63 |
| 80                      | ø80 |

| <b>C Port thread</b> |   |
|----------------------|---|
| Blank                | M5 (ø8 to ø25)                                  |
|                      | Rc thread (ø32 to ø80)                          |
| NN                   | NPT thread (ø32 and over) made-to-order product |
| GN                   | G thread (ø32 and over) made-to-order product   |

| <b>D Stroke (mm)</b>                             |  |
|--|--|
| Refer to the stroke table on the following page. |  |

| <b>E Switch model No.</b> |                    |           |         |                     |                       |           |
|---------------------------|--------------------|-----------|---------|---------------------|-----------------------|-----------|
| Straight lead wire        | L-shaped lead wire | Contact   | Voltage |                     | Indicator             | Lead wire |
|                           |                    |           | AC      | DC                  |                       |           |
| T0H*                      | T0V*               | Reed      | ●       | ●                   | 1-color LED           | 2-wire    |
| T5H*                      | T5V*               |           | ●       | ●                   | no indicator lamp     |           |
| T8H*                      | T8V*               |           | ●       | ●                   | 1-color LED           | 2-wire    |
| T1H*                      | T1V*               |           | ●       | ●                   |                       |           |
| T2H*                      | T2V*               | ●         | ●       |                     |                       |           |
| T3H*                      | T3V*               | Proximity | ●       | ●                   | 1-color LED           | 3-wire    |
| T3PH*                     | T3PV*              |           | ●       | ●                   |                       |           |
| T2WH*                     | T2WV*              |           | ●       | ●                   | 2-color LED           | 2-wire    |
| T2YH*                     | T2YV*              |           | ●       | ●                   |                       |           |
| T3WH*                     | T3WV*              |           | ●       | ●                   | 1-color LED           | 3-wire    |
| T3YH*                     | T3YV*              |           | ●       | ●                   |                       |           |
| T2JH*                     | T2JV*              |           | ●       | ●                   | 1-color LED off-delay | 2-wire    |
| T2YD*                     | -                  |           | ●       | ●                   | 2-color LED           | 2-wire    |
| T2YDT*                    | -                  | ●         | ●       | (AC magnetic field) |                       |           |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| Blank                     | 1 m (standard) |
| 3                         | 3 m (option)   |
| 5                         | 5 m (option)   |

| <b>F Switch quantity</b> |                |
|--------------------------|----------------|
| R                        | 1 on rod side  |
| H                        | 1 on head side |
| D                        | 2              |
| T                        | 3              |

| <b>G Option</b> |  |
|-----------------|--|
| F               | End plate material (steel)   |
| M               | *5 Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product)            |
| M1              | *5 Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) |

### D Stroke

| Series              | Stroke (mm)     | Applicable bore size |     |                    |     |     |     |     |     |     |     |   |  |
|---------------------|-----------------|----------------------|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|---|--|
|                     |                 | ø8                   | ø12 | ø16                | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 |   |  |
| STS                 | Standard stroke | 10                   | ●   | ●                  | ●   |     |     |     |     |     |     |   |  |
|                     |                 | 20                   | ●   | ●                  | ●   |     |     |     |     |     |     |   |  |
|                     |                 | 25                   |     |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 30                   | ●   | ●                  | ●   |     |     |     |     |     |     |   |  |
|                     |                 | 40                   | ●   | ●                  | ●   |     |     |     |     |     |     |   |  |
|                     |                 | 50                   | ●   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 75                   |     |                    |     |     |     |     |     |     |     | ● |  |
|                     |                 | 100                  |     |                    |     |     |     |     |     |     |     | ● |  |
|                     |                 | Min. stroke *1       |     | 5                  |     |     |     |     |     |     |     |   |  |
|                     |                 | Custom stroke *1, 2  |     | In 5 mm increments |     |     |     |     |     |     |     |   |  |
| STL                 | Standard stroke | 50                   | ●   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 75                   | ●   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 100                  | ●   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 125                  | ●   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 150                  | ●   | ●                  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 175                  |     |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 200                  |     |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 225                  |     |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 250                  |     |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
|                     |                 | 275                  |     |                    |     | ●   | ●   | ●   | ●   | ●   | ●   | ● |  |
| 300                 |                 |                      |     | ●                  | ●   | ●   | ●   | ●   | ●   | ●   |     |   |  |
| Min. stroke *1      |                 | 50                   |     |                    | 30  |     |     |     |     | 55  |     |   |  |
| Custom stroke *1, 2 |                 | In 5 mm increments   |     |                    |     |     |     |     |     |     |     |   |  |

\*1 : The total dimensions are the same as the longer standard stroke.

\*2 : Special total length for custom stroke can be provided when a custom stroke is used. (Made to order)

### How to order switch



Switch model No.  
(Item (E) on page 516)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

### Internal structure and parts list

Same as double acting/single rod. Refer to pages 453 to 457.

### Repair parts list

| Bore size (mm) | Kit No.              | Repair parts No. |
|----------------|----------------------|------------------|
|                | STS-M <sub>B</sub> O |                  |
| ø8             | STS-O-8K             | 7 9 10 13 16     |
| ø12            | STS-O-12K            | 7 9 10 13 16 32  |
| ø16            | STS-O-16K            | 7 9 10 13 16 32  |
| ø20            | STS-O-20K            |                  |
| ø25            | STS-O-25K            |                  |
| ø32            | STS-O-32K            | 7 9 10 13        |
| ø40            | STS-O-40K            |                  |
| ø50            | STS-O-50K            | 16 17 32         |
| ø63            | STS-O-63K            |                  |
| ø80            | STS-O-80K            |                  |

Note : Specify the kit No. when placing an order.

### Dimensions

Same as STS/STL Series (double acting/single rod). Refer to the pages below.

STS Series : Page 459 (ø8 to ø16), page 460 (ø20 and ø25), page 461 (ø32 to ø63) and page 462 (ø80)

STL Series : Page 464 (ø8 to ø16), page 465 (ø20 and ø25), page 466 (ø32 to ø63) and page 467 (ø80)



Guided cylinder Double acting/rubber scraper

# STS/STL-M<sub>B</sub>G Series

Double acting/coil scraper

# STS/STL-M<sub>B</sub>G1 Series

● Bore size: ø20/ø25/ø32/ø40/ø50/ø63/ø80

JIS symbol



## Specifications

| Item                        | STS-MG/BG, STS-MG1/BG1, STL-MG/BG, STL-MG1/BG1                               |       |       |                         |       |           |       |  |
|-----------------------------|--|-------|-------|-------------------------|-------|-----------|-------|--|
| Bore size mm                | ø20  | ø25   | ø32   | ø40                     | ø50   | ø63       | ø80   |  |
| Actuation                   | Double acting/scraper  |       |       |                         |       |           |       |  |
| Working fluid               | Compressed air   |       |       |                         |       |           |       |  |
| Max. working pressure MPa   | 1.0 (≈150 psi, 10 bar)   |       |       |                         |       |           |       |  |
| Min. working pressure MPa   | 0.2 (≈29 psi, 2 bar)   |       |       | 0.15 (≈22 psi, 1.5 bar) |       |           |       |  |
| Proof pressure MPa          | 1.6 (≈230 psi, 16 bar)   |       |       |                         |       |           |       |  |
| Ambient temperature °C      | -10 (14°F) to 60 (140°F) (no freezing)                                       |       |       |                         |       |           |       |  |
| Port size                   | M5   |       | Rc1/8 |                         | Rc1/4 |           | Rc3/8 |  |
| Stroke tolerance mm         | +2.0<br>0  |       |       |                         |       |           |       |  |
| Working piston speed mm/s   | 50 to 500  |       |       |                         |       | 50 to 300 |       |  |
| Cushion                     | With rubber cushion  |       |       |                         |       |           |       |  |
| Lubrication                 | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |       |       |                         |       |           |       |  |
| Allowable absorbed energy J | 0.157  | 0.157 | 0.401 | 0.627                   | 0.980 | 1.560     | 2.510 |  |

## Stroke

· Short stroke STS

| Bore size (mm) | Standard stroke (mm) | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)  |
|----------------|----------------------|------------------|------------------|-------------------------------|
| ø20            | 25, 50               | 50               | 5                | 5<br>With one or two switches |
| ø25            |                      |                  |                  |                               |
| ø32            |                      |                  |                  |                               |
| ø40            |                      |                  |                  |                               |
| ø50            |                      |                  |                  |                               |
| ø63            | 25, 50, 75, 100      | 100              |                  |                               |
| ø80            |                      |                  |                  |                               |

· Long stroke STL

| Bore size (mm) | Standard stroke (mm)  | Max. stroke (mm) | Min. stroke (mm) | Min. stroke with switch (mm)   |
|----------------|---|------------------|------------------|--------------------------------|
| ø20            | 50, 75, 100, 125, 150<br>175, 200, 225, 250<br>275, 300, 325, 350<br>375, 400 | 400              | 30               | 30<br>With one or two switches |
| ø25            |   |                  |                  |                                |
| ø32            |   |                  |                  |                                |
| ø40            |   |                  | 55               | 55<br>With one or two switches |
| ø50            |   |                  |                  |                                |
| ø63            |   |                  |                  |                                |
| ø80            | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300<br>325, 350, 375, 400       |                  |                  |                                |

Note : The custom stroke is available in 5 mm increments.

However, the total length is the same as that of the next longer standard stroke.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

### Switch specifications

● 1-color/2-color LED/for AC magnetic field proof

| Item            | Proximity 2-wire   |                         | Proximity 2-wire                      |                                   |                         | Proximity 3-wire                   |                                   |                                   |                         | Reed 2-wire                        |                          |                                    |                                   |   |             | Proximity 2-wire                   |           |                             |             |
|-----------------|--|-------------------------|---------------------------------------|-----------------------------------|-------------------------|------------------------------------|-----------------------------------|-----------------------------------|-------------------------|------------------------------------|--------------------------|------------------------------------|-----------------------------------|---|-------------|------------------------------------|-----------|-----------------------------|-------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV   | T2YH/<br>T2YV                         | T2WH/<br>T2WV                     | T3H/<br>T3V             | T3PH/<br>T3PV                      | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V                 | T5H/T5V                            |                          | T8H/T8V                            |                                   | T2YD(*4)<br>T2YDT   |             |                                    |           |                             |             |
| Applications    | For programmable controller, relay, compact solenoid valve |                         | Dedicated for programmable controller |                                   |                         | For programmable controller, relay |                                   |                                   |                         | For programmable controller, relay |                          | For programmable controller, relay |                                   | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |             | For programmable controller, relay |           | For programmable controller |             |
| Output method   | -  |                         |                                       |                                   |                         | NPN output                         | PNP output                        | NPN output                        | NPN output              | -                                  |                          |                                    |                                   |   |             |                                    |           |                             |             |
| Pwr. supp. V.   | -  |                         |                                       |                                   |                         | 10 to 28 VDC                       |                                   |                                   |                         | -                                  |                          |                                    |                                   |   |             |                                    |           |                             |             |
| Load voltage    | 85 to 265 VAC  |                         | 10 to 30 VDC                          |                                   |                         | 24 VDC ±10%                        |                                   |                                   |                         | 30 VDC or less                     |                          | 12/24 VDC                          | 100/110 VAC                       | 5/12/24 VDC   | 100/110 VAC | 12/24 VDC                          | 110 VAC   | 220 VAC                     | 24 VDC ±10% |
| Load current    | 5 to 100mA   |                         | 5 to 20 mA (*3)                       |                                   |                         | 100 mA or less                     |                                   | 50 mA or less                     |                         | 5 to 50mA                          | 7 to 20mA                | 50 mA or less                      | 20 mA or less                     | 5 to 50mA   | 7 to 20mA   | 7 to 10mA                          | 5 to 20mA |                             |             |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)    | Red/green<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)    | Yellow<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)    | No indicator lamp                  | LED<br>(Lit when ON)     |                                    | Red/green<br>LED<br>(Lit when ON) |   |             |                                    |           |                             |             |
| Leakage current | 1 mA or less with 100 VAC, 2 mA or less with 200 VAC       |                         | 1 mA or less                          |                                   |                         | 10 µA or less                      |                                   |                                   |                         | 0mA                                |                          |                                    |                                   | 1 mA or less  |             |                                    |           |                             |             |
| Weight g        | 1 m: 33 3 m: 87 5 m: 142                                   | 1 m: 18 3 m: 49 5 m: 80 | 1 m: 33 3 m: 87 5 m: 142              | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80 | 1 m: 33 3 m: 87 5 m: 142           | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80           | 1 m: 18 3 m: 49 5 m: 80 | 1 m: 18 3 m: 49 5 m: 80            | 1 m: 33 3 m: 87 5 m: 142 | 1 m: 33 3 m: 87 5 m: 142           | 1 m: 61 3 m: 166 5 m: 272         |   |             |                                    |           |                             |             |

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.

### Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                |                     | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø20            | Push                | -                      | 62.8                   | 94.2                   | 1.26 x 10 <sup>2</sup> | 1.57 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.20 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 2.83 x 10 <sup>2</sup> | 3.14 x 10 <sup>2</sup> |
|                | Pull                | -                      | 47.1                   | 70.7                   | 94.2                   | 1.18 x 10 <sup>2</sup> | 1.41 x 10 <sup>2</sup> | 1.65 x 10 <sup>2</sup> | 1.88 x 10 <sup>2</sup> | 2.12 x 10 <sup>2</sup> | 2.36 x 10 <sup>2</sup> |
| ø25            | Push                | -                      | 98.2                   | 1.47 x 10 <sup>2</sup> | 1.96 x 10 <sup>2</sup> | 2.45 x 10 <sup>2</sup> | 2.95 x 10 <sup>2</sup> | 3.44 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 4.42 x 10 <sup>2</sup> | 4.91 x 10 <sup>2</sup> |
|                | Pull                | -                      | 75.6                   | 1.13 x 10 <sup>2</sup> | 1.51 x 10 <sup>2</sup> | 1.89 x 10 <sup>2</sup> | 2.27 x 10 <sup>2</sup> | 2.64 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.40 x 10 <sup>2</sup> | 3.78 x 10 <sup>2</sup> |
| ø32            | Push                | 1.21 x 10 <sup>2</sup> | 1.61 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.22 x 10 <sup>2</sup> | 4.02 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.63 x 10 <sup>2</sup> | 6.43 x 10 <sup>2</sup> | 7.24 x 10 <sup>2</sup> | 8.04 x 10 <sup>2</sup> |
|                | Pull                | 90.5                   | 1.21 x 10 <sup>2</sup> | 1.81 x 10 <sup>2</sup> | 2.41 x 10 <sup>2</sup> | 3.02 x 10 <sup>2</sup> | 3.62 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 4.83 x 10 <sup>2</sup> | 5.43 x 10 <sup>2</sup> | 6.03 x 10 <sup>2</sup> |
| ø40            | Push                | 1.88 x 10 <sup>2</sup> | 2.51 x 10 <sup>2</sup> | 3.77 x 10 <sup>2</sup> | 5.03 x 10 <sup>2</sup> | 6.28 x 10 <sup>2</sup> | 7.54 x 10 <sup>2</sup> | 8.80 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.13 x 10 <sup>3</sup> | 1.26 x 10 <sup>3</sup> |
|                | Pull                | 1.58 x 10 <sup>2</sup> | 2.11 x 10 <sup>2</sup> | 3.17 x 10 <sup>2</sup> | 4.22 x 10 <sup>2</sup> | 5.28 x 10 <sup>2</sup> | 6.33 x 10 <sup>2</sup> | 7.39 x 10 <sup>2</sup> | 8.44 x 10 <sup>2</sup> | 9.50 x 10 <sup>2</sup> | 1.06 x 10 <sup>3</sup> |
| ø50            | Push                | 2.95 x 10 <sup>2</sup> | 3.93 x 10 <sup>2</sup> | 5.89 x 10 <sup>2</sup> | 7.85 x 10 <sup>2</sup> | 9.82 x 10 <sup>2</sup> | 1.18 x 10 <sup>3</sup> | 1.37 x 10 <sup>3</sup> | 1.57 x 10 <sup>3</sup> | 1.77 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> |
|                | Pull                | 2.47 x 10 <sup>2</sup> | 3.30 x 10 <sup>2</sup> | 4.95 x 10 <sup>2</sup> | 6.60 x 10 <sup>2</sup> | 8.25 x 10 <sup>2</sup> | 9.90 x 10 <sup>2</sup> | 1.15 x 10 <sup>3</sup> | 1.32 x 10 <sup>3</sup> | 1.48 x 10 <sup>3</sup> | 1.65 x 10 <sup>3</sup> |
| ø63            | Push                | 4.68 x 10 <sup>2</sup> | 6.23 x 10 <sup>2</sup> | 9.35 x 10 <sup>2</sup> | 1.25 x 10 <sup>3</sup> | 1.56 x 10 <sup>3</sup> | 1.87 x 10 <sup>3</sup> | 2.18 x 10 <sup>3</sup> | 2.49 x 10 <sup>3</sup> | 2.81 x 10 <sup>3</sup> | 3.12 x 10 <sup>3</sup> |
|                | Pull                | 4.20 x 10 <sup>2</sup> | 5.61 x 10 <sup>2</sup> | 8.41 x 10 <sup>2</sup> | 1.12 x 10 <sup>3</sup> | 1.40 x 10 <sup>3</sup> | 1.68 x 10 <sup>3</sup> | 1.96 x 10 <sup>3</sup> | 2.24 x 10 <sup>3</sup> | 2.52 x 10 <sup>3</sup> | 2.80 x 10 <sup>3</sup> |
| ø80            | Push                | 7.54 x 10 <sup>2</sup> | 1.01 x 10 <sup>3</sup> | 1.51 x 10 <sup>3</sup> | 2.01 x 10 <sup>3</sup> | 2.51 x 10 <sup>3</sup> | 3.02 x 10 <sup>3</sup> | 3.52 x 10 <sup>3</sup> | 4.02 x 10 <sup>3</sup> | 4.52 x 10 <sup>3</sup> | 5.03 x 10 <sup>3</sup> |
|                | Pull                | 6.80 x 10 <sup>2</sup> | 9.07 x 10 <sup>2</sup> | 1.36 x 10 <sup>3</sup> | 1.81 x 10 <sup>3</sup> | 2.27 x 10 <sup>3</sup> | 2.72 x 10 <sup>3</sup> | 3.17 x 10 <sup>3</sup> | 3.63 x 10 <sup>3</sup> | 4.08 x 10 <sup>3</sup> | 4.54 x 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

# STS/STL-M<sup>B</sup>G/G1 Series

## How to order

### ● Short stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



### ● Long stroke

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



**A** Bearing

**B** Model No.

**C** Bore size

**D** Port thread

**E** Stroke

■ Custom stroke

Available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke.

**F** Switch model No.

\*1, \*3

### ⚠ Precautions for model No. selection

- \*1 : Switches other than **F** Switch model No. are also available. (Made-to-order product) Refer to Ending Page 1 for details.
- \*2 : Refer to pages 444 to 447 for combinations of variations/options.
- \*3 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
- \*4 : Refer to page 458 for material details.
- \*5 :  $\phi 20$  and  $\phi 25$  with ball bearing B are copper and PTFE free as standard. Not available for coil scraper G1.

For the 2-color LED, T1H/V, T8H/V and AC magnetic field proof switches for  $\phi 40$  and over, insert "L1" with "." between **D** and **C**.  
(Example) STS-MG-L1-63-50-T2YH3-D-F  
For  $\phi 80$ , the 2-color LED, T1H/V, T8H/V and strong magnetic field proof switches cannot be retrofitted on a previously purchased standard product.

In this case, order the model No. with "L1" inserted between **D** and **C**.

(Example) STS-MG-L1-80-50-F

[Example of model No.]

### STS-MG-20-25-T0H-R-F

Model: Guided cylinder, short stroke

- A** Bearing : Metal bush bearing
- B** Model No. : Rubber scraper
- C** Bore size :  $\phi 20$  mm
- D** Port thread : M5
- E** Stroke : 25 mm
- F** Switch model No. : Reed T0H, lead wire length 1 m
- G** Switch quantity : 1 on rod side
- H** Option : End plate material: steel

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| M                | Metal bush bearing |
| B                | Ball bearing       |

| <b>B Model No.</b> |                |
|--------------------|----------------|
| G                  | Rubber scraper |
| G1                 | Coil scraper   |

| <b>C Bore size (mm)</b> |           |
|-------------------------|-----------|
| 20                      | $\phi 20$ |
| 25                      | $\phi 25$ |
| 32                      | $\phi 32$ |
| 40                      | $\phi 40$ |
| 50                      | $\phi 50$ |
| 63                      | $\phi 63$ |
| 80                      | $\phi 80$ |

| <b>D Port thread</b> |  |
|----------------------|--|
| Blank                | M5 ( $\phi 20$ , $\phi 25$ )<br>Rc thread ( $\phi 32$ to $\phi 80$ ) |
| NN                   | NPT thread ( $\phi 32$ and over) made-to-order product.              |
| GN                   | G thread ( $\phi 32$ and over) made-to-order product.                |

| <b>E Stroke (mm)</b>                             |  |
|--|--|
| Refer to the stroke table on the following page. |  |

| <b>F Switch model No.</b> |                    |         |               |                                 |           |
|---------------------------|--------------------|---------|---------------|---------------------------------|-----------|
| Straight lead wire        | L-shaped lead wire | Contact | Voltage AC/DC | Indicator                       | Lead wire |
|                           |                    |         |               |                                 |           |
| T0H*                      | T0V*               | ●       | ●             | 1-color LED                     | 2-wire    |
| T5H*                      | T5V*               | ●       | ●             | no indicator lamp               |           |
| T8H*                      | T8V*               | ●       | ●             | 1-color LED                     | 2-wire    |
| T1H*                      | T1V*               | ●       | ●             |                                 |           |
| T2H*                      | T2V*               |         | ●             | 3-wire                          | 3-wire    |
| T3H*                      | T3V*               |         | ●             |                                 |           |
| T3PH*                     | T3PV*              |         | ●             | 1-color LED                     | 3-wire    |
| T2WH*                     | T2WV*              |         | ●             |                                 |           |
| T2YH*                     | T2YV*              |         | ●             | 2-color LED                     | 2-wire    |
| T3WH*                     | T3WV*              |         | ●             |                                 |           |
| T3YH*                     | T3YV*              |         | ●             | 1-color LED off-delay           | 2-wire    |
| T2JH*                     | T2JV*              |         | ●             |                                 |           |
| T2YD*                     | -                  |         | ●             | 2-color LED (AC magnetic field) | 2-wire    |
| T2YDT*                    | -                  |         | ●             |                                 |           |

| <b>* Lead wire length</b> |                |
|---------------------------|----------------|
| Blank                     | 1 m (standard) |
| 3                         | 3 m (option)   |
| 5                         | 5 m (option)   |

| <b>G Switch quantity</b> |                |
|--------------------------|----------------|
| R                        | 1 on rod side  |
| H                        | 1 on head side |
| D                        | 2              |
| T                        | 3              |

| <b>H Option</b> |  |
|-----------------|--|
| F               | End plate material (steel)   |
| M               | *4 Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product)            |
| M1              | *4 Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) |
| P6              | *5 Copper/PTFE free specs (made to order) (N/A for G1 coil scraper)                            |



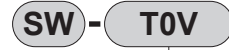
### Stroke

| Series | Stroke (mm)         | Applicable bore size |     |     |     |     |     |     |    |
|--------|---------------------|----------------------|-----|-----|-----|-----|-----|-----|----|
|        |                     | ø20                  | ø25 | ø32 | ø40 | ø50 | ø63 | ø80 |    |
| STS    | Standard stroke     | 25                   | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 50                   | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 75                   |     |     |     |     |     |     | ●  |
|        |                     | 100                  |     |     |     |     |     |     | ●  |
|        | Min. stroke *1      | 5                    |     |     |     |     |     |     |    |
|        | Custom stroke *1, 2 | In 5 mm increments   |     |     |     |     |     |     |    |
| STL    | Standard stroke     | 50                   | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 75                   | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 100                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 125                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 150                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 175                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 200                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 225                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 250                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 275                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 300                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 325                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 350                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 375                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | 400                  | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
|        |                     | Min. stroke *1       | 30  |     |     |     |     |     | 55 |
|        | Custom stroke *1, 2 | In 5 mm increments   |     |     |     |     |     |     |    |

\*1 : The total dimensions are the same as the longer standard stroke.

\*2 : Special total length for custom stroke can be provided when a custom stroke is used. (Made to order)

### How to order switch



Switch model No.  
(Item ⑥ on page 520)

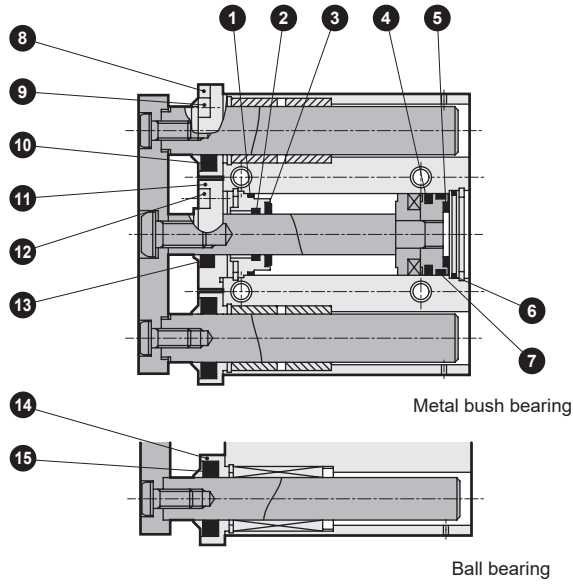
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-<sup>M</sup><sub>B</sub>G/G1 Series

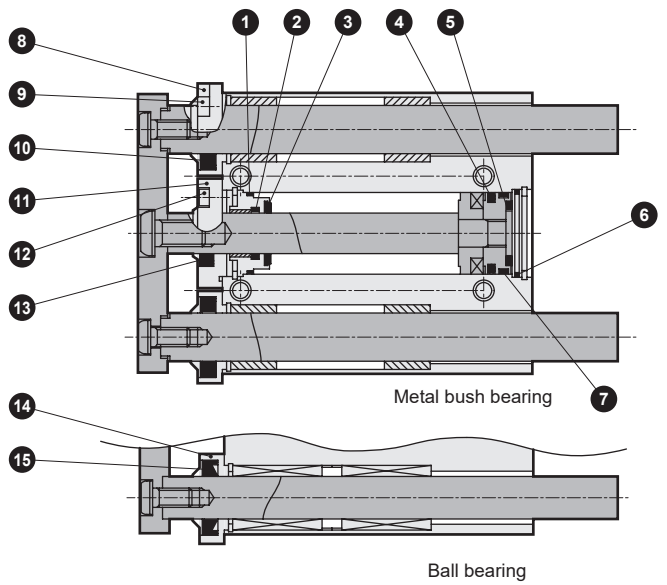
## Internal structure and parts list

|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| LCX         |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

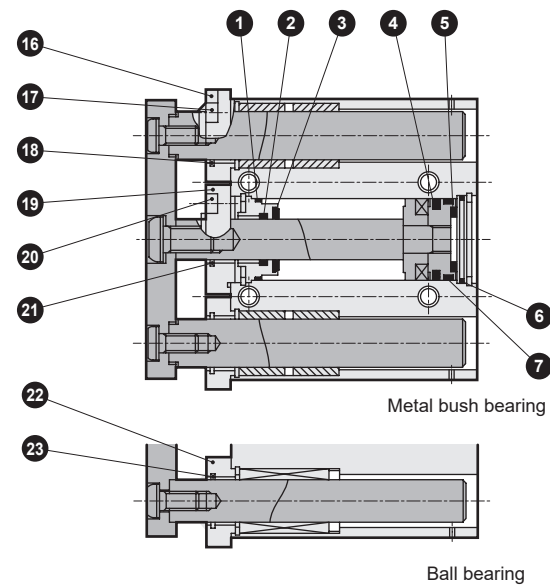
● Rubber scraper  
STS-<sup>M</sup><sub>B</sub>G



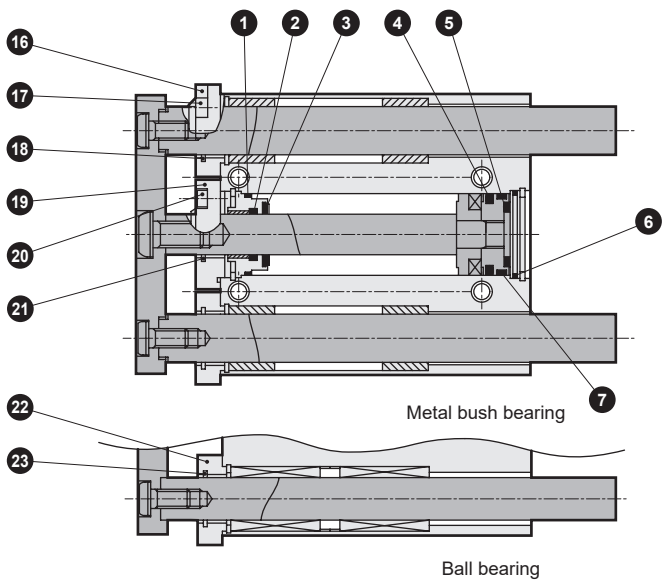
STL-<sup>M</sup><sub>B</sub>G



● Coil scraper  
STS-<sup>M</sup><sub>B</sub>G1



STL-<sup>M</sup><sub>B</sub>G1



Parts list (Parts not listed below are the same as those of the double acting/standard single rod. Refer to pages 453 to 457.)

| No.   | Part name                     | Material               | Remarks       | No.  | Part name                     | Material        | Remarks       |
|---|-------------------------------|------------------------|---------------|--|-------------------------------|-----------------|---------------|
| <b>ST<sup>S</sup><sub>L</sub>-M<sup>S</sup>G (Rubber scraper)</b> |                               |                        |               | <b>ST<sup>S</sup><sub>L</sub>-M<sup>S</sup>G1 (Coil scraper)</b> |                               |                 |               |
| 1   | Metal gasket                  | Nitrile rubber         |               | 1  | Metal gasket                  | Nitrile rubber  |               |
| 2   | Rod packing                   | Nitrile rubber         |               | 2  | Rod packing                   | Nitrile rubber  |               |
| 3   | Cushion rubber (R)            | Urethane rubber        |               | 3  | Cushion rubber (R)            | Urethane rubber |               |
| 4   | Piston packing                | Nitrile rubber         |               | 4  | Piston packing                | Nitrile rubber  |               |
| 5   | Cushion rubber (H)            | Urethane rubber        |               | 5  | Cushion rubber (H)            | Urethane rubber |               |
| 6   | O-ring                        | Nitrile rubber         |               | 6  | O-ring                        | Nitrile rubber  |               |
| 7   | Wear ring                     | Acetal resin           |               | 7  | Wear ring                     | Acetal resin    |               |
| 8   | Adaptor B                     | Aluminum alloy         | Alumite       | 16   | Adaptor B                     | Aluminum alloy  | Alumite       |
| 9   | Hexagon socket head cap screw | Alloy steel            | Zinc chromate | 17   | Hexagon socket head cap screw | Alloy steel     | Zinc chromate |
| 10  | Rubber scraper                | Nitrile rubber + steel |               | 18   | Coil scraper                  | Phosphor bronze |               |
| 11  | Adaptor A                     | Aluminum alloy         | Alumite       | 19   | Adaptor A                     | Aluminum alloy  | Alumite       |
| 12  | Hexagon socket head cap screw | Alloy steel            | Zinc chromate | 20   | Hexagon socket head cap screw | Alloy steel     | Zinc chromate |
| 13  | Rubber scraper                | Nitrile rubber + steel |               | 21   | Coil scraper                  | Phosphor bronze |               |
| 14  | Adaptor C                     | Aluminum alloy         | Alumite       | 22   | Adaptor C                     | Aluminum alloy  | Alumite       |
| 15  | Rubber scraper                | Nitrile rubber + steel |               | 23   | Coil scraper                  | Phosphor bronze |               |

## Repair parts list (Note: specify the kit No. when ordering repair parts.)

### ● STS-MG/STL-MG (Rubber scraper)

| Bore size (mm) | Kit No.    | Repair parts No. |
|----------------|------------|------------------|
| ø20            | STS-MG-20K |                  |
| ø25            | STS-MG-25K |                  |
| ø32            | STS-MG-32K | 1 2 3            |
| ø40            | STS-MG-40K | 4 5 6            |
| ø50            | STS-MG-50K | 7 10 13          |
| ø63            | STS-MG-63K |                  |
| ø80            | STS-MG-80K |                  |

### ● STS-BG/STL-BG (Rubber scraper)

| Bore size (mm) | Kit No.    | Repair parts No. |
|----------------|------------|------------------|
| ø20            | STS-BG-20K |                  |
| ø25            | STS-BG-25K |                  |
| ø32            | STS-BG-32K | 1 2 3            |
| ø40            | STS-BG-40K | 4 5 6            |
| ø50            | STS-BG-50K | 7 13 15          |
| ø63            | STS-BG-63K |                  |
| ø80            | STS-BG-80K |                  |

### ● STS-MG1/STL-MG1 (Coil scraper)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-MG1-20K |                  |
| ø25            | STS-MG1-25K |                  |
| ø32            | STS-MG1-32K | 1 2 3            |
| ø40            | STS-MG1-40K | 4 5 6            |
| ø50            | STS-MG1-50K | 7 18 21          |
| ø63            | STS-MG1-63K |                  |
| ø80            | STS-MG1-80K |                  |

### ● STS-BG1/STL-BG1 (Coil scraper)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-BG1-20K |                  |
| ø25            | STS-BG1-25K |                  |
| ø32            | STS-BG1-32K | 1 2 3            |
| ø40            | STS-BG1-40K | 4 5 6            |
| ø50            | STS-BG1-50K | 7 21 23          |
| ø63            | STS-BG1-63K |                  |
| ø80            | STS-BG1-80K |                  |

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

# STS-M-B-G/G1 Series



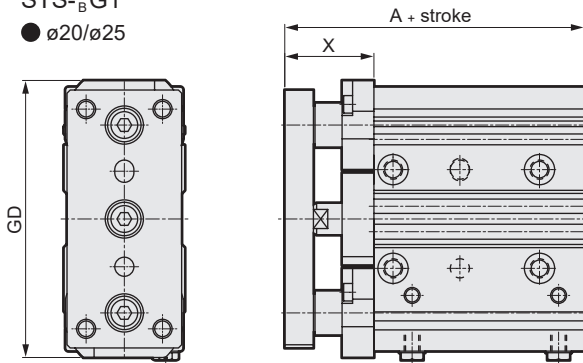
## Dimensions

● Coil scraper (Dimensions not listed below are the same as those of the double acting/single rod on pages 459 to 462.)

● Rubber scraper (Dimensions not listed below are the same as those of the double acting/single rod on pages 459 to 462.)

