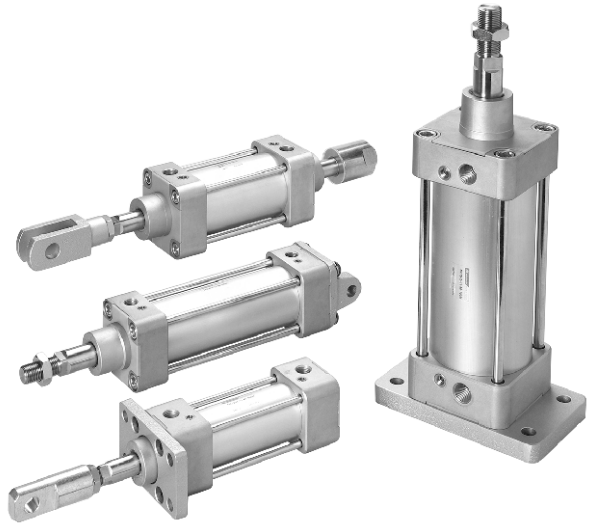


## Features

### Non lubrication
Special housing and bushing enables self lubrication of piston rod.

### High quality long service life
Hard anodised aluminium cylinder tubes offer a high resistance to corrosion and low internal friction.

### ISO-VDMA standard specification
Conforms to ISO-6431 and VDMA 24562 specification enabling worldwide interchangeability.

### Cylinder mountings
Available with comprehensive internationally recognised range of fixed and flexible mountings.

## Specification

| Model | MCQV2 | | | MCQV | | |
|---|---|---|---|---|---|---|
| Tube I.D. (mm) | 32,40 | 50,63 | 80,100 | 125 | 160 | 200 |
| Medium | Air | | | | | |
| Operating pressure range | 0.05~1 MPa | | | | | |
| Proof pressure | 1.5 MPa | | | | | |
| Ambient temperature | −5~+60℃ (No freezing) | | | | | |
| Available speed range | 50~500 mm/sec | | | | | |
| Sensor switch (※) | RCA | | | | | |
| Sensor switch holder | HV1 | HV2 | HV3 | HV4 | PM16 | HA5V |

※ RCA specification, please refer to page **V-05**.

## Table for standard stroke

| Tube I.D. | Stroke (mm) |
|---|---|
| ϕ32,40 | 50,75,100,125,150,175,200,250,300,350,400,450,500 |
| ϕ50,63 | ↑ 600 |
| ϕ80,100,125,160 | ↑ 600,700 |
| ϕ200 | ↑ 600,700,800,900,1000,1500 |

- Stroke out of specification is also available.
- Please consult us if stroke out of specification.

## Order example

MCQV2 − 11 − 40 − 100M − G

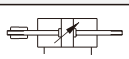
- MCQV2: MODEL
- 11: STYLE
- 40: TUBE I.D.
- 100: STROKE
- M: Magnet
- G: PORT THREAD (G: G thread)

**1**: Single Rod
**2**: Double Rod

MODEL

| Model | Tube I.D. |
|---|---|
| **MCQV2** | ϕ32~ϕ100 |
| **MCQV** | ϕ125~ϕ200 |

STYLE

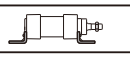
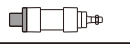
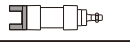
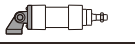
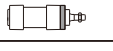
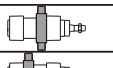
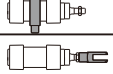
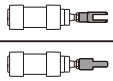
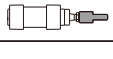
| Code | | Symbol | Description |
|---|---|---|---|
| 1 | 1 |  | Double acting / Male thread |
| 2 | 1 |  | Double rod / Male thread |
| 2 | 7 |  | Double rod / Adjustable male thread (Please mark "adjustable distance(mm)" at order list) |

※ Order example for special specification, refer to page **J-03**.
※ Order example for **Rc** or **NPT** thread please consult us.

## Mounting accessories

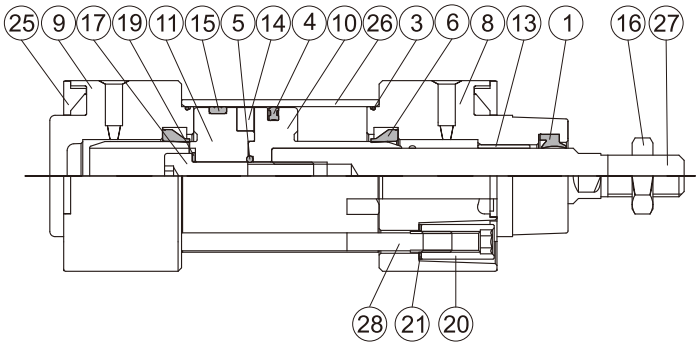
FAC − MCQV − 40 ※ **CDB** only for MCQV2

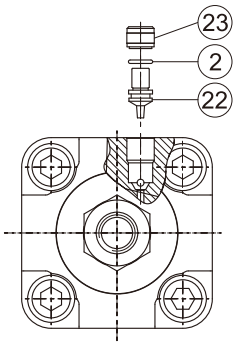
- FAC: MOUNTING TYPE
- MCQV: MODEL
- 40: TUBE I.D.

| | |
|---|---|
|  | **LB** |
|  | **CA** |
|  | **CB** |
|  | **CDB** (+CB+Pin) |
|  | **FAC** |
|  | **FBC** |
|  | **TA** |
|  | **TB** |
|  | **TC** |
|  | **Y** |
|  | **I** |