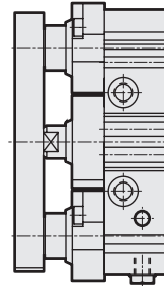
### STS-M-B-G1

●  $\varnothing 20/\varnothing 25$



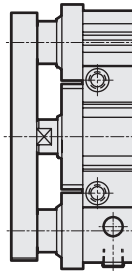
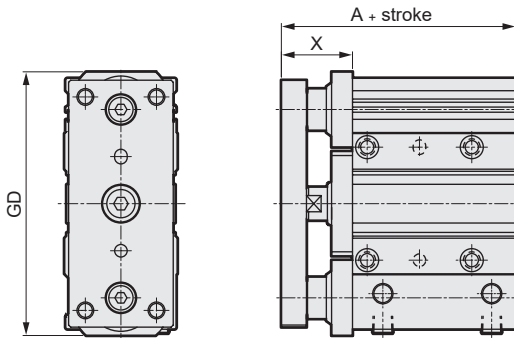
### STS-M-B-G

●  $\varnothing 20/\varnothing 25$



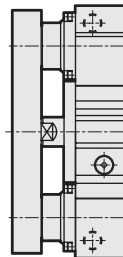
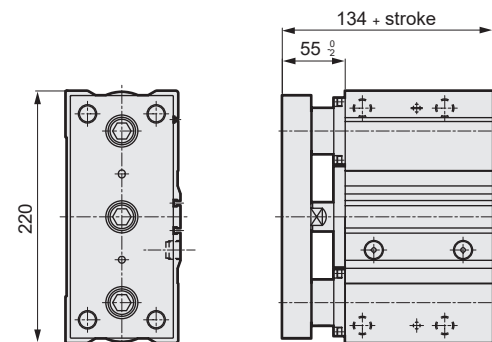
●  $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$

●  $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$



●  $\varnothing 80$

●  $\varnothing 80$



| Code                  | A   | X  | GD  |
|-----------------------|-----|----|-----|
| <b>Bore size (mm)</b> |     |    |     |
| $\varnothing 20$      | 68  | 28 | 87  |
| $\varnothing 25$      | 69  | 28 | 91  |
| $\varnothing 32$      | 83  | 34 | 117 |
| $\varnothing 40$      | 87  | 34 | 126 |
| $\varnothing 50$      | 92  | 37 | 152 |
| $\varnothing 63$      | 98  | 37 | 166 |
| $\varnothing 80$      | 134 | 55 | 220 |

\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MecHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## Dimensions

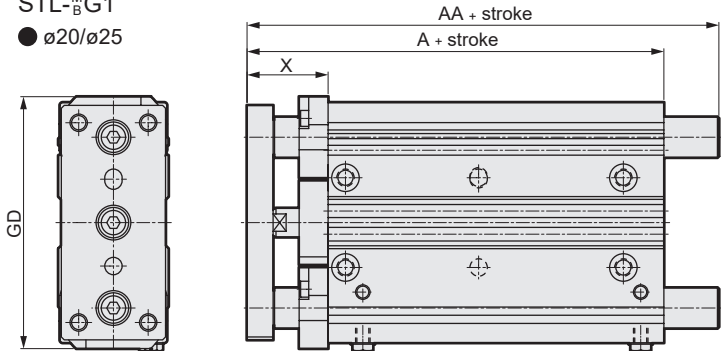


### ● Coil scraper

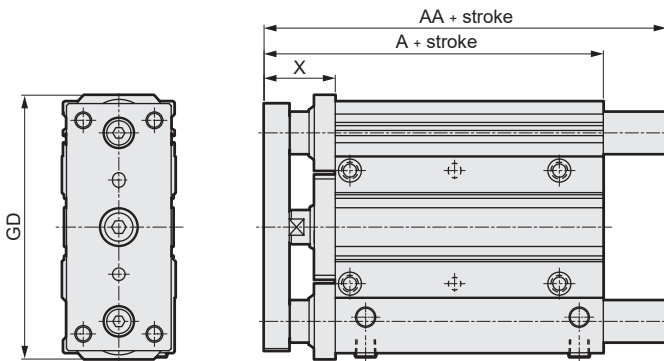
(Dimensions not listed below are the same as those of double acting/single rod on pages 464 to 467.)

#### STL-M<sub>B</sub>G1

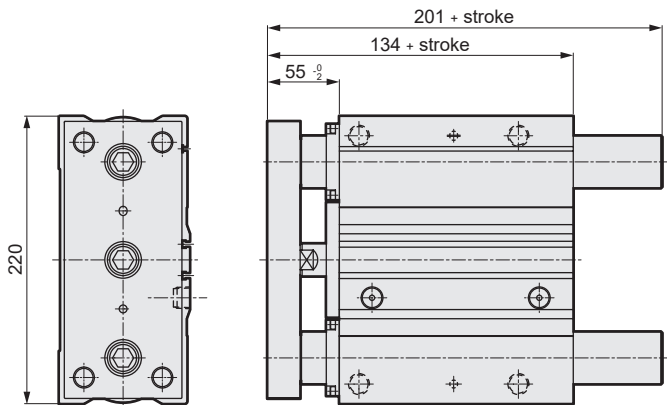
●  $\phi 20/\phi 25$



●  $\phi 32/\phi 40/\phi 50/\phi 63$



●  $\phi 80$

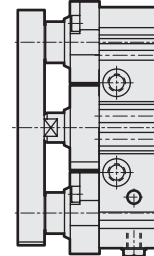


### ● Rubber scraper

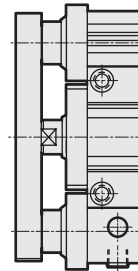
(Dimensions not listed below are the same as those of double acting/single rod on pages 464 to 467.)

#### STL-M<sub>B</sub>G

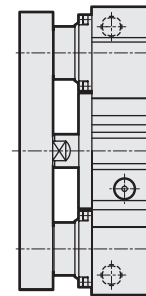
●  $\phi 20/\phi 25$



●  $\phi 32/\phi 40/\phi 50/\phi 63$



●  $\phi 80$



| Code           | A   | AA  | X         | GD  |
|----------------|-----|-----|-----------|-----|
| Bore size (mm) |     |     |           |     |
| $\phi 20$      | 68  | 87  | 28 ± 0.05 | 87  |
| $\phi 25$      | 69  | 87  | 28 ± 0.05 | 91  |
| $\phi 32$      | 83  | 117 | 34 ± 0.2  | 117 |
| $\phi 40$      | 87  | 117 | 34 ± 0.2  | 126 |
| $\phi 50$      | 92  | 140 | 37 ± 0.2  | 152 |
| $\phi 63$      | 98  | 140 | 37 ± 0.2  | 166 |
| $\phi 80$      | 134 | 201 | 55 ± 0.2  | 220 |

\*1 : When using a custom stroke, the dimensions are the same as the longer standard stroke.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending



Guided cylinder Double acting/coolant proof

# STS/STL-M G<sub>3</sub><sup>2</sup> Series

● Bore size: ø20/ø25/ø32/ø40/ø50/ø63/ø80

JIS symbol



## Specifications

| Item                        | STS/STL-M G <sub>3</sub> <sup>2</sup>  |       |       |                         |       |           |       |       |
|-----------------------------|--|-------|-------|-------------------------|-------|-----------|-------|-------|
| Bore size mm                | ø20  | ø25   | ø32   | ø40                     | ø50   | ø63       | ø80   |       |
| Actuation                   | Double acting/coolant proof  |       |       |                         |       |           |       |       |
| Working fluid               | Compressed air   |       |       |                         |       |           |       |       |
| Max. working pressure MPa   | 1.0 (≈150 psi, 10 bar)   |       |       |                         |       |           |       |       |
| Min. working pressure MPa   | 0.2 (≈29 psi, 2 bar)   |       |       | 0.15 (≈22 psi, 1.5 bar) |       |           |       |       |
| Proof pressure MPa          | 1.6 (≈230 psi, 16 bar)   |       |       |                         |       |           |       |       |
| Ambient temperature °C      | -10 (14°F) to 60 (140°F) (no freezing)                                       |       |       |                         |       |           |       |       |
| Port size                   | M5   |       | Rc1/8 |                         |       | Rc1/4     |       | Rc3/8 |
| Stroke tolerance mm         | +2 <sub>0</sub> <sup>0</sup>   |       |       |                         |       |           |       |       |
| Working piston speed mm/s   | 50 to 500  |       |       |                         |       | 50 to 300 |       |       |
| Cushion                     | Rubber cushioned (urethane rubber)   |       |       |                         |       |           |       |       |
| Lubrication                 | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |       |       |                         |       |           |       |       |
| Allowable absorbed energy J | 0.157  | 0.157 | 0.401 | 0.627                   | 0.980 | 1.560     | 2.510 |       |

## Stroke length

### ● Scraper

· Short stroke length STS

| Bore size (mm) | Standard stroke length (mm) | Max. stroke length (mm) | Min. stroke length (mm) | Min. stroke with switch (mm)  |
|----------------|-----------------------------|-------------------------|-------------------------|-------------------------------|
| ø20            | 25, 50                      | 50                      | 5                       | 5<br>With one or two switches |
| ø25            |                             |                         |                         |                               |
| ø32            |                             |                         |                         |                               |
| ø40            |                             |                         |                         |                               |
| ø50            |                             |                         |                         |                               |
| ø63            | 25, 50, 75, 100             | 100                     |                         |                               |
| ø80            |                             |                         |                         |                               |

· Long stroke length STL

| Bore size (mm) | Standard stroke length (mm)   | Max. stroke length (mm) | Min. stroke length (mm)   | Min. stroke with switch (mm)   |
|----------------|---|-------------------------|---|--------------------------------|
| ø20            | 50, 75, 100, 125, 150<br>175, 200, 225, 250<br>275, 300, 325, 350<br>375, 400 | 400                     | 30  | 30<br>With one or two switches |
| ø25            |   |                         |   |                                |
| ø32            |   |                         |   |                                |
| ø40            |   |                         |   |                                |
| ø50            |   |                         | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300<br>325, 350, 375, 400 |                                |
| ø63            |   |                         |   |                                |
| ø80            |   |                         |   |                                |

\*1 : The custom stroke length is available in 5 mm increments.

However, the total length is the same as that of the next longer standard stroke length.

\*2 : Stroke length over standard to maximum is available in increments of 25.

**⚠ CAUTION:** The rod side with scraper is coolant proof but the head side without scraper is not. Therefore, protect it with a cover.

## Switch specifications

| Type/model No.<br>Item | Proximity switch specifications       |                                |
|------------------------|---------------------------------------|--------------------------------|
|                        | T2YLH/T2YLV                           | T3YLH/T3YLV                    |
| Applications           | Dedicated for programmable controller | Programmable controller, relay |
| Output method          | -                                     | NPN output                     |
| Power supply voltage   | -                                     | 10 to 28 VDC                   |
| Load voltage/current   | 10 to 30 VDC, 5 to 20 mA *3           | 30 VDC or less, 50 mA or less  |
| Indicator lamp         | Red/green LED (Lit when ON)           |                                |
| Leakage current        | 1 mA or less                          | 10 µA or less                  |
| Shock resistance       | 980 m/S <sup>2</sup>                  |                                |
| Weight                 | g 1 m:33 3 m:87 5 m:142               |                                |

\*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2 : Switches with connectors are also available. Refer to Ending Page 28.

\*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

## Theoretical thrust table

(Unit: N)

| Bore size<br>(mm) | Operating<br>direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|-------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                   |                        | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    | 0.8                    | 0.9                    | 1.0                    |
| ø20               | Push                   | -                      | 62.8                   | 94.2                   | 1.26 × 10 <sup>2</sup> | 1.57 × 10 <sup>2</sup> | 1.88 × 10 <sup>2</sup> | 2.20 × 10 <sup>2</sup> | 2.51 × 10 <sup>2</sup> | 2.83 × 10 <sup>2</sup> | 3.14 × 10 <sup>2</sup> |
|                   | Pull                   | -                      | 47.1                   | 70.7                   | 94.2                   | 1.18 × 10 <sup>2</sup> | 1.41 × 10 <sup>2</sup> | 1.65 × 10 <sup>2</sup> | 1.88 × 10 <sup>2</sup> | 2.12 × 10 <sup>2</sup> | 2.36 × 10 <sup>2</sup> |
| ø25               | Push                   | -                      | 98.2                   | 1.47 × 10 <sup>2</sup> | 1.96 × 10 <sup>2</sup> | 2.45 × 10 <sup>2</sup> | 2.95 × 10 <sup>2</sup> | 3.44 × 10 <sup>2</sup> | 3.93 × 10 <sup>2</sup> | 4.42 × 10 <sup>2</sup> | 4.91 × 10 <sup>2</sup> |
|                   | Pull                   | -                      | 75.6                   | 1.13 × 10 <sup>2</sup> | 1.51 × 10 <sup>2</sup> | 1.89 × 10 <sup>2</sup> | 2.27 × 10 <sup>2</sup> | 2.64 × 10 <sup>2</sup> | 3.02 × 10 <sup>2</sup> | 3.40 × 10 <sup>2</sup> | 3.78 × 10 <sup>2</sup> |
| ø32               | Push                   | 1.21 × 10 <sup>2</sup> | 1.61 × 10 <sup>2</sup> | 2.41 × 10 <sup>2</sup> | 3.22 × 10 <sup>2</sup> | 4.02 × 10 <sup>2</sup> | 4.83 × 10 <sup>2</sup> | 5.63 × 10 <sup>2</sup> | 6.43 × 10 <sup>2</sup> | 7.24 × 10 <sup>2</sup> | 8.04 × 10 <sup>2</sup> |
|                   | Pull                   | 90.5                   | 1.21 × 10 <sup>2</sup> | 1.81 × 10 <sup>2</sup> | 2.41 × 10 <sup>2</sup> | 3.02 × 10 <sup>2</sup> | 3.62 × 10 <sup>2</sup> | 4.22 × 10 <sup>2</sup> | 4.83 × 10 <sup>2</sup> | 5.43 × 10 <sup>2</sup> | 6.03 × 10 <sup>2</sup> |
| ø40               | Push                   | 1.88 × 10 <sup>2</sup> | 2.51 × 10 <sup>2</sup> | 3.77 × 10 <sup>2</sup> | 5.03 × 10 <sup>2</sup> | 6.28 × 10 <sup>2</sup> | 7.54 × 10 <sup>2</sup> | 8.80 × 10 <sup>2</sup> | 1.01 × 10 <sup>3</sup> | 1.13 × 10 <sup>3</sup> | 1.26 × 10 <sup>3</sup> |
|                   | Pull                   | 1.58 × 10 <sup>2</sup> | 2.11 × 10 <sup>2</sup> | 3.17 × 10 <sup>2</sup> | 4.22 × 10 <sup>2</sup> | 5.28 × 10 <sup>2</sup> | 6.33 × 10 <sup>2</sup> | 7.39 × 10 <sup>2</sup> | 8.44 × 10 <sup>2</sup> | 9.50 × 10 <sup>2</sup> | 1.06 × 10 <sup>3</sup> |
| ø50               | Push                   | 2.95 × 10 <sup>2</sup> | 3.93 × 10 <sup>2</sup> | 5.89 × 10 <sup>2</sup> | 7.85 × 10 <sup>2</sup> | 9.82 × 10 <sup>2</sup> | 1.18 × 10 <sup>3</sup> | 1.37 × 10 <sup>3</sup> | 1.57 × 10 <sup>3</sup> | 1.77 × 10 <sup>3</sup> | 1.96 × 10 <sup>3</sup> |
|                   | Pull                   | 2.47 × 10 <sup>2</sup> | 3.30 × 10 <sup>2</sup> | 4.95 × 10 <sup>2</sup> | 6.60 × 10 <sup>2</sup> | 8.25 × 10 <sup>2</sup> | 9.90 × 10 <sup>2</sup> | 1.15 × 10 <sup>3</sup> | 1.32 × 10 <sup>3</sup> | 1.48 × 10 <sup>3</sup> | 1.65 × 10 <sup>3</sup> |
| ø63               | Push                   | 4.68 × 10 <sup>2</sup> | 6.23 × 10 <sup>2</sup> | 9.35 × 10 <sup>2</sup> | 1.25 × 10 <sup>3</sup> | 1.56 × 10 <sup>3</sup> | 1.87 × 10 <sup>3</sup> | 2.18 × 10 <sup>3</sup> | 2.49 × 10 <sup>3</sup> | 2.81 × 10 <sup>3</sup> | 3.12 × 10 <sup>3</sup> |
|                   | Pull                   | 4.20 × 10 <sup>2</sup> | 5.61 × 10 <sup>2</sup> | 8.41 × 10 <sup>2</sup> | 1.12 × 10 <sup>3</sup> | 1.40 × 10 <sup>3</sup> | 1.68 × 10 <sup>3</sup> | 1.96 × 10 <sup>3</sup> | 2.24 × 10 <sup>3</sup> | 2.52 × 10 <sup>3</sup> | 2.80 × 10 <sup>3</sup> |
| ø80               | Push                   | 7.54 × 10 <sup>2</sup> | 1.01 × 10 <sup>3</sup> | 1.51 × 10 <sup>3</sup> | 2.01 × 10 <sup>3</sup> | 2.51 × 10 <sup>3</sup> | 3.02 × 10 <sup>3</sup> | 3.52 × 10 <sup>3</sup> | 4.02 × 10 <sup>3</sup> | 4.52 × 10 <sup>3</sup> | 5.03 × 10 <sup>3</sup> |
|                   | Pull                   | 6.80 × 10 <sup>2</sup> | 9.07 × 10 <sup>2</sup> | 1.36 × 10 <sup>3</sup> | 1.81 × 10 <sup>3</sup> | 2.27 × 10 <sup>3</sup> | 2.72 × 10 <sup>3</sup> | 3.17 × 10 <sup>3</sup> | 3.63 × 10 <sup>3</sup> | 4.08 × 10 <sup>3</sup> | 4.54 × 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-M<sup>B</sup>G2/G3 Series

|             |
|-------------|
| LCM         |
| LCR         |
| LCC         |
| LCW         |
| LX          |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

## How to order

### ● Short stroke length

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



### ● Long stroke length

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



**A** Bearing

**B** Degree of protection level

**C** Bore size

**D** Port thread

**E** Stroke length

■ Custom stroke length

Available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke length.

**F** Switch model No.

\*2

**G** Switch quantity

**H** Option

### ⚠ Precautions for model No. selection

\*1 : Refer to pages 444 to 447 for combinations of variations/options.

\*2 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

\*3 : Refer to page 458 for material details.

### [Example of model No.]

#### STS-MG2-20-50-T2YLH-R

Model: Guided cylinder, short stroke length

- A** Bearing : Metal bush bearing
- B** Degree of protection level : Coolant proof scraper + packing NBR
- C** Bore size : ø20 mm
- D** Port thread : M5
- E** Stroke length : 50 mm
- F** Switch model No. : Proximity switch T2YLH, lead wire 1 m
- G** Switch quantity : 1 on rod side

| Code  | Description                                     |   |                |                  |                  |
|---|---|---|----------------|------------------|------------------|
| <b>A Bearing</b>  |   |   |                |                  |                  |
| M   | Metal bush bearing                              |   |                |                  |                  |
| B   | Ball bearing                                    |   |                |                  |                  |
| <b>B Degree of protection level</b>                     |   |   |                |                  |                  |
| G2  | Coolant proof scraper + packing NBR             |   |                |                  |                  |
| G3  | Coolant proof scraper + packing FKM             |   |                |                  |                  |
| <b>C Bore size (mm)</b>                                 |   |   |                |                  |                  |
| 20  | ø20   |   |                |                  |                  |
| 25  | ø25   |   |                |                  |                  |
| 32  | ø32   |   |                |                  |                  |
| 40  | ø40   |   |                |                  |                  |
| 50  | ø50   |   |                |                  |                  |
| 63  | ø63   |   |                |                  |                  |
| 80  | ø80   |   |                |                  |                  |
| <b>D Port thread</b>                                    |   |   |                |                  |                  |
| Blank   | M5 (ø20, ø25)                                   |   |                |                  |                  |
|   | Rc thread (ø32 to ø80)                          |   |                |                  |                  |
| NN  | NPT thread (ø32 and over) made-to-order product |   |                |                  |                  |
| GN  | G thread (ø32 and over) made-to-order product   |   |                |                  |                  |
| <b>E Stroke length (mm)</b>                             |   |   |                |                  |                  |
| Refer to the stroke length table on the following page. |   |   |                |                  |                  |
| <b>F Switch model No.</b>                               |   |   |                |                  |                  |
| <b>Axial lead wire</b>                                  | <b>Radial lead wire</b>                         | <b>Contact</b>  | <b>Voltage</b> | <b>Indicator</b> | <b>Lead wire</b> |
| T2YLH*  | T2YLV*  | Proximity   | DC             | 2-color display  | 2-wire           |
| T3YLH*  | T3YLV*  |   |                |                  | 3-wire           |
| <b>* Lead wire length</b>                               |   |   |                |                  |                  |
| Blank   | 1 m (standard)                                  |   |                |                  |                  |
| 3   | 3 m (option)                                    |   |                |                  |                  |
| 5   | 5 m (option)                                    |   |                |                  |                  |
| <b>G Switch quantity</b>                                |   |   |                |                  |                  |
| R   | 1 on rod side                                   |   |                |                  |                  |
| H   | 1 on head side                                  |   |                |                  |                  |
| D   | 2   |   |                |                  |                  |
| <b>H Option</b>   |   |   |                |                  |                  |
| M1  | *3  | Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) |                |                  |                  |



### E Stroke length

| Series               | Stroke length (mm)     | Applicable bore size  |                    |     |     |     |     |     |    |
|----------------------|------------------------|-----------------------|--------------------|-----|-----|-----|-----|-----|----|
|                      |                        | ø20                   | ø25                | ø32 | ø40 | ø50 | ø63 | ø80 |    |
| STS                  | Standard stroke length | 25                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 50                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 75                    |                    |     |     |     |     |     | ●  |
|                      |                        | 100                   |                    |     |     |     |     |     | ●  |
|                      | Min. stroke length *1  | 5                     |                    |     |     |     |     |     |    |
| Custom stroke *1, *2 | In 5 mm increments     |                       |                    |     |     |     |     |     |    |
| STL                  | Standard stroke length | 50                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 75                    | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 100                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 125                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 150                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 175                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 200                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 225                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 250                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 275                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 300                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 325                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 350                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 375                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | 400                   | ●                  | ●   | ●   | ●   | ●   | ●   | ●  |
|                      |                        | Min. stroke length *1 | 30                 |     |     |     |     |     | 55 |
|                      |                        | Custom stroke *1, *2  | In 5 mm increments |     |     |     |     |     |    |

\*1 : The total dimensions are the same as the longer standard stroke length.

\*2 : Special total length for custom stroke length can be provided when a custom stroke length is used. (Made to order)

### How to order switch

**SW - T2YLH**

Switch model No.  
(Item E on page 528)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS-M<sub>B</sub>G2/G3 Series

## Internal structure and parts list

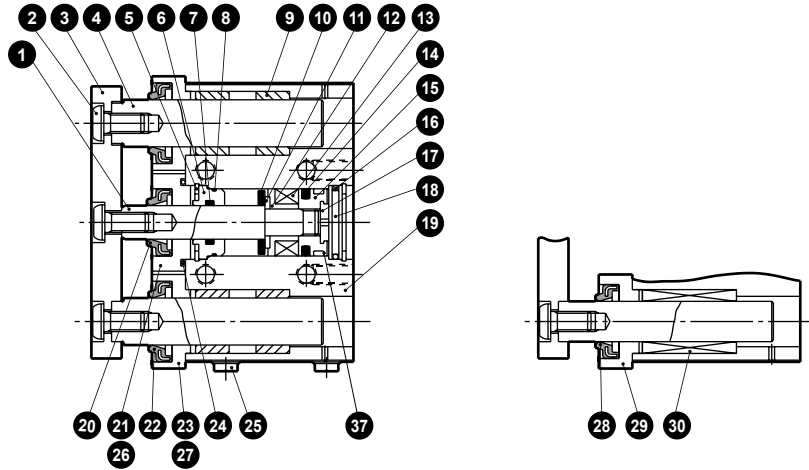
|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| L CX        |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

● Degree of protection: Packing NBR/FKM

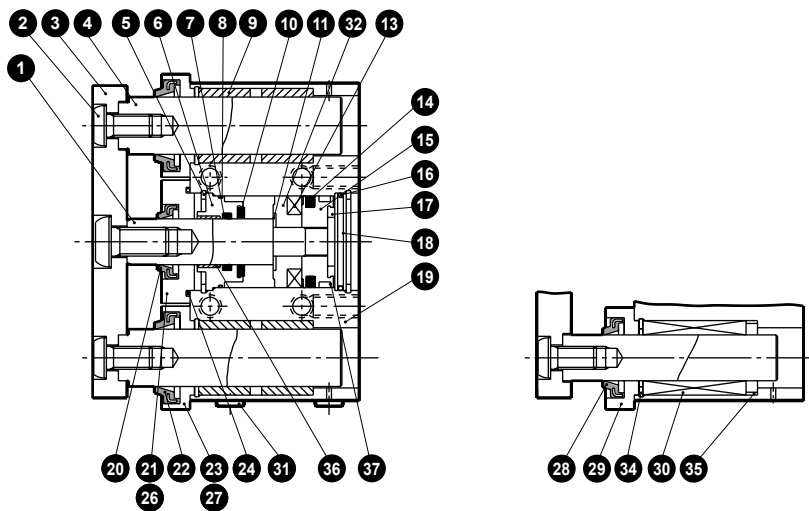
STS-M<sub>B</sub>G2

STS-M<sub>B</sub>G3

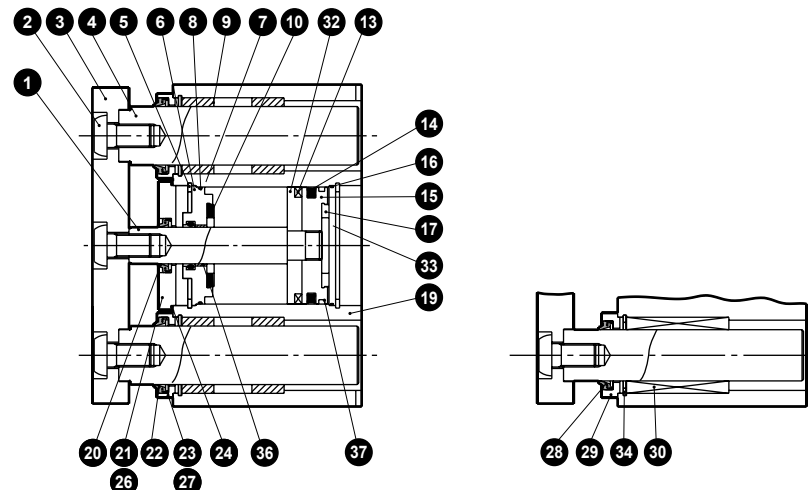
●  $\varnothing 20/\varnothing 25$



●  $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$



●  $\varnothing 80$



### Parts list

| No. | Part name                       | Material                      | Remarks                   | No. | Part name                     | Material          | Remarks           |
|-----|---------------------------------|-------------------------------|---------------------------|-----|-------------------------------|-------------------|-------------------|
| 1   | Piston rod                      | Stainless steel               | Industrial chrome plating | 20  | Scraper                       | G2 Nitrile rubber |                   |
| 2   | Hexagon socket button head bolt | Stainless steel               |                           |     |                               | G3 Fluoro rubber  |                   |
| 3   | End plate                       | Aluminum alloy                | Alumite                   | 21  | Adaptor A                     | Aluminum alloy    | Alumite           |
| 4   | Guide rod                       | Stainless steel               | Industrial chrome plating | 22  | Scraper                       | G2 Nitrile rubber |                   |
| 5   | C type snap ring for hole       | Stainless steel               |                           |     |                               | G3 Fluoro rubber  |                   |
| 6   | Rod metal                       | Special aluminum              | Alumite                   | 23  | Adaptor B                     | Aluminum alloy    | Alumite           |
| 7   | Rod packing                     | G2                            | Nitrile rubber            | 24  | O-ring                        | G2                | Nitrile rubber    |
|     |                                 | G3                            | Fluoro rubber             |     |                               | G3                | Fluoro rubber     |
| 8   | Metal gasket                    | G2                            | Nitrile rubber            | 25  | Plug                          | Copper alloy      | Nickeling         |
|     |                                 | G3                            | Fluoro rubber             | 26  | Hexagon socket head cap screw | Stainless steel   |                   |
| 9   | Metal                           | Oil impregnated bearing alloy |                           | 27  | Hexagon socket head cap screw | Stainless steel   |                   |
| 10  | Cushion rubber (R)              | Urethane rubber               |                           | 28  | Scraper                       | G2 Nitrile rubber |                   |
| 11  | Spacer washer                   | Stainless steel               | ø20 to ø50                |     |                               | G3 Fluoro rubber  |                   |
| 12  | Spacer                          | Polyamide                     | ø20 to ø50                | 29  | Adaptor C                     | Aluminum alloy    | Alumite           |
| 13  | Magnet                          |                               |                           | 30  | Bearing                       | Stainless steel   |                   |
| 14  | Piston packing                  | G2                            | Nitrile rubber            | 31  | Hexagon socket flush plug     | Stainless steel   | ø32 to ø63        |
|     |                                 | G3                            | Fluoro rubber             | 32  | Spacer                        | Aluminum alloy    | ø63.ø80           |
| 15  | Piston                          | Aluminum alloy                | Chromate                  | 33  | Base plate                    | Steel             | Zinc chromate ø80 |
| 16  | O-ring                          | G2                            | Nitrile rubber            | 34  | C type snap ring for hole     | Stainless steel   | ø32 to ø80        |
|     |                                 | G3                            | Fluoro rubber             | 35  | Collar                        | Aluminum alloy    | ø32 to ø63        |
| 17  | Cushion rubber (H)              | Urethane rubber               |                           | 36  | Bush                          | Oiles drymet      | ø32 to ø80        |
| 18  | Base plate                      | Aluminum alloy                | ø20 to ø63                | 37  | Wear ring                     | Acetal resin      |                   |
| 19  | Tube body                       | Aluminum alloy                | Hard alumite              |     |                               |                   |                   |

### Repair parts list

#### ● STS-MG2 (metal bush bearing, nitrile rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-MG2-20K | 7 8 10           |
| ø25            | STS-MG2-25K | 14 16 17         |
| ø32            | STS-MG2-32K | 20 22 24         |
| ø40            | STS-MG2-40K | 37               |
| ø50            | STS-MG2-50K |                  |
| ø63            | STS-MG2-63K |                  |
| ø80            | STS-MG2-80K |                  |

#### ● STS-BG2 (ball bearing, nitrile rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-BG2-20K | 7 8 10           |
| ø25            | STS-BG2-25K | 14 16 17         |
| ø32            | STS-BG2-32K | 20 24 28         |
| ø40            | STS-BG2-40K | 37               |
| ø50            | STS-BG2-50K |                  |
| ø63            | STS-BG2-63K |                  |
| ø80            | STS-BG2-80K |                  |

#### ● STS-MG3 (metal bush bearing, fluoro rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-MG3-20K | 7 8 10           |
| ø25            | STS-MG3-25K | 14 16 17         |
| ø32            | STS-MG3-32K | 20 22 24         |
| ø40            | STS-MG3-40K | 37               |
| ø50            | STS-MG3-50K |                  |
| ø63            | STS-MG3-63K |                  |
| ø80            | STS-MG3-80K |                  |

#### ● STS-BG3 (ball bearing, fluoro rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-BG3-20K | 7 8 10           |
| ø25            | STS-BG3-25K | 14 16 17         |
| ø32            | STS-BG3-32K | 20 24 28         |
| ø40            | STS-BG3-40K | 37               |
| ø50            | STS-BG3-50K |                  |
| ø63            | STS-BG3-63K |                  |
| ø80            | STS-BG3-80K |                  |

Note : Specify the kit No. when placing an order.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

# STL-<sup>M</sup><sub>B</sub>G2/G3 Series

## Internal structure and parts list

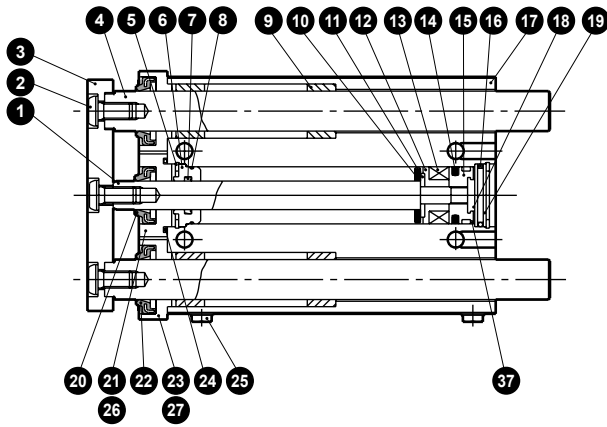
|             |
|-------------|
| LCM         |
| LCR         |
| LCG         |
| LCW         |
| LCX         |
| STM         |
| STG         |
| STS/STL     |
| STR2        |
| UCA2        |
| ULK*        |
| JSK/M2      |
| JSG         |
| JSC3/JSC4   |
| USSD        |
| UFCD        |
| USC         |
| UB          |
| JSB3        |
| LMB         |
| LML         |
| HCM         |
| HCA         |
| LBC         |
| CAC4        |
| UCAC2       |
| CAC-N       |
| UCAC-N      |
| RCS2        |
| RCC2        |
| PCC         |
| SHC         |
| MCP         |
| GLC         |
| MFC         |
| BBS         |
| RRC         |
| GRC         |
| RV3*        |
| NHS         |
| HRL         |
| LN          |
| Hand        |
| Chuk        |
| MecHnd/Chuk |
| ShkAbs      |
| FJ          |
| FK          |
| SpdContr    |
| Ending      |

● Degree of protection: Packing NBR/FKM

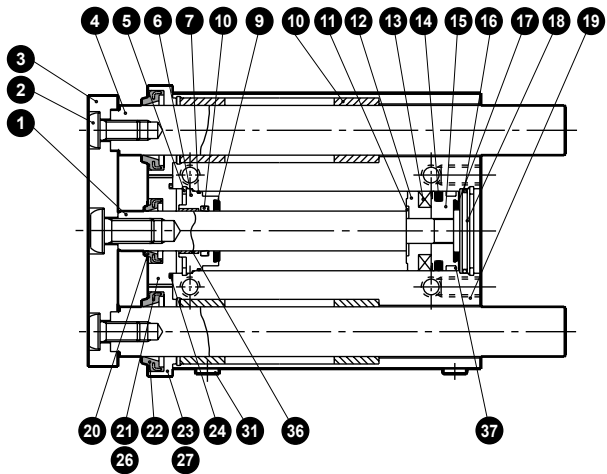
STL-<sup>M</sup><sub>B</sub>G2

STL-<sup>M</sup><sub>B</sub>G3

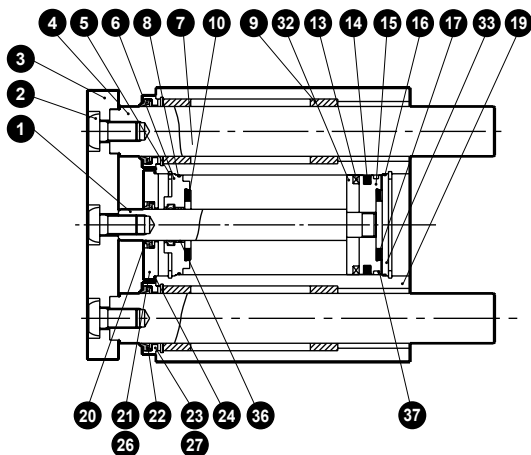
●  $\varnothing 20/\varnothing 25$



●  $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$



●  $\varnothing 80$



### Parts list

| No. | Part name                       | Material                      | Remarks                   | No. | Part name                     | Material          | Remarks           |
|-----|---------------------------------|-------------------------------|---------------------------|-----|-------------------------------|-------------------|-------------------|
| 1   | Piston rod                      | Stainless steel               | Industrial chrome plating | 20  | Scraper                       | G2 Nitrile rubber |                   |
| 2   | Hexagon socket button head bolt | Stainless steel               |                           |     |                               | G3 Fluoro rubber  |                   |
| 3   | End plate                       | Aluminum alloy                | Alumite                   | 21  | Adaptor A                     | Aluminum alloy    | Alumite           |
| 4   | Guide rod                       | Stainless steel               | Industrial chrome plating | 22  | Scraper                       | G2 Nitrile rubber |                   |
| 5   | C type snap ring for hole       | Stainless steel               |                           |     |                               | G3 Fluoro rubber  |                   |
| 6   | Rod metal                       | Special aluminum              | Alumite                   | 23  | Adaptor B                     | Aluminum alloy    | Alumite           |
| 7   | Rod packing                     | G2                            | Nitrile rubber            | 24  | O-ring                        | G2                | Nitrile rubber    |
|     |                                 | G3                            | Fluoro rubber             |     |                               | G3                | Fluoro rubber     |
| 8   | Metal gasket                    | G2                            | Nitrile rubber            | 25  | Plug                          | Copper alloy      | Nickeling         |
|     |                                 | G3                            | Fluoro rubber             | 26  | Hexagon socket head cap screw | Stainless steel   |                   |
| 9   | Metal                           | Oil impregnated bearing alloy |                           | 27  | Hexagon socket head cap screw | Stainless steel   |                   |
| 10  | Cushion rubber (R)              | Urethane rubber               |                           | 28  | Scraper                       | G2                | Nitrile rubber    |
| 11  | Spacer washer                   | Stainless steel               | ø20 to ø50                |     |                               |                   | G3                |
| 12  | Spacer                          | Polyamide                     | ø20 to ø50                | 29  | Adaptor C                     | Aluminum alloy    | Alumite           |
| 13  | Magnet                          |                               |                           | 30  | Bearing                       | Stainless steel   |                   |
| 14  | Piston packing                  | G2                            | Nitrile rubber            | 31  | Hexagon socket flush plug     | Stainless steel   | ø32 to ø63        |
|     |                                 | G3                            | Fluoro rubber             | 32  | Spacer                        | Aluminum alloy    | ø63.ø80           |
| 15  | Piston                          | Aluminum alloy                | Chromate                  | 33  | Base plate                    | Steel             | Zinc chromate ø80 |
| 16  | O-ring                          | G2                            | Nitrile rubber            | 34  | C type snap ring for hole     | Stainless steel   | ø32 to ø80        |
|     |                                 | G3                            | Fluoro rubber             | 35  | Collar                        | Aluminum alloy    | ø32 to ø63        |
| 17  | Cushion rubber (H)              | Urethane rubber               |                           | 36  | Bush                          | Oiles drymet      | ø32 to ø80        |
| 18  | Base plate                      | Aluminum alloy                | ø20 to ø63                | 37  | Wear ring                     | Acetal resin      |                   |
| 19  | Tube body                       | Aluminum alloy                | Hard alumite              |     |                               |                   |                   |

### Repair parts list

#### ● STL-MG2 (metal bush bearing, nitrile rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-MG2-20K | 7 8 10           |
| ø25            | STS-MG2-25K | 14 16 17         |
| ø32            | STS-MG2-32K | 20 22 24         |
| ø40            | STS-MG2-40K | 37               |
| ø50            | STS-MG2-50K |                  |
| ø63            | STS-MG2-63K |                  |
| ø80            | STS-MG2-80K |                  |

#### ● STL-BG2 (ball bearing, nitrile rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-BG2-20K | 7 8 10           |
| ø25            | STS-BG2-25K | 14 16 17         |
| ø32            | STS-BG2-32K | 20 24 28         |
| ø40            | STS-BG2-40K | 37               |
| ø50            | STS-BG2-50K |                  |
| ø63            | STS-BG2-63K |                  |
| ø80            | STS-BG2-80K |                  |

#### ● STL-MG3 (metal bush bearing, fluoro rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-MG3-20K | 7 8 10           |
| ø25            | STS-MG3-25K | 14 16 17         |
| ø32            | STS-MG3-32K | 20 22 24         |
| ø40            | STS-MG3-40K | 37               |
| ø50            | STS-MG3-50K |                  |
| ø63            | STS-MG3-63K |                  |
| ø80            | STS-MG3-80K |                  |

#### ● STL-BG3 (ball bearing, fluoro rubber packing)

| Bore size (mm) | Kit No.     | Repair parts No. |
|----------------|-------------|------------------|
| ø20            | STS-BG3-20K | 7 8 10           |
| ø25            | STS-BG3-25K | 14 16 17         |
| ø32            | STS-BG3-32K | 20 24 28         |
| ø40            | STS-BG3-40K | 37               |
| ø50            | STS-BG3-50K |                  |
| ø63            | STS-BG3-63K |                  |
| ø80            | STS-BG3-80K |                  |

Note : Specify the kit No. when placing an order.