## Single rod 11 type

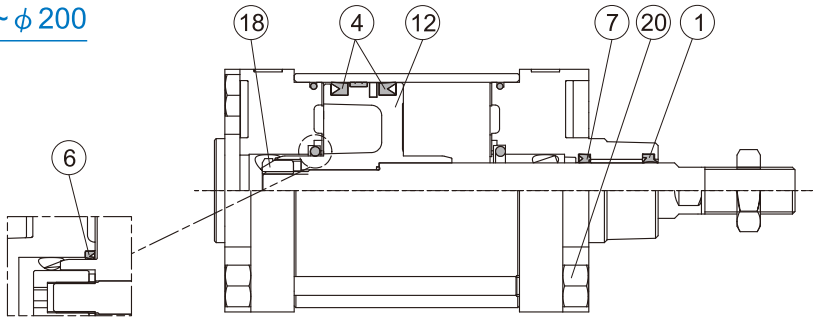
$\phi$ 32~$\phi$ 100

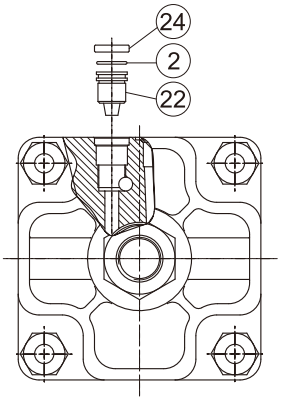



$\phi$ 125~$\phi$ 200

$\phi$ 200




| No. | Part name | Material | Q'y | Component parts (inclusion) | | Repair kits (inclusion) | | Note |
|---|---|---|---|---|---|---|---|---|
| | | | | $\phi$ 32~$\phi$ 100 | $\phi$ 125~$\phi$ 200 | $\phi$ 32~$\phi$ 100 | $\phi$ 125~$\phi$ 200 | |
| **01** | Rod packing | NBR | 1 | ● | ● | ● | ● | |
| **02** | O-ring | NBR | 2 | ● | ● | ● | ● | |
| **03** | O-ring | NBR | 2 | ● | ● | ● | ● | |
| **04** | Piston packing | NBR | 1 or 2 | ● | ● | ● | ● | $\phi$ 125~$\phi$ 200 (Q'y 2) |
| **05** | O-ring | NBR | 1 | ● | ● | ● | ● | |
| **06** | Cushion packing | NBR | 2 | ● | ● | ● | ● (※) | |
| **07** | Rod packing | NBR | 1 | | ● | | ● | |
| **08** | Rod cover | Aluminum alloy | 1 | ● | ● | | | |
| **09** | Head cover | Aluminum alloy | 1 | ● | ● | | | |
| **10** | Piston-R | Aluminum alloy | 1 | ● | | | | |
| **11** | Piston-H | Aluminum alloy | 1 | ● | | | | |
| **12** | Piston | Aluminum alloy | 1 | | ● | | | |
| **13** | Bush | Bearing alloy | 1 | ● | ● | | | |
| **14** | Magnet ring | Magnet material | 1 | ◎ | ◎ | | | ◎ Option |
| **15** | Wear ring | Teflon | 1 | ● | ● | | | |
| **16** | Nut | Carbon steel | 1 | ● | ● | | | |
| **17** | Bolt | Carbon steel | 1 | ● | | | | |
| **18** | Piston nut | Carbon steel | 1 | | ● | | | |
| **19** | Washer | Carbon steel | 1 | ● | ● | | | $\phi$ 32 does not contain item #19 |
| **20** | Tie rod nut | Carbon steel | 8 | ● | ● | | | |
| **21** | Tie rod washer | Carbon steel | 8 | ● | | | | |
| **22** | Needle valve | Copper alloy | 2 | ● | ● | | | |
| **23** | Insert nut | Copper alloy | 2 | ● | | | | |
| **24** | Needle valve washer | Carbon steel | 2 | | ● | | | |
| **25** | Cover plate | Plastic | 2 | ● | | | | |
| **26** | Cylinder tube | Aluminum alloy | 1 | | | | | |
| **27** | Piston rod | Carbon steel | 1 | | | | | |
| **28** | Tie rod | Carbon steel | 4 | | | | | |

(※) Cushion packing is not included in $\phi$ 200 repair kits.

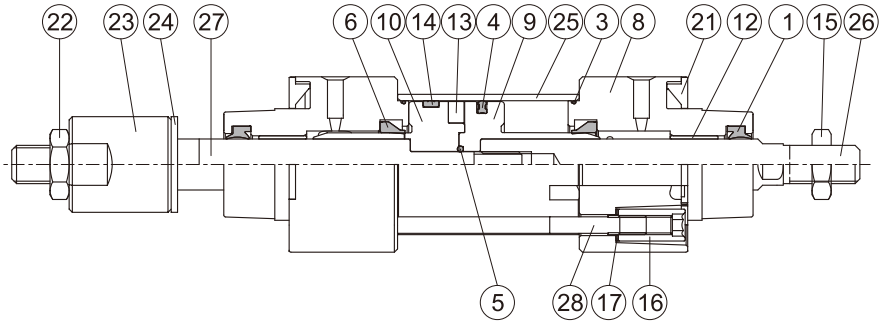
# MCQV-2* Inside structure & Parts list

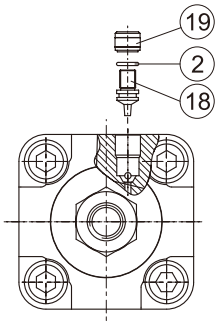
ISO-VDMA **STANDARD CYLINDERS**

mindman

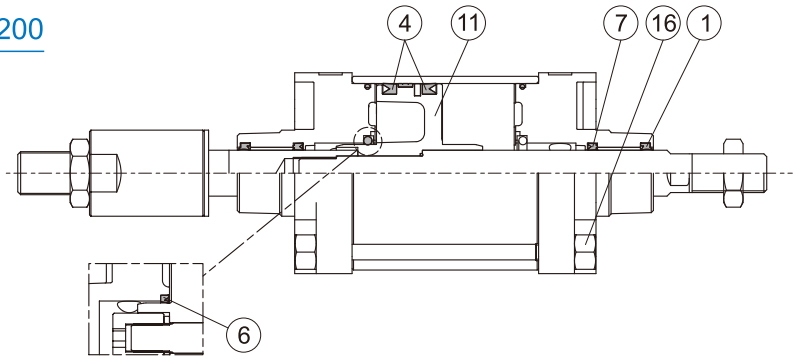
## Double rod 21 / 27 type

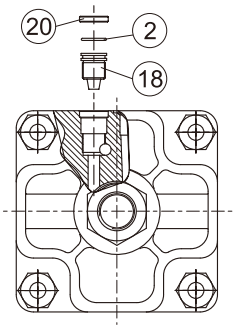
φ32~φ100




φ125~φ200




φ200




| No. | 21 type | | 27 type | | Part name | Material | Q'y | Component parts (inclusion) | | Repair kits (inclusion) | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | | | | φ40~φ100 | φ125~φ200 | φ40~φ100 | φ125~φ200 | |
| 01 | ● | ● | ● | ● | Rod packing | NBR | 2 | ● | ● | ● | ● | |
| 02 | ● | ● | ● | ● | O-ring | NBR | 2 | ● | ● | ● | ● | |
| 03 | ● | ● | ● | ● | O-ring | NBR | 2 | ● | ● | ● | ● | |
| 04 | ● | ● | ● | ● | Piston packing | NBR | 1 or 2 | ● | ● | ● | ● | φ125~φ200 (Q'y 2) |
| 05 | ● | ● | ● | ● | O-ring | NBR | 1 | ● | ● | ● | ● | |
| 06 | ● | ● | ● | ● | Cushion packing | NBR | 2 | ● | ● | ● | ●(※) | |
| 07 | | ● | | ● | Rod packing | NBR | 2 | | ● | | ● | |
| 08 | ● | ● | ● | ● | Rod cover | Aluminum alloy | 2 | ● | ● | | | |
| 09 | ● | | ● | | Piston-R | Aluminum alloy | 1 | ● | | | | |
| 10 | ● | | ● | | Piston-H | Aluminum alloy | 1 | ● | | | | |
| 11 | | ● | | ● | Piston | Aluminum alloy | 1 | | ● | | | |
| 12 | ● | ● | ● | ● | Bush | Bearing alloy | 2 | ● | ● | | | |
| 13 | ◎ | ◎ | ◎ | ◎ | Magnet ring | Magnet material | 1 | ◎ | ◎ | | | ◎ Option |
| 14 | ● | ● | ● | ● | Wear ring | Teflon | 1 | ● | ● | | | |
| 15 | ● | ● | ● | ● | Screw | Carbon steel | 1 | ● | ● | | | |
| 16 | ● | ● | ● | ● | Tie rod nut | Carbon steel | 8 | ● | ● | | | |
| 17 | ● | | ● | | Tie rod washer | Carbon steel | 8 | ● | | | | |
| 18 | ● | ● | ● | ● | Needle valve | Copper alloy | 2 | ● | ● | | | |
| 19 | ● | | ● | | Insert nut | Copper alloy | 2 | ● | | | | |
| 20 | | ● | | ● | Needle valve washer | Carbon steel | 2 | | ● | | | |
| 21 | ● | | ● | | Cover plate | Plastic | 2 | ● | | | | |
| 22 | ● | ● | ● | ● | Nut | Carbon steel | 1 | ● | ● | | | |
| 23 | | | ● | ● | Adjustable nut | Carbon steel | 1 | | | | | |
| 24 | | | ● | ● | Gasket | PU | 1 | | | | | |
| 25 | ● | ● | ● | ● | Cylinder tube | Aluminum alloy | 1 | | | | | |
| 26 | ● | ● | ● | ● | Piston rod #1 | Carbon steel | 1 | | | | | |
| 27 | ● | ● | ● | ● | Piston rod #2 | Carbon steel | 1 | | | | | |
| 28 | ● | ● | ● | ● | Tie rod | Carbon steel | 4 | | | | | |

**A**: φ40~φ100, **B**: φ125~φ200 (※) Cushion packing is not included in φ200 repair kits.

## Order example of component parts

CP – MCQV2 – 2 – 40 M – G

MODEL

| Model | Tube I.D. |
|---|---|
| MCQV2 | ϕ32~ϕ100 |
| MCQV | ϕ125~ϕ200 |

Blank: Single rod
**2**: Double rod

TUBE I.D.
**32**
**40**
**50**
**63**
**80**
**100**
**125**
**160**
**200**

**M**: Magnet

PORT THREAD
**G**: G thread

※ Order example for **Rc** or **NPT** thread please consult us.