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr

Ending

# STS-M<sub>B</sub>G2/G3 Series

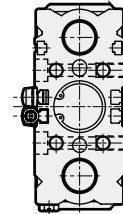
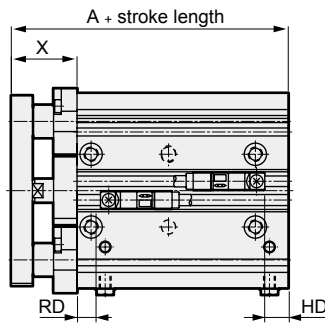
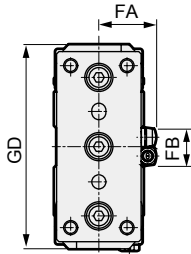
## Dimensions



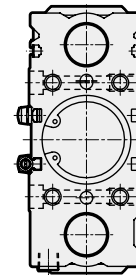
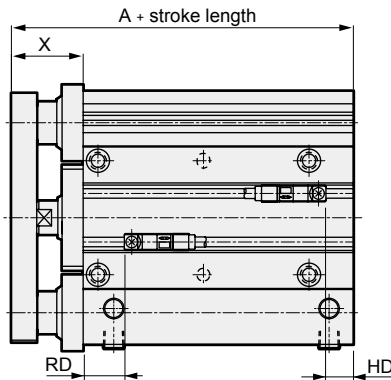
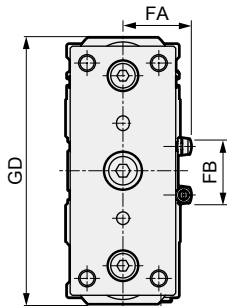
● Coolant proof (Dimensions not listed below are the same as those of the double acting/single rod.)

STS-M<sub>B</sub>G2/G3

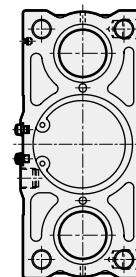
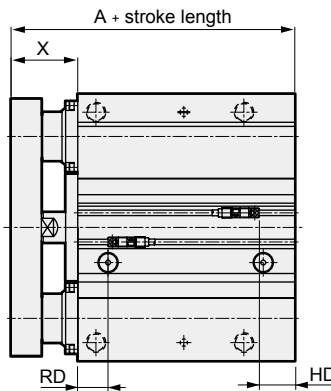
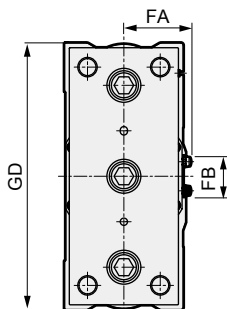
●  $\varnothing 20/\varnothing 25$



●  $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$



●  $\varnothing 80$



| Code             | A   | GD  | X                | RD   | HD   | FA   | FB |
|------------------|-----|-----|------------------|------|------|------|----|
| Bore size (mm)   |     |     |                  |      |      |      |    |
| $\varnothing 20$ | 68  | 87  | $28 \frac{0}{2}$ | 9.5  | 8    | 24.3 | 16 |
| $\varnothing 25$ | 69  | 91  | $28 \frac{0}{2}$ | 11.5 | 7.5  | 26.3 | 17 |
| $\varnothing 32$ | 83  | 117 | $34 \frac{0}{2}$ | 16   | 12   | 28.8 | 24 |
| $\varnothing 40$ | 87  | 126 | $34 \frac{0}{2}$ | 19.5 | 13   | 32.3 | 31 |
| $\varnothing 50$ | 92  | 152 | $37 \frac{0}{2}$ | 21.5 | 13.5 | 38.3 | 32 |
| $\varnothing 63$ | 98  | 166 | $37 \frac{0}{2}$ | 18.5 | 21.5 | 44.8 | 32 |
| $\varnothing 80$ | 134 | 220 | $55 \frac{0}{2}$ | 25   | 33   | 55.3 | 32 |

\*1 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

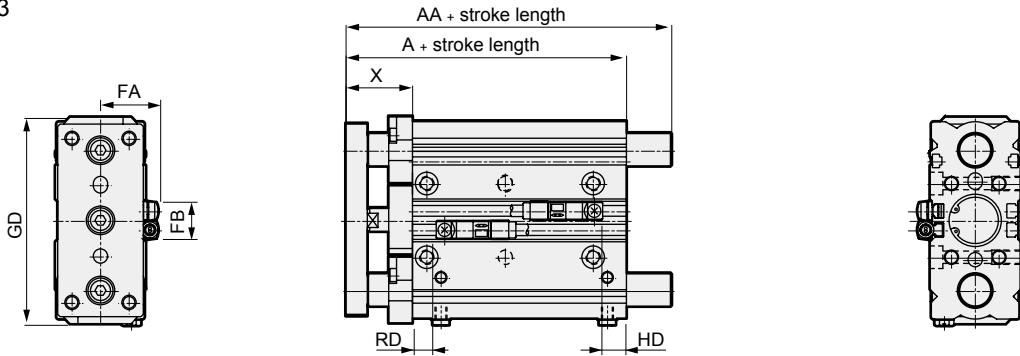
- LCM
- LCR
- LCG
- LCW
- LX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MecHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## Dimensions

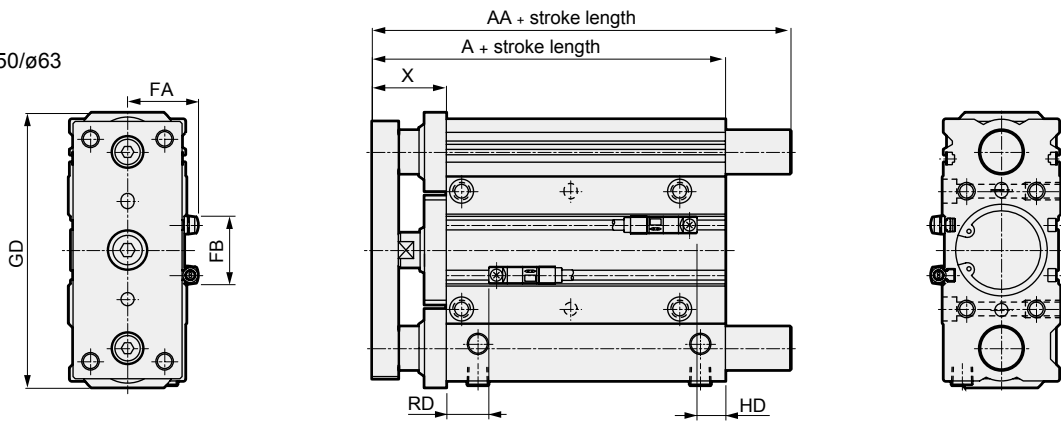
- Coolant proof (Dimensions not listed below are the same as those of the double acting/single rod.)  
STL-M<sub>B</sub>G2/G3

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

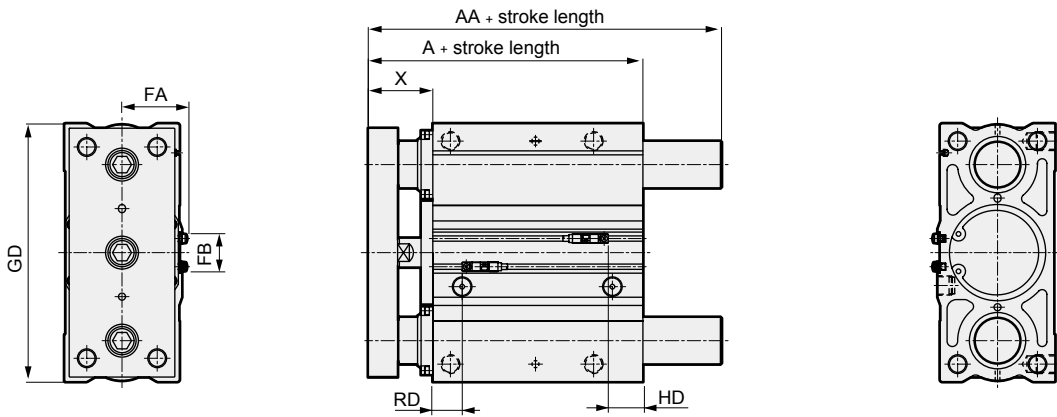
- $\varnothing 20/\varnothing 25$



- $\varnothing 32/\varnothing 40/\varnothing 50/\varnothing 63$

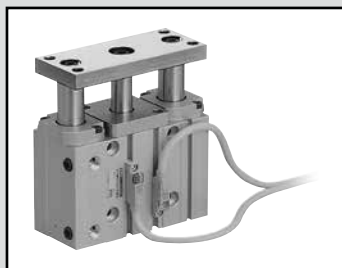


- $\varnothing 80$



| Code             | A   | AA  | GD  | X             | RD   | HD   | FA   | FB |
|------------------|-----|-----|-----|---------------|------|------|------|----|
| Bore size (mm)   |     |     |     |               |      |      |      |    |
| $\varnothing 20$ | 68  | 87  | 87  | $28^{0}_{-2}$ | 9.5  | 8    | 24.3 | 16 |
| $\varnothing 25$ | 69  | 87  | 91  | $28^{0}_{-2}$ | 11.5 | 7.5  | 26.3 | 17 |
| $\varnothing 32$ | 83  | 117 | 117 | $34^{0}_{-2}$ | 16   | 12   | 28.8 | 24 |
| $\varnothing 40$ | 87  | 117 | 126 | $34^{0}_{-2}$ | 19.5 | 13   | 32.3 | 31 |
| $\varnothing 50$ | 92  | 140 | 152 | $37^{0}_{-2}$ | 21.5 | 13.5 | 38.3 | 32 |
| $\varnothing 63$ | 98  | 140 | 166 | $37^{0}_{-2}$ | 18.5 | 21.5 | 44.8 | 32 |
| $\varnothing 80$ | 134 | 201 | 220 | $55^{0}_{-2}$ | 25   | 33   | 55.3 | 32 |

\*1 : When using a custom stroke length, the dimensions are the same as the longer standard stroke length.



Guided cylinder Anti-spatter adherence

# STS/STL-G4 Series

● Bore size:  $\phi 40/\phi 50/\phi 63/\phi 80$

JIS symbol ● Double acting



## Specifications

| Item                                   | STS/STL-G4   |           |           |           |
|--|--|-----------|-----------|-----------|
| Bore size mm                           | $\phi 40$  | $\phi 50$ | $\phi 63$ | $\phi 80$ |
| Actuation                              | Double acting  |           |           |           |
| Working fluid                          | Compressed air   |           |           |           |
| Max. working pressure MPa              | 1.0 ( $\approx 150$ psi, 10 bar)   |           |           |           |
| Min. working pressure MPa              | 0.15 ( $\approx 22$ psi, 1.5 bar)  |           |           |           |
| Proof pressure MPa                     | 1.6 ( $\approx 230$ psi, 16 bar)   |           |           |           |
| Ambient temperature $^{\circ}\text{C}$ | -10 ( $14^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ ) (no freezing)   |           |           |           |
| Port size                              | Rc1/8  | Rc1/4     | Rc3/8     |           |
| Stroke tolerance mm                    | +2.0<br>0  |           |           |           |
| Working piston speed mm/s              | 50 to 500  |           | 50 to 300 |           |
| Cushion                                | With rubber cushion  |           |           |           |
| Lubrication                            | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |           |           |           |
| Allowable absorbed energy J            | 0.627  | 0.980     | 1.560     | 2.510     |

## Stroke length

· Short stroke length STS

| Bore size (mm) | Standard stroke length (mm) | Max. stroke length (mm) | Min. stroke length (mm) | Min. stroke with switch (mm)             |
|----------------|-----------------------------|-------------------------|-------------------------|--|
| $\phi 40$      | 25, 50                      | 50                      | 5                       | 5<br>With one switch<br>or two switches. |
| $\phi 50$      |                             |                         |                         |  |
| $\phi 63$      |                             |                         |                         |  |
| $\phi 80$      | 25, 50, 75, 100             | 100                     |                         |  |

· Long stroke length STL

| Bore size (mm) | Standard stroke length (mm)   | Max. stroke length (mm) | Min. stroke length (mm) | Min. stroke with switch (mm)      |
|----------------|---|-------------------------|-------------------------|-----------------------------------|
| $\phi 40$      | 50, 75, 100, 125, 150   | 400                     | 30                      | 30<br>With one or two<br>switches |
| $\phi 50$      | 175, 200, 225, 250, 275,  |                         |                         |                                   |
| $\phi 63$      | 300, 325, 350, 375, 400   |                         |                         |                                   |
| $\phi 80$      | 75, 100, 125, 150, 175<br>200, 225, 250, 275, 300<br>325, 350, 375, 400 |                         | 55                      | 55<br>With one or two<br>switches |

\*1: The custom stroke length is available in 5 mm increments.

However, the total length is the same as that of the next longer standard stroke length.

## Switch specifications

| Item                  | Proximity 2-wire                      |  |
|-----------------------|---------------------------------------|--|
|                       | T2YD/T2YDT                            |  |
| Applications          | Dedicated for programmable controller |  |
| Indicator lamp        | Red/green LED (Lit when ON)           |  |
| Load voltage          | 24 VDC $\pm 10\%$                     |  |
| Load current          | DC5 to 20 mA                          |  |
| Internal voltage drop | 6 V or less                           |  |
| Leakage current       | 1.0 mA or less                        |  |
| Weight g              | 1 m:61 3 m:166 5 m:272                |  |

\*1 : Flame-resistant lead wires are available as options.

\*2 : This switch cannot be used in DC magnetic field.

\*3 : Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*4 : Switches with connectors are also available. Refer to Ending Page 28.

## Theoretical thrust table

(Unit: N)

| Bore size (mm) | Operating direction | Working pressure MPa |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|----------------|---------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                |                     | 0.15                 | 0.2                | 0.3                | 0.4                | 0.5                | 0.6                | 0.7                | 0.8                | 0.9                | 1.0                |
| $\phi 40$      | Push                | $1.88 \times 10^2$   | $2.51 \times 10^2$ | $3.77 \times 10^2$ | $5.03 \times 10^2$ | $6.28 \times 10^2$ | $7.54 \times 10^2$ | $8.80 \times 10^2$ | $1.01 \times 10^3$ | $1.13 \times 10^3$ | $1.26 \times 10^3$ |
|                | Pull                | $1.58 \times 10^2$   | $2.11 \times 10^2$ | $3.17 \times 10^2$ | $4.22 \times 10^2$ | $5.28 \times 10^2$ | $6.33 \times 10^2$ | $7.39 \times 10^2$ | $8.44 \times 10^2$ | $9.50 \times 10^2$ | $1.06 \times 10^3$ |
| $\phi 50$      | Push                | $2.95 \times 10^2$   | $3.93 \times 10^2$ | $5.89 \times 10^2$ | $7.85 \times 10^2$ | $9.82 \times 10^2$ | $1.18 \times 10^3$ | $1.37 \times 10^3$ | $1.57 \times 10^3$ | $1.77 \times 10^3$ | $1.96 \times 10^3$ |
|                | Pull                | $2.47 \times 10^2$   | $3.30 \times 10^2$ | $4.95 \times 10^2$ | $6.60 \times 10^2$ | $8.25 \times 10^2$ | $9.90 \times 10^2$ | $1.15 \times 10^3$ | $1.32 \times 10^3$ | $1.48 \times 10^3$ | $1.65 \times 10^3$ |
| $\phi 63$      | Push                | $4.68 \times 10^2$   | $6.23 \times 10^2$ | $9.35 \times 10^2$ | $1.25 \times 10^3$ | $1.56 \times 10^3$ | $1.87 \times 10^3$ | $2.18 \times 10^3$ | $2.49 \times 10^3$ | $2.81 \times 10^3$ | $3.12 \times 10^3$ |
|                | Pull                | $4.20 \times 10^2$   | $5.61 \times 10^2$ | $8.41 \times 10^2$ | $1.12 \times 10^3$ | $1.40 \times 10^3$ | $1.68 \times 10^3$ | $1.96 \times 10^3$ | $2.24 \times 10^3$ | $2.52 \times 10^3$ | $2.80 \times 10^3$ |
| $\phi 80$      | Push                | $7.54 \times 10^2$   | $1.01 \times 10^3$ | $1.51 \times 10^3$ | $2.01 \times 10^3$ | $2.51 \times 10^3$ | $3.02 \times 10^3$ | $3.52 \times 10^3$ | $4.02 \times 10^3$ | $4.52 \times 10^3$ | $5.03 \times 10^3$ |
|                | Pull                | $6.80 \times 10^2$   | $9.07 \times 10^2$ | $1.36 \times 10^3$ | $1.81 \times 10^3$ | $2.27 \times 10^3$ | $2.72 \times 10^3$ | $3.17 \times 10^3$ | $3.63 \times 10^3$ | $4.08 \times 10^3$ | $4.54 \times 10^3$ |



### How to order

#### ● Short stroke length

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



#### ● Long stroke length

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



Series model No.

A Bearing

B Bore size

C Port thread

D Stroke length

E Switch model No.  
\*2

F Switch quantity

G Option

■ Custom stroke length  
Available in 5 mm increments.  
However, the total length is the same as that of the next longer standard stroke length.

#### ⚠ Precautions for model No. selection

\*1 : Refer to pages 444 to 447 for combinations of variations/options.

\*2 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

\*3 : Refer to page 458 for material details.

#### ● Stroke length

| Series                | Stroke length (mm)     | Applicable bore size |     |     |     |   |
|-----------------------|------------------------|----------------------|-----|-----|-----|---|
|                       |                        | ø40                  | ø50 | ø63 | ø80 |   |
| STS                   | Standard stroke length | 25                   | 50  | 75  | 100 |   |
|                       | Min. stroke length *1  | 5                    |     |     |     |   |
|                       | Custom stroke *1, 2    | In 5 mm increments   |     |     |     |   |
|                       | STL                    | 50                   | ●   | ●   | ●   | ● |
|                       |                        | 75                   | ●   | ●   | ●   | ● |
| 100                   |                        | ●                    | ●   | ●   | ●   |   |
| 125                   |                        | ●                    | ●   | ●   | ●   |   |
| 150                   |                        | ●                    | ●   | ●   | ●   |   |
| 175                   |                        | ●                    | ●   | ●   | ●   |   |
| 200                   |                        | ●                    | ●   | ●   | ●   |   |
| 225                   |                        | ●                    | ●   | ●   | ●   |   |
| 250                   |                        | ●                    | ●   | ●   | ●   |   |
| 275                   |                        | ●                    | ●   | ●   | ●   |   |
| 300                   |                        | ●                    | ●   | ●   | ●   |   |
| 325                   | ●                      | ●                    | ●   | ●   |     |   |
| 350                   | ●                      | ●                    | ●   | ●   |     |   |
| 375                   | ●                      | ●                    | ●   | ●   |     |   |
| 400                   | ●                      | ●                    | ●   | ●   |     |   |
| Min. stroke length *1 | 30                     |                      | 55  |     |     |   |
| Custom stroke *1, 2   | In 5 mm increments     |                      |     |     |     |   |

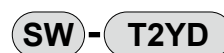
\*1: The total dimensions are the same as the longer standard stroke length.

\*2: Special total length for custom stroke length can be provided when a custom stroke length is used. (Made to order)

\* For cylinder weight, refer to pages 558 to 561.

| Code                                    | Remarks   |           |         |                   |           |
|---|---|-----------|---------|-------------------|-----------|
| <b>A Bearing</b>                        |   |           |         |                   |           |
| M                                       | Metal bush bearing  |           |         |                   |           |
| B                                       | Ball bearing  |           |         |                   |           |
| <b>B Bore size (mm)</b>                 |   |           |         |                   |           |
| 40                                      | ø40   |           |         |                   |           |
| 50                                      | ø50   |           |         |                   |           |
| 63                                      | ø63   |           |         |                   |           |
| 80                                      | ø80   |           |         |                   |           |
| <b>C Port thread</b>                    |   |           |         |                   |           |
| Blank                                   | Rc thread   |           |         |                   |           |
| NN                                      | NPT thread made-to-order product  |           |         |                   |           |
| GN                                      | G thread made-to-order product  |           |         |                   |           |
| <b>D Stroke length (mm)</b>             |   |           |         |                   |           |
| Refer to the stroke length table below. |   |           |         |                   |           |
| <b>E Switch model No.</b>               |   |           |         |                   |           |
| Axial lead wire                         | Radial lead wire  | Contact   | Voltage | Indicator         | Lead wire |
| T2YD*                                   | —   | Proximity | DC      | 2-color display   | 2-wire    |
| T2YDT*                                  | —   | Proximity | DC      | AC magnetic field | 2-wire    |
| <b>* Lead wire length</b>               |   |           |         |                   |           |
| Blank                                   | 1 m (standard)  |           |         |                   |           |
| 3                                       | 3 m (option)  |           |         |                   |           |
| 5                                       | 5 m (option)  |           |         |                   |           |
| <b>F Switch quantity</b>                |   |           |         |                   |           |
| R                                       | 1 on rod side   |           |         |                   |           |
| H                                       | 1 on head side  |           |         |                   |           |
| D                                       | 2   |           |         |                   |           |
| T                                       | 3   |           |         |                   |           |
| <b>G Option</b>                         |   |           |         |                   |           |
| F                                       | End plate material: steel   |           |         |                   |           |
| M *3                                    | Corrosion proof (Piston rod and guide rod material: SUS) (made-to-order product)            |           |         |                   |           |
| M1 *3                                   | Corrosion proof (Piston rod, guide rod and end plate material: SUS) (made-to-order product) |           |         |                   |           |

#### How to order switch



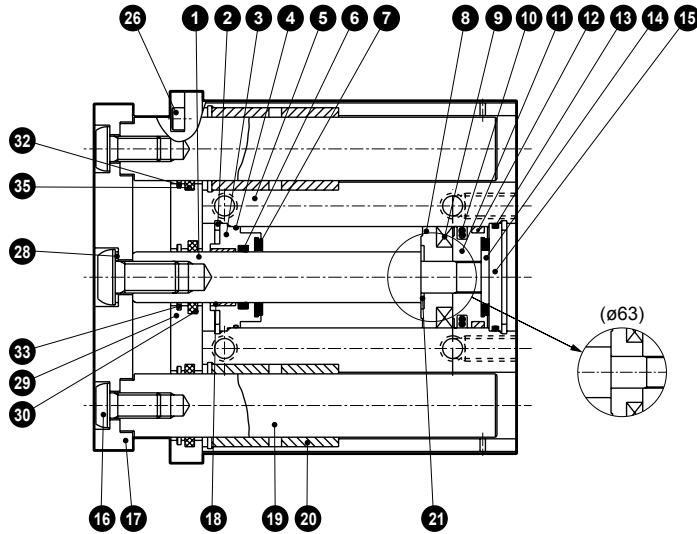
Switch model No.  
(Item E above)

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

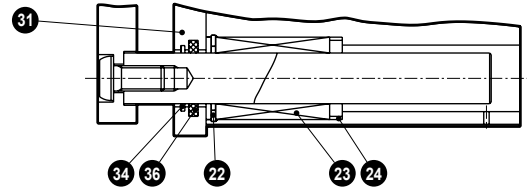
# STS-G4 Series

## Internal structure and parts list

● Double acting/standard  $\phi 40/\phi 50/\phi 63$   
single rod STS-<sub>B</sub>G4

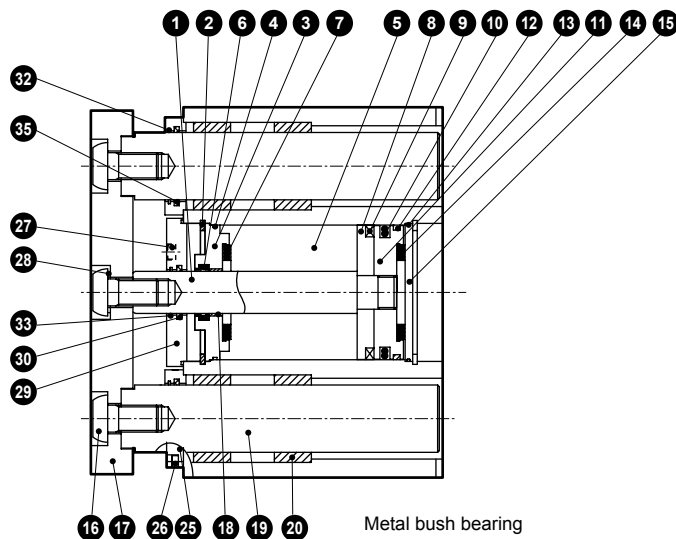


Metal bush bearing

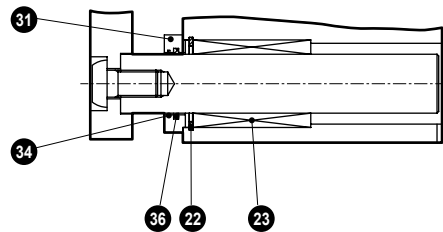


Ball bearing

$\phi 80$



Metal bush bearing

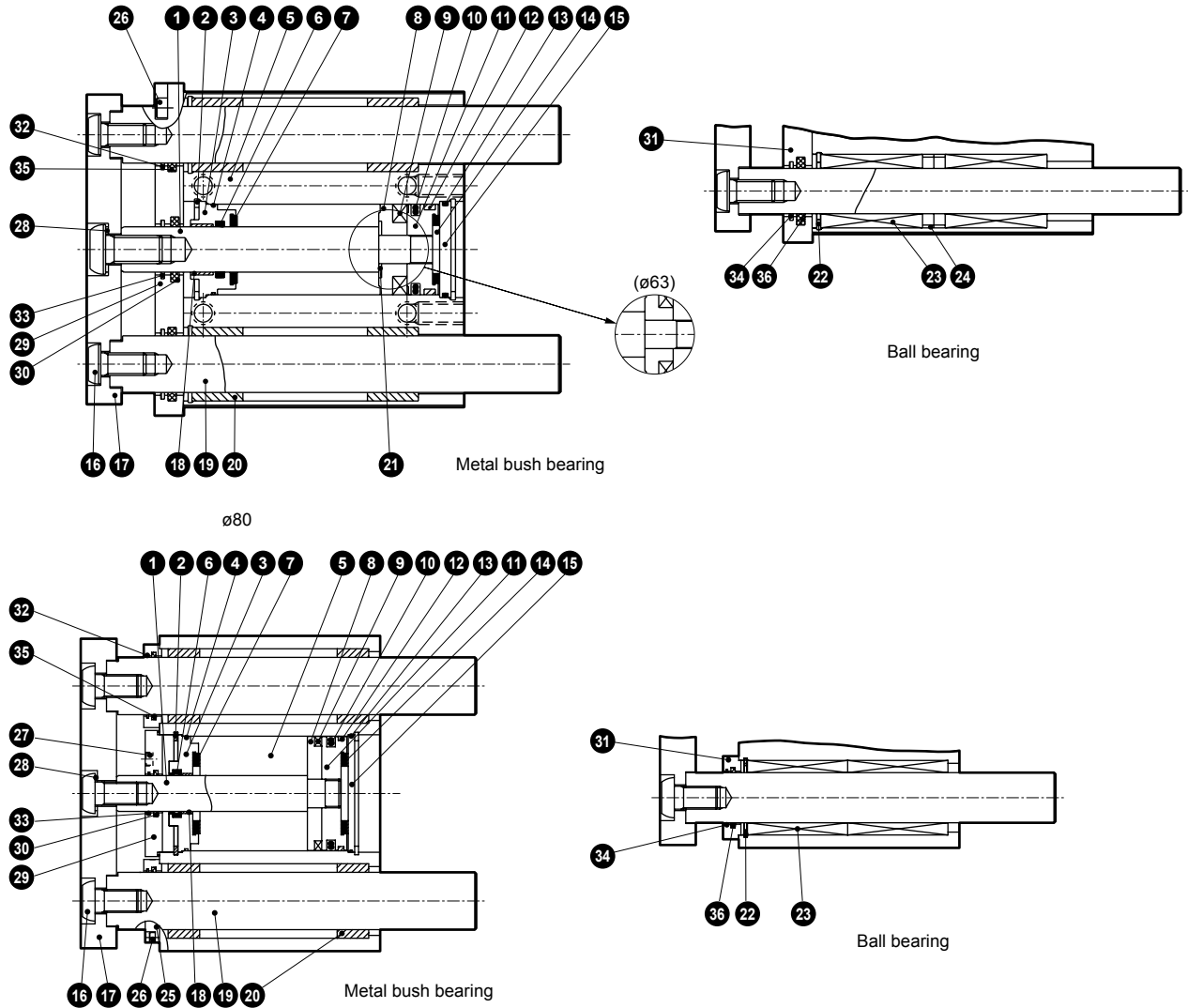


Ball bearing

| No. | Part name                       | Material  | Remarks  | No. | Part name                     | Material                      | Remarks                   |
|-----|---------------------------------|---|--|-----|-------------------------------|-------------------------------|---------------------------|
| 1   | Piston rod                      | Steel   | Industrial chrome plating  | 18  | Bush                          | Oiles drymet                  |                           |
| 2   | C type snap ring                | Steel   | Zinc phosphate   | 19  | Guide rod                     | Steel                         | Industrial chrome plating |
| 3   | Rod metal                       | Special aluminum alloy  | Alumite  | 20  | Metal                         | Oil impregnated bearing alloy |                           |
| 4   | Metal gasket                    | Nitrile rubber  |  | 21  | Spacer washer                 | Stainless steel               |                           |
| 5   | Cylinder body                   | Aluminum alloy  | Hard alumite   | 22  | C type snap ring              | Steel                         | Zinc phosphate            |
| 6   | Rod packing                     | Nitrile rubber  |  | 23  | Ball bushing                  |                               |                           |
| 7   | Cushion rubber (R)              | Urethane rubber   |  | 24  | Collar                        | Aluminum alloy                |                           |
| 8   | Spacer                          | Polyamide ( $\phi 40/\phi 50$ )<br>Aluminum alloy ( $\phi 63/\phi 80$ ) | Chromate ( $\phi 63/\phi 80$ )                                     | 25  | Adaptor B                     | Aluminum alloy                | Alumite                   |
| 9   | Magnet                          |   |  | 26  | Hexagon socket head cap screw | Steel                         | Zinc chromate             |
| 10  | Piston packing                  | Nitrile rubber  |  | 27  | Hexagon socket head cap screw | Steel                         | Zinc chromate             |
| 11  | Piston                          | Aluminum alloy  | Chromate   | 28  | Conical spring washer         | Steel                         |                           |
| 12  | Wear ring                       | Acetal resin  |  | 29  | Adaptor A                     | Aluminum alloy                | Alumite                   |
| 13  | O-ring                          | Nitrile rubber  |  | 30  | Lube keeping structure        | Special rubber                |                           |
| 14  | Cushion rubber (H)              | Urethane rubber   |  | 31  | Adaptor C                     | Aluminum alloy                | Alumite                   |
| 15  | Base plate                      | Aluminum alloy ( $\phi 40$ to $\phi 63$ )<br>Steel ( $\phi 80$ )        | Chromate ( $\phi 40$ to $\phi 63$ )<br>Zinc chromate ( $\phi 80$ ) | 32  | Coil scraper                  | Phosphor bronze               |                           |
| 16  | Hexagon socket button head bolt | Steel   | Zinc chromate  | 33  | Coil scraper                  | Phosphor bronze               |                           |
| 17  | End plate                       | Aluminum alloy  | Alumite  | 34  | Coil scraper                  | Phosphor bronze               |                           |
|     |                                 |   |  | 35  | Lube keeping structure        | Special rubber                |                           |
|     |                                 |   |  | 36  | Lube keeping structure        | Special rubber                |                           |

### Internal structure and parts list

- Double acting/standard  $\phi 40/\phi 50/\phi 63$   
single rod STL-M<sub>2</sub>G4



|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

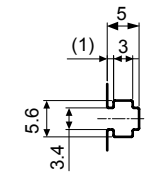
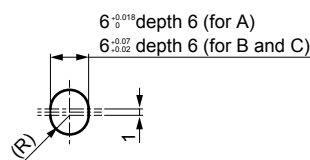
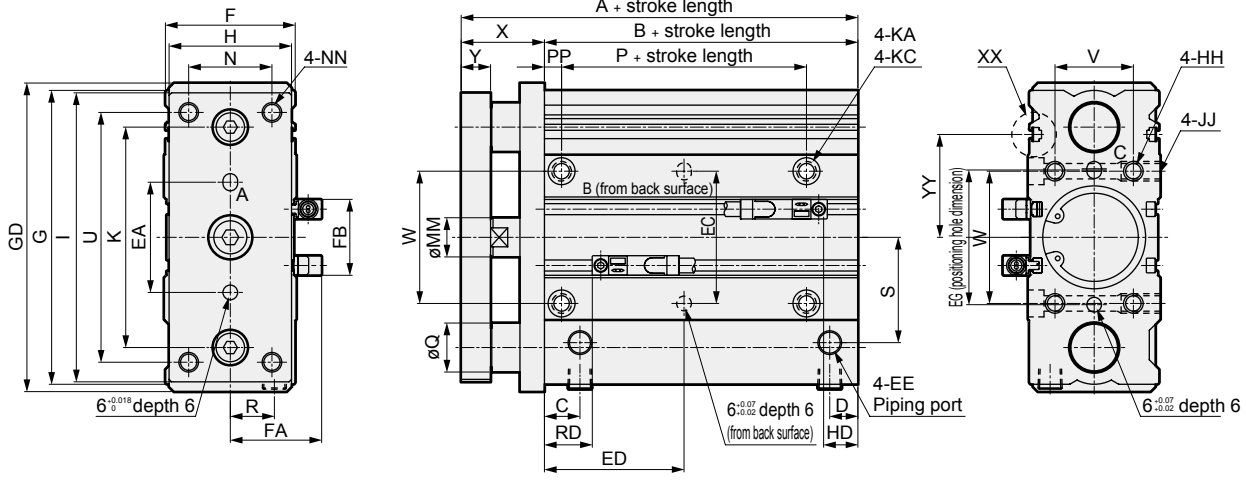
| No. | Part name                       | Material                                  | Remarks                             | No. | Part name                     | Material                      | Remarks                   |
|-----|---------------------------------|---|-------------------------------------|-----|-------------------------------|-------------------------------|---------------------------|
| 1   | Piston rod                      | Steel                                     | Industrial chrome plating           | 18  | Bush                          | Oiles drymet                  |                           |
| 2   | C type snap ring                | Steel                                     | Zinc phosphate                      | 19  | Guide rod                     | Steel                         | Industrial chrome plating |
| 3   | Rod metal                       | Special aluminum alloy                    | Alumite                             | 20  | Metal                         | Oil impregnated bearing alloy |                           |
| 4   | Metal gasket                    | Nitrile rubber                            |                                     | 21  | Spacer washer                 | Stainless steel               |                           |
| 5   | Cylinder body                   | Aluminum alloy                            | Hard alumite                        | 22  | C type snap ring              | Steel                         | Zinc phosphate            |
| 6   | Rod packing                     | Nitrile rubber                            |                                     | 23  | Ball bushing                  |                               |                           |
| 7   | Cushion rubber (R)              | Urethane rubber                           |                                     | 24  | Collar                        | Aluminum alloy                |                           |
| 8   | Spacer                          | Polyamide ( $\phi 40/\phi 50$ )           |                                     | 25  | Adaptor B                     | Aluminum alloy                | Alumite                   |
|     |                                 | Aluminum alloy ( $\phi 63/\phi 80$ )      | Chromate ( $\phi 63/\phi 80$ )      | 26  | Hexagon socket head cap screw | Steel                         | Zinc chromate             |
| 9   | Magnet                          |   |                                     | 27  | Hexagon socket head cap screw | Steel                         | Zinc chromate             |
| 10  | Piston packing                  | Nitrile rubber                            |                                     | 28  | Conical spring washer         | Steel                         |                           |
| 11  | Piston                          | Aluminum alloy                            | Chromate                            | 29  | Adaptor A                     | Aluminum alloy                | Alumite                   |
| 12  | Wear ring                       | Acetal resin                              |                                     | 30  | Lube keeping structure        | Special rubber                |                           |
| 13  | O-ring                          | Nitrile rubber                            |                                     | 31  | Adaptor C                     | Aluminum alloy                | Alumite                   |
| 14  | Cushion rubber (H)              | Urethane rubber                           |                                     | 32  | Coil scraper                  | Phosphor bronze               |                           |
| 15  | Base plate                      | Aluminum alloy ( $\phi 40$ to $\phi 63$ ) | Chromate ( $\phi 40$ to $\phi 63$ ) | 33  | Coil scraper                  | Phosphor bronze               |                           |
|     |                                 | Steel ( $\phi 80$ )                       | Zinc chromate ( $\phi 80$ )         | 34  | Coil scraper                  | Phosphor bronze               |                           |
| 16  | Hexagon socket button head bolt | Steel                                     | Zinc chromate                       | 35  | Lube keeping structure        | Special rubber                |                           |
| 17  | End plate                       | Aluminum alloy                            | Alumite                             | 36  | Lube keeping structure        | Special rubber                |                           |

# STS-G4 Series



Dimensions:  $\varnothing 40/\varnothing 50/\varnothing 63$

- Double acting/standard single rod STS- $\frac{M}{B}$ G4



Slot dimensions for A, B and C

XX section details

| STS- $\frac{M}{B}$ -G4 |    |    |      |      |     |       |    |    |    |   |    |     |     |    |              |     |              |     |             |
|------------------------|----|----|------|------|-----|-------|----|----|----|---|----|-----|-----|----|--------------|-----|--------------|-----|-------------|
| Code                   | A  | B  | C    | D    | E   | EE    | EA | EC | EG | ED                                      | F  | G   | GD  | H  | HH           | I   | JJ           | KA  |             |
| Bore size (mm)         |    |    |      |      |     |       |    |    |    |   |    |     |     |    |              |     |              |     |             |
| $\varnothing 40$       | 87 | 53 | 14.5 | 12   | 5.6 | Rc1/8 | 45 | 54 | 55 | 19.5 + $\frac{\text{Stroke length}}{2}$ | 54 | 120 | 126 | 50 | M8 depth 16  | 118 | M8 depth 16  | 90  | 6.3 through |
| $\varnothing 50$       | 92 | 55 | 16   | 12.5 | 5.6 | Rc1/4 | 55 | 66 | 69 | 19.5 + $\frac{\text{Stroke length}}{2}$ | 66 | 147 | 152 | 64 | M10 depth 20 | 145 | M10 depth 20 | 110 | 8.6 through |
| $\varnothing 63$       | 98 | 61 | 17.5 | 17.5 | 5.6 | Rc1/4 | 62 | 79 | 82 | 22.5 + $\frac{\text{Stroke length}}{2}$ | 79 | 162 | 166 | 75 | M10 depth 20 | 160 | M10 depth 20 | 124 | 8.6 through |

| STS- $\frac{M}{B}$ -G4 |                        |   |     |    |    |             |    |    |    |    |    |   |     |    |    |             |    |    |   |      |      |      |    |
|------------------------|------------------------|---|-----|----|----|-------------|----|----|----|----|----|---|-----|----|----|-------------|----|----|---|------|------|------|----|
| Code                   | KC                     | L | M   | MM | N  | NN          | P  | PP | Q  | R  | S  | T | U   | V  | W  | X           | Y  | YY | Z | RD   | HD   | FA   | FB |
| Bore size (mm)         |                        |   |     |    |    |             |    |    |    |    |    |   |     |    |    |             |    |    |   |      |      |      |    |
| $\varnothing 40$       | 11 spot face depth 6.5 | 1 | 3.4 | 16 | 34 | M8 through  | 25 | 7  | 20 | 18 | 43 | 5 | 102 | 32 | 54 | $34^{+0.2}$ | 12 | 42 | 3 | 19.5 | 12.5 | 32.3 | 31 |
| $\varnothing 50$       | 14 spot face depth 8.6 | 1 | 3.4 | 20 | 44 | M10 through | 26 | 8  | 25 | 22 | 49 | 5 | 125 | 38 | 66 | $37^{+0.2}$ | 16 | 45 | 3 | 21.5 | 13.5 | 38.3 | 32 |
| $\varnothing 63$       | 14 spot face depth 8.6 | 1 | 3.4 | 20 | 55 | M10 through | 26 | 8  | 25 | 26 | 56 | 5 | 140 | 50 | 79 | $37^{+0.2}$ | 16 | 52 | 3 | 18.5 | 21.5 | 44.8 | 32 |

\*1: When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

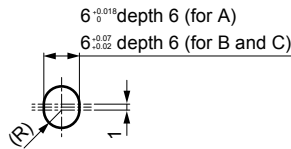
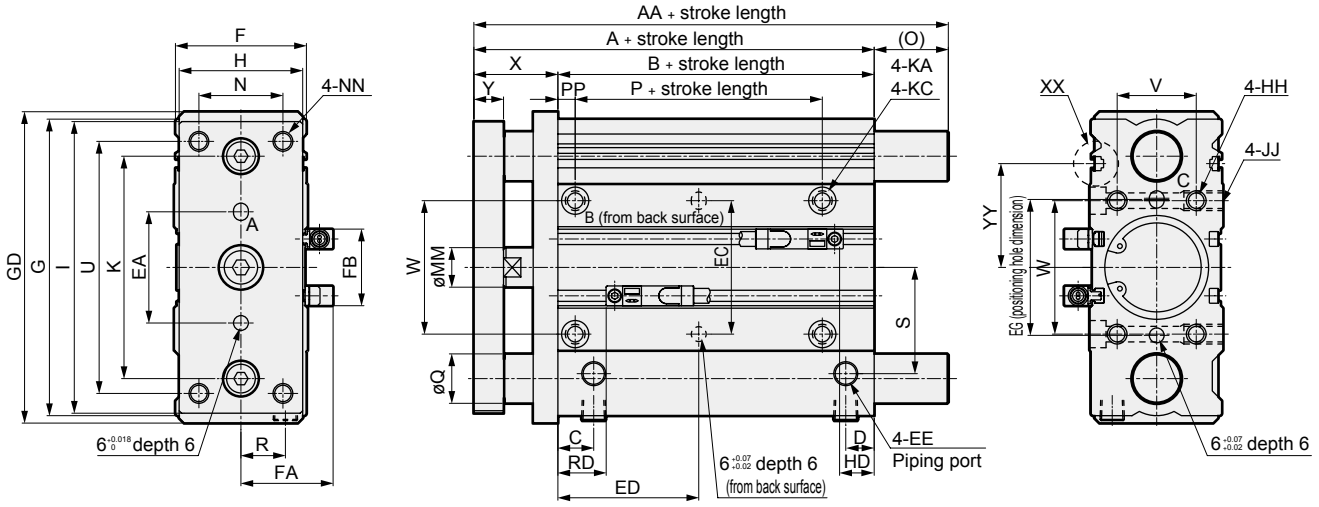


# STL-G4 Series

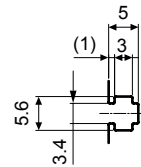


Dimensions:  $\varnothing 40/\varnothing 50/\varnothing 63$

- Double acting/standard single rod STL-<sup>M</sup><sub>B</sub>G4



Slot dimensions for A, B and C



XX section details

| STL- <sup>M</sup> <sub>B</sub> -G4 |    |     |    |      |      |     |       |    |    |    |   |    |     |     |    |              |     |              |     |             |
|------------------------------------|----|-----|----|------|------|-----|-------|----|----|----|---|----|-----|-----|----|--------------|-----|--------------|-----|-------------|
| Code                               | A  | AA  | B  | C    | D    | E   | EE    | EA | EC | EG | ED                                      | F  | G   | GD  | H  | HH           | I   | JJ           | K   | KA          |
| Bore size (mm)                     |    |     |    |      |      |     |       |    |    |    |   |    |     |     |    |              |     |              |     |             |
| $\varnothing 40$                   | 87 | 117 | 53 | 14.5 | 12   | 5.6 | Rc1/8 | 45 | 54 | 55 | $19.5 + \frac{\text{Stroke length}}{2}$ | 54 | 120 | 126 | 50 | M8 depth 16  | 118 | M8 depth 16  | 90  | 6.3 through |
| $\varnothing 50$                   | 92 | 140 | 55 | 16   | 12.5 | 5.6 | Rc1/4 | 55 | 66 | 69 | $19.5 + \frac{\text{Stroke length}}{2}$ | 66 | 147 | 152 | 64 | M10 depth 20 | 145 | M10 depth 20 | 110 | 8.6 through |
| $\varnothing 63$                   | 98 | 140 | 61 | 17.5 | 17.5 | 5.6 | Rc1/4 | 62 | 79 | 82 | $22.5 + \frac{\text{Stroke length}}{2}$ | 79 | 162 | 166 | 75 | M10 depth 20 | 160 | M10 depth 20 | 124 | 8.6 through |

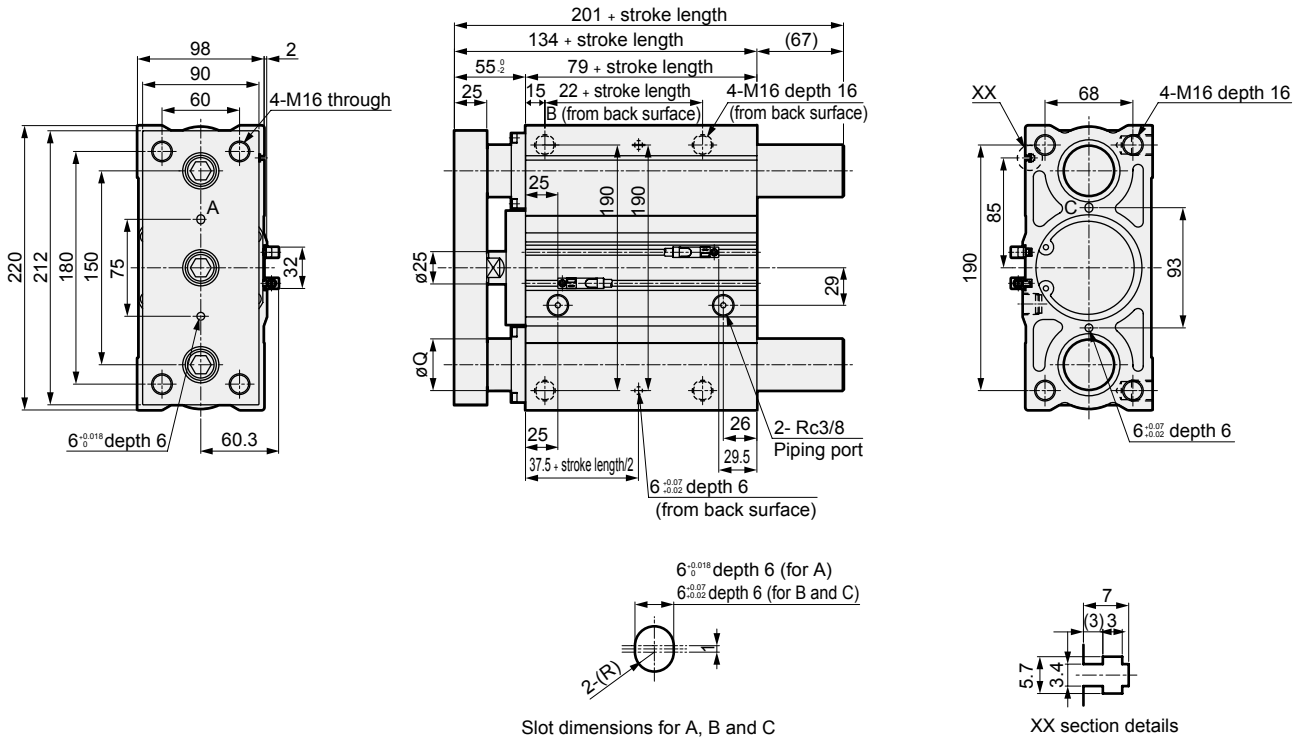
| STL- <sup>M</sup> <sub>B</sub> -G4 |                        |   |     |    |    |             |    |    |    |    |    |    |   |     |    |    |                     |    |    |   |      |      |      |    |
|------------------------------------|------------------------|---|-----|----|----|-------------|----|----|----|----|----|----|---|-----|----|----|---------------------|----|----|---|------|------|------|----|
| Code                               | KC                     | L | M   | MM | N  | NN          | O  | P  | PP | Q  | R  | S  | T | U   | V  | W  | X                   | Y  | YY | Z | RD   | HD   | FA   | FB |
| Bore size (mm)                     |                        |   |     |    |    |             |    |    |    |    |    |    |   |     |    |    |                     |    |    |   |      |      |      |    |
| $\varnothing 40$                   | 11 spot face depth 6.5 | 1 | 3.4 | 16 | 34 | M8 through  | 30 | 25 | 7  | 20 | 18 | 43 | 5 | 102 | 32 | 54 | $34 \frac{0}{-0.2}$ | 12 | 42 | 3 | 19.5 | 12.5 | 32.3 | 31 |
| $\varnothing 50$                   | 14 spot face depth 8.6 | 1 | 3.4 | 20 | 44 | M10 through | 48 | 26 | 8  | 25 | 22 | 49 | 5 | 125 | 38 | 66 | $37 \frac{0}{-0.2}$ | 16 | 45 | 3 | 21.5 | 13.5 | 38.3 | 32 |
| $\varnothing 63$                   | 14 spot face depth 8.6 | 1 | 3.4 | 20 | 55 | M10 through | 42 | 26 | 8  | 25 | 26 | 56 | 5 | 140 | 50 | 79 | $37 \frac{0}{-0.2}$ | 16 | 52 | 3 | 18.5 | 21.5 | 44.8 | 32 |

\*1: When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

Dimensions:  $\varnothing 80$



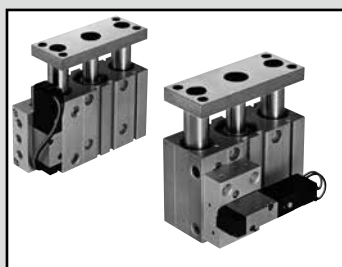
- Double acting/standard single rod STL- $\frac{M}{B}$ G4



Dimension Q is  $\varnothing 40$  for M (metal bush bearing) and  $\varnothing 35$  for B (ball bearing).

Note: When using a custom stroke length, the dimensions are the same as the longer standard stroke length. The standard stroke length of  $\varnothing 80$  can be selected from 75 to 400 mm in 25 mm increments.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

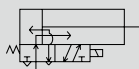


Guided cylinder/valve equipped

# STS/STL-V<sub>B</sub> Series

● Bore size:  $\phi 20/\phi 25/\phi 32/\phi 40/\phi 50/\phi 63$

JIS symbol



## Specifications

| Item                      | STS-MV, STS-BV (short stroke length)/STL-MV/STL-BV (long stroke length)      |   |           |           |             |           |           |  |
|---------------------------|--|---|-----------|-----------|-------------|-----------|-----------|--|
| Bore size                 | mm   | $\phi 20$   | $\phi 25$ | $\phi 32$ | $\phi 40$   | $\phi 50$ | $\phi 63$ |  |
| Actuation                 | Double acting  |   |           |           |             |           |           |  |
| Working fluid             | Compressed air   |   |           |           |             |           |           |  |
| Max. working pressure     | MPa  | 0.7 ( $\approx 100$ psi, 7 bar)   |           |           |             |           |           |  |
| Min. working pressure     | MPa  | 0.15 ( $\approx 22$ psi, 1.5 bar)   |           |           |             |           |           |  |
| Proof pressure            | MPa  | 1.0 ( $\approx 150$ psi, 10 bar)  |           |           |             |           |           |  |
| Ambient temperature       | $^{\circ}\text{C}$   | -5 (23 $^{\circ}\text{F}$ ) to 50 (122 $^{\circ}\text{F}$ ) (no freezing) |           |           |             |           |           |  |
| Port size                 |  | Rc1/8   |           |           | Rc1/4       |           |           |  |
| Stroke tolerance          | mm   | +2.0<br>0   |           |           |             |           |           |  |
| Working piston speed      | mm/s   | 50 to 500   |           |           |             |           | 50 to 300 |  |
| Cushion                   | With rubber cushion  |   |           |           |             |           |           |  |
| Lubrication               | Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication) |   |           |           |             |           |           |  |
| Incorporated valve        |  | 4KB1 Series   |           |           | 4KB2 Series |           |           |  |
| Allowable absorbed energy | J  | 0.157   | 0.157     | 0.401     | 0.627       | 0.980     | 1.560     |  |

Note: Refer to "Pneumatic Valves (CB-023SA)" for details on valves.

## Stroke length

| Bore size (mm)            | Standard stroke length (mm) |           | Max. stroke length (mm) | Min. stroke length (mm) |
|---------------------------|-----------------------------|-----------|-------------------------|-------------------------|
| $\phi 20/\phi 25/\phi 32$ | STS                         | 25/50     | 100                     | 5                       |
| $\phi 40/\phi 50/\phi 63$ | STL                         | 50/75/100 |                         |                         |

### Custom stroke length

Custom stroke lengths other than the standard are available in 5 mm increments. However, the total length is the same as that of the next longer standard stroke length.  
(Example) For STS-MV1-25-35, a spacer is mounted inside the STS-MV1-25-50 body to obtain a total length the same as that of the 50-stroke.

## Switch specifications

● 1-color/2-color display/for AC magnetic field proof

| Item            | Proximity 2-wire   |                                       | Proximity 2-wire                  |                                   |                            |                                    | Proximity 3-wire                  |                                   |                      |                                    | Reed 2-wire   |                       |                                    | Proximity 2-wire                  |              |            |                   |
|-----------------|--|---------------------------------------|-----------------------------------|-----------------------------------|----------------------------|------------------------------------|-----------------------------------|-----------------------------------|----------------------|------------------------------------|---|-----------------------|------------------------------------|-----------------------------------|--------------|------------|-------------------|
|                 | T1H/<br>T1V  | T2H/T2V/<br>T2JH/T2JV                 | T2YH/<br>T2YV                     | T2WH/<br>T2WV                     | T3H/<br>T3V                | T3PH/<br>T3PV                      | T3YH/<br>T3YV                     | T3WH/<br>T3WV                     | T0H/T0V              | T5H/T5V                            | T8H/T8V   |                       | T2YD(*4)<br>T2YDT                  |                                   |              |            |                   |
| Applications    | For programmable controller, relay, compact solenoid valve | Dedicated for programmable controller |                                   |                                   |                            | For programmable controller, relay |                                   |                                   |                      | For programmable controller, relay | For programmable controller, relay, IC circuit (no indicator lamp), serial connection |                       | For programmable controller, relay | For programmable controller       |              |            |                   |
| Output method   | -  |                                       |                                   |                                   | NPN output                 | PNP output                         | NPN output                        | NPN output                        | -                    |                                    |   |                       |                                    |                                   |              |            |                   |
| Pwr. supp. V.   | -  |                                       |                                   |                                   | 10 to 28 VDC               |                                    |                                   |                                   | -                    |                                    |   |                       |                                    |                                   |              |            |                   |
| Load voltage    | 85 to 265 VAC  | 10 to 30 VDC                          |                                   | 24 VDC $\pm 10\%$                 |                            | 30 VDC or less                     |                                   |                                   |                      | 12/24 VDC                          | 100/110 VAC   | 5/12/24 VDC           | 100/110 VAC                        | 12/24 VDC                         | 110 VAC      | 220 VAC    | 24 VDC $\pm 10\%$ |
| Load current    | 5 to 100 mA  | 5 to 20 mA (*3)                       |                                   |                                   |                            | 100 mA or less                     |                                   | 50 mA or less                     |                      | 5 to 50 mA                         | 7 to 20 mA  | $\leq 50$ mA          | $\leq 20$ mA                       | 5 to 50 mA                        | 7 to 20 mA   | 7 to 10 mA | 5 to 20 mA        |
| Indicator lamp  | LED<br>(Lit when ON)                                       | LED<br>(Lit when ON)                  | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON)       | Yellow<br>LED<br>(Lit when ON)     | Red/green<br>LED<br>(Lit when ON) | Red/green<br>LED<br>(Lit when ON) | LED<br>(Lit when ON) | Without indicator lamp             |   | LED<br>(Lit when ON)  |                                    | Red/green<br>LED<br>(Lit when ON) |              |            |                   |
| Leakage current | $\leq 1$ mA at 100 VAC,<br>$\leq 2$ mA at 200 VAC          | 1 mA or less                          |                                   |                                   |                            | 10 $\mu\text{A}$ or less           |                                   |                                   |                      | 0 mA                               |   |                       |                                    |                                   | 1 mA or less |            |                   |
| Weight g        | 1 m:33<br>3 m:87<br>5 m:142                                | 1 m:18<br>3 m:49<br>5 m:80            | 1 m:33<br>3 m:87<br>5 m:142       | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:18<br>3 m:49<br>5 m:80 | 1 m:33<br>3 m:87<br>5 m:142        | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:18<br>3 m:49<br>5 m:80        | 1 m:18 3 m:49 5 m:80 |                                    |   | 1 m:33 3 m:87 5 m:142 |                                    | 1 m:61<br>3 m:166<br>5 m:272      |              |            |                   |

\*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3 : The max. load current is 20 mA at 25 $^{\circ}\text{C}$ . The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25 $^{\circ}\text{C}$ . (5 to 10 mA at 60 $^{\circ}\text{C}$ )

\*4 : AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic fields.



## Valve specifications

| Item  | ST <sup>S/L</sup> - M <sub>B</sub> V1 <sup>20</sup><br>V2 <sup>25</sup><br>32 |                  |       | ST <sup>S/L</sup> - M <sub>B</sub> V1 <sup>40</sup><br>V2 <sup>50</sup><br>63 |                  |       |
|---|---|------------------|-------|---|------------------|-------|
| Applicable valve series   | 4KB1 Series   |                  |       | 4KB2 Series   |                  |       |
| Position Number of solenoids                                    | 2-position single   |                  |       | 2-position single   |                  |       |
| Valve effective cross-sectional area (mm <sup>2</sup> )<br>(Cv) | 4<br>(0.22)   |                  |       | 14<br>(0.76)  |                  |       |
| Rated voltage (V)   | 100 AC(50/60 Hz)  | 200 AC(50/60 Hz) | 24 DC | 100 AC(50/60 Hz)  | 200 AC(50/60 Hz) | 24 DC |
| Starting current (A)  | 0.056/0.044   | 0.034/0.026      | 0.075 | 0.056/0.044   | 0.028/0.022      | 0.075 |
| Holding current (A)   | 0.028/0.022   | 0.017/0.013      |       | 0.028/0.022   | 0.014/0.011      |       |
| Power consumption (W)   | 1.8/1.4   | 2.1/1.6          | 1.8   | 1.8/1.4   |                  | 1.8   |
| Voltage fluctuation range                                       | ±10%  |                  |       | ±10%  |                  |       |
| Thermal class   | Class B molded coil   |                  |       | Class B molded coil   |                  |       |

Note: Refer to "Pneumatic Valves (CB-023SA)" for details on valves.

## Theoretical thrust table

(Unit: N)

| Bore size<br>(mm) | Operating<br>direction | Working pressure MPa   |                        |                        |                        |                        |                        |                        |
|-------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                   |                        | 0.15                   | 0.2                    | 0.3                    | 0.4                    | 0.5                    | 0.6                    | 0.7                    |
| ø20               | Push                   | 47.1                   | 62.8                   | 94.2                   | 1.26 × 10 <sup>2</sup> | 1.57 × 10 <sup>2</sup> | 1.88 × 10 <sup>2</sup> | 2.20 × 10 <sup>2</sup> |
|                   | Pull                   | 35.3                   | 47.1                   | 70.7                   | 94.2                   | 1.18 × 10 <sup>2</sup> | 1.41 × 10 <sup>2</sup> | 1.65 × 10 <sup>2</sup> |
| ø25               | Push                   | 73.6                   | 98.2                   | 1.47 × 10 <sup>2</sup> | 1.96 × 10 <sup>2</sup> | 2.45 × 10 <sup>2</sup> | 2.95 × 10 <sup>2</sup> | 3.44 × 10 <sup>2</sup> |
|                   | Pull                   | 56.7                   | 75.6                   | 1.13 × 10 <sup>2</sup> | 1.51 × 10 <sup>2</sup> | 1.89 × 10 <sup>2</sup> | 2.27 × 10 <sup>2</sup> | 2.64 × 10 <sup>2</sup> |
| ø32               | Push                   | 1.21 × 10 <sup>2</sup> | 1.61 × 10 <sup>2</sup> | 2.41 × 10 <sup>2</sup> | 3.22 × 10 <sup>2</sup> | 4.02 × 10 <sup>2</sup> | 4.83 × 10 <sup>2</sup> | 5.63 × 10 <sup>2</sup> |
|                   | Pull                   | 90.5                   | 1.21 × 10 <sup>2</sup> | 1.81 × 10 <sup>2</sup> | 2.41 × 10 <sup>2</sup> | 3.02 × 10 <sup>2</sup> | 3.62 × 10 <sup>2</sup> | 4.22 × 10 <sup>2</sup> |
| ø40               | Push                   | 1.88 × 10 <sup>2</sup> | 2.51 × 10 <sup>2</sup> | 3.77 × 10 <sup>2</sup> | 5.03 × 10 <sup>2</sup> | 6.28 × 10 <sup>2</sup> | 7.54 × 10 <sup>2</sup> | 8.80 × 10 <sup>2</sup> |
|                   | Pull                   | 1.58 × 10 <sup>2</sup> | 2.11 × 10 <sup>2</sup> | 3.17 × 10 <sup>2</sup> | 4.22 × 10 <sup>2</sup> | 5.28 × 10 <sup>2</sup> | 6.33 × 10 <sup>2</sup> | 7.39 × 10 <sup>2</sup> |
| ø50               | Push                   | 2.95 × 10 <sup>2</sup> | 3.93 × 10 <sup>2</sup> | 5.89 × 10 <sup>2</sup> | 7.85 × 10 <sup>2</sup> | 9.82 × 10 <sup>2</sup> | 1.18 × 10 <sup>3</sup> | 1.37 × 10 <sup>3</sup> |
|                   | Pull                   | 2.47 × 10 <sup>2</sup> | 3.30 × 10 <sup>2</sup> | 4.95 × 10 <sup>2</sup> | 6.60 × 10 <sup>2</sup> | 8.25 × 10 <sup>2</sup> | 9.90 × 10 <sup>2</sup> | 1.15 × 10 <sup>3</sup> |
| ø63               | Push                   | 4.68 × 10 <sup>2</sup> | 6.23 × 10 <sup>2</sup> | 9.35 × 10 <sup>2</sup> | 1.25 × 10 <sup>3</sup> | 1.56 × 10 <sup>3</sup> | 1.87 × 10 <sup>3</sup> | 2.18 × 10 <sup>3</sup> |
|                   | Pull                   | 4.20 × 10 <sup>2</sup> | 5.61 × 10 <sup>2</sup> | 8.41 × 10 <sup>2</sup> | 1.12 × 10 <sup>3</sup> | 1.40 × 10 <sup>3</sup> | 1.68 × 10 <sup>3</sup> | 1.96 × 10 <sup>3</sup> |

For cylinder weight, refer to pages 558 to 561.

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## How to order

### ● Short stroke length

Without switch (built-in magnet for switch)

**STS - M V1 S - 20 - 25 - B - 1 - F**

With switch (built-in magnet for switch)

**STS - M V1 S - 20 - 25 - B - 1 - T0H - R - F**

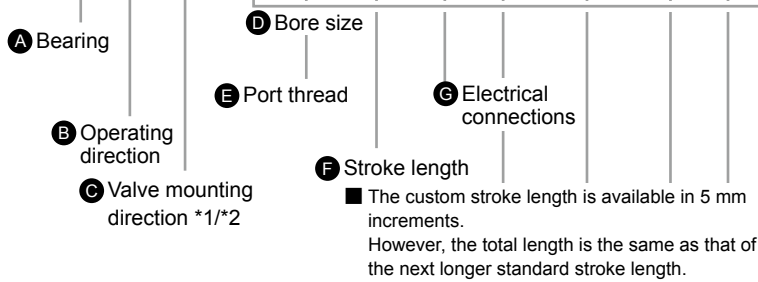
### ● Long stroke length

Without switch (built-in magnet for switch)

**STL - M V1 S - 50 - 50 - B - 1 - F**

With switch (built-in magnet for switch)

**STL - M V1 S - 50 - 50 - B - 1 - T0H - R - F**



### ⚠ Precautions for model No. selection

- \*1 : When selecting types with valve on side with a stroke length of 25 mm or less, the valve mounting dimensions (VC) may exceed the overall length of the cylinder (A + stroke). Check the measurements using the external dimensions chart.
- \*2 : The 2-color display and strong magnetic field proof switch cannot be mounted on the valve on front type.
- \*3 : Refer to pages 444 and 447 for combinations of variations/options.
- \*4 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

[Example of model No.]

**STS-MV1S-20-25-B-1-T0H-R-F**

Model: Guided cylinder, short stroke length, valve equipped

- A** Bearing : Metal bush bearing
- B** Operating direction: Pushed out when energized
- C** Valve mounting direction: With valve on side
- D** Bore size : ø20 mm
- E** Port thread : Rc thread
- F** Stroke length : 25 mm
- G** Electrical connections: Compact terminal box, without lead wire
- H** Rated voltage : 100 VAC
- I** Switch model No.: Reed T0H, lead wire 1 m
- J** Switch quantity : 1 on rod side
- K** Option : End plate material (steel)

For the 2-color display, T1H/V, T8H/V and AC magnetic field proof switches for ø40 and over, insert "L1" with "-" between **C** and **D**.  
Example) STS-MV1S-L1-50-50-B-1-T2YH3-D-F

## How to order switch

**SW - T0H**

Switch model No.  
(Item **I** above)

**J** Switch quantity

**K** Option

| Code             | Description        |
|------------------|--------------------|
| <b>A Bearing</b> |                    |
| <b>M</b>         | Metal bush bearing |
| <b>B</b>         | Ball bearing       |

| <b>B Operating direction</b> |                           |
|------------------------------|---------------------------|
| <b>V1</b>                    | Pushed out when energized |
| <b>V2</b>                    | Pull when energized       |

| <b>C Valve mounting direction</b> |                     |
|-----------------------------------|---------------------|
| <b>Blank</b>                      | With valve on front |
| <b>S</b>                          | With valve on side  |

| <b>D Bore size (mm)</b> |     |
|-------------------------|-----|
| <b>20</b>               | ø20 |
| <b>25</b>               | ø25 |
| <b>32</b>               | ø32 |
| <b>40</b>               | ø40 |
| <b>50</b>               | ø50 |
| <b>63</b>               | ø63 |

| <b>E Port thread</b> |   |
|----------------------|---|
| <b>Blank</b>         | Rc thread                                       |
| <b>NN</b>            | NPT thread (ø32 and over) made-to-order product |
| <b>GN</b>            | G thread (ø32 and over) made-to-order product   |

| <b>F Stroke length</b>                              |  |
|---|--|
| Refer to the stroke length table on following page. |  |

| <b>G Electrical connections</b> |   |
|---------------------------------|---|
| <b>Blank</b>                    | Grommet lead wire (300 mm)              |
| <b>B</b>                        | Compact terminal box, without lead wire |
| <b>C</b>                        | C type connector, lead wire (300 mm)    |
| <b>D</b>                        | D type connector, lead wire (300 mm)    |

| <b>H Rated voltage</b> |         |
|------------------------|---------|
| <b>1</b>               | 100 VAC |
| <b>2</b>               | 200 VAC |
| <b>3</b>               | 24 VDC  |

| <b>I Switch model No.</b> |                  |           |         |    |   |
|---------------------------|------------------|-----------|---------|----|---|
| Axial lead wire           | Radial lead wire | Contact   | Voltage |    | Lead wire                                 |
|                           |                  |           | AC      | DC |   |
| <b>T0H*</b>               | <b>T0V*</b>      | Reed      | ●       | ●  | 1-color display<br>Without indicator lamp |
| <b>T5H*</b>               | <b>T5V*</b>      |           | ●       | ●  |   |
| <b>T8H*</b>               | <b>T8V*</b>      |           | ●       | ●  | 1-color display                           |
| <b>T1H*</b>               | <b>T1V*</b>      |           | ●       | ●  |   |
| <b>T2H*</b>               | <b>T2V*</b>      | Proximity | ●       | ●  | 1-color display                           |
| <b>T3H*</b>               | <b>T3V*</b>      |           | ●       | ●  |   |
| <b>T3PH*</b>              | <b>T3PV*</b>     |           | ●       | ●  | 1-color display                           |
| <b>T2WH*</b>              | <b>T2WV*</b>     |           | ●       | ●  |   |
| <b>T2YH*</b>              | <b>T2YV*</b>     |           | ●       | ●  | 2-color display                           |
| <b>T3WH*</b>              | <b>T3WV*</b>     |           | ●       | ●  |   |
| <b>T3YH*</b>              | <b>T3YV*</b>     |           | ●       | ●  | 2-color display                           |
| <b>T2JH*</b>              | <b>T2JV*</b>     |           | ●       | ●  |   |
| <b>T2YD*</b>              | -                |           | ●       | ●  | 2-color display<br>for AC magnetic field  |
| <b>T2YDT*</b>             | -                |           | ●       | ●  |   |

| <b>* Lead wire length (m)</b> |                |
|-------------------------------|----------------|
| <b>Blank</b>                  | 1 m (standard) |
| <b>3</b>                      | 3 m (option)   |
| <b>5</b>                      | 5 m (option)   |

| <b>J Switch quantity</b> |                |
|--------------------------|----------------|
| <b>R</b>                 | 1 on rod side  |
| <b>H</b>                 | 1 on head side |
| <b>D</b>                 | 2              |

| <b>K Option</b> |                            |
|-----------------|----------------------------|
| <b>F</b>        | End plate material (steel) |

### F Stroke length

| Series | Stroke length (mm)     |     | Applicable bore size |     |     |     |     |     |
|--------|------------------------|-----|----------------------|-----|-----|-----|-----|-----|
|        |                        |     | ø20                  | ø25 | ø32 | ø40 | ø50 | ø63 |
| STS    | Standard stroke length | 25  | ●                    | ●   | ●   | ●   | ●   | ●   |
|        |                        | 50  | ●                    | ●   | ●   | ●   | ●   | ●   |
|        | Min. stroke length *1  |     | 5                    |     |     |     |     |     |
|        | Custom stroke *1, 2    |     | In 5 mm increments   |     |     |     |     |     |
| STL    | Standard stroke length | 50  | ●                    | ●   | ●   | ●   | ●   | ●   |
|        |                        | 75  | ●                    | ●   | ●   | ●   | ●   | ●   |
|        |                        | 100 | ●                    | ●   | ●   | ●   | ●   | ●   |
|        | Min. stroke length*1   |     | 30                   |     |     |     |     |     |
|        | Custom stroke*1, 2     |     | In 5 mm increments   |     |     |     |     |     |

\*1: The total dimensions are the same as the longer standard stroke length.