## Order example of repair kits

PS – MCQV2 – 2 – 40 – XB6

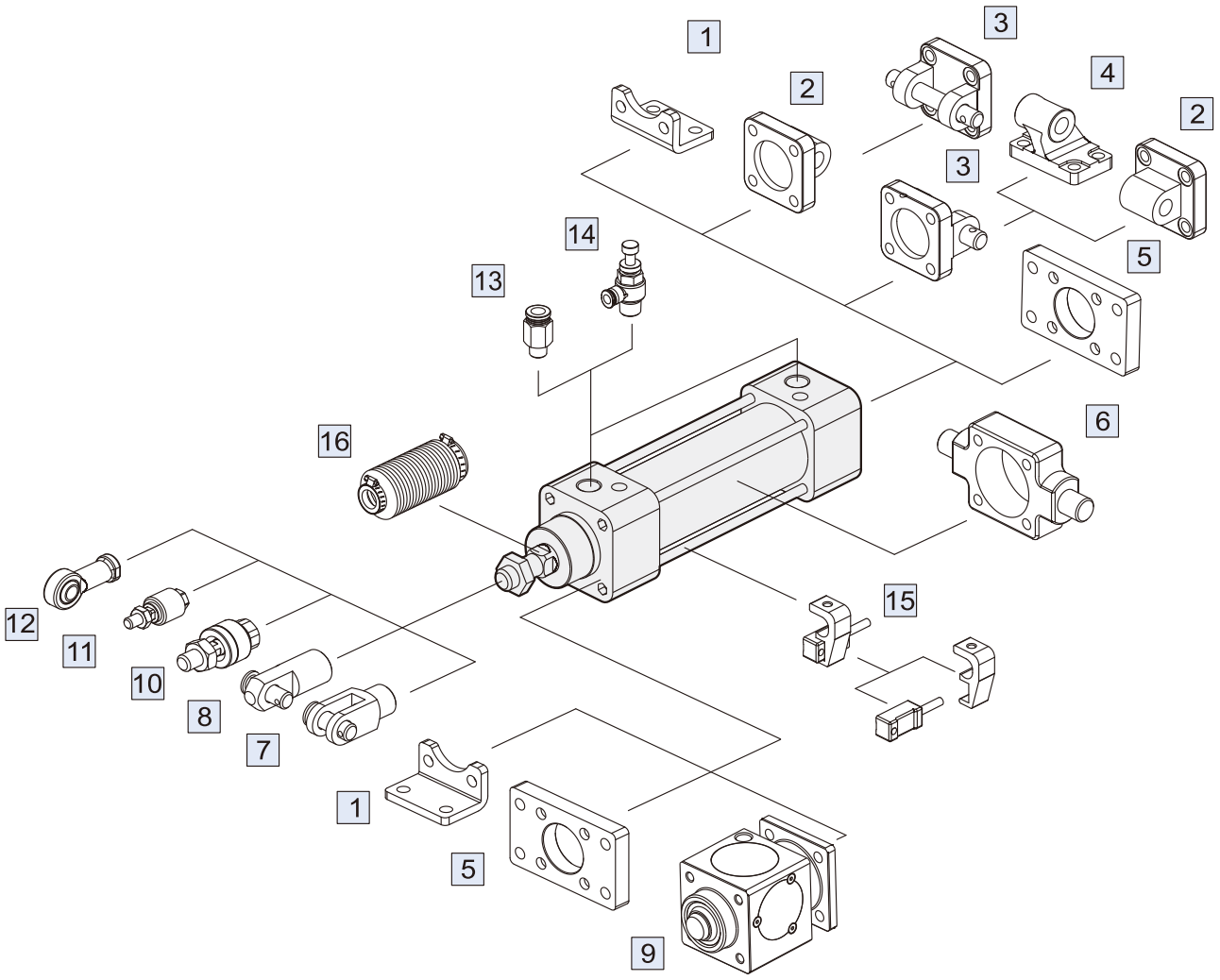
MODEL

| Model | Tube I.D. |
|---|---|
| MCQV2 | ϕ32~ϕ100 |
| MCQV | ϕ125~ϕ200 |

Blank: Single rod
**2**: Double rod

TUBE I.D.
**32**
**40**
**50**
**63**
**80**
**100**
**125**
**160**
**200**

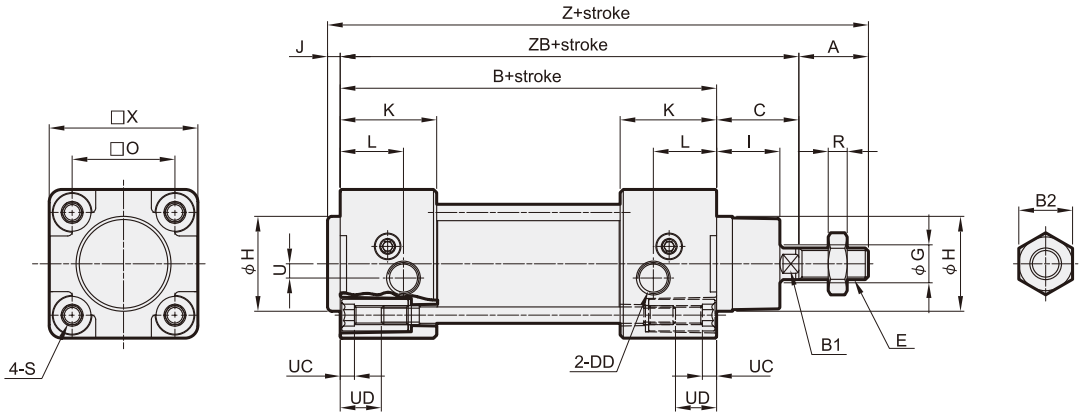
Blank: NBR
**XB6**: Heat resistant material



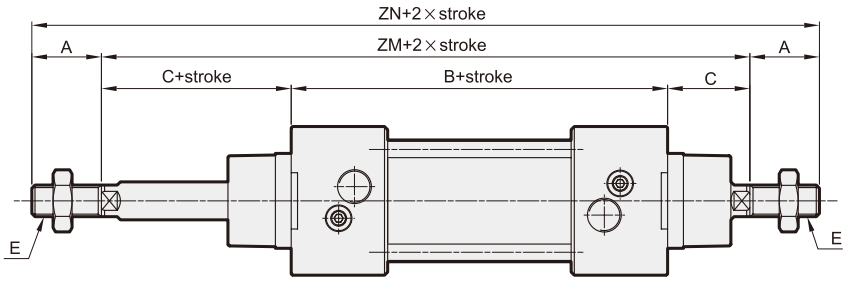

| No. | Accessories | Page |
|---|---|---|
| 1 | Mounting accessories LB | J-42 |
| 2 | Mounting accessories CA | J-44 |
| 3 | Mounting accessories CB+PIN | J-44, 52 |
| 4 | Mounting accessories CDB | J-45 |
| 5 | Mounting accessories FAC / FBC | J-43 |
| 6 | Mounting accessories TA / TB / TC | J-45, 46 |
| 7 | Accessories Y+PIN | J-52 |
| 8 | Accessories I+PIN | J-52 |

| No. | Accessories | Page |
|---|---|---|
| 9 | Locking unit MCBQV* | J-75 |
| 10 | Floating joint MFC | V-01 |
| 11 | Floating joint MFCS | V-03 |
| 12 | Female rod ends PHS | V-04 |
| 13 | Fitting PC (PISCO) | H-03 |
| 14 | Speed controller JSC (PISCO) | H-14 |
| 15 | Sensor switch RCA+HV* | V-05 |
| 16 | Protective bellows kit | — |