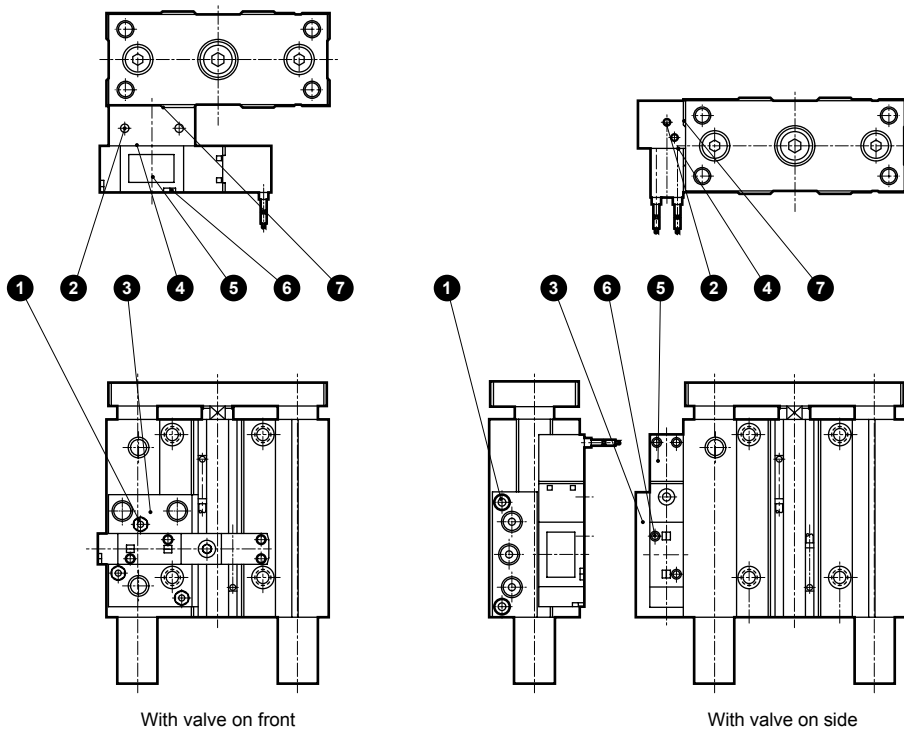
\*2: Special total length for custom stroke length can be provided when a custom stroke length is used. (Made to order)

### Series variation

| Bore size (mm) | Standard stroke length (mm) |    |     |    |     | Applicable valve series | Position<br>Number of solenoids | Valve effective cross-sectional area (mm <sup>2</sup> ) (Cv) |
|----------------|-----------------------------|----|-----|----|-----|-------------------------|---------------------------------|--|
|                | STS                         |    | STL |    |     |                         |                                 |  |
|                | 25                          | 50 | 50  | 75 | 100 |                         |                                 |  |
| ø20            | ●                           | ●  | ●   | ●  | ●   | 4KB1 Series             | 2-position single               | 4(0.22)  |
| ø25            | ●                           | ●  | ●   | ●  | ●   |                         |                                 |  |
| ø32            | ●                           | ●  | ●   | ●  | ●   |                         |                                 |  |
| ø40            | ●                           | ●  | ●   | ●  | ●   | 4KB2 Series             | 2-position single               | 14(0.76)   |
| ø50            | ●                           | ●  | ●   | ●  | ●   |                         |                                 |  |
| ø63            | ●                           | ●  | ●   | ●  | ●   |                         |                                 |  |

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

## Internal structure and parts list



| No. | Part name                | Material        | Remarks       |
|-----|--------------------------|-----------------|---------------|
| 1   | Hex socket screw         | Stainless steel |               |
| 2   | Hexagon socket set screw | Steel           | Black finish  |
| 3   | Sub-base                 | Aluminum alloy  | Alumite       |
| 4   | Gasket                   | Nitrile rubber  |               |
| 5   | Pneumatic valve          |                 |               |
| 6   | Set screw                | Steel           | Zinc chromate |
| 7   | O-ring                   | Nitrile rubber  |               |

### Repair parts list

The repair parts list is common with the double acting/single rod.  
Refer to page 453 for STS Series and page 456 for STL Series.

### Sub-base kit

| Bore size (mm)   | Kit No. | Part No.       | Bore size (mm)  | Kit No. | Part No.       |
|--|---------|----------------|---|---------|----------------|
| STS-M/B-V1<br>(With valve on front<br>Pushed out when energized)   | ø20     | STS-V1-20      | STS-M/B-V1S<br>(With valve on side<br>Pushed out when energized)    | ø20     | STS-V1S-20     |
|  | ø25     | STS-V1-32      |   | ø25     | STS-V1S-32     |
|  | ø32     | STS-V1-40      |   | ø32     | STS-V1S-40     |
|  | ø40     | STS-V1-50      |   | ø40     | STS-V1S-50     |
|  | ø50     |                |   | ø50     |                |
|  | ø63     |                |   | ø63     |                |
|  |         | <b>1 2 3 7</b> |   |         | <b>1 2 3 7</b> |
| Bore size (mm)   | Kit No. | Part No.       | Bore size (mm)  | Kit No. | Part No.       |
| STS-M/B-V2<br>(With valve on front<br>Retracted in when energized) | ø20     | STS-V2-20      | STS-M/B-V2S<br>(With valve on front<br>Retracted in when energized) | ø20     | STS-V2S-20     |
|  | ø25     | STS-V2-32      |   | ø25     | STS-V2S-32     |
|  | ø32     | STS-V2-40      |   | ø32     | STS-V2S-40     |
|  | ø40     | STS-V2-50      |   | ø40     | STS-V2S-50     |
|  | ø50     |                |   | ø50     |                |
|  | ø63     |                |   | ø63     |                |
|  |         | <b>1 2 3 7</b> |   |         | <b>1 2 3 7</b> |

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# MEMO

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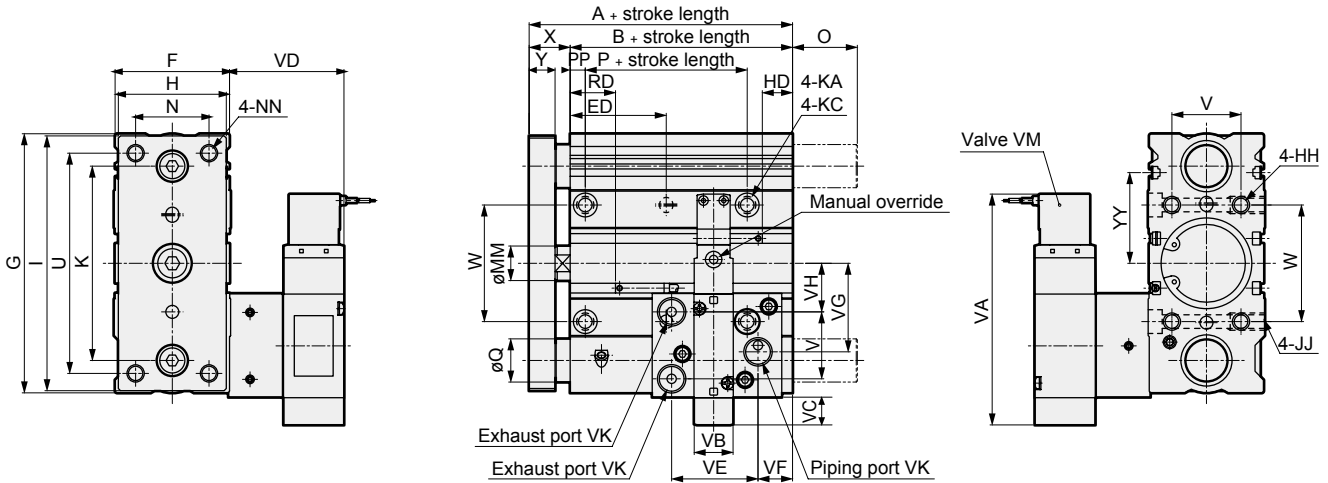
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL-BV Series

## Dimensions



● With valve on front



| Code            | A  | B  | ED                                      | F  | G   | H  | HH           | I   | JJ           | K   | KA          | KC                      | MM | N  | NN          | O   |     | P  |
|-----------------|----|----|---|----|-----|----|--------------|-----|--------------|-----|-------------|-------------------------|----|----|-------------|-----|-----|----|
|                 |    |    |   |    |     |    |              |     |              |     |             |                         |    |    |             | STS | STL |    |
| Bores size (mm) |    |    |   |    |     |    |              |     |              |     |             |                         |    |    |             |     |     |    |
| ø20             | 53 | 40 | 14 + $\frac{\text{Stroke length}}{2}$   | 38 | 83  | 36 | M6 depth 12  | 81  | M6 depth 12  | 59  | 5.2 through | 9.5 spot face depth 5.4 | 10 | 24 | M6 through  | 0   | 18  | 20 |
| ø25             | 54 | 41 | 14.5 + $\frac{\text{Stroke length}}{2}$ | 42 | 86  | 38 | M6 depth 12  | 84  | M6 depth 12  | 63  | 5.2 through | 9.5 spot face depth 5.4 | 12 | 26 | M6 through  | 0   | 17  | 20 |
| ø32             | 68 | 49 | 17.5 + $\frac{\text{Stroke length}}{2}$ | 47 | 111 | 45 | M8 depth 16  | 109 | M8 depth 16  | 81  | 6.3 through | 11 spot face depth 6.5  | 16 | 29 | M8 through  | 0   | 34  | 22 |
| ø40             | 72 | 53 | 19.5 + $\frac{\text{Stroke length}}{2}$ | 54 | 120 | 50 | M8 depth 16  | 118 | M8 depth 16  | 90  | 6.3 through | 11 spot face depth 6.5  | 16 | 34 | M8 through  | 0   | 30  | 25 |
| ø50             | 77 | 55 | 19.5 + $\frac{\text{Stroke length}}{2}$ | 66 | 147 | 64 | M10 depth 20 | 145 | M10 depth 20 | 110 | 8.6 through | 14 spot face depth 8.6  | 20 | 44 | M10 through | 0   | 48  | 26 |
| ø63             | 83 | 61 | 22.5 + $\frac{\text{Stroke length}}{2}$ | 79 | 162 | 75 | M10 depth 20 | 160 | M10 depth 20 | 124 | 8.6 through | 14 spot face depth 8.6  | 20 | 55 | M10 through | 0   | 42  | 26 |

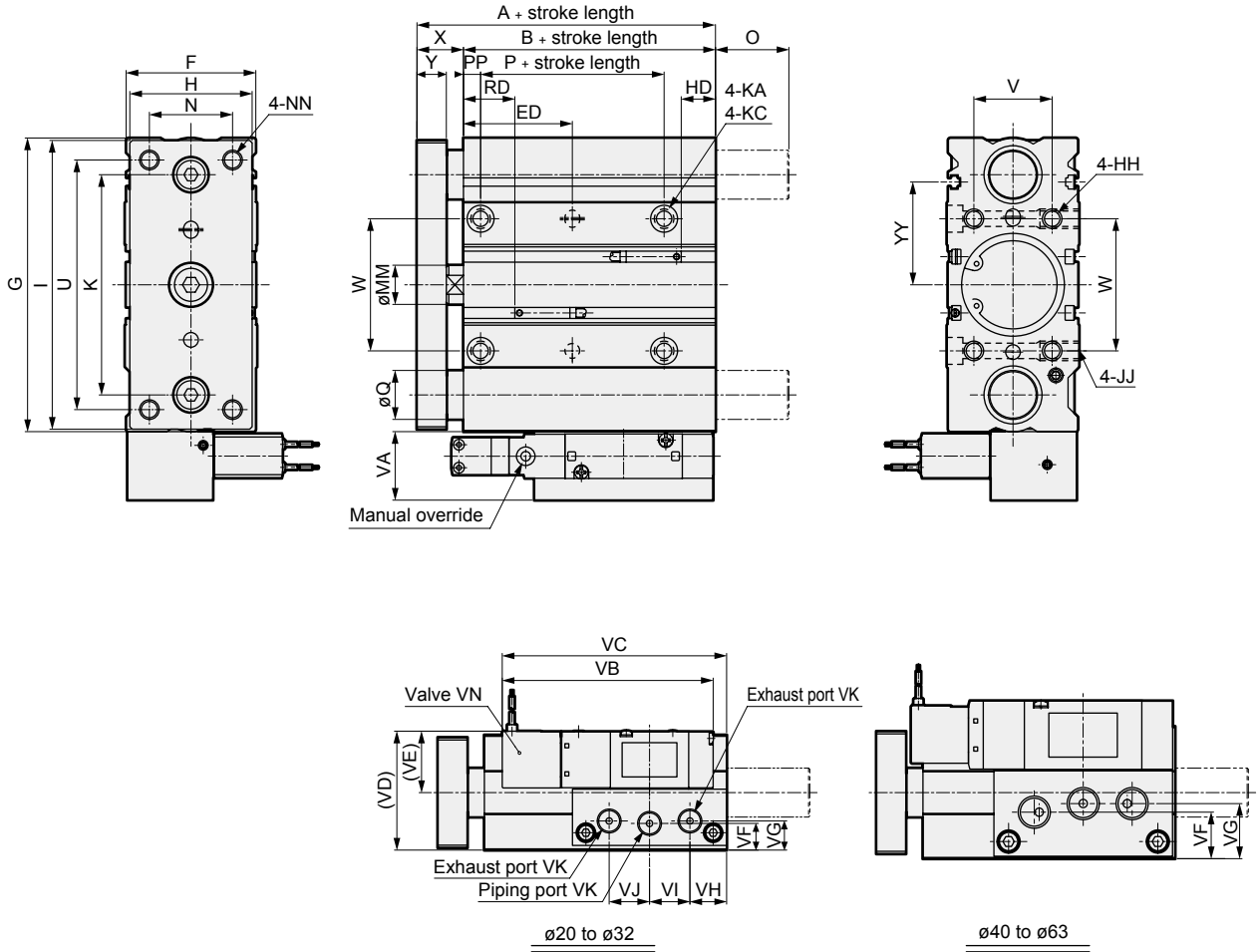
| Code | PP | Q      |        | U   | V  | W  | X              | Y  | YY | VA  | VB | VC  | VD   | VE   | VF   | VG   | VH   | VI | VK    | VM          | T0/T5/T2/T3 |      | T2W/T3W |      |
|------|----|--------|--------|-----|----|----|----------------|----|----|-----|----|-----|------|------|------|------|------|----|-------|-------------|-------------|------|---------|------|
|      |    | M type | B type |     |    |    |                |    |    |     |    |     |      |      |      |      |      |    |       |             | RD          | HD   | RD      | HD   |
| ø20  | 6  | 14     | 12     | 69  | 20 | 31 | 13 $_{-0.2}^0$ | 9  | 25 | 86  | 15 | 8.5 | 42.5 | 35.5 | 9.5  | 29.5 | 13   | 22 | Rc1/8 | 4KB1 Series | 12          | 9    | 12.5    | 12.5 |
| ø25  | 6  | 14     | 12     | 72  | 24 | 35 | 13 $_{-0.2}^0$ | 9  | 27 | 86  | 15 | 8   | 42.5 | 35.5 | 10.5 | 30.5 | 14   | 22 | Rc1/8 | 4KB1 Series | 13          | 9    | 14.5    | 11   |
| ø32  | 7  | 20     | 16     | 93  | 25 | 45 | 19 $_{-0.2}^0$ | 12 | 39 | 86  | 15 | 4   | 42.5 | 37.5 | 15.5 | 39   | 20.5 | 26 | Rc1/8 | 4KB1 Series | 17.5        | 13.5 | 19      | 15   |
| ø40  | 7  | 20     | 16     | 102 | 32 | 54 | 19 $_{-0.2}^0$ | 12 | 42 | 107 | 18 | 15  | 52.5 | 40   | 16   | 41   | 22.5 | 31 | Rc1/4 | 4KB2 Series | 21          | 14   | 22.5    | 16   |
| ø50  | 8  | 25     | 20     | 125 | 38 | 66 | 22 $_{-0.2}^0$ | 16 | 45 | 107 | 18 | 9   | 52.5 | 41   | 17   | 49   | 43   | 21 | Rc1/4 | 4KB2 Series | 22          | 16   | 23.5    | 16.5 |
| ø63  | 8  | 25     | 20     | 140 | 50 | 79 | 22 $_{-0.2}^0$ | 16 | 52 | 107 | 18 | 8   | 52.5 | 41   | 23   | 55.5 | 49.5 | 21 | Rc1/4 | 4KB2 Series | 20          | 23   | 21.5    | 24.5 |

\*1: When using a custom stroke length, the dimensions are the same as the longer standard stroke length.

\*2: Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

## Dimensions

● With valve on side



- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechMod/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

| Code<br>Bore size (mm) | A  | B  | ED                          | F  | G   | H  | HH           | I   | JJ           | K   | KA          | KC                      | MM | N  | NN          | O   |     | P  |
|------------------------|----|----|-----------------------------|----|-----|----|--------------|-----|--------------|-----|-------------|-------------------------|----|----|-------------|-----|-----|----|
|                        |    |    |                             |    |     |    |              |     |              |     |             |                         |    |    |             | STS | STL |    |
| ø20                    | 53 | 40 | 14 +<br>Stroke length<br>2  | 38 | 83  | 36 | M6 depth 12  | 81  | M6 depth 12  | 59  | 5.2 through | 9.5 spot face depth 5.4 | 10 | 24 | M6 through  | 0   | 18  | 20 |
| ø25                    | 54 | 41 | 14.5+<br>Stroke length<br>2 | 42 | 86  | 38 | M6 depth 12  | 84  | M6 depth 12  | 63  | 5.2 through | 9.5 spot face depth 5.4 | 12 | 26 | M6 through  | 0   | 17  | 20 |
| ø32                    | 68 | 49 | 17.5+<br>Stroke length<br>2 | 47 | 111 | 45 | M8 depth 16  | 109 | M8 depth 16  | 81  | 6.3 through | 11 spot face depth 6.5  | 16 | 29 | M8 through  | 0   | 34  | 22 |
| ø40                    | 72 | 53 | 19.5+<br>Stroke length<br>2 | 54 | 120 | 50 | M8 depth 16  | 118 | M8 depth 16  | 90  | 6.3 through | 11 spot face depth 6.5  | 16 | 34 | M8 through  | 0   | 30  | 25 |
| ø50                    | 77 | 55 | 19.5+<br>Stroke length<br>2 | 66 | 147 | 64 | M10 depth 20 | 145 | M10 depth 20 | 110 | 8.6 through | 14 spot face depth 8.6  | 20 | 44 | M10 through | 0   | 48  | 26 |
| ø63                    | 83 | 61 | 22.5+<br>Stroke length<br>2 | 79 | 162 | 75 | M10 depth 20 | 160 | M10 depth 20 | 124 | 8.6 through | 14 spot face depth 8.6  | 20 | 55 | M10 through | 0   | 42  | 26 |

| Code<br>Bore size (mm) | PP | Q      |        | U   | V  | W  | X                               | Y  | YY | VA | VB  | VC  | VD   | VE   | VF   | VG   | VH   | VI   | VJ   | VK    | VN          | T0/T5/T2/T3 |      |      | T2W/T3W |  |
|------------------------|----|--------|--------|-----|----|----|---------------------------------|----|----|----|-----|-----|------|------|------|------|------|------|------|-------|-------------|-------------|------|------|---------|--|
|                        |    | M type | B type |     |    |    |                                 |    |    |    |     |     |      |      |      |      |      |      |      |       |             | RD          | HD   | RD   | HD      |  |
| ø20                    | 6  | 14     | 12     | 69  | 20 | 31 | 13 <sup>0</sup> / <sub>-2</sub> | 9  | 25 | 23 | 86  | 92  | 47.5 | 28.5 | 10   | 11   | 15   | 16.5 | 16.5 | Rc1/8 | 4KB1 Series | 12          | 9    | 12.5 | 12.5    |  |
| ø25                    | 6  | 14     | 12     | 72  | 24 | 35 | 13 <sup>0</sup> / <sub>-2</sub> | 9  | 27 | 23 | 86  | 92  | 49.5 | 28.5 | 12   | 13   | 15   | 16.5 | 16.5 | Rc1/8 | 4KB1 Series | 13          | 9    | 14.5 | 11      |  |
| ø32                    | 7  | 20     | 16     | 93  | 25 | 45 | 19 <sup>0</sup> / <sub>-2</sub> | 12 | 39 | 23 | 86  | 92  | 48.5 | 25   | 11   | 12   | 15   | 16.5 | 16.5 | Rc1/8 | 4KB1 Series | 17.5        | 13.5 | 19   | 15      |  |
| ø40                    | 7  | 20     | 16     | 102 | 32 | 54 | 19 <sup>0</sup> / <sub>-2</sub> | 12 | 42 | 28 | 107 | 108 | 64.5 | 37.5 | 19   | 22.5 | 17.5 | 20   | 20   | Rc1/4 | 4KB2 Series | 21          | 14   | 22.5 | 16      |  |
| ø50                    | 8  | 25     | 20     | 125 | 38 | 66 | 22 <sup>0</sup> / <sub>-2</sub> | 16 | 45 | 28 | 107 | 108 | 66.5 | 33.5 | 21   | 24.5 | 17.5 | 20   | 20   | Rc1/4 | 4KB2 Series | 22          | 16   | 23.5 | 16.5    |  |
| ø63                    | 8  | 25     | 20     | 140 | 50 | 79 | 22 <sup>0</sup> / <sub>-2</sub> | 16 | 52 | 28 | 107 | 108 | 68   | 28.5 | 22.5 | 26   | 17   | 20   | 20   | Rc1/4 | 4KB2 Series | 20          | 23   | 21.5 | 24.5    |  |

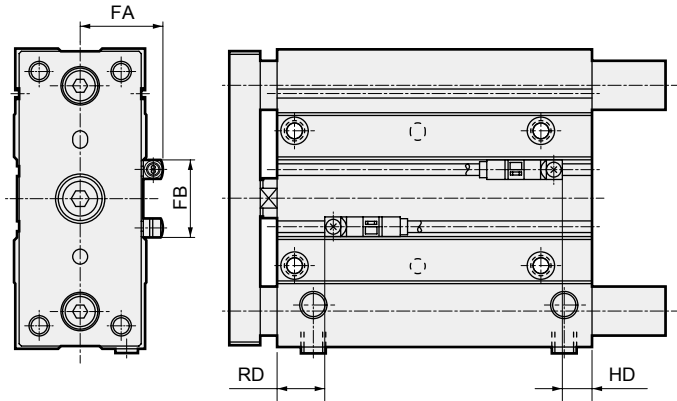
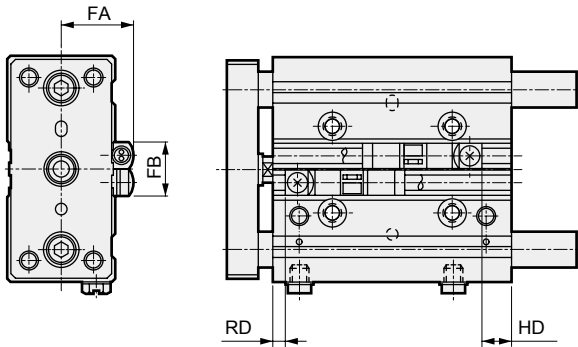
\*1: When using a custom stroke length, the dimensions are the same as the longer standard stroke length.  
 \*2: Refer to pages 552 and 553 for RD, HD and protruding dimensions of the 2-color display (except for T2WH/V and T3WH/V), off-delay, AC magnetic field proof, T1H/V and T8H/V switches.

# STS/STL Series

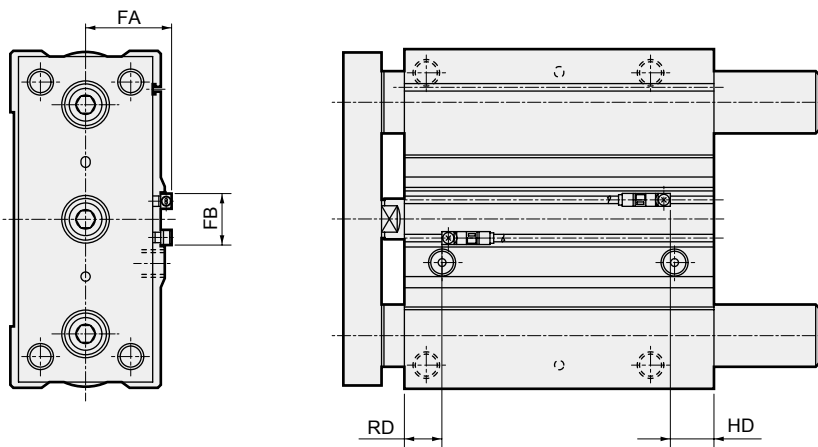
## STS/STL Series common/dimensions: 2-color display, off-delay, T8H/V switch mounting method

● Bore size:  $\varnothing 8$  to  $\varnothing 16$

● Bore size:  $\varnothing 20$  to  $\varnothing 63$



● Bore size:  $\varnothing 80$



### STS/STL (standard)

| Code<br>Bore size (mm) | FA   | FB | T*YH/V, T2JH/V |      | T8H/V |      |
|------------------------|------|----|----------------|------|-------|------|
|                        |      |    | RD             | HD   | RD    | HD   |
| $\varnothing 8$        | 17.6 | 16 | 5.5            | 1.5  | -     | -    |
| $\varnothing 12$       | 18.8 | 16 | 4              | 7.5  | -     | -    |
| $\varnothing 16$       | 20.8 | 16 | 3.5            | 8.5  | -     | -    |
| $\varnothing 20$       | 24.3 | 16 | 9.5            | 8    | 5     | 3.5  |
| $\varnothing 25$       | 26.3 | 17 | 11.5           | 7.5  | 7     | 3    |
| $\varnothing 32$       | 28.8 | 24 | 16             | 12   | 11.5  | 7.5  |
| $\varnothing 40$       | 32.3 | 31 | 19.5           | 12.5 | 15    | 8    |
| $\varnothing 50$       | 38.3 | 32 | 21.5           | 13.5 | 16    | 10   |
| $\varnothing 63$       | 44.8 | 32 | 18.5           | 21.5 | 14    | 17   |
| $\varnothing 80$       | 55.3 | 32 | 25             | 33   | 20.5  | 24.5 |
| $\varnothing 100$      | 65   | 32 | 24             | 34   | 19    | 29   |

### STS/STL-Q-R (rod side position locking)

| Code<br>Bore size (mm) | FA   | FB | RD   | HD   |
|------------------------|------|----|------|------|
| $\varnothing 20$       | 24.3 | 16 | 34.5 | 8    |
| $\varnothing 25$       | 26.3 | 17 | 36.5 | 7.5  |
| $\varnothing 32$       | 28.8 | 24 | 41   | 12   |
| $\varnothing 40$       | 32.3 | 31 | 69.5 | 13   |
| $\varnothing 50$       | 38.3 | 32 | 71.5 | 13.5 |
| $\varnothing 63$       | 44.8 | 32 | 68.5 | 21.5 |
| $\varnothing 80$       | 55.3 | 32 | 100  | 33   |

\*1: T8H/V switch cannot be installed.

### STS/STL-Q-H (head side position locking)

| Code<br>Bore size (mm) | FA   | FB | RD   | HD   |
|------------------------|------|----|------|------|
| $\varnothing 20$       | 24.3 | 16 | 9.5  | 33   |
| $\varnothing 25$       | 26.3 | 17 | 11.5 | 32.5 |
| $\varnothing 32$       | 28.8 | 24 | 16   | 37   |
| $\varnothing 40$       | 32.3 | 31 | 19.5 | 63   |
| $\varnothing 50$       | 38.3 | 32 | 21.5 | 63.5 |
| $\varnothing 63$       | 44.8 | 32 | 18.5 | 71.5 |
| $\varnothing 80$       | 55.3 | 32 | 25   | 108  |

\*1: T8H/V switch cannot be installed.

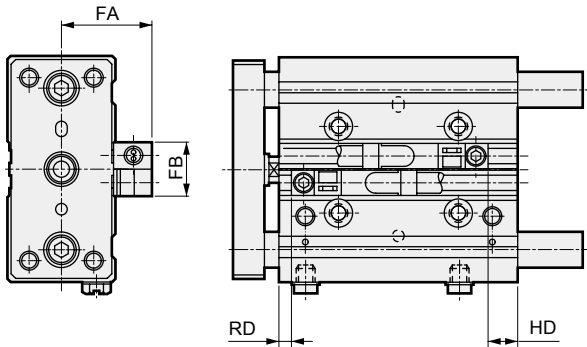
### STS/STL-C (air-cushioned)

| Code<br>Bore size (mm) | FA   | FB | T*YH/V, T2JH/V |      | T8H/V |      |
|------------------------|------|----|----------------|------|-------|------|
|                        |      |    | RD             | HD   | RD    | HD   |
| $\varnothing 25$       | 26.3 | 17 | 26.5           | 17.5 | 20.5  | 11.5 |
| $\varnothing 32$       | 28.8 | 24 | 33             | 20   | 27    | 14   |
| $\varnothing 40$       | 32.3 | 31 | 36.5           | 21   | 30.5  | 15   |
| $\varnothing 50$       | 38.3 | 32 | 37             | 22   | 31    | 16   |
| $\varnothing 63$       | 44.8 | 32 | 42.5           | 24.5 | 36.5  | 18.5 |
| $\varnothing 80$       | 55.3 | 32 | 59             | 49   | 53    | 43   |

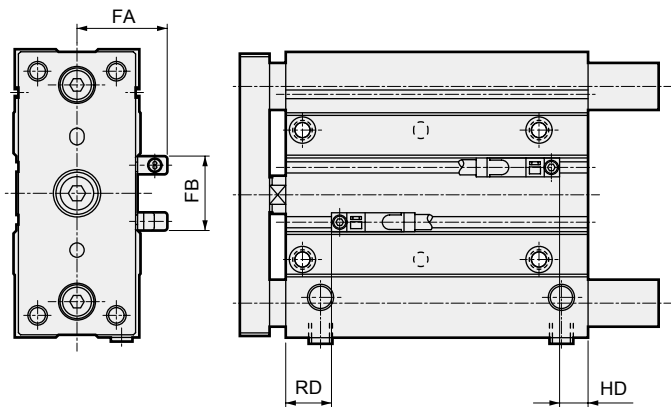


### STS/STL Series common dimensions: AC magnetic field, T1H/V switch installation dimensions

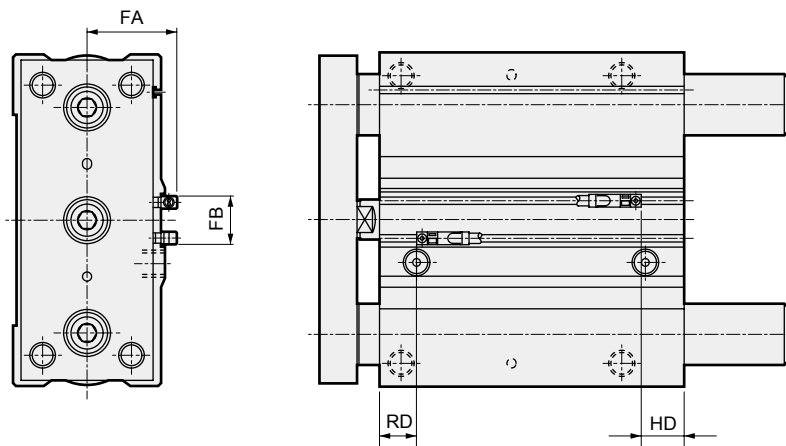
● Bore size:  $\phi 8$  to  $\phi 16$



● Bore size:  $\phi 20$  to  $\phi 63$



● Bore size:  $\phi 80$



#### STS/STL (standard)

| Code           | FA   | FB | RD   | HD   |
|----------------|------|----|------|------|
| Bore size (mm) |      |    |      |      |
| $\phi 8$       | 22.6 | 16 | 5.5  | 1.5  |
| $\phi 12$      | 23.8 | 16 | 4    | 7.5  |
| $\phi 16$      | 25.8 | 16 | 3.5  | 8.5  |
| $\phi 20$      | 29.3 | 16 | 9.5  | 8    |
| $\phi 25$      | 31.3 | 17 | 11.5 | 7.5  |
| $\phi 32$      | 33.8 | 24 | 16   | 12   |
| $\phi 40$      | 37.3 | 31 | 19.5 | 12.5 |
| $\phi 50$      | 43.3 | 32 | 21.5 | 13.5 |
| $\phi 63$      | 49.8 | 32 | 18.5 | 21.5 |
| $\phi 80$      | 60.3 | 32 | 25   | 29.5 |
| $\phi 100$     | 70.9 | 32 | 24   | 34   |

#### STS/STL-Q-R (rod side position locking)

| Code           | FA   | FB | RD   | HD   |
|----------------|------|----|------|------|
| Bore size (mm) |      |    |      |      |
| $\phi 20$      | 29.3 | 16 | 34.5 | 8    |
| $\phi 25$      | 31.3 | 17 | 36.5 | 7.5  |
| $\phi 32$      | 33.8 | 24 | 41   | 12   |
| $\phi 40$      | 37.3 | 31 | 69.5 | 13   |
| $\phi 50$      | 43.3 | 32 | 71.5 | 13.5 |
| $\phi 63$      | 49.8 | 32 | 68.5 | 21.5 |
| $\phi 80$      | 60.3 | 32 | 100  | 33   |

#### STS/STL-Q-H (head side position locking)

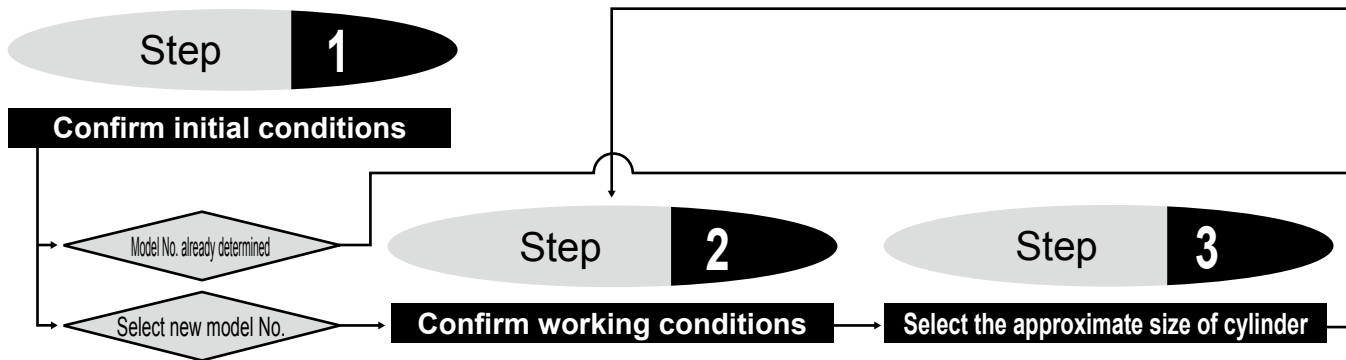
| Code           | FA   | FB | RD   | HD   |
|----------------|------|----|------|------|
| Bore size (mm) |      |    |      |      |
| $\phi 20$      | 29.3 | 16 | 9.5  | 33   |
| $\phi 25$      | 31.3 | 17 | 11.5 | 32.5 |
| $\phi 32$      | 33.8 | 24 | 16   | 37   |
| $\phi 40$      | 37.3 | 31 | 19.5 | 63   |
| $\phi 50$      | 43.3 | 32 | 21.5 | 63.5 |
| $\phi 63$      | 49.8 | 32 | 18.5 | 71.5 |
| $\phi 80$      | 60.3 | 32 | 25   | 108  |

#### STS/STL-C (air cushion)

| Code           | FA   | FB | RD   | HD   |
|----------------|------|----|------|------|
| Bore size (mm) |      |    |      |      |
| $\phi 25$      | 31.3 | 17 | 26.5 | 17.5 |
| $\phi 32$      | 33.8 | 24 | 33   | 20   |
| $\phi 40$      | 37.3 | 31 | 36.5 | 21   |
| $\phi 50$      | 43.3 | 32 | 37   | 22   |
| $\phi 63$      | 49.8 | 32 | 42.5 | 24.5 |
| $\phi 80$      | 60.3 | 32 | 59   | 49   |

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

As the selection conditions are different from those of general air cylinders, confirm whether the model is adequate or not according to the selection guide.