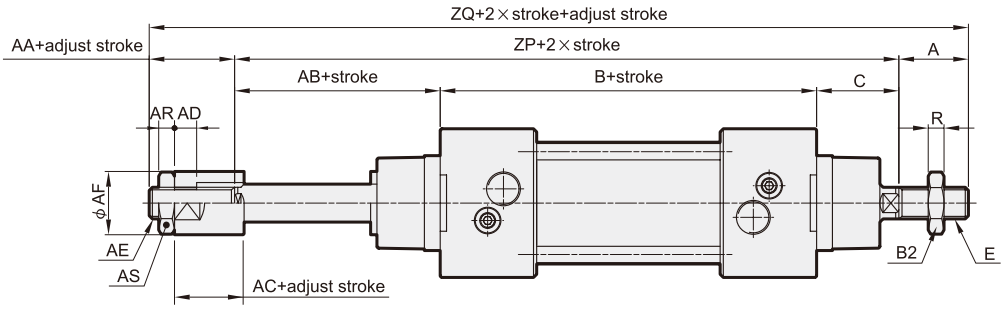
## 11




## 21

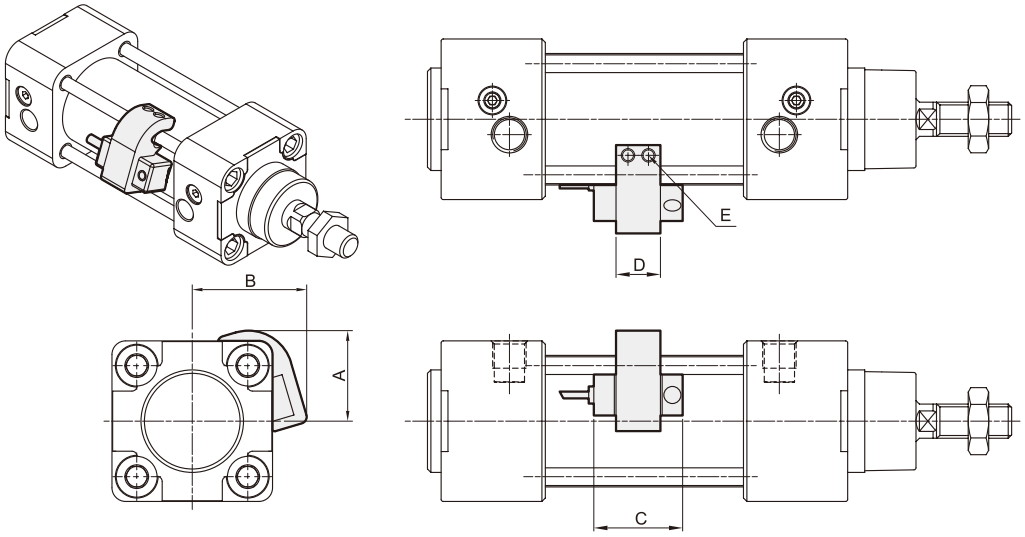



## 27




| Code / Tube I.D. | A | AA | AB | AC | AD | AE | AF | AR | AS | B | B1 | B2 | C | DD | E | G | H | I | J | K | L | O | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 16 | 26 | 12 | 7 | M10×1.25 | 20 | 5 | 17 | 94 | 10 | 17 | 26 | G1/8 | M10×1.25 | 12 | 30 | 20 | 4 | 30.5 | 20 | 32.5 | 5 |
| 40 | 24 | 20 | 27 | 12 | 7 | M12×1.25 | 30 | 6 | 19 | 105 | 13 | 19 | 30 | G1/4 | M12×1.25 | 16 | 35 | 20.5 | 4 | 34 | 14.5 | 38 | 6 |
| 50 | 32 | 18 | 34 | 15 | 10 | M16×1.5 | 40 | 8 | 24 | 106 | 16 | 24 | 37 | G1/4 | M16×1.5 | 20 | 40 | 28 | 4 | 31 | 16 | 46.5 | 8 |
| 63 | 32 | 20 | 32 | 15 | 10 | M16×1.5 | 40 | 8 | 24 | 121 | 16 | 24 | 37 | G3/8 | M16×1.5 | 20 | 45 | 26 | 4 | 33 | 16 | 56.5 | 8 |
| 80 | 40 | 32 | 41 | 20 | 14 | M22×1.5 | 50 | 13 | 32 | 128 | 21 | 30 | 46 | G3/8 | M20×1.5 | 25 | 45 | 32.5 | 4 | 35.5 | 20.5 | 72 | 10 |
| 100 | 40 | 30 | 46 | 20 | 14 | M22×1.5 | 50 | 13 | 32 | 138 | 21 | 30 | 51 | G1/2 | M20×1.5 | 25 | 55 | 37.5 | 4 | 37 | 19 | 89 | 10 |

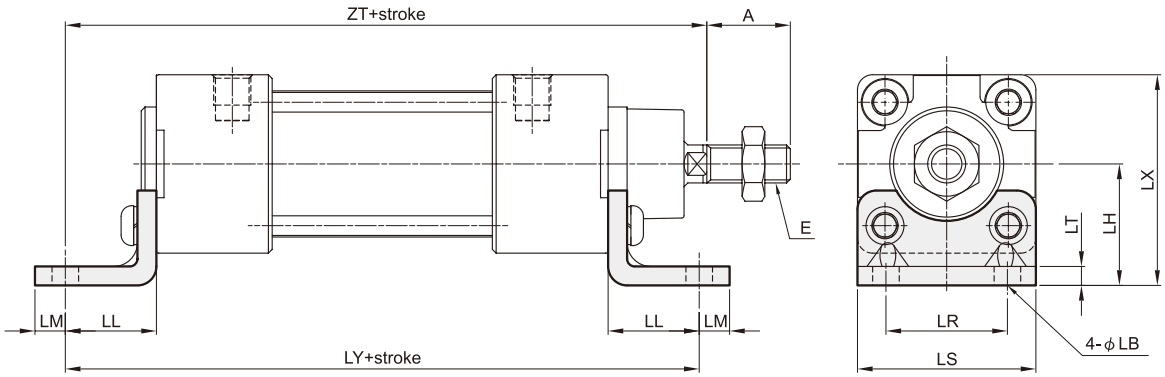
| Code / Tube I.D. | S | U | UC | UD | X | Z | ZB | ZM | ZN | ZP | ZQ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | M6×1.0 | 4.5 | 4.5 | 12 | 47 | 146 | 120 | 146 | 190 | 146 | 184 |
| 40 | M6×1.0 | 5.3 | 4.5 | 12 | 55 | 163 | 135 | 165 | 213 | 162 | 206 |
| 50 | M8×1.25 | 8.5 | 4.5 | 16 | 65 | 179 | 143 | 180 | 244 | 177 | 227 |
| 63 | M8×1.25 | 8 | 4.5 | 16 | 78 | 194 | 158 | 195 | 259 | 190 | 242 |
| 80 | M10×1.5 | 9 | 4.5 | 18 | 95 | 218 | 174 | 220 | 300 | 215 | 287 |
| 100 | M10×1.5 | 13 | 4.5 | 18 | 115 | 233 | 189 | 240 | 320 | 235 | 305 |




| Code / Tube I.D. | Sensor switch | Hold | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| MCQV2-32 | RCA | HV1 | 26.5 | 33.5 | 26 | 13 | M4×10L |
| MCQV2-40 | RCA | HV1 | 29.5 | 36.5 | 26 | 13 | M4×10L |
| MCQV2-50 | RCA | HV2 | 37.5 | 41.5 | 26 | 13 | M4×10L |
| MCQV2-63 | RCA | HV2 | 42.5 | 46.5 | 26 | 13 | M4×10L |
| MCQV2-80 | RCA | HV3 | 49.5 | 54.5 | 26 | 13 | M5×16L |
| MCQV2-100 | RCA | HV3 | 57.5 | 62.5 | 26 | 13 | M5×16L |
| MCQV-125 | RCA | HV4 | — | — | 26 | 13 | M4×10L |
| MCQV-160 | RCA | PM16 | — | — | 26 | 12 | M4×10L |
| MCQV-200 | RCA | HA5V | — | — | 26 | 15 | M4×16L |