## Step 2 Confirm working conditions

1. Working pressure P (MPa)
2. Total applied load W (N)  
[Total applied load]  
When determining the total applied load, take into account the weight of the guide rod part of the cylinder body.  
 $W = (\text{Applied load}) + (\text{Jig load}) + (\text{Self-weight of guide rod part: } Fa)$   
Table 1 shows the formula for the self-weight of the guide rod part.

Table 1 Formula of the self weight of movable parts

| Bore size | Fa: Self-weight of movable part (N) |                          |
|-----------|-------------------------------------|--------------------------|
|           | STS                                 | STL                      |
| ø 8       | $(0.36)+0.004 \times ST$            | $(0.43)+0.004 \times ST$ |
| ø12       | $(0.54)+0.008 \times ST$            | $(0.69)+0.008 \times ST$ |
| ø16       | $(0.81)+0.012 \times ST$            | $(1.10)+0.012 \times ST$ |
| ø20       | $(1.30)+0.030 \times ST$            | $(2.00)+0.030 \times ST$ |
| ø25       | $(1.50)+0.033 \times ST$            | $(2.20)+0.033 \times ST$ |
| ø32       | $(3.90)+0.065 \times ST$            | $(5.80)+0.065 \times ST$ |
| ø40       | $(4.10)+0.065 \times ST$            | $(6.10)+0.065 \times ST$ |
| ø50       | $(7.40)+0.101 \times ST$            | $(11.2)+0.101 \times ST$ |
| ø63       | $(8.30)+0.101 \times ST$            | $(12.1)+0.101 \times ST$ |
| ø80       | $(26.2)+0.234 \times ST$            | $(40.6)+0.234 \times ST$ |
| ø100      | $(52.3)+0.248 \times ST$            | $(65.8)+0.248 \times ST$ |

ST: Stroke length (mm)

3. Mounting orientation  
[Actuation]  
Horizontal, vertical-rise, vertical-decline
4. Stroke length ST (mm)
5. Operation time t(s)
6. Operation speed V (mm/s)  
Formula of cylinder average operation speed Va  
 $Va=ST/t$  (mm/s)

## Step 3 Select the approximate size of cylinder

- Formula for calculating cylinder size (bore size)

$$F = \pi/4 \times D^2 \times P$$

$$\therefore D = \sqrt{4F/\pi P}$$

D: Cylinder bore size (mm)  
P: Working pressure (MPa)  
F: Cylinder theoretical thrust (N)

- When calculating from the theoretical thrust value in Table 2  
Approximate required thrust  $\geq$  Applied load  $\times$  2  
("x 2" in "Applied load x 2" is for when the load factor is approx. 50% as a safety coefficient)

[Example] Working pressure 0.5(MPa)

Applied load 25(N)

Required thrust:  $25(N) \times 2 = 50(N)$

The bore size selected from Table 2 with theoretical thrust of 50 N and over at working pressure of 0.5 MPa will be ø12 or more.

D=ø12

[Cylinder theoretical thrust]

Table 2 Cylinder theoretical thrust table

Theoretical thrust table ø8, ø12

Unit: N

| Actuation direction | Pressure MPa | Bore size mm |       |
|---------------------|--------------|--------------|-------|
|                     |              | ø8           | ø12   |
| Push                | 0.15         | 7.5          | 17    |
|                     | 0.2          | 10           | 22.6  |
|                     | 0.3          | 15.1         | 33.9  |
|                     | 0.4          | 20           | 45.2  |
|                     | 0.5          | 25.1         | 56.6  |
|                     | 0.6          | 30.1         | 67.8  |
|                     | 0.7          | 35.2         | 79.1  |
|                     | 0.8          | 40.2         | 90.4  |
|                     | 0.9          | 45.2         | 101.8 |

\* Refer to page 449 for theoretical thrust table.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

## Step 4

Calculate the total applied load (W) and each moment

To the next page

### Step 4 Calculate the total applied load (W) and each moment

#### ● Calculate the static load

(W<sub>0</sub>) and the moment (M) based on the load cylinder mounting status.

$$W_0 = (\text{Applied load}) + (\text{Jig load}) \quad (\text{N})$$

$$M_1 = F_1 \times \ell_1 \quad (\text{N} \cdot \text{m})$$

$$M_2 = F_2 \times \ell_2 \quad (\text{N} \cdot \text{m})$$

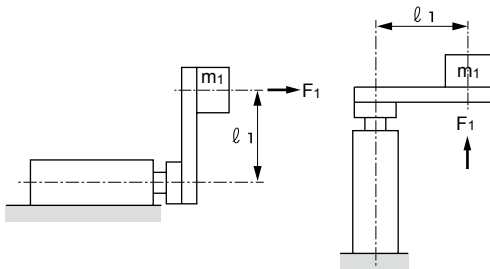
$$M_3 = F_3 \times \ell_3 \quad (\text{N} \cdot \text{m})$$

For values of F<sub>1</sub>, F<sub>2</sub> and F<sub>3</sub>, use those shown in Fig. 2.

Fig. 2 Formula for calculating each moment  
Calculate each moment from total applied load, inertia force coefficient and eccentric distance.

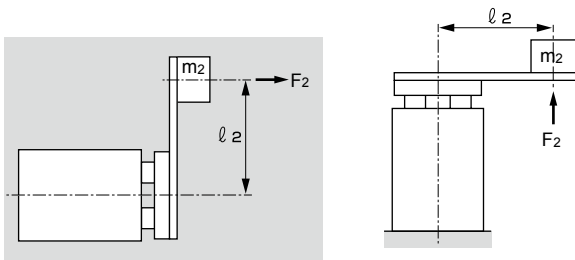
[Bending moment]

$$M_1 = F_1 \times \ell_1 = 10 \times m_1 \times G \times \ell_1$$



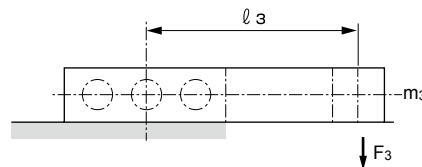
[Radial moment]

$$M_2 = F_2 \times \ell_2 = 10 \times m_2 \times G \times \ell_2$$



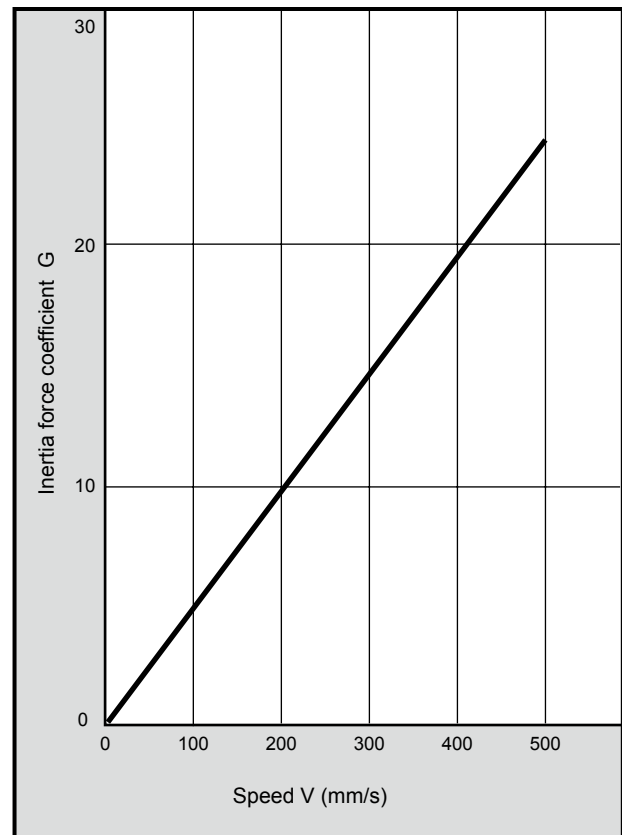
[Torsion moment]

$$M_3 = F_3 \times \ell_3 = 10 \times m_3 \times \ell_3$$

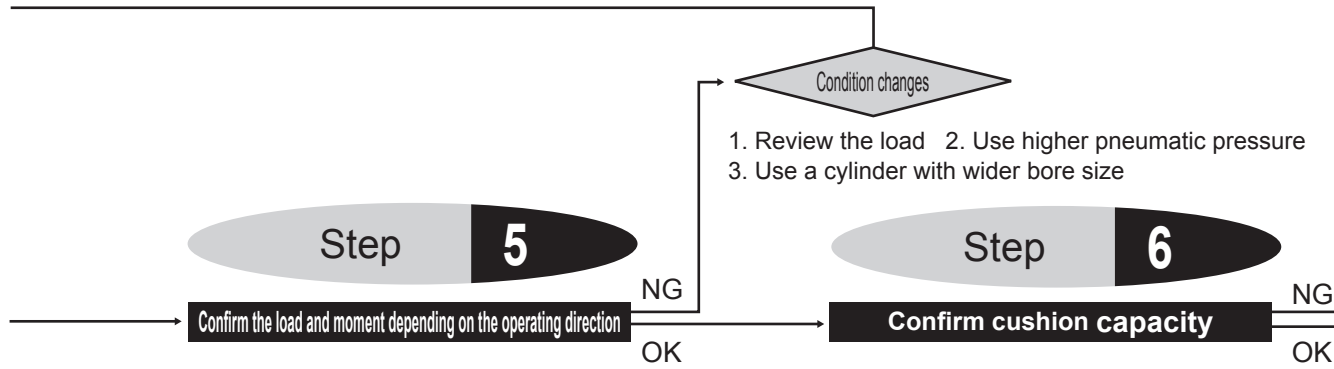


- m<sub>1</sub> : Load weight (kg)
- m<sub>2</sub> :
- m<sub>3</sub> :
- ℓ<sub>1</sub> : Eccentric distance (m)
- ℓ<sub>2</sub> :
- ℓ<sub>3</sub> :
- G : Inertia force coefficient

Fig. 3 Trend of inertia force coefficient for guided cylinder



- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL**
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending



## Step 5 Confirm the load and moment depending on the operating direction

### 5-1 Confirming total applied load

#### 1 For horizontal operation

The value of static applied load must be the allowable load value or less.

Static applied load  $W_0$  Value obtained in Step 4  
 Allowable lateral load  $W_{max}$  Select from Table 3 or the graph depending on stroke

(When using a custom stroke, select the longer standard stroke)

$$W_0 \leq W_{max}$$

Table 3 Allowable lateral load

Unit: N

| Bore size (mm) | Type                               | Bearing            | STS |    |     |
|----------------|------------------------------------|--------------------|-----|----|-----|
|                |                                    |                    | 10  | 20 | 25  |
| ø 8            | ST <sub>L</sub> <sup>S</sup> -M-8  | Metal bush bearing | 14  | 11 | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-8  | Ball bearing       | 16  | 11 | -   |
| ø12            | ST <sub>L</sub> <sup>S</sup> -M-12 | Metal bush bearing | 23  | 19 | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-12 | Ball bearing       | 30  | 21 | -   |
| ø16            | ST <sub>L</sub> <sup>S</sup> -M-16 | Metal bush bearing | 40  | 34 | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-16 | Ball bearing       | 44  | 32 | -   |
| ø20            | ST <sub>L</sub> <sup>S</sup> -M-20 | Metal bush bearing | -   | -  | 48  |
|                | ST <sub>L</sub> <sup>S</sup> -B-20 | Ball bearing       | -   | -  | 45  |
| ø25            | ST <sub>L</sub> <sup>S</sup> -M-25 | Metal bush bearing | -   | -  | 48  |
|                | ST <sub>L</sub> <sup>S</sup> -B-25 | Ball bearing       | -   | -  | 45  |
| ø32            | ST <sub>L</sub> <sup>S</sup> -M-32 | Metal bush bearing | -   | -  | 141 |
|                | ST <sub>L</sub> <sup>S</sup> -B-32 | Ball bearing       | -   | -  | 49  |

\* Refer to page 564 for allowable lateral load.

Also refer to the graphs on pages 566 to 569 for eccentric load.

#### 2 For vertical operation

The total applied load value must be the value obtained by applying the load factor to the theoretical thrust

##### ● Calculation of load factor

Total applied load  $W$  Value obtained in Step 2  
 Theoretical thrust of cylinder  $F$  Select from the theoretical thrust table on page 449 depending on the pressure

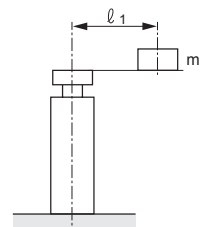
$$\alpha = W/F \times 100 (\%)$$

- Determine the load factor by taking into account the status of utilization such as stability margin and service life of the cylinder. For general use, the value within the range in Table 4 is desirable.

Table 4 Appropriate range of load factor (reference value)

| Working pressure (MPa) | Load factor (%)  |
|------------------------|------------------|
| 0.1 to 0.3             | $\alpha \leq 40$ |
| 0.3 to 0.6             | $\alpha \leq 50$ |
| 0.6 to 1.0             | $\alpha \leq 60$ |

- A lateral load works when an eccentric load is applied. The lateral load should be within the allowable lateral load in Table 3.



$$\frac{m_1 \times l_1 \times 10}{L} \leq W_{max}$$

st: Stroke (m)

| Bore size | L        | Bore size | L        |
|-----------|----------|-----------|----------|
| ø8        | 0.015+st | ø32       | 0.022+st |
| ø12       | 0.015+st | ø40       | 0.022+st |
| ø16       | 0.016+st | ø50       | 0.025+st |
| ø20       | 0.016+st | ø63       | 0.025+st |
| ø25       | 0.016+st | ø80       | 0.046+st |
|           |          | ø100      | 0.055+st |

### 5-2 Confirming static moment

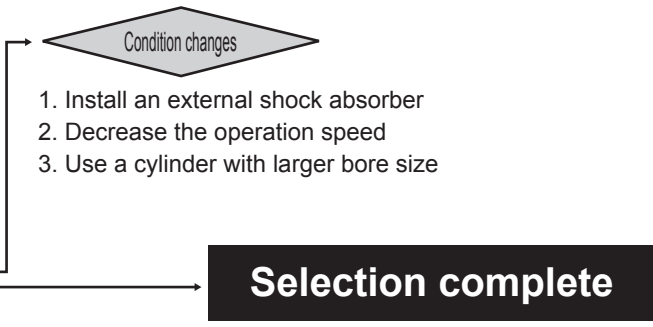
- 1 Divide the value of bending moment and radial moment by the value in Table 5 to obtain the moment ratio and check that the total value of the moment ratio is 1.0 or less.

##### ● Calculation of moment ratio

Bending moment  $M_1$  } Calculated value  
 Radial moment  $M_2$  } in Step 4

$$M_1/M_{1max} + M_2/M_{2max} \leq 1.0$$

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending



### Step 6 Confirm cushion capacity

Check if the kinetic energy generated by an actual load can be absorbed by the cylinder cushion.

- The allowable absorbed energy of cylinder (E1) depends on the cylinder model. Use the values in Table 7 for STS and STL.
- Formula for calculating the piston kinetic energy (E2)

$$E_2 = 1/2 \times W \times V^2 \times \frac{1}{10} \text{ (J)}$$

W: Total applied load (N) Value obtained

in Step 2

V: Speed of the piston entering the cushion (m/s)

$$V = ST/t \times (1 + 1.5 \times \alpha/100)$$

ST : Stroke (m)

t : Operating time (s)

$\alpha$  : Load factor (%)

Table 5 Allowable value of moment (N·m)

| Bore size (mm) | Allowable bending moment M1 max, M2 max (N·m) |
|----------------|---|
| ø8             | 4.1   |
| ø12            | 6.1   |
| ø16            | 19.3  |
| ø20            | 32.6  |
| ø25            | 48.5  |
| ø32            | 107.4   |
| ø40            | 107.4   |
| ø50            | 201.7   |
| ø63            | 201.7   |
| ø80            | 726.0   |
| ø100           | 726.0   |

- 2 The torsion moment must be the allowable torque value or less.

Torsion moment M3 Value obtained in Step 4  
Allowable torque

M3max Select from Table 6 depending on the stroke  
(When using a custom stroke, select the longer standard stroke)

$$M_3 \leq M_{3max}$$

Table 6 Allowable torque (N·m)

| Bore size (mm) | Type                                | Bearing            | STS  |      |       |
|----------------|-------------------------------------|--------------------|------|------|-------|
|                |                                     |                    | 10   | 20   | 25    |
| ø 8            | ST <sub>L</sub> <sup>S</sup> -M-8   | Metal bush bearing | 0.14 | 0.11 | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-8   | Ball bearing       | 0.16 | 0.11 | -     |
| ø 12           | ST <sub>L</sub> <sup>S</sup> -M-12  | Metal bush bearing | 0.24 | 0.19 | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-12  | Ball bearing       | 0.31 | 0.22 | -     |
| ø 16           | ST <sub>L</sub> <sup>S</sup> -M-16  | Metal bush bearing | 0.46 | 0.39 | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-16  | Ball bearing       | 0.51 | 0.37 | -     |
| ø 20           | ST <sub>L</sub> <sup>S</sup> -M-20  | Metal bush bearing | -    | -    | 0.71  |
|                | ST <sub>L</sub> <sup>S</sup> -B-20  | Ball bearing       | -    | -    | 1.19  |
| ø 25           | ST <sub>L</sub> <sup>S</sup> -M-25  | Metal bush bearing | -    | -    | 0.76  |
|                | ST <sub>L</sub> <sup>S</sup> -B-25  | Ball bearing       | -    | -    | 1.28  |
| ø 32           | ST <sub>L</sub> <sup>S</sup> -M-32  | Metal bush bearing | -    | -    | 2.86  |
|                | ST <sub>L</sub> <sup>S</sup> -B-32  | Ball bearing       | -    | -    | 0.99  |
| ø 40           | ST <sub>L</sub> <sup>S</sup> -M-40  | Metal bush bearing | -    | -    | 3.17  |
|                | ST <sub>L</sub> <sup>S</sup> -B-40  | Ball bearing       | -    | -    | 1.10  |
| ø 50           | ST <sub>L</sub> <sup>S</sup> -M-50  | Metal bush bearing | -    | -    | 5.86  |
|                | ST <sub>L</sub> <sup>S</sup> -B-50  | Ball bearing       | -    | -    | 2.01  |
| ø 63           | ST <sub>L</sub> <sup>S</sup> -M-63  | Metal bush bearing | -    | -    | 6.60  |
|                | ST <sub>L</sub> <sup>S</sup> -B-63  | Ball bearing       | -    | -    | 2.26  |
| ø 80           | ST <sub>L</sub> <sup>S</sup> -M-80  | Metal bush bearing | -    | -    | 13.95 |
|                | ST <sub>L</sub> <sup>S</sup> -B-80  | Ball bearing       | -    | -    | 8.48  |
| ø 100          | ST <sub>L</sub> <sup>S</sup> -M-100 | Metal bush bearing | -    | -    | 18.23 |
|                | ST <sub>L</sub> <sup>S</sup> -B-100 | Ball bearing       | -    | -    | 11.07 |

\* Refer to page 564 for allowable torque.

### Allowable absorbed energy of cylinder

- The kinetic energy absorption performance of the cylinder's cushion depends on the cylinder bore size. For the guided cylinder, use the values in Table 7 for comparison.

Table 7 Allowable absorbed energy value (E1) of STS/STL

| Bore size (mm) | Allowable absorbed energy (J) |                    |             |                 |
|----------------|-------------------------------|--------------------|-------------|-----------------|
|                | Rubber cushion                | Rubber-air cushion | Air cushion | Without cushion |
| ø8             | 0.029                         | —                  | —           | —               |
| ø12            | 0.056                         | —                  | —           | 0.004           |
| ø16            | 0.088                         | —                  | —           | 0.010           |
| ø20            | 0.157                         | —                  | —           | 0.016           |
| ø25            | 0.157                         | —                  | 1.18        | 0.021           |
| ø32            | 0.401                         | 0.401              | 2.27        | 0.025           |
| ø40            | 0.627                         | 0.627              | 3.05        | 0.092           |
| ø50            | 0.980                         | 0.980              | 3.81        | 0.100           |
| ø63            | 1.560                         | 1.560              | 15.64       | 0.120           |
| ø80            | 2.510                         | 2.510              | 20.18       | 0.270           |
| ø100           | 3.920                         | —                  | —           | 0.560           |

**E1 > E2**  
(Allowable absorbed energy) > (Kinetic energy of piston)

**Selection complete**

**E1 < E2**  
(Allowable absorbed energy) < (Kinetic energy of piston)

# STS Series

## Technical data ① Cylinder weight

### ● Short stroke

Unit: g

| Model series   | Bore size (mm) | Bearing | Weight for 0 mm stroke |           |       | Weight per switch (Grommet)                       | Additional weight per St = 25 mm<br>ø8 to ø16:<br>(Additional weight per St = 10 mm) |      |      |
|--|----------------|---------|------------------------|-----------|-------|---|--|------|------|
|  |                |         | Cylinder body          | End plate |       |   |  |      |      |
|  |                |         |                        | Standard  | Steel |   |  |      |      |
| <ul style="list-style-type: none"> <li>● Standard single rod STS-M<sub>B</sub></li> <li>● Low speed STS-M<sub>B</sub>O</li> <li>● Copper and PTFE free STS-M<sub>B</sub>-P6</li> <li>● Corrosion proof STS-M<sub>B</sub>-M/M1</li> <li>● Heat resistance STS-M<sub>B</sub>T</li> <li>● Packing fluoro rubber STS-M<sub>B</sub>T2</li> <li>● Rubber-air cushioned STS-M<sub>B</sub>*C</li> <li>● Fine speed STS-M<sub>B</sub>F</li> </ul> | ø 8            | M       | 102                    | 22        | 62    | Refer to the weight in the switch specifications. | 29   |      |      |
|  |                | B       | 89                     |           |       |   | 27   | 76   | 37   |
|  | ø12            | M       | 151                    |           |       |   |  |      |      |
|  |                | B       | 154                    |           |       |   |  |      |      |
|  | ø16            | M       | 225                    |           |       |   |  |      |      |
|  |                | B       | 229                    |           |       |   | 37   | 104  | 47   |
|  | ø20            | M       | 483                    |           |       |   |  |      |      |
|  |                | B       | 363                    |           |       |   | 72   | 200  | 150  |
|  | ø25            | M       | 534                    |           |       |   |  |      |      |
|  |                | B       | 415                    |           |       |   | 78   | 219  | 169  |
|  | ø32            | M       | 924                    |           |       |   |  |      |      |
|  |                | B       | 804                    |           |       |   | 162  | 451  | 231  |
|  | ø40            | M       | 1333                   |           |       |   |  |      |      |
|  |                | B       | 1214                   |           |       |   | 195  | 543  | 283  |
|  | ø50            | M       | 2026                   |           |       |   |  |      |      |
|  |                | B       | 1915                   |           |       |   | 415  | 1158 | 428  |
|  | ø63            | M       | 2803                   |           |       |   |  |      |      |
|  |                | B       | 2569                   |           |       |   | 530  | 1478 | 557  |
| ø80  | M              | 6435    |                        |           |       |   |  |      |      |
|  | B              | 5876    |                        |           | 1335  | 3720  | 1265   |      |      |
| ø100   | M              | 10850   |                        |           |       |   |  |      |      |
|  | B              | 9934    |                        |           | 2685  | 7491  | 1150   |      |      |
| <ul style="list-style-type: none"> <li>● Stroke adjustable STS-M<sub>B</sub>P</li> </ul>   | ø 8            | M       | 260                    | 22        | 62    | Refer to the weight in the switch specifications. | 33   |      |      |
|  |                | B       | 243                    |           |       |   |  |      | 45   |
|  | ø12            | M       | 340                    |           |       |   |  |      |      |
|  |                | B       | 333                    |           |       |   | 27   | 76   | 59   |
|  | ø16            | M       | 462                    |           |       |   |  |      |      |
|  |                | B       | 454                    |           |       |   | 37   | 104  | 210  |
|  | ø20            | M       | 742                    |           |       |   |  |      |      |
|  |                | B       | 602                    |           |       |   | 72   | 200  | 229  |
|  | ø25            | M       | 836                    |           |       |   |  |      |      |
|  |                | B       | 697                    |           |       |   | 78   | 219  | 335  |
|  | ø32            | M       | 1499                   |           |       |   |  |      |      |
|  |                | B       | 1331                   |           |       |   | 162  | 451  | 407  |
|  | ø40            | M       | 2006                   |           |       |   |  |      |      |
|  |                | B       | 1841                   |           |       |   | 195  | 543  | 620  |
|  | ø50            | M       | 3323                   |           |       |   |  |      |      |
|  |                | B       | 3106                   |           |       |   | 415  | 1158 | 749  |
|  | ø63            | M       | 4458                   |           |       |   |  |      |      |
|  |                | B       | 4118                   |           |       |   | 530  | 1478 | 1755 |
| ø80  | M              | 9505    |                        |           |       |   |  |      |      |
|  | B              | 8776    |                        |           | 1335  | 3720  | 1526   |      |      |
| <ul style="list-style-type: none"> <li>● Position locking STS-M<sub>B</sub>Q-H (with head side position locking)</li> </ul>  | ø20            | M       | 680                    | 72        | 200   | Refer to the weight in the switch specifications. | 150  |      |      |
|  |                | B       | 560                    |           |       |   |  |      | 169  |
|  | ø25            | M       | 767                    |           |       |   |  |      |      |
|  |                | B       | 648                    |           |       |   | 78   | 219  | 231  |
|  | ø32            | M       | 1235                   |           |       |   |  |      |      |
|  |                | B       | 1115                   |           |       |   | 162  | 451  | 283  |
|  | ø40            | M       | 2183                   |           |       |   |  |      |      |
|  |                | B       | 2064                   |           |       |   | 195  | 543  | 428  |
|  | ø50            | M       | 3305                   |           |       |   |  |      |      |
|  |                | B       | 3194                   |           |       |   | 415  | 1158 | 557  |
|  | ø63            | M       | 4554                   |           |       |   |  |      |      |
|  |                | B       | 4320                   |           |       |   | 530  | 1478 | 1265 |
| ø80  | M              | 11583   |                        |           |       |   |  |      |      |
|  | B              | 10679   |                        |           | 1335  | 3720  | 1150   |      |      |
| <ul style="list-style-type: none"> <li>● Position locking STS-M<sub>B</sub>Q-R (with rod side position locking)</li> </ul>   | ø20            | M       | 666                    | 72        | 200   | Refer to the weight in the switch specifications. | 150  |      |      |
|  |                | B       | 546                    |           |       |   |  |      | 169  |
|  | ø25            | M       | 749                    |           |       |   |  |      |      |
|  |                | B       | 630                    |           |       |   | 78   | 219  | 231  |
|  | ø32            | M       | 1221                   |           |       |   |  |      |      |
|  |                | B       | 1101                   |           |       |   | 162  | 451  | 283  |
|  | ø40            | M       | 2126                   |           |       |   |  |      |      |
|  |                | B       | 2007                   |           |       |   | 195  | 543  | 428  |
|  | ø50            | M       | 3214                   |           |       |   |  |      |      |
|  |                | B       | 3103                   |           |       |   | 415  | 1158 | 557  |
|  | ø63            | M       | 4434                   |           |       |   |  |      |      |
|  |                | B       | 4200                   |           |       |   | 530  | 1478 | 1265 |
| ø80  | M              | 11340   |                        |           |       |   |  |      |      |
|  | B              | 10436   |                        |           | 1335  | 3720  | 1150   |      |      |

### ● Short stroke

| Model series   | Bore size (mm)  | Bearing | Weight for 0 mm stroke |           |       | Weight per switch (Grommet)                       | Additional weight per St = 25 mm | Unit: g   |     |
|--|---|---------|------------------------|-----------|-------|---|----------------------------------|---|-----|
|  |   |         | Cylinder body          | End plate |       |   |                                  |   |     |
|  |   |         |                        | Standard  | Steel |   |                                  |   |     |
| <ul style="list-style-type: none"> <li>● Coil scraper STS-<sup>M</sup><sub>B</sub>G1</li> <li>● Rubber scraper STS-<sup>M</sup><sub>B</sub>G</li> <li>● Coolant proof STS-<sup>M</sup><sub>B</sub>G2, G3</li> <li>● Anti-spatter adherence STS-<sup>M</sup><sub>B</sub>G4</li> </ul> | ø20   | M       | 572                    | 72        | 200   | Refer to the weight in the switch specifications. | 150                              |   |     |
|  |   | B       | 452                    |           |       |   |                                  |   |     |
|  | ø25   | M       | 630                    | 78        | 219   |   | 169                              |   |     |
|  |   | B       | 511                    |           |       |   |                                  |   |     |
|  | ø32   | M       | 1083                   | 162       | 451   |   | 231                              |   |     |
|  |   | B       | 963                    |           |       |   |                                  |   |     |
|  | ø40   | M       | 1667                   | 195       | 543   |   | 283                              |   |     |
|  |   | B       | 1548                   |           |       |   |                                  |   |     |
|  | ø50   | M       | 2299                   | 415       | 1158  |   | 428                              |   |     |
|  |   | B       | 2188                   |           |       |   |                                  |   |     |
|  | ø63   | M       | 3125                   | 530       | 1478  |   | 557                              |   |     |
|  |   | B       | 2891                   |           |       |   |                                  |   |     |
|  | ø80   | M       | 6861                   | 1335      | 3720  |   | 1265                             |   |     |
|  |   | B       | 6302                   |           |       |   |                                  | 1150  |     |
| <ul style="list-style-type: none"> <li>● Valve equipped STS-<sup>M</sup><sub>B</sub>V<sup>1</sup>/<sub>2</sub> (with valve on front)</li> </ul>  | ø20   | M       | 668                    | 72        | 200   | Refer to the weight in the switch specifications. | 150                              |   |     |
|  |   | B       | 548                    |           |       |   |                                  |   |     |
|  | ø25   | M       | 719                    | 78        | 219   |   | 169                              |   |     |
|  |   | B       | 600                    |           |       |   |                                  |   |     |
|  | ø32   | M       | 1136                   | 162       | 451   |   | 231                              |   |     |
|  |   | B       | 1016                   |           |       |   |                                  |   |     |
|  | ø40   | M       | 1648                   | 195       | 543   |   | 283                              |   |     |
|  |   | B       | 1529                   |           |       |   |                                  |   |     |
|  | ø50   | M       | 2428                   | 415       | 1158  |   | 428                              |   |     |
|  |   | B       | 2317                   |           |       |   |                                  |   |     |
|  | ø63   | M       | 3205                   | 530       | 1478  |   | 557                              |   |     |
|  |   | B       | 2971                   |           |       |   |                                  |   |     |
|  | <ul style="list-style-type: none"> <li>● Valve equipped STS-<sup>M</sup><sub>B</sub>V<sup>1</sup>/<sub>2</sub>S (with valve on side)</li> </ul> | ø20     | M                      | 663       | 72    |   | 200                              | Refer to the weight in the switch specifications. | 150 |
|  |   |         | B                      | 543       |       |   |                                  |   |     |
| ø25  |   | M       | 714                    | 78        | 219   | 169   |                                  |   |     |
|  |   | B       | 595                    |           |       |   |                                  |   |     |
| ø32  |   | M       | 1104                   | 162       | 451   | 231   |                                  |   |     |
|  |   | B       | 684                    |           |       |   |                                  |   |     |
| ø40  |   | M       | 1651                   | 195       | 543   | 283   |                                  |   |     |
|  |   | B       | 1532                   |           |       |   |                                  |   |     |
| ø50  |   | M       | 2344                   | 45        | 1158  | 428   |                                  |   |     |
|  |   | B       | 2233                   |           |       |   |                                  |   |     |
| ø63  |   | M       | 3121                   | 530       | 1478  | 557   |                                  |   |     |
|  |   | B       | 2887                   |           |       |   |                                  |   |     |

Note: Refer to Ending Page 16 for the switch weight of 3 m and 5 m switch lead wire lengths.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

## ● Long stroke

Unit: g

| Model series   | Bore size (mm) | Bearing | Weight for 0 mm stroke |           |       | Additional weight per St = 25 mm                  |
|--|----------------|---------|------------------------|-----------|-------|---|
|  |                |         | Cylinder body          | End plate |       |   |
|  |                |         |                        | Standard  | Steel |   |
| ● Standard single rod<br>STL <sup>M</sup> <sub>B</sub><br>● Low speed<br>STL <sup>M</sup> <sub>B</sub> O<br>● Copper and PTFE free<br>STL <sup>M</sup> <sub>B</sub> -P6<br>● Corrosion proof<br>STL <sup>M</sup> <sub>B</sub> -MM1<br>● Heat resistance<br>STL <sup>M</sup> <sub>B</sub> T<br>● Packing fluoro rubber<br>STL <sup>M</sup> <sub>B</sub> T2<br>● Rubber-air cushioned<br>STL <sup>M</sup> <sub>B</sub> *C<br>● Fine speed<br>STL <sup>M</sup> <sub>B</sub> F | ø 8            | M       | 103                    | 22        | 62    | Refer to the weight in the switch specifications. |
|  |                | B       | 99                     |           |       |   |
|  | ø 12           | M       | 159                    | 27        | 76    |   |
|  |                | B       | 173                    |           |       |   |
|  | ø 16           | M       | 232                    | 37        | 104   |   |
|  |                | B       | 265                    |           |       |   |
|  | ø 20           | M       | 890                    | 72        | 200   |   |
|  |                | B       | 751                    |           |       |   |
|  | ø 25           | M       | 979                    | 78        | 219   |   |
|  |                | B       | 840                    |           |       |   |
|  | ø 32           | M       | 1705                   | 162       | 451   |   |
|  |                | B       | 1520                   |           |       |   |
|  | ø 40           | M       | 2218                   | 195       | 543   |   |
|  |                | B       | 2033                   |           |       |   |
|  | ø 50           | M       | 3587                   | 415       | 1158  |   |
|  |                | B       | 3228                   |           |       |   |
|  | ø 63           | M       | 4501                   | 530       | 1478  |   |
|  |                | B       | 4142                   |           |       |   |
| ø 80   | M              | 10337   | 1335                   | 3720      |       |   |
|  | B              | 9341    |                        |           |       |   |
| ø 100  | M              | 16649   | 2685                   | 7491      |       |   |
|  | B              | 15385   |                        |           |       |   |
| ● Stroke adjustable<br>STL <sup>M</sup> <sub>B</sub> P   | ø 8            | M       | 261                    | 22        | 62    |   |
|  |                | B       | 253                    |           |       |   |
|  | ø 12           | M       | 348                    | 27        | 76    |   |
|  |                | B       | 352                    |           |       |   |
|  | ø 16           | M       | 469                    | 37        | 104   |   |
|  |                | B       | 490                    |           |       |   |
|  | ø 20           | M       | 1149                   | 72        | 200   |   |
|  |                | B       | 990                    |           |       |   |
|  | ø 25           | M       | 1281                   | 78        | 219   |   |
|  |                | B       | 1122                   |           |       |   |
|  | ø 32           | M       | 2280                   | 162       | 451   |   |
|  |                | B       | 2049                   |           |       |   |
|  | ø 40           | M       | 2891                   | 195       | 543   |   |
|  |                | B       | 2658                   |           |       |   |
|  | ø 50           | M       | 4884                   | 415       | 1158  |   |
|  |                | B       | 4419                   |           |       |   |
|  | ø 63           | M       | 6156                   | 530       | 1478  |   |
|  |                | B       | 5691                   |           |       |   |
| ø 80   | M              | 12035   | 1335                   | 3720      |       |   |
|  | B              | 11191   |                        |           |       |   |
| ● Position locking<br>STL <sup>M</sup> <sub>B</sub> Q-H<br>(with head side position locking)   | ø 20           | M       | 1087                   | 72        | 200   |   |
|  |                | B       | 948                    |           |       |   |
|  | ø 25           | M       | 1212                   | 78        | 219   |   |
|  |                | B       | 1073                   |           |       |   |
|  | ø 32           | M       | 2016                   | 162       | 451   |   |
|  |                | B       | 1831                   |           |       |   |
|  | ø 40           | M       | 3068                   | 195       | 543   |   |
|  |                | B       | 2883                   |           |       |   |
|  | ø 50           | M       | 4866                   | 415       | 1158  |   |
|  |                | B       | 4507                   |           |       |   |
|  | ø 63           | M       | 6252                   | 530       | 1478  |   |
|  |                | B       | 5893                   |           |       |   |
| ø 80   | M              | 15485   | 1335                   | 3720      |       |   |
|  | B              | 14144   |                        |           |       |   |
| ● Position locking<br>STL <sup>M</sup> <sub>B</sub> Q-R<br>(with rod side position locking)  | ø 20           | M       | 1073                   | 72        | 200   |   |
|  |                | B       | 934                    |           |       |   |
|  | ø 25           | M       | 1194                   | 78        | 219   |   |
|  |                | B       | 1056                   |           |       |   |
|  | ø 32           | M       | 2002                   | 162       | 451   |   |
|  |                | B       | 1867                   |           |       |   |
|  | ø 40           | M       | 3011                   | 195       | 543   |   |
|  |                | B       | 2826                   |           |       |   |
|  | ø 50           | M       | 4775                   | 415       | 1158  |   |
|  |                | B       | 4416                   |           |       |   |
|  | ø 63           | M       | 6132                   | 530       | 1478  |   |
|  |                | B       | 5773                   |           |       |   |
| ø 80   | M              | 15242   | 1335                   | 3720      |       |   |
|  | B              | 13401   |                        |           |       |   |