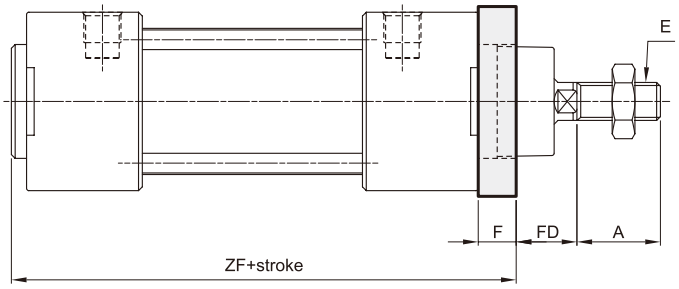
## Mounting accessories

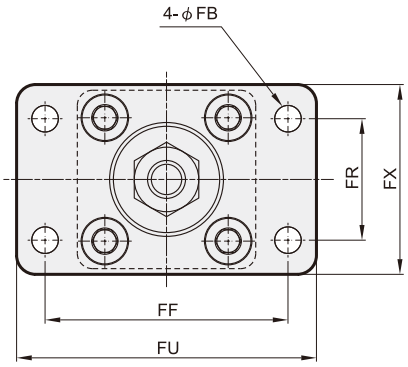
### LB




| Code / Tube I.D. | A | E | LB | LH | LL | LM | LR | LS | LT | LX | LY | ZT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | M10×1.25 | 7 | 32 | 24 | 8 | 32 | 47 | 5 | 55.5 | 142 | 144 |
| 40 | 24 | M12×1.25 | 9 | 36 | 28 | 10 | 36 | 53 | 5 | 63.2 | 161 | 163 |
| 50 | 32 | M16×1.5 | 9 | 45 | 32 | 10 | 45 | 65 | 5 | 77.5 | 170 | 175 |
| 63 | 32 | M16×1.5 | 9 | 50 | 32 | 10 | 50 | 75 | 5 | 89 | 185 | 190 |
| 80 | 40 | M20×1.5 | 12 | 63 | 41 | 13 | 63 | 95 | 6 | 110.5 | 210 | 215 |
| 100 | 40 | M20×1.5 | 14 | 71 | 41 | 13 | 75 | 115 | 6 | 128.5 | 220 | 230 |

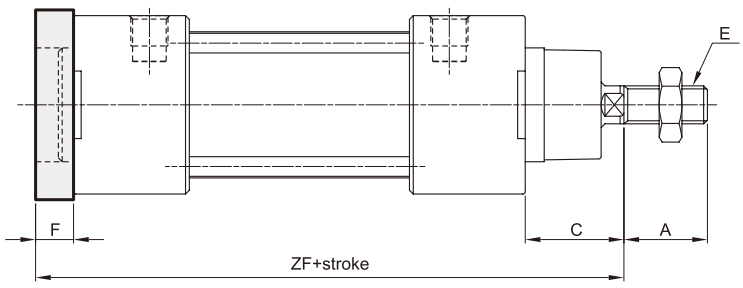
## FAC

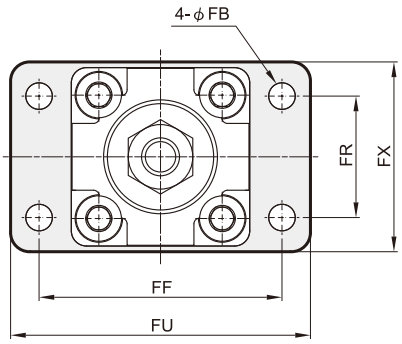



| Code / Tube I.D. | A | E | F | FB | FD | FF | FR | FU | FX | ZF |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | M10×1.25 | 10 | 7 | 16 | 64 | 32 | 79 | 50 | 108 |
| 40 | 24 | M12×1.25 | 10 | 9 | 20 | 72 | 36 | 93 | 54 | 120 |
| 50 | 32 | M16×1.5 | 12 | 9 | 25 | 90 | 45 | 112 | 67 | 123 |
| 63 | 32 | M16×1.5 | 12 | 9 | 25 | 100 | 50 | 127 | 79 | 137 |
| 80 | 40 | M20×1.5 | 16 | 12 | 30 | 126 | 63 | 158 | 98 | 148 |
| 100 | 40 | M20×1.5 | 16 | 14 | 35 | 150 | 75 | 185 | 116 | 158 |

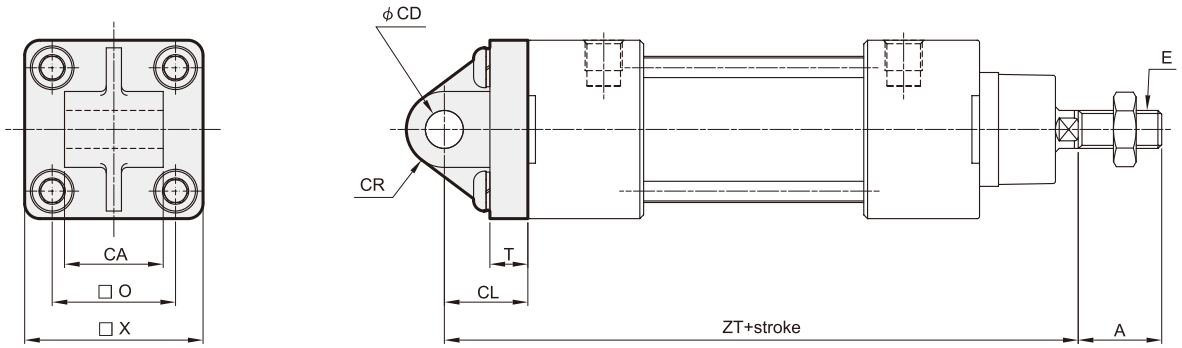
## FBC



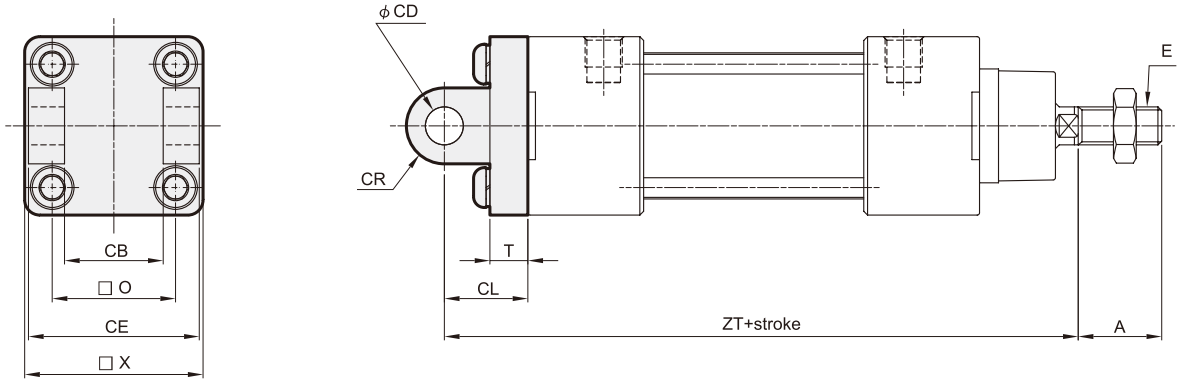

| Code / Tube I.D. | A | C | E | F | FB | FF | FR | FU | FX | ZF |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 26 | M10×1.25 | 10 | 7 | 64 | 32 | 79 | 50 | 130 |
| 40 | 24 | 30 | M12×1.25 | 10 | 9 | 72 | 36 | 93 | 54 | 145 |
| 50 | 32 | 37 | M16×1.5 | 12 | 9 | 90 | 45 | 112 | 67 | 155 |
| 63 | 32 | 37 | M16×1.5 | 12 | 9 | 100 | 50 | 127 | 79 | 170 |
| 80 | 40 | 46 | M20×1.5 | 16 | 12 | 126 | 63 | 158 | 98 | 190 |
| 100 | 40 | 51 | M20×1.5 | 16 | 14 | 150 | 75 | 185 | 116 | 205 |

## CA



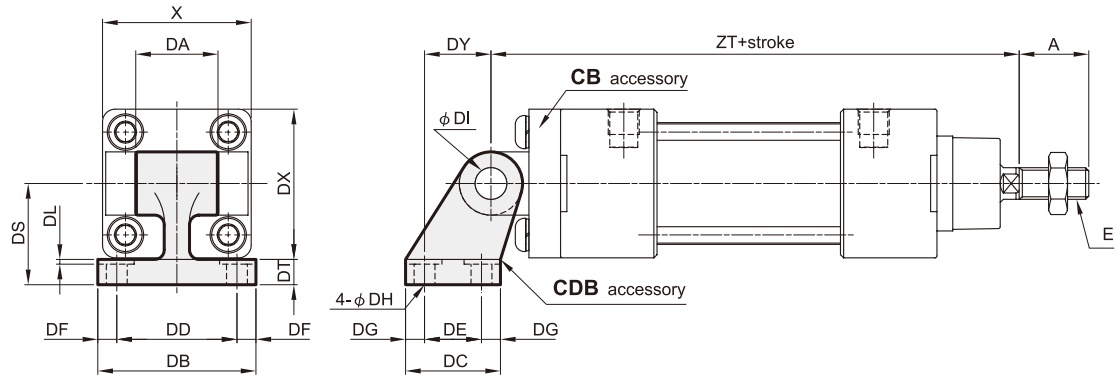

| Code / Tube I.D. | A | CA | CD | CL | CR | E | O | T | X | ZT |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | $26^{-0.1}_{-0.3}$ | 10H9 | 22 | R10.5 | M10×1.25 | 32.5 | 10 | 47 | 142 |
| 40 | 24 | $28^{-0.1}_{-0.3}$ | 12H9 | 25 | R12 | M12×1.25 | 38 | 9 | 55 | 160 |
| 50 | 32 | $32^{-0.1}_{-0.3}$ | 12H9 | 27 | R14 | M16×1.5 | 46.5 | 9 | 65 | 170 |
| 63 | 32 | $40^{-0.1}_{-0.3}$ | 16H9 | 32 | R18 | M16×1.5 | 56.5 | 9 | 78 | 190 |
| 80 | 40 | $50^{-0.1}_{-0.3}$ | 16H9 | 36 | R17 | M20×1.5 | 72 | 12 | 95 | 210 |
| 100 | 40 | $60^{-0.1}_{-0.3}$ | 20H9 | 41 | R21 | M20×1.5 | 89 | 11 | 115 | 230 |

## CB



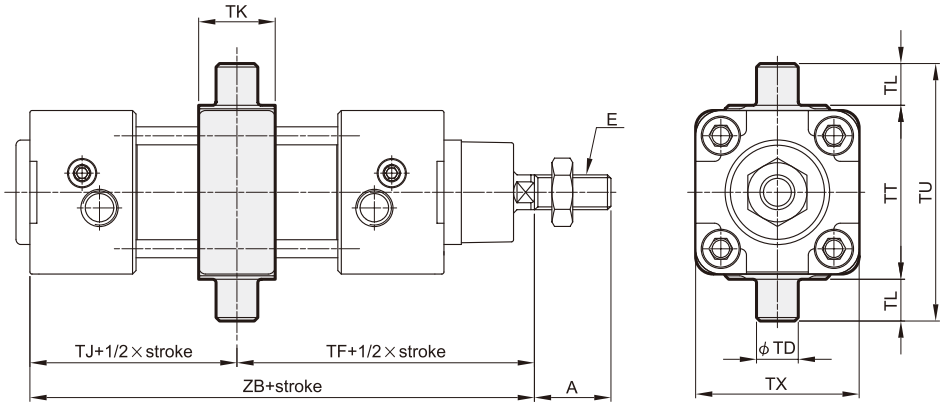

| Code / Tube I.D. | A | CB | CD | CE | CL | CR | E | O | T | X | ZT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | $26^{+0.3}_{+0.1}$ | 10H9 | 45 | 22 | R10.5 | M10×1.25 | 32.5 | 10 | 47 | 142 |
| 40 | 24 | $28^{+0.3}_{+0.1}$ | 12H9 | 52 | 25 | R12 | M12×1.25 | 38 | 9 | 55 | 160 |
| 50 | 32 | $32^{+0.3}_{+0.1}$ | 12H9 | 60 | 27 | R14 | M16×1.5 | 46.5 | 9 | 65 | 170 |
| 63 | 32 | $40^{+0.3}_{+0.1}$ | 16H9 | 70 | 32 | R18 | M16×1.5 | 56.5 | 9 | 78 | 190 |
| 80 | 40 | $50^{+0.3}_{+0.1}$ | 16H9 | 90 | 36 | R17 | M20×1.5 | 72 | 12 | 95 | 210 |
| 100 | 40 | $60^{+0.3}_{+0.1}$ | 20H9 | 110 | 41 | R21 | M20×1.5 | 89 | 11 | 115 | 230 |

## CDB CB+Pin (Extra purchase)



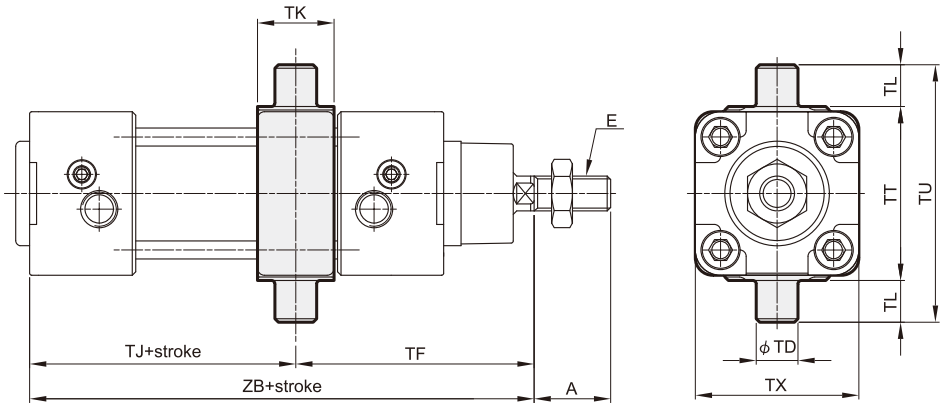

| Code / Tube I.D. | A | DA | DB | DC | DD | DE | DF | DG | DH | DI | DL | DS | DT | DX | DY | E | X | ZT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | 26 | 50 | 30 | 38 | 18 | 6 | 6 | 6.6 | 10 | 1.5 | 32 | 8 | 47.5 | 21 | M10×1.25 | 47 | 142 |
| 40 | 24 | 28 | 53 | 34 | 41 | 22 | 6 | 6 | 6.6 | 12 | 1.5 | 36 | 10 | 52.5 | 24 | M12×1.25 | 55 | 160 |
| 50 | 32 | 32 | 65 | 45 | 50 | 30 | 7.5 | 7.5 | 9 | 12 | 1.5 | 45 | 12 | 65.5 | 33 | M16×1.5 | 65 | 170 |
| 63 | 32 | 40 | 67 | 50 | 52 | 35 | 7.5 | 7.5 | 9 | 16 | 1.5 | 50 | 12 | 75.5 | 37 | M16×1.5 | 78 | 190 |
| 80 | 40 | 50 | 86 | 60 | 66 | 40 | 10 | 10 | 11 | 16 | 2.5 | 63 | 14 | 96.5 | 47 | M20×1.5 | 95 | 210 |
| 100 | 40 | 60 | 96 | 70 | 76 | 50 | 10 | 10 | 11 | 20 | 2.5 | 71 | 15 | 113.5 | 55 | M20×1.5 | 115 | 230 |