### ● Long stroke

| Model series   | Bore size (mm) | Bearing | Weight for 0 mm stroke |           |       | Weight per switch (Grommet)                       | Additional weight per St = 25 mm | Unit: g |
|--|----------------|---------|------------------------|-----------|-------|---|----------------------------------|---------|
|  |                |         | Cylinder body          | End plate |       |   |                                  |         |
|  |                |         |                        | Standard  | Steel |   |                                  |         |
| <ul style="list-style-type: none"> <li>● Coil scraper<br/>STL<sup>M</sup><sub>B</sub>G1</li> <li>● Rubber scraper<br/>STL<sup>M</sup><sub>B</sub>G</li> <li>● Coolant proof<br/>STL<sup>M</sup><sub>B</sub>G2, G3</li> <li>● Anti-spatter adherence<br/>STL<sup>M</sup><sub>B</sub>G4</li> </ul> | ø20            | M       | 979                    | 72        | 200   | Refer to the weight in the switch specifications. | 150                              |         |
|  |                | B       | 840                    |           |       |   |                                  |         |
|  | ø25            | M       | 1075                   | 78        | 219   |   | 169                              |         |
|  |                | B       | 936                    |           |       |   |                                  |         |
|  | ø32            | M       | 1864                   | 162       | 451   |   | 231                              |         |
|  |                | B       | 1679                   |           |       |   |                                  |         |
|  | ø40            | M       | 2552                   | 195       | 543   |   | 283                              |         |
|  |                | B       | 2367                   |           |       |   |                                  |         |
|  | ø50            | M       | 3860                   | 415       | 1158  |   | 428                              |         |
|  |                | B       | 3501                   |           |       |   |                                  |         |
|  | ø63            | M       | 4823                   | 530       | 1478  |   | 557                              |         |
|  |                | B       | 4464                   |           |       |   |                                  |         |
| ø80  | M              | 10763   | 1335                   | 3720      | 1265  |   |                                  |         |
|  | B              | 9767    |                        |           |       | 1150  |                                  |         |
| <ul style="list-style-type: none"> <li>● Valve equipped<br/>STL<sup>M</sup><sub>B</sub>V<sub>2</sub>(with valve on front)</li> </ul>   | ø20            | M       | 1075                   | 72        | 200   | Refer to the weight in the switch specifications. | 150                              |         |
|  |                | B       | 936                    |           |       |   |                                  |         |
|  | ø25            | M       | 1164                   | 78        | 219   |   | 169                              |         |
|  |                | B       | 1025                   |           |       |   |                                  |         |
|  | ø32            | M       | 1917                   | 162       | 451   |   | 231                              |         |
|  |                | B       | 1732                   |           |       |   |                                  |         |
|  | ø40            | M       | 2533                   | 195       | 543   |   | 283                              |         |
|  |                | B       | 2348                   |           |       |   |                                  |         |
|  | ø50            | M       | 3989                   | 415       | 1158  |   | 428                              |         |
|  |                | B       | 3630                   |           |       |   |                                  |         |
|  | ø63            | M       | 4903                   | 530       | 1478  |   | 557                              |         |
|  |                | B       | 4544                   |           |       |   |                                  |         |
| <ul style="list-style-type: none"> <li>● Valve equipped<br/>STL<sup>M</sup><sub>B</sub>V<sub>2</sub>S (with valve on side)</li> </ul>  | ø20            | M       | 1070                   | 72        | 200   | Refer to the weight in the switch specifications. | 150                              |         |
|  |                | B       | 931                    |           |       |   |                                  |         |
|  | ø25            | M       | 1159                   | 78        | 219   |   | 169                              |         |
|  |                | B       | 1020                   |           |       |   |                                  |         |
|  | ø32            | M       | 1885                   | 162       | 451   |   | 231                              |         |
|  |                | B       | 1700                   |           |       |   |                                  |         |
|  | ø40            | M       | 2536                   | 195       | 543   |   | 283                              |         |
|  |                | B       | 2351                   |           |       |   |                                  |         |
|  | ø50            | M       | 3905                   | 415       | 1158  |   | 428                              |         |
|  |                | B       | 3546                   |           |       |   |                                  |         |
|  | ø63            | M       | 4819                   | 530       | 1478  |   | 557                              |         |
|  |                | B       | 4460                   |           |       |   |                                  |         |

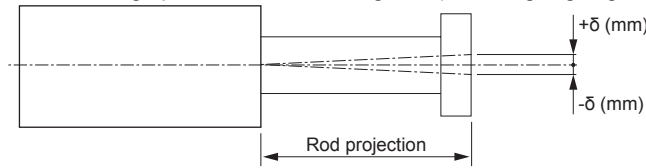
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL Series

## Technical data ② Deflection

### Deflection

For the inclination that is produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)



ø8 to ø16 metal bush bearing

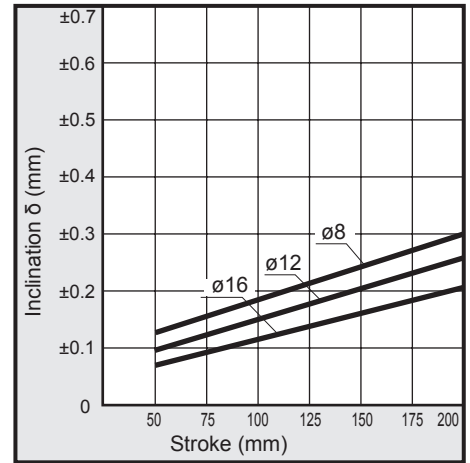
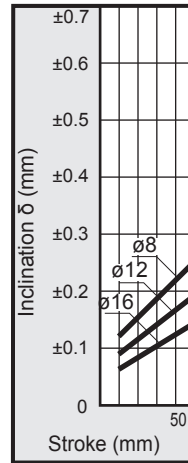
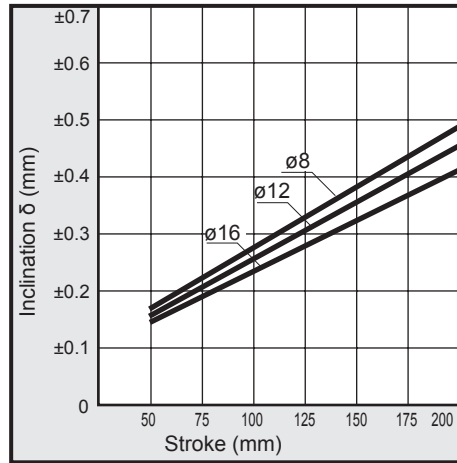
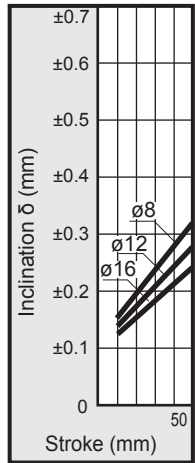
ø8 to ø16 ball bearing

STS-M

STL-M

STS-B

STL-B



ø20 to ø100 Metal bush bearing

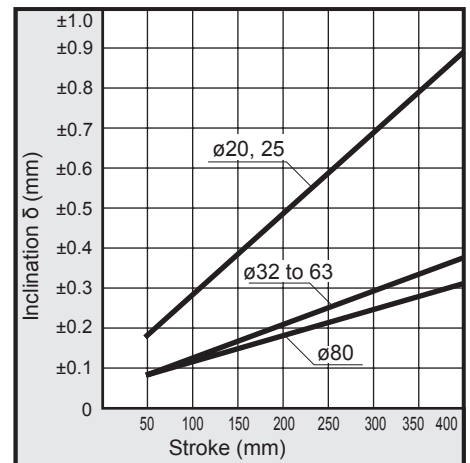
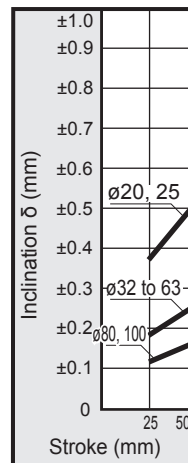
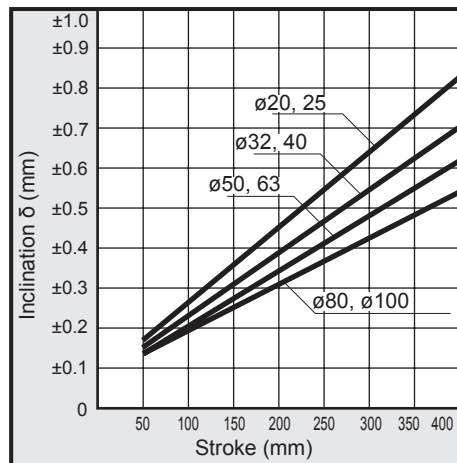
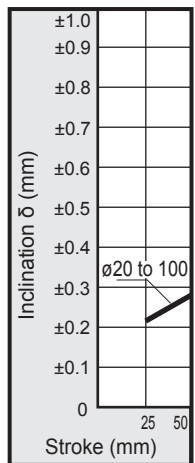
ø20 to ø80 ball bearing

STS-M

STL-M

STS-B

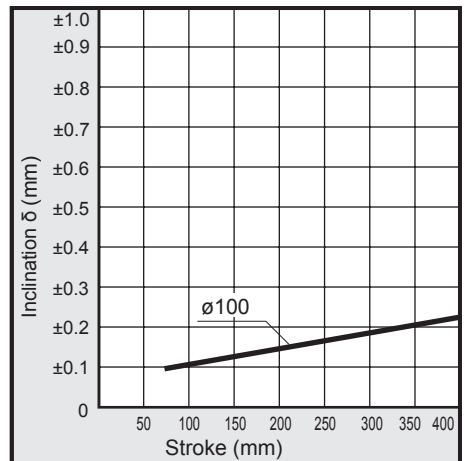
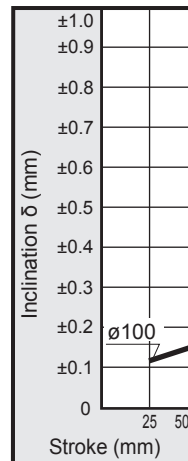
STL-B



ø100 ball bearing

STS-B

STL-B

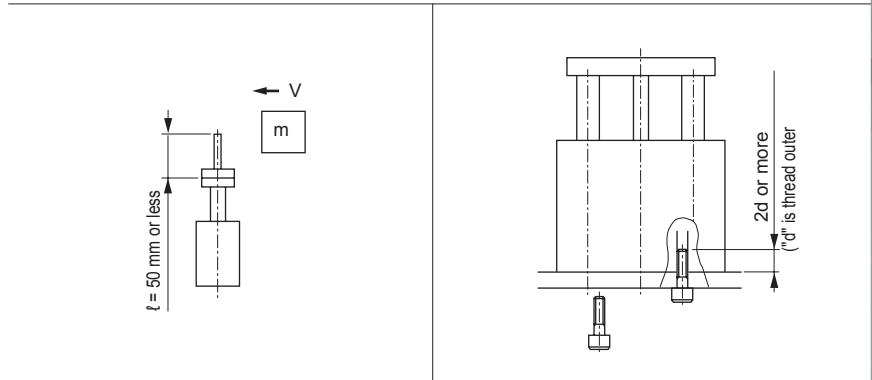
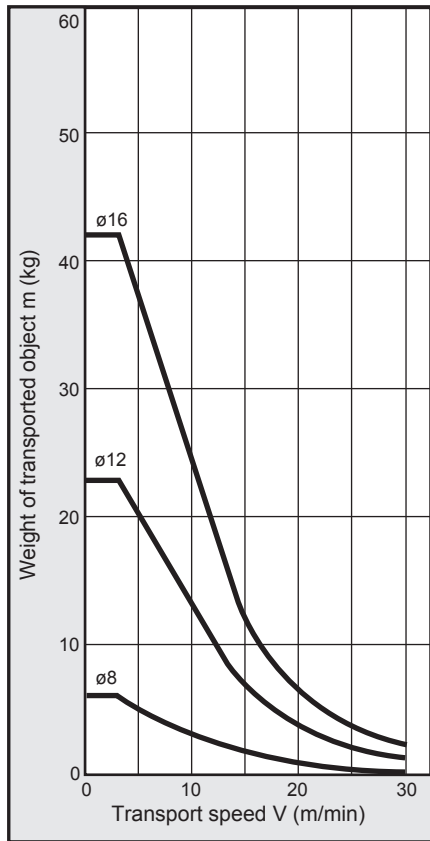


- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## Specified range when using the product as a stopper

Impact load

STS-M-8 to 16 (metal bush bearing)

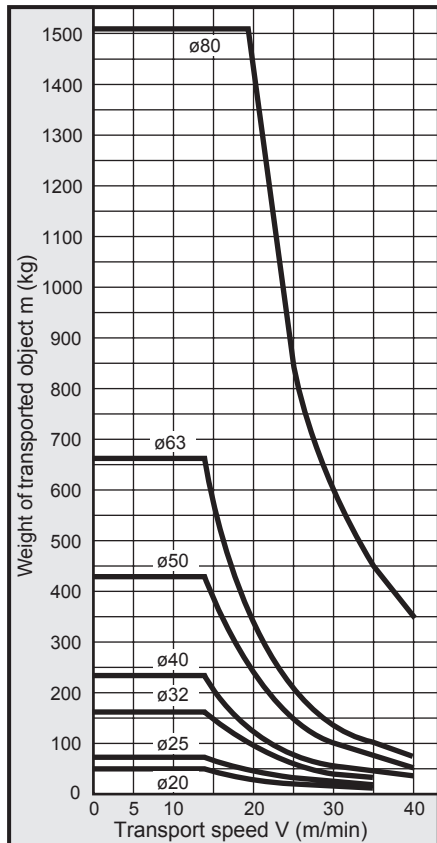


### Safety precautions

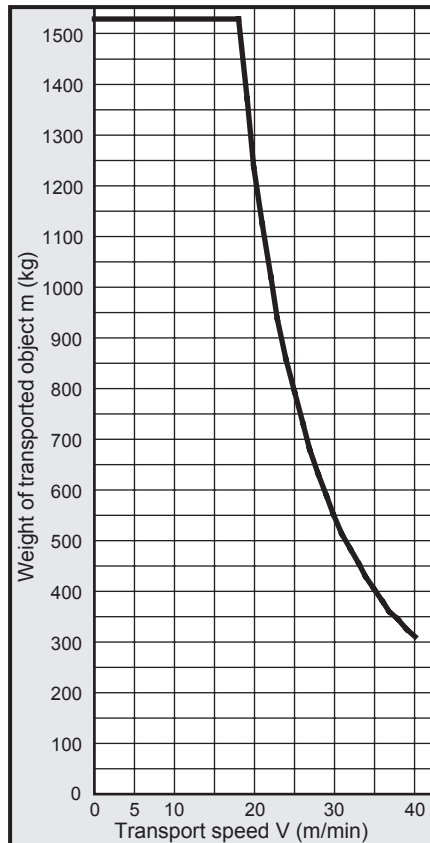
- \*1 : When using the cylinder as a stopper, select a model with 50 mm stroke or less (STS-M). (30 mm stroke or less for ø8 to ø16)
- \*2 : Make sure that the total length of the stopper section  $l$  is 50 mm or less.
- \*3 : Make sure that the screw insertion depth of the bolt is  $2d$  or more when fixing the cylinder body and consider countermeasures for preventing looseness (adhesive, spring washer, etc.). (for ø80 and ø100, make sure that the screw insertion depth is  $1d$ . "d" is thread outer diameter)
- \*4 : STS-B (ball bearing) cannot be used as a stopper.

Impact load

STS-M-20 to 80 (metal bush bearing)



STS-M-100 (metal bush bearing)



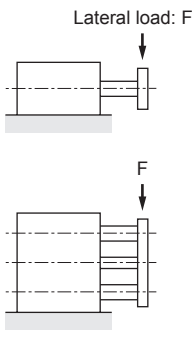
|              |
|--------------|
| LCM          |
| LCR          |
| LCC          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

# STS/STL Series

Unit: N

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS/STL  
STR2  
UCA2  
ULK\*  
JSK/M2  
JSG  
JSC3/JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3\*  
NHS  
HRL  
LN  
Hand  
Chuk  
MecHnd/Chuk  
ShkAbs  
FJ  
FK  
SpdContr  
Ending

## Allowable lateral load

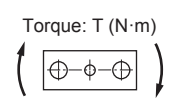


| Bore size (mm) | Model No.                           | Bearing            | STS |    |     |    |    |     |     |     |
|----------------|-------------------------------------|--------------------|-----|----|-----|----|----|-----|-----|-----|
|                |                                     |                    | 10  | 20 | 25  | 30 | 40 | 50  | 75  | 100 |
| ø 8            | ST <sub>L</sub> <sup>S</sup> -M-8   | Metal bush bearing | 14  | 11 | -   | 9  | 8  | 7   | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-8   | Ball bearing       | 16  | 11 | -   | 8  | 7  | 6   | -   | -   |
| ø 12           | ST <sub>L</sub> <sup>S</sup> -M-12  | Metal bush bearing | 23  | 19 | -   | 16 | 14 | 12  | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-12  | Ball bearing       | 30  | 21 | -   | 16 | 13 | 11  | -   | -   |
| ø 16           | ST <sub>L</sub> <sup>S</sup> -M-16  | Metal bush bearing | 40  | 34 | -   | 29 | 25 | 22  | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-16  | Ball bearing       | 44  | 32 | -   | 25 | 21 | 18  | -   | -   |
| ø 20           | ST <sub>L</sub> <sup>S</sup> -M-20  | Metal bush bearing | -   | -  | 48  | -  | -  | 35  | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-20  | Ball bearing       | -   | -  | 45  | -  | -  | 29  | -   | -   |
| ø 25           | ST <sub>L</sub> <sup>S</sup> -M-25  | Metal bush bearing | -   | -  | 48  | -  | -  | 35  | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-25  | Ball bearing       | -   | -  | 45  | -  | -  | 29  | -   | -   |
| ø 32           | ST <sub>L</sub> <sup>S</sup> -M-32  | Metal bush bearing | -   | -  | 141 | -  | -  | 109 | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-32  | Ball bearing       | -   | -  | 49  | -  | -  | 33  | -   | -   |
| ø 40           | ST <sub>L</sub> <sup>S</sup> -M-40  | Metal bush bearing | -   | -  | 141 | -  | -  | 109 | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-40  | Ball bearing       | -   | -  | 49  | -  | -  | 33  | -   | -   |
| ø 50           | ST <sub>L</sub> <sup>S</sup> -M-50  | Metal bush bearing | -   | -  | 213 | -  | -  | 170 | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-50  | Ball bearing       | -   | -  | 73  | -  | -  | 50  | -   | -   |
| ø 63           | ST <sub>L</sub> <sup>S</sup> -M-63  | Metal bush bearing | -   | -  | 213 | -  | -  | 170 | -   | -   |
|                | ST <sub>L</sub> <sup>S</sup> -B-63  | Ball bearing       | -   | -  | 73  | -  | -  | 50  | -   | -   |
| ø 80           | ST <sub>L</sub> <sup>S</sup> -M-80  | Metal bush bearing | -   | -  | 372 | -  | -  | 316 | 275 | 243 |
|                | ST <sub>L</sub> <sup>S</sup> -B-80  | Ball bearing       | -   | -  | 226 | -  | -  | 165 | 133 | 112 |
| ø100           | ST <sub>L</sub> <sup>S</sup> -M-100 | Metal bush bearing | -   | -  | 372 | -  | -  | 316 | 275 | 243 |
|                | ST <sub>L</sub> <sup>S</sup> -B-100 | Ball bearing       | -   | -  | 226 | -  | -  | 165 | 133 | 112 |

\*1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.  
 [Anti-corrosion] Catalog allowable lateral load value x 0.6  
 [Optional variations other than the above] Catalog allowable lateral load value x 0.9  
 \*2: When designing, be sure to consider the safety factor according to the operating conditions.

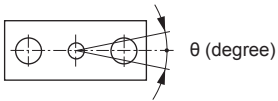
Unit: N·m

## Allowable torque



| Bore size (mm) | Model No.                           | Bearing            | STS  |      |       |      |      |       |       |       |
|----------------|-------------------------------------|--------------------|------|------|-------|------|------|-------|-------|-------|
|                |                                     |                    | 10   | 20   | 25    | 30   | 40   | 50    | 75    | 100   |
| ø 8            | ST <sub>L</sub> <sup>S</sup> -M-8   | Metal bush bearing | 0.14 | 0.11 | -     | 0.09 | 0.08 | 0.07  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-8   | Ball bearing       | 0.16 | 0.11 | -     | 0.08 | 0.07 | 0.06  | -     | -     |
| ø 12           | ST <sub>L</sub> <sup>S</sup> -M-12  | Metal bush bearing | 0.24 | 0.19 | -     | 0.16 | 0.14 | 0.12  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-12  | Ball bearing       | 0.31 | 0.22 | -     | 0.16 | 0.13 | 0.11  | -     | -     |
| ø 16           | ST <sub>L</sub> <sup>S</sup> -M-16  | Metal bush bearing | 0.46 | 0.39 | -     | 0.33 | 0.29 | 0.25  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-16  | Ball bearing       | 0.51 | 0.37 | -     | 0.29 | 0.24 | 0.21  | -     | -     |
| ø 20           | ST <sub>L</sub> <sup>S</sup> -M-20  | Metal bush bearing | -    | -    | 0.71  | -    | -    | 0.52  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-20  | Ball bearing       | -    | -    | 1.19  | -    | -    | 0.80  | -     | -     |
| ø 25           | ST <sub>L</sub> <sup>S</sup> -M-25  | Metal bush bearing | -    | -    | 0.76  | -    | -    | 0.55  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-25  | Ball bearing       | -    | -    | 1.28  | -    | -    | 0.85  | -     | -     |
| ø 32           | ST <sub>L</sub> <sup>S</sup> -M-32  | Metal bush bearing | -    | -    | 2.86  | -    | -    | 2.21  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-32  | Ball bearing       | -    | -    | 0.99  | -    | -    | 0.67  | -     | -     |
| ø 40           | ST <sub>L</sub> <sup>S</sup> -M-40  | Metal bush bearing | -    | -    | 3.17  | -    | -    | 2.45  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-40  | Ball bearing       | -    | -    | 1.10  | -    | -    | 0.74  | -     | -     |
| ø 50           | ST <sub>L</sub> <sup>S</sup> -M-50  | Metal bush bearing | -    | -    | 5.86  | -    | -    | 4.68  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-50  | Ball bearing       | -    | -    | 2.01  | -    | -    | 1.38  | -     | -     |
| ø 63           | ST <sub>L</sub> <sup>S</sup> -M-63  | Metal bush bearing | -    | -    | 6.60  | -    | -    | 5.27  | -     | -     |
|                | ST <sub>L</sub> <sup>S</sup> -B-63  | Ball bearing       | -    | -    | 2.26  | -    | -    | 1.55  | -     | -     |
| ø 80           | ST <sub>L</sub> <sup>S</sup> -M-80  | Metal bush bearing | -    | -    | 13.95 | -    | -    | 11.85 | 10.31 | 9.11  |
|                | ST <sub>L</sub> <sup>S</sup> -B-80  | Ball bearing       | -    | -    | 8.48  | -    | -    | 6.19  | 4.99  | 4.20  |
| ø100           | ST <sub>L</sub> <sup>S</sup> -M-100 | Metal bush bearing | -    | -    | 18.23 | -    | -    | 15.48 | 13.48 | 11.91 |
|                | ST <sub>L</sub> <sup>S</sup> -B-100 | Ball bearing       | -    | -    | 11.07 | -    | -    | 8.09  | 6.52  | 5.49  |

## Non-rotating accuracy



# STS/STL Series

Technical data ④ Allowable lateral load/allowable torque/non-rotating accuracy

Unit: N

| Stroke (mm) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| STL         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|             | 50  | 75  | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 400 |
|             | 12  | 9   | 7   | 6   | 5   | 5   | 4   | -   | -   | -   | -   | -   | -   | -   | -   |
|             | 16  | 11  | 9   | 7   | 5   | 4   | 4   | -   | -   | -   | -   | -   | -   | -   | -   |
|             | 20  | 16  | 13  | 11  | 10  | 9   | 8   | -   | -   | -   | -   | -   | -   | -   | -   |
|             | 23  | 16  | 13  | 10  | 8   | 7   | 6   | -   | -   | -   | -   | -   | -   | -   | -   |
|             | 35  | 29  | 24  | 21  | 19  | 17  | 15  | -   | -   | -   | -   | -   | -   | -   | -   |
|             | 34  | 25  | 19  | 16  | 13  | 11  | 10  | -   | -   | -   | -   | -   | -   | -   | -   |
|             | 54  | 45  | 38  | 33  | 30  | 27  | 24  | 22  | 20  | 19  | 17  | 16  | 15  | 14  | 14  |
|             | 68  | 50  | 39  | 32  | 27  | 23  | 20  | 18  | 16  | 14  | 13  | 12  | 11  | 10  | 9   |
|             | 54  | 45  | 38  | 33  | 30  | 27  | 24  | 22  | 20  | 19  | 17  | 16  | 15  | 14  | 14  |
|             | 68  | 50  | 39  | 32  | 27  | 23  | 20  | 18  | 16  | 14  | 13  | 12  | 11  | 10  | 9   |
|             | 161 | 138 | 121 | 108 | 97  | 88  | 81  | 75  | 69  | 65  | 61  | 57  | 54  | 51  | 48  |
|             | 100 | 76  | 62  | 51  | 44  | 38  | 34  | 30  | 27  | 25  | 22  | 21  | 19  | 18  | 16  |
|             | 161 | 138 | 121 | 108 | 97  | 88  | 81  | 75  | 69  | 65  | 61  | 57  | 54  | 51  | 48  |
|             | 100 | 76  | 62  | 51  | 44  | 38  | 34  | 30  | 27  | 25  | 22  | 21  | 19  | 18  | 16  |
|             | 243 | 213 | 189 | 170 | 155 | 142 | 131 | 121 | 113 | 106 | 100 | 94  | 89  | 85  | 81  |
|             | 161 | 126 | 103 | 87  | 75  | 66  | 58  | 52  | 47  | 43  | 40  | 36  | 34  | 31  | 29  |
|             | 243 | 213 | 189 | 170 | 155 | 142 | 131 | 121 | 113 | 106 | 100 | 94  | 89  | 85  | 81  |
|             | 161 | 126 | 103 | 87  | 75  | 66  | 58  | 52  | 47  | 43  | 40  | 36  | 34  | 31  | 29  |
|             | -   | 402 | 367 | 338 | 312 | 291 | 272 | 255 | 241 | 228 | 216 | 205 | 196 | 187 | 179 |
|             | -   | 235 | 197 | 170 | 149 | 133 | 120 | 109 | 99  | 91  | 85  | 79  | 73  | 69  | 64  |
|             | -   | 402 | 367 | 338 | 312 | 291 | 272 | -   | -   | -   | -   | -   | -   | -   | -   |
|             | -   | 235 | 197 | 170 | 149 | 133 | 120 | -   | -   | -   | -   | -   | -   | -   | -   |

Unit: N·m

| Stroke (mm) |      |       |       |       |       |       |       |      |      |      |      |      |      |      |      |
|-------------|------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
| STL         |      |       |       |       |       |       |       |      |      |      |      |      |      |      |      |
|             | 50   | 75    | 100   | 125   | 150   | 175   | 200   | 225  | 250  | 275  | 300  | 325  | 350  | 375  | 400  |
|             | 0.12 | 0.09  | 0.07  | 0.06  | 0.05  | 0.05  | 0.04  | -    | -    | -    | -    | -    | -    | -    | -    |
|             | 0.16 | 0.11  | 0.08  | 0.07  | 0.05  | 0.04  | 0.04  | -    | -    | -    | -    | -    | -    | -    | -    |
|             | 0.21 | 0.16  | 0.13  | 0.11  | 0.10  | 0.09  | 0.08  | -    | -    | -    | -    | -    | -    | -    | -    |
|             | 0.24 | 0.16  | 0.13  | 0.10  | 0.08  | 0.07  | 0.06  | -    | -    | -    | -    | -    | -    | -    | -    |
|             | 0.40 | 0.33  | 0.28  | 0.24  | 0.22  | 0.20  | 0.17  | -    | -    | -    | -    | -    | -    | -    | -    |
|             | 0.39 | 0.29  | 0.22  | 0.18  | 0.15  | 0.13  | 0.12  | -    | -    | -    | -    | -    | -    | -    | -    |
|             | 0.80 | 0.66  | 0.56  | 0.49  | 0.44  | 0.40  | 0.35  | 0.32 | 0.30 | 0.28 | 0.25 | 0.24 | 0.22 | 0.21 | 0.21 |
|             | 1.00 | 0.74  | 0.58  | 0.47  | 0.40  | 0.34  | 0.30  | 0.27 | 0.24 | 0.21 | 0.19 | 0.18 | 0.16 | 0.15 | 0.13 |
|             | 0.85 | 0.71  | 0.60  | 0.52  | 0.47  | 0.43  | 0.38  | 0.35 | 0.32 | 0.30 | 0.27 | 0.25 | 0.24 | 0.22 | 0.22 |
|             | 1.07 | 0.79  | 0.61  | 0.50  | 0.43  | 0.36  | 0.32  | 0.28 | 0.25 | 0.22 | 0.20 | 0.19 | 0.17 | 0.16 | 0.14 |
|             | 3.26 | 2.79  | 2.45  | 2.19  | 1.96  | 1.78  | 1.64  | 1.52 | 1.40 | 1.32 | 1.24 | 1.15 | 1.09 | 1.03 | 0.97 |
|             | 2.03 | 1.54  | 1.26  | 1.03  | 0.89  | 0.77  | 0.69  | 0.61 | 0.55 | 0.51 | 0.45 | 0.43 | 0.38 | 0.36 | 0.32 |
|             | 3.62 | 3.11  | 2.72  | 2.43  | 2.18  | 1.98  | 1.82  | 1.69 | 1.55 | 1.46 | 1.37 | 1.28 | 1.22 | 1.15 | 1.08 |
|             | 2.25 | 1.71  | 1.40  | 1.15  | 0.99  | 0.86  | 0.77  | 0.68 | 0.61 | 0.56 | 0.50 | 0.47 | 0.43 | 0.41 | 0.36 |
|             | 6.68 | 5.86  | 5.20  | 4.68  | 4.26  | 3.91  | 3.60  | 3.33 | 3.11 | 2.92 | 2.75 | 2.59 | 2.45 | 2.34 | 2.23 |
|             | 4.43 | 3.47  | 2.83  | 2.39  | 2.06  | 1.82  | 1.60  | 1.43 | 1.29 | 1.18 | 1.10 | 0.99 | 0.94 | 0.85 | 0.80 |
|             | 7.53 | 6.60  | 5.86  | 5.27  | 4.81  | 4.40  | 4.06  | 3.75 | 3.50 | 3.29 | 3.10 | 2.91 | 2.76 | 2.64 | 2.51 |
|             | 4.99 | 3.91  | 3.19  | 2.70  | 2.33  | 2.05  | 1.80  | 1.61 | 1.46 | 1.33 | 1.24 | 1.12 | 1.05 | 0.96 | 0.90 |
|             | -    | 15.08 | 13.76 | 12.68 | 11.70 | 10.91 | 10.20 | 9.56 | 9.04 | 8.55 | 8.10 | 7.69 | 7.35 | 7.01 | 6.71 |
|             | -    | 8.81  | 7.39  | 6.38  | 5.59  | 4.99  | 4.50  | 4.09 | 3.71 | 3.41 | 3.19 | 2.96 | 2.74 | 2.59 | 2.40 |
|             | -    | 19.70 | 17.98 | 16.56 | 15.29 | 14.26 | 13.33 | -    | -    | -    | -    | -    | -    | -    | -    |
|             | -    | 11.52 | 9.65  | 8.33  | 7.30  | 6.52  | 5.88  | -    | -    | -    | -    | -    | -    | -    | -    |

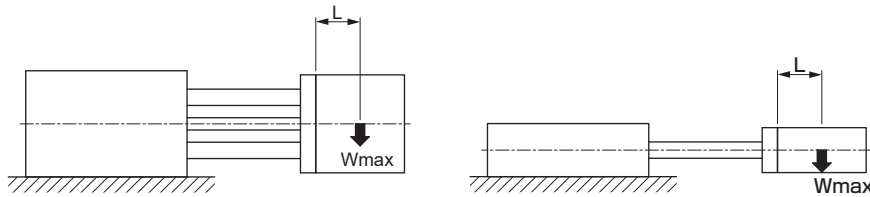
| Item              | Non-rotating accuracy $\theta$ (degrees) |                    |
|-------------------|--|--------------------|
|                   | Bore size (mm)                           |                    |
|                   |  | Metal bush bearing |
| $\varnothing$ 8   |  | $\pm 0.09$         |
| $\varnothing$ 12  |  | $\pm 0.10$         |
| $\varnothing$ 16  |  |                    |
| $\varnothing$ 20  |  |                    |
| $\varnothing$ 25  |  |                    |
| $\varnothing$ 32  |  | $\pm 0.08$         |
| $\varnothing$ 40  |  | $\pm 0.04$         |
| $\varnothing$ 50  |  | $\pm 0.03$         |
| $\varnothing$ 63  |  |                    |
| $\varnothing$ 80  |  |                    |
| $\varnothing$ 100 |  |                    |
|                   |  | Ball bearing       |
|                   |  | $\pm 0.06$         |
|                   |  | $\pm 0.08$         |
|                   |  | $\pm 0.04$         |
|                   |  | $\pm 0.03$         |
|                   |  | $\pm 0.03$         |

(Default at PULL) Note: Excluding sag of guide rod

## Short stroke

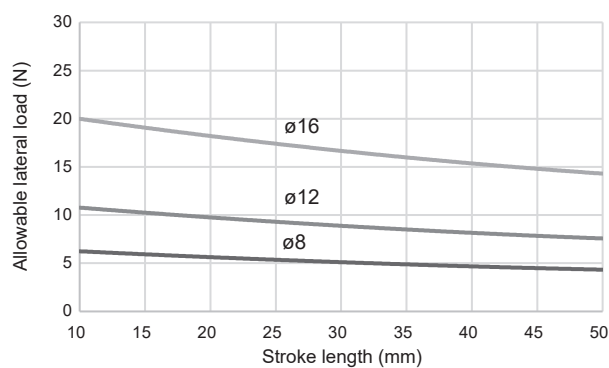
### Allowable lateral load Metal bush bearing

W<sub>max</sub>: Lateral load (N)  
L: Load center of gravity position (mm)



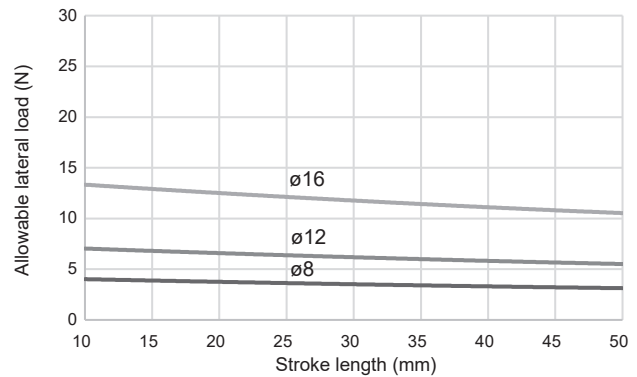
#### When L = 50 mm

##### STS-M-8 to 16

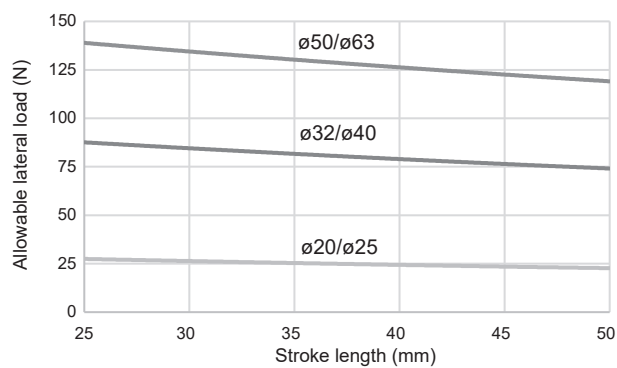


#### When L = 100 mm

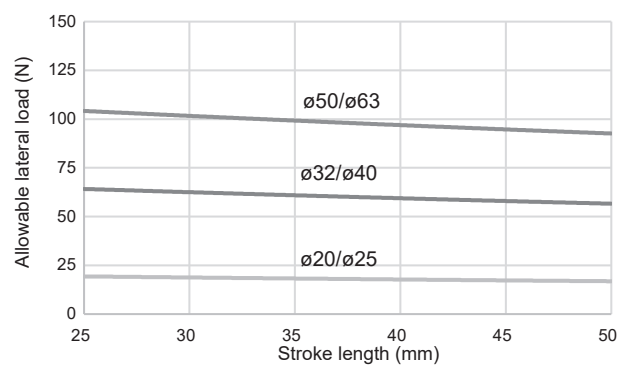
##### STS-M-8 to 16



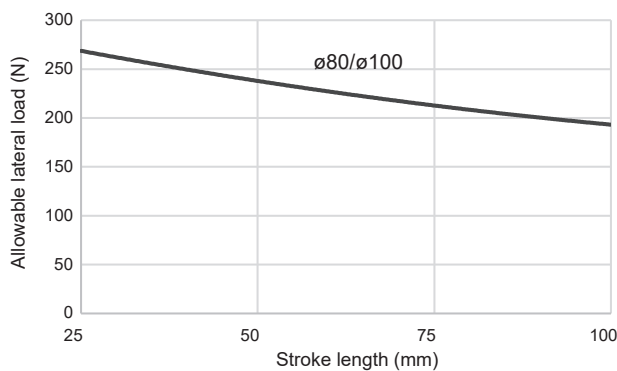
#### STS-M-20 to 63



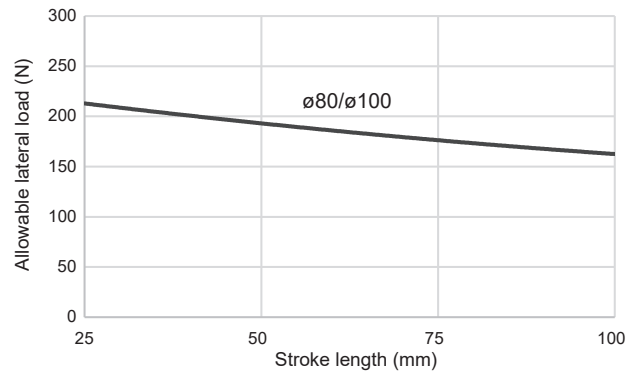
#### STS-M-20 to 63



#### STS-M-80/100



#### STS-M-80/100



\* 1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.