## TC



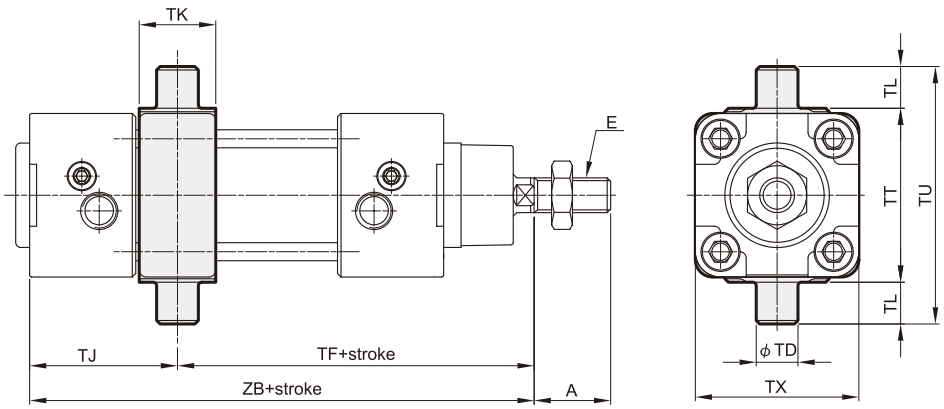

| Code / Tube I.D. | A | E | TD | TF | TJ | TK | TL | TT | TU | TX | ZB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 22 | M10×1.25 | 12e8 | 73 | 47 | 22 | 12 | 50 | 74 | 47 | 120 |
| 40 | 24 | M12×1.25 | 16e8 | 82.5 | 52.5 | 22 | 16 | 63 | 95 | 53 | 135 |
| 50 | 32 | M16×1.5 | 16e8 | 90 | 53 | 22 | 16 | 75 | 107 | 66 | 143 |
| 63 | 32 | M16×1.5 | 20e8 | 97.5 | 60.5 | 28 | 20 | 90 | 130 | 80 | 158 |
| 80 | 40 | M20×1.5 | 20e8 | 110 | 64 | 34 | 20 | 110 | 150 | 106 | 174 |
| 100 | 40 | M20×1.5 | 25e8 | 120 | 69 | 40 | 25 | 132 | 182 | 126 | 189 |

## TA



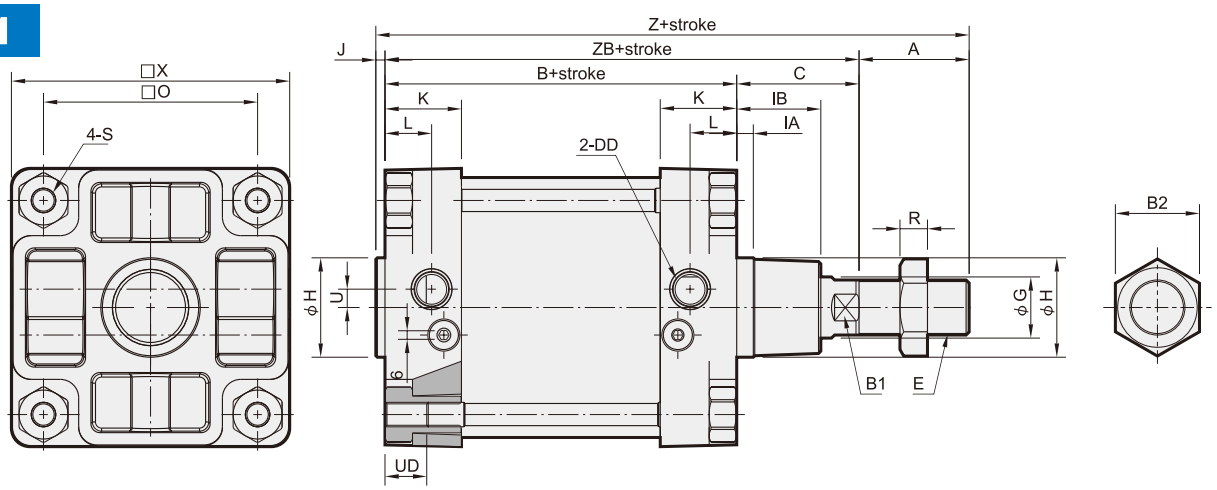

| Code / Tube I.D. | A | E | TD | TF | without magnet | | magnet | | TK | TL | TT | TU | TX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TJ | ZB | TJ | ZB | | | | | |
| 32 | 22 | M10×1.25 | 12e8 | 68.5 | 51.5 | 120 | 81.5 | 150 | 22 | 12 | 50 | 74 | 47 |
| 40 | 24 | M12×1.25 | 16e8 | 76 | 59 | 135 | 89 | 165 | 22 | 16 | 63 | 95 | 53 |
| 50 | 32 | M16×1.5 | 16e8 | 80 | 63 | 143 | 93 | 173 | 22 | 16 | 75 | 107 | 66 |
| 63 | 32 | M16×1.5 | 20e8 | 85 | 73 | 158 | 103 | 188 | 28 | 20 | 90 | 130 | 80 |
| 80 | 40 | M20×1.5 | 20e8 | 99.5 | 74.5 | 174 | 114.5 | 214 | 34 | 20 | 110 | 150 | 106 |
| 100 | 40 | M20×1.5 | 25e8 | 109 | 80 | 189 | 120 | 229 | 40 | 25 | 132 | 182 | 126 |

## TB

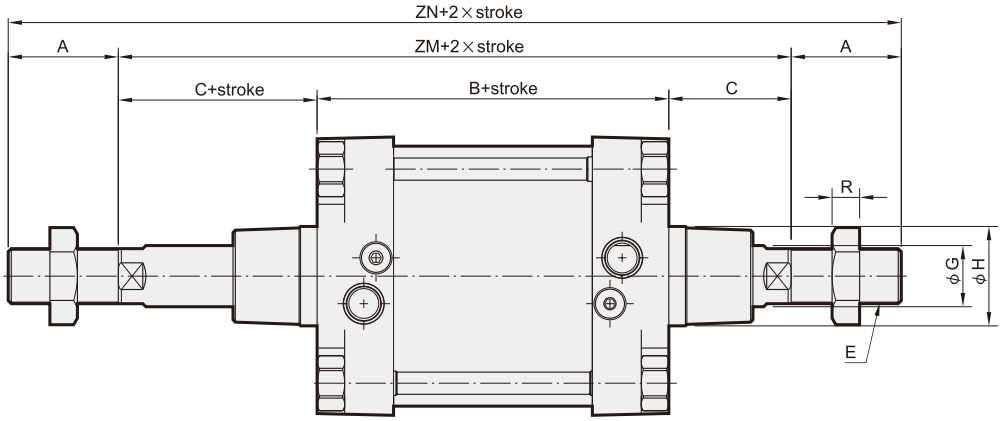



| Code / Tube I.D. | A | E | TD | without magnet | | magnet | | TJ | TK | TL | TT | TU | TX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TF | ZB | TF | ZB | | | | | | |
| 32 | 22 | M10×1.25 | 12e8 | 77.5 | 120 | 107.5 | 150 | 42.5 | 22 | 12 | 50 | 74 | 47 |
| 40 | 24 | M12×1.25 | 16e8 | 89 | 135 | 119 | 165 | 46 | 22 | 16 | 63 | 95 | 53 |
| 50 | 32 | M16×1.5 | 16e8 | 100 | 143 | 130 | 173 | 43 | 22 | 16 | 75 | 107 | 66 |
| 63 | 32 | M16×1.5 | 20e8 | 110 | 158 | 140 | 188 | 48 | 28 | 20 | 90 | 130 | 80 |
| 80 | 40 | M20×1.5 | 20e8 | 120.5 | 174 | 160.5 | 214 | 53.5 | 34 | 20 | 110 | 150 | 106 |
| 100 | 40 | M20×1.5 | 25e8 | 131 | 189 | 171 | 229 | 58 | 40 | 25 | 132 | 182 | 126 |