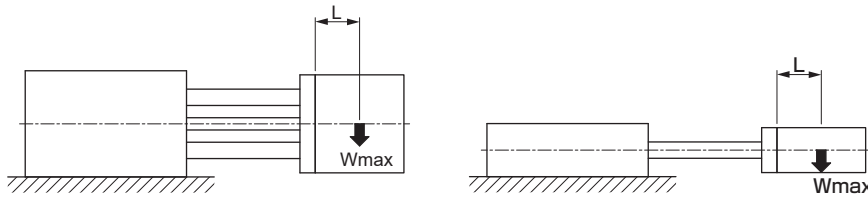
[Corrosion-resistant] Catalog allowable lateral load value x 0.6

[Optional variations other than the above] Catalog allowable lateral load value x 0.9

2: When designing, be sure to consider the safety factor according to the operating conditions.

## Short stroke

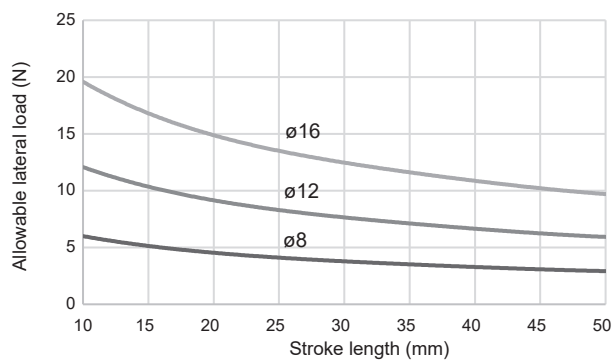
### Allowable lateral load Ball bearing



Wmax: Lateral load (N)  
L: Load center of gravity position (mm)

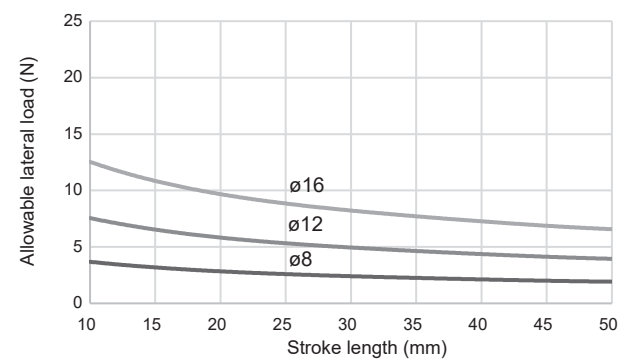
#### When L = 50 mm

##### STS-B-8 to 16

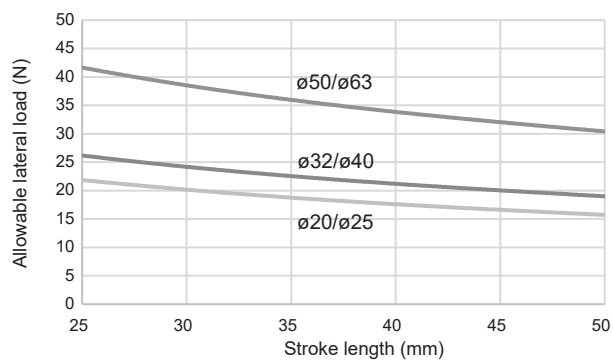


#### When L = 100 mm

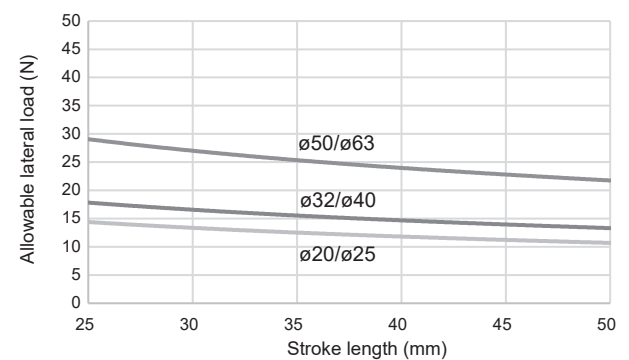
##### STS-B-8 to 16



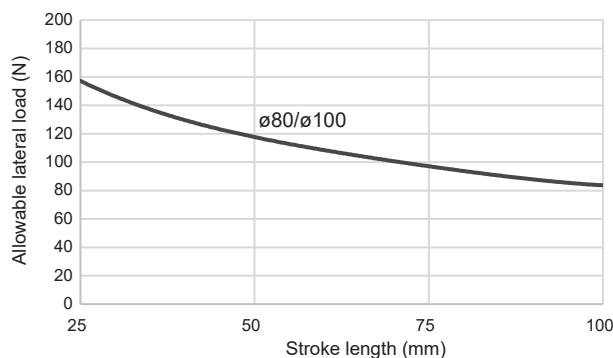
##### STS-B-20 to 63



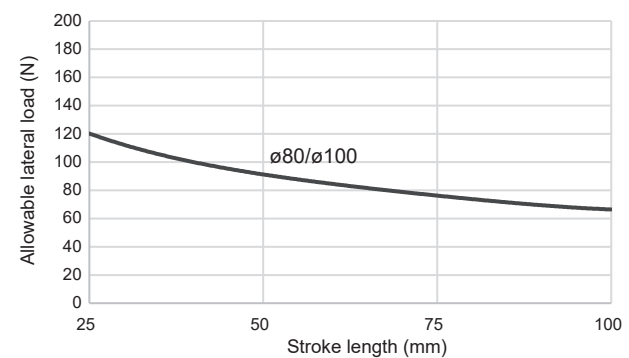
##### STS-B-20 to 63



##### STS-B-80/100



##### STS-B-80/100



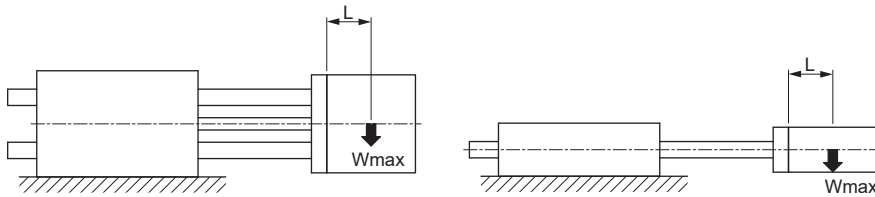
\* 1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.  
 [Corrosion-resistant] Catalog allowable lateral load value x 0.6  
 [Optional variations other than the above] Catalog allowable lateral load value x 0.9  
 2: When designing, be sure to consider the safety factor according to the operating conditions.

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

## Long stroke

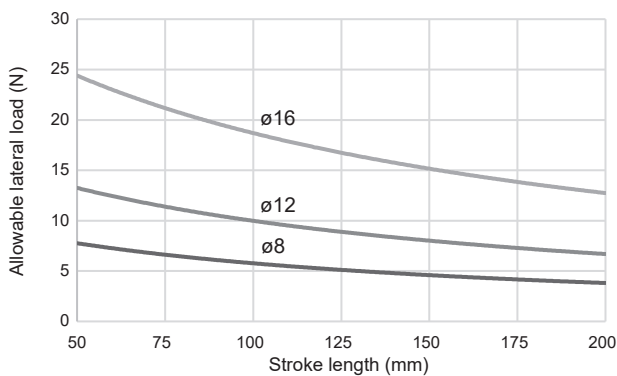
### Allowable lateral load Metal bush bearing

W<sub>max</sub>: Lateral load (N)  
L: Load center of gravity position (mm)



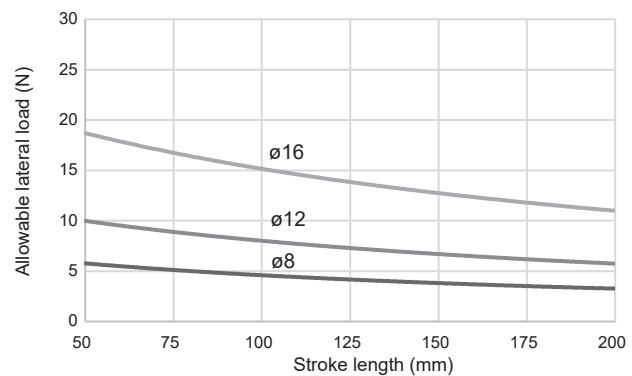
#### When L = 50 mm

##### STL-M-8 to 16

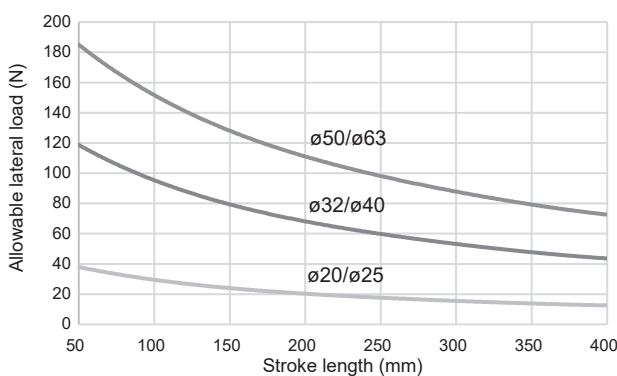


#### When L = 100 mm

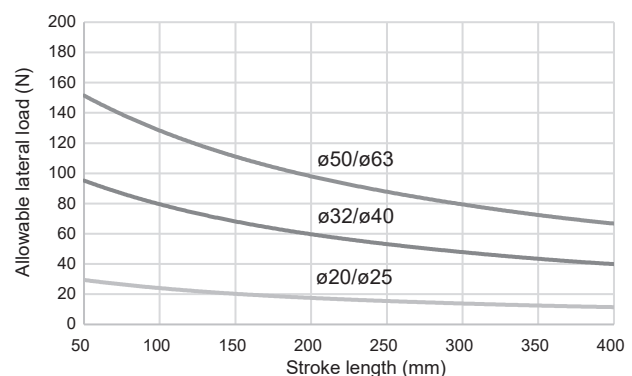
##### STL-M-8 to 16



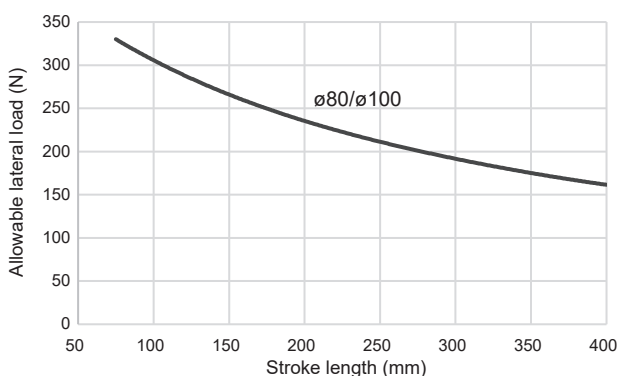
#### STL-M-20 to 63



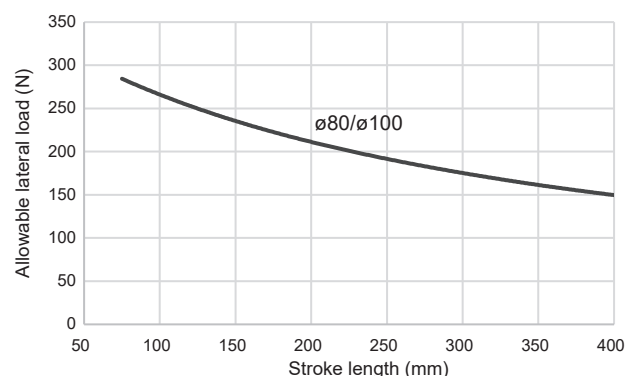
#### STL-M-20 to 63



#### STL-M-80/100



#### STL-M-80/100



\* 1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.

[Corrosion-resistant] Catalog allowable lateral load value x 0.6

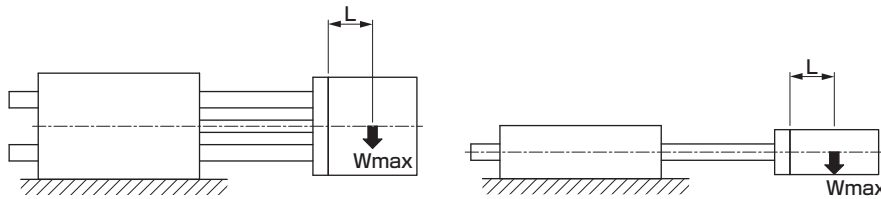
[Optional variations other than the above] Catalog allowable lateral load value x 0.9

2: When designing, be sure to consider the safety factor according to the operating conditions.



## Long stroke

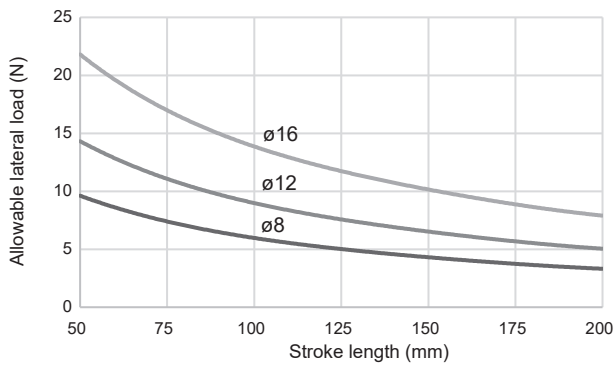
### Allowable lateral load Ball bearing



Wmax: Lateral load (N)  
L: Load center of gravity position (mm)

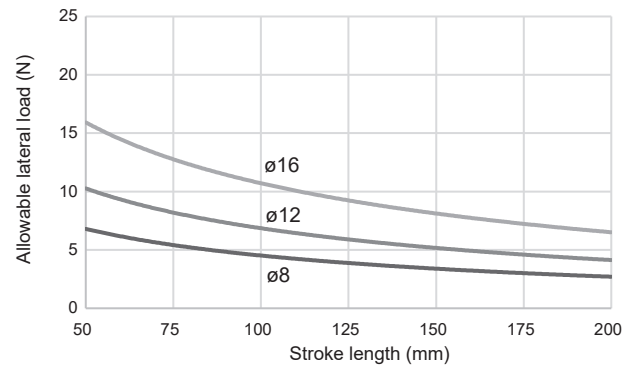
● L=50mm For

#### STL-B-8 to 16

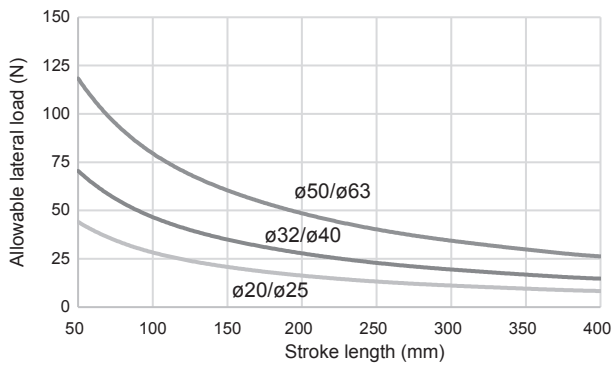


● For L=100mm

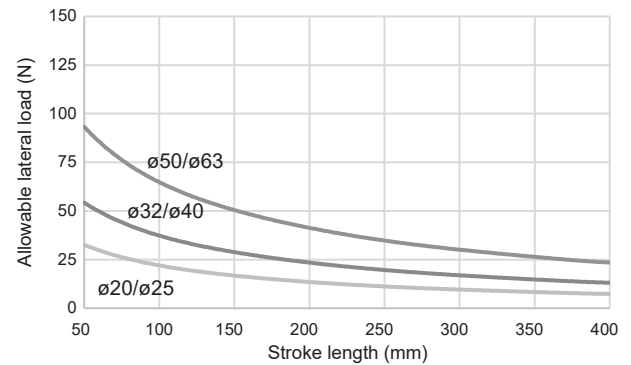
#### STL-B-8 to 16



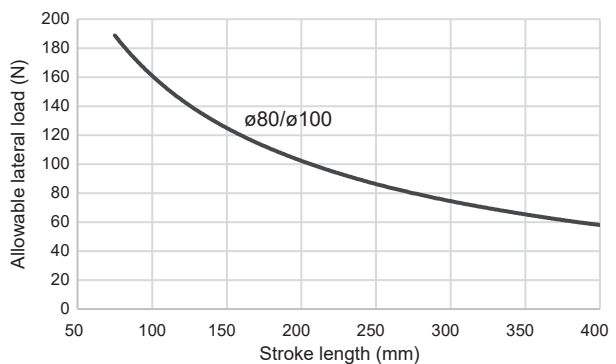
#### STL-B-20 to 63



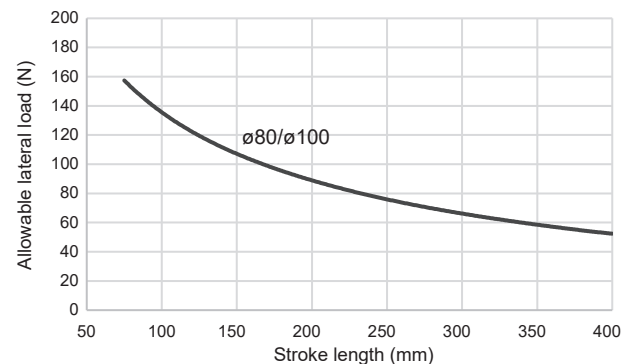
#### STL-B-20 to 63



#### STL-B-80/100



#### STL-B-80/100



\* 1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.  
 [Corrosion-resistant] Catalog allowable lateral load value x 0.6  
 [Optional variations other than the above] Catalog allowable lateral load value x 0.9  
 2: When designing, be sure to consider the safety factor according to the operating conditions.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |



# Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Guided cylinder STS/STL Series

## Design/selection

### 1. Common

#### CAUTION

- When using the metal bush bearing with a long stroke length at low speed, stick-slip may occur depending on load conditions. In this case, use the ball bearing.

### 2. Rubber-air cushioned STS/STL-<sup>M</sup>/<sub>B</sub>-\*C

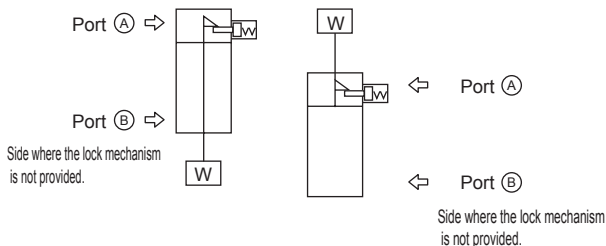
#### CAUTION

- Note that, structurally, the stroke end position cannot be retained if air supply is cut off. When detecting the stroke end by switch, set the switch position with pneumatic pressure applied, as otherwise the position may be out of the detection range.

### 3. Position locking STS/STL-<sup>M</sup>/<sub>B</sub>Q

#### WARNING

- If pressure is supplied to port **A** when both ports are not pressurized and the piston is locked, the lock may not be released or the piston rod may suddenly pop out just after the lock is released. This can be extremely hazardous. To release the lock mechanism, make sure to supply pressure to port **B**. Check that load is not applied to the lock mechanism.



- For usage where the drop rate is increased using the quick exhaust valve, the lock may not release normally because the cylinder body starts operating before the lock pin. For the position locking cylinder, do not use the quick exhaust valve.

#### ■ Do not use 3-position valves.

Do not use the cylinder in combination with a 3-position (especially, closed center metal seal) valve. If the port at the side where the lock mechanism is provided is pressurized, the lock cannot be engaged. Even if it is locked once, the air leaked from the valve enters the cylinder, and the lock may be released after a certain period of time.

#### CAUTION

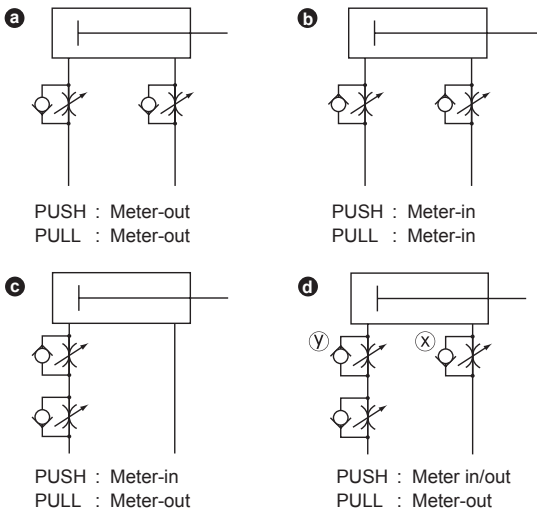
- Cylinder load factor must be 50% or less. If the load factor is high, the lock may not be released, or the lock section may be damaged.
- If back pressure is applied to the locking mechanism, the lock may be released. Use a single valve, or an individual exhaust manifold.
- Do not use multiple synchronized cylinders. Do not use so that 1 workpiece is moved by synchronizing 2 or more position locking cylinders. Lock release may fail for one of the cylinders.

### 4. Fine speed (STS/STL-<sup>M</sup>/<sub>B</sub>F)

#### CAUTION

- Use without lubrication. Applying lubrication may cause changes in characteristics.
- Assemble the speed controller near the cylinder. When installed far from the cylinder, the speed becomes unstable. For the speed controller, SC-M3/M5, SC3W, SCD-M3/M5, and SC3U Series are recommended.
- In general, the speed is stabler at higher air pressure and lower load factor. Use at a 50% or less load factor.
- Do not apply a lateral load to the cylinder. Also install the sliding guide so that it is not twisted. When the load or the resistance fluctuates, operation becomes unstable. With a large difference between static friction and kinematic friction of the guide, operation becomes unstable.
- Avoid using this product where vibration is present. The product will be adversely affected by vibration and operation will become unstable.
- Stable speed control is achieved with a meter-out circuit. When fine speed activation is performed with operating direction PUSH for the single rod cylinder, the popping out phenomenon occurs when operation starts if the load resistance is low. For countermeasures, use the  $\ominus \bullet \circ$  circuit. Note that circuit  $\bullet$  is the most stable.

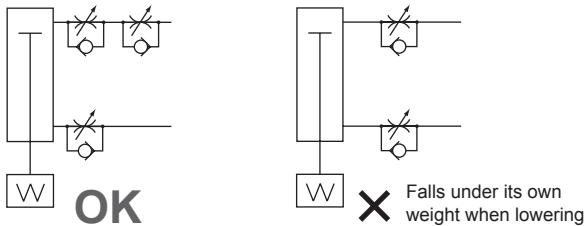
|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |



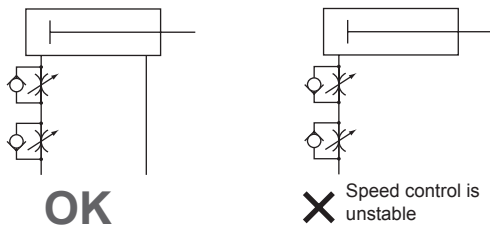
- d** Speed adjustment method for PUSH operation of circuit:
1. Set the speed with the speed controller x.
  2. Restrict the speed with the speed controller y until there is no popping out.
  3. Check the speed again.

(\*1) When comparing **b c d**, the circuit **d** is the most stable.

(\*2) For vertical mounting, combine the cylinder with a meter-out circuit, as it will fall under its own weight when a meter-in circuit is used.



(\*3) Use the circuit shown in the figure below for the serial connection of the speed controllers.



(Guidelines for pop-out generation)

Popping out occurs in the following cases.

· Thrust > Resistance

\*Resistance: Thrust caused by residual pressure on the exhaust side (in the fine speed, suction pressure = residual pressure) + {When using horizontally: frictional force caused by load  
When using vertically : load self-weight

### 4. Coolant proof STS/STL-<sup>M</sup><sub>B</sub>G<sup>2</sup><sub>3</sub>

#### ⚠ CAUTION

- Do not apply an eccentric load to the piston rod.  
The service life of the scraper or bearing could be shortened.
- If the piston rod is not exposed to splattered coolant or water, use the G or G1 Series.  
In the case that the G2 or G3 Series are not exposed to splattering of coolant or water, the lubrication of the piston rod will run out and the service life will be shortened.
- Mount a speed controller on the cylinder.  
Mount the speed controller on the cylinder.  
Use each cylinder within the applicable working piston speed range.

### 5. Anti-spatter adherence STS/STL-<sup>M</sup><sub>B</sub>G4

#### ⚠ CAUTION

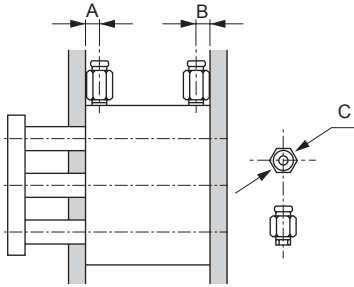
- The durability of this cylinder series is improved in comparison to standard cylinders when used in an atmosphere exposed to spatter. But durability may be shorter than the standard cylinder when used in other atmospheres.

## Mounting, installation and adjustment

### 1. Common

#### CAUTION

- Be sure to attach a speed controller during piping before use. The available fittings are as below.



ø80 does not allow side piping such as shown in the figure above.

| Item<br>Bore size (mm) | Port size | Port position |          | Applicable fittings   | Fitting O.D.<br>øC |
|------------------------|-----------|---------------|----------|---|--------------------|
|                        |           | A             | B        |   |                    |
| ø 8                    | M5×0.8    | 11            | 6.5      | SC3W-M5-4<br>SC3W-M5-6  | ø12 or less        |
| ø12                    |           | 7.5           | 7.5      | GWS4-M5-S<br>GWS4-M5 GWL4-M5                                    |                    |
| ø16                    |           | 7.5           | 7.5      | GWL6-M5 GWS6-M5   |                    |
| ø20                    |           | 12            | 8        | SC3W-M5-4 SC3W-M5-6<br>GWS4-M5-S GWS4-M5                        | ø15 or less        |
| ø25                    |           | 12            | 9        | GWL4-M5<br>GWL6-M5  |                    |
| ø32                    | Rc1/8     | 14            | 9        | SC3W-6-4/6/8<br>GWS4-6 GWS6-6 GWS8-6                            | ø15 or less        |
| ø40                    |           | 14.5          | 10       | GWL4-6 GWL6-6   |                    |
| ø50                    | Rc1/4     | 16            | 11       | SC3W-8-6/8/10<br>GWS4-8 GWS6-8                                  | ø21 or less        |
| ø63                    |           | 17.5          | 16       | GWS10-8 GWS12-8<br>GWL4 to 12-8                                 |                    |
| ø80                    | Rc3/8     | 25            | 26       | SC3W-10-8/10/12<br>GWS6-10 GWS8-10<br>GWS10-10<br>GWL6 to 12-10 | ø21 or less        |
| ø100                   | Rc3/8     | 24            | 25.5(50) | SC3W-10-8/10/12<br>GWS6-10 GWS8-10<br>GWS10-10<br>GWL6 to 12-10 |                    |

- Do not damage surface flatness by denting or scratching the body (tube) mounting surface or the end plate surface.  
Make sure that the flatness of the mating surface where the end plate will be attached is 0.05 mm or below.

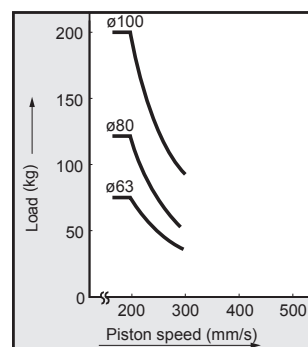
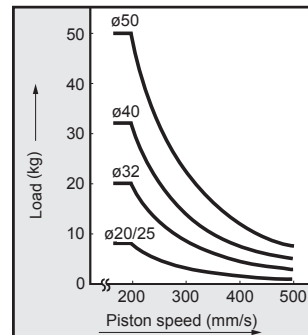
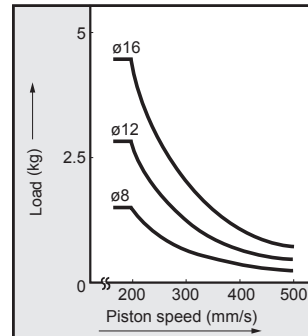
- Be sure not to rotate the piston rod, as it may destabilize operation (due to misalignment).

- When mounting the body with the through bolt, tighten with tightening torque as shown in the table below.

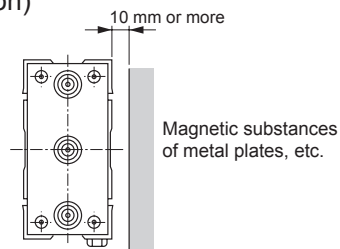
|          |          |
|----------|----------|
| ø8/ø12   | 1.0 N·m  |
| ø16      | 2.4 N·m  |
| ø20/ø25  | 5.1 N·m  |
| ø32/ø40  | 8.6 N·m  |
| ø50/ø63  | 21.5 N·m |
| ø80/ø100 | 75.5 N·m |

- Allowable energy value

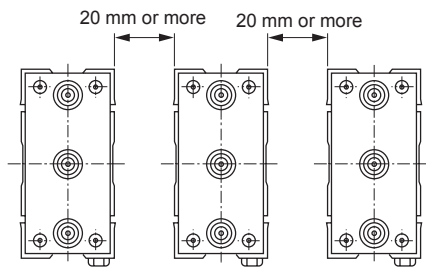
Use in the range below and to the left of the curve.  
For use in the upper right range, provide an external shock absorber.



- The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Check that a distance of 10 mm or more is provided from the surface of the cylinders. (All bore sizes common)



- The cylinder switch may malfunction if cylinders are installed adjacently. Check that the following distances are provided between cylinders. (All bore sizes common)



- Do not rotate the piston rod, except when disassembling the product for maintenance, etc. Be sure not to rotate the piston rod, as misalignment may occur, destabilizing operation.

- CKD's shock absorber is a repair part. Replace it when the energy absorption performance has degraded or the operation is not smooth.

### 2. Position locking STS/STL-<sup>M</sup>/<sub>B</sub> Q

#### ⚠ CAUTION

- The lock mechanism functions at the stroke end, so that if the stopper is engaged during the stroke by the external stopper, the lock mechanism may not work and the piston could fall. When setting a load, make sure to check that the lock mechanism functions before installing the product.
- Supply pressure equal to or higher than the min. working pressure to the port on the lock mechanism side.
- When the piping at the side where the lock mechanism is provided is long and thin, or when the speed controller is far away from the cylinder port, note that it takes time to engage the lock. Note that clogging in the silencer mounted on the EXH port of the valve may cause the same result.

### 3. Fine speed STS/STL-<sup>M</sup>/<sub>B</sub> F

#### ⚠ CAUTION

- Perform adjustment such as centering so that a lateral load is not applied to the cylinder. Adjust and install the sliding guide so that it is not twisted. When the load or the resistance fluctuates, operation becomes unstable. With a large difference between static friction and kinematic friction of the guide, operation becomes unstable.

|              |
|--------------|
| LCM          |
| LCR          |
| LCG          |
| LCW          |
| LCX          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| USC          |
| UB           |
| JSB3         |
| LMB          |
| LML          |
| HCM          |
| HCA          |
| LBC          |
| CAC4         |
| UCAC2        |
| CAC-N        |
| UCAC-N       |
| RCS2         |
| RCC2         |
| PCC          |
| SHC          |
| MCP          |
| GLC          |
| MFC          |
| BBS          |
| RRC          |
| GRC          |
| RV3*         |
| NHS          |
| HRL          |
| LN           |
| Hand         |
| Chuk         |
| MechHnd/Chuk |
| ShkAbs       |
| FJ           |
| FK           |
| SpdContr     |
| Ending       |

## Use/maintenance

### 1. Rubber-air cushioned STS/STL-<sup>M</sup>/<sub>B</sub>-\*C

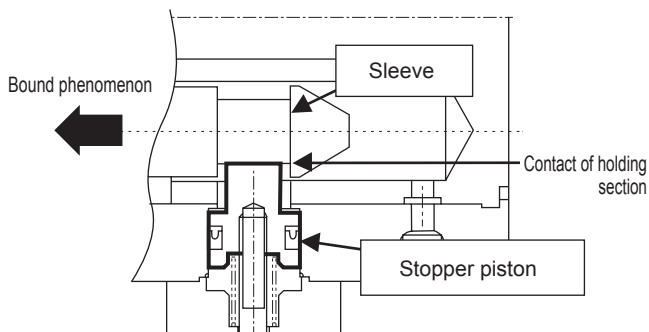
#### ⚠ CAUTION

- Do not rapidly discharge air from the cylinder after performing low speed operation outside the catalog specifications range. (Example: Removing piping or coupler, etc.) Otherwise the rubber air cushion may fall. Be careful that the possibility of occurrence of this may increase especially when the air pressure is high.

### 2. Position locking STS/STL-<sup>M</sup>/<sub>B</sub> Q

#### ⚠ WARNING

- For safety purposes, prevent the load from falling under its own weight during maintenance.
- When stopping the piston with an external buffer device (shock absorber, etc.), adjust it so that there is no bound. If the piston bounds at the stroke end, the sleeve and stopper piston will collide strongly and may result in damage of the locking mechanism. Inspect the piston once or twice a year to make sure there is no damage to the retainer caused by this phenomenon.



#### ⚠ CAUTION

- After the locking mechanism is manually operated, make sure to return the locking mechanism to the original state. Do not perform manual operation except for adjustment, as it is dangerous.
- When mounting or adjusting the cylinder, release the lock. If mounting work, etc., is done while the lock is engaged, the lock part may be damaged.
- Use the speed controller with meter-out. If the meter-in control is used, the lock may not be able to be released.
- At the side where the lock mechanism is attached, be sure to use the cylinder from the stroke end. If the cylinder piston does not reach the stroke end, the lock will not be engaged.