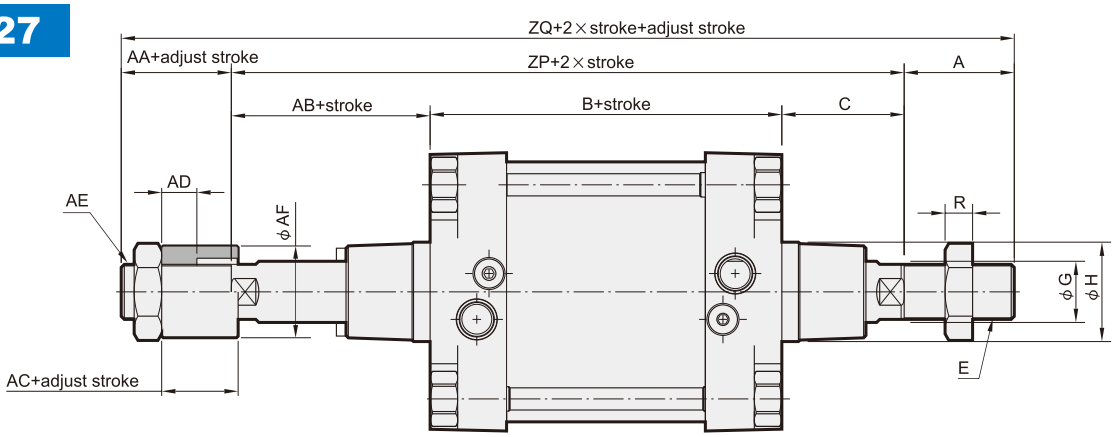
## 11




## 21



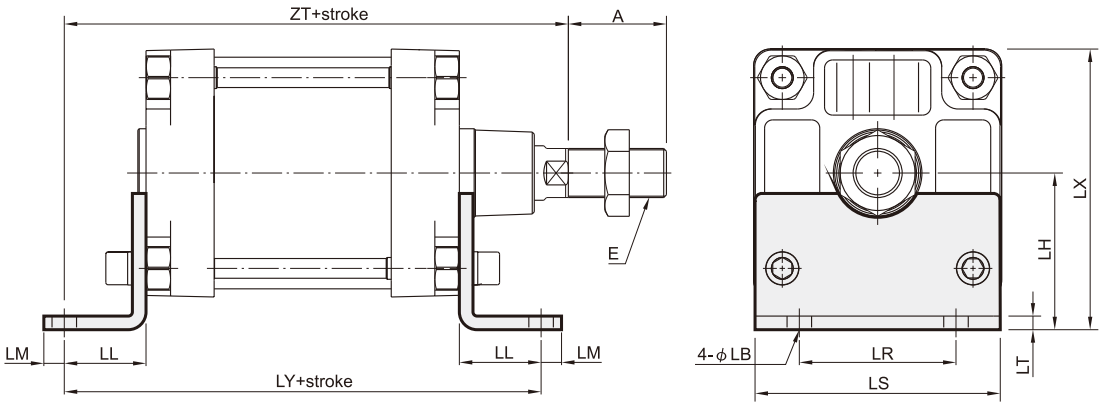

## 27




| Code / Tube I.D. | A | AA | AB | AC | AD | AE | AF | B | B1 | B2 | C | DD | E | G | H | IA | IB | J | K | L | O | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | 38 | 55 | 30 | 18 | M30×1.5 | 60 | 160 | 27 | 41 | 65 | G1/2 | M27×P2.0 | 32 | 60e11 | 10 | 40 | 6 | 40 | 25 | 110 | 13.5 | M12×1.75 |
| 160 | 72 | 38 | 71 | 30 | 18 | M30×1.5 | 60 | 180 | 36 | 55 | 80 | G3/4 | M36×P2.0 | 40 | 65e11 | 10 | 55 | 6 | 50 | 30.5 | 140 | 18 | M16×2.0 |
| 200 | 72 | 40.5 | 94.5 | 42.5 | 20 | M36×2 | 60 | 180 | 36 | 55 | 95 | G3/4 | M36×P2.0 | 40 | 75e11 | 15 | 55 | 6 | 56 | 36.5 | 175 | 18 | M16×2.0 |

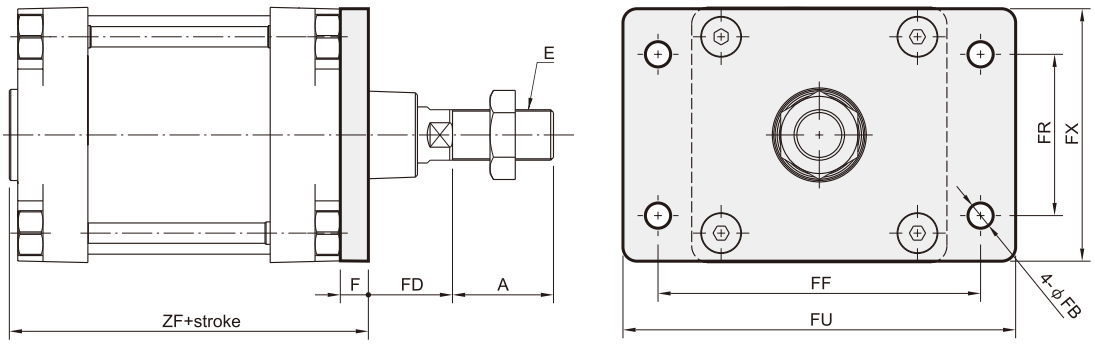
| Code / Tube I.D. | U | UD | X | Z | ZB | ZM | ZN | ZP | ZQ |
|---|---|---|---|---|---|---|---|---|---|
| 125 | 11 | 22 | 140 | 285 | 225 | 290 | 398 | 280 | 372 |
| 160 | 12 | 27 | 182 | 338 | 260 | 340 | 484 | 331 | 441 |
| 200 | 12 | 28 | 220 | 353 | 275 | 370 | 514 | 369.5 | 482 |

## LB



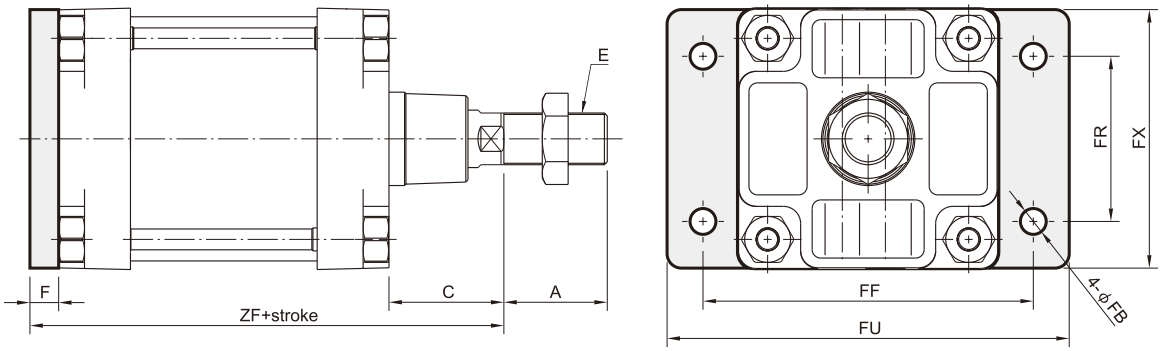

| Code / Tube I.D. | A | E | LB | LH | LL | LM | LR | LS | LT | LX | LY | ZT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | M27×2.0 | 16 | 90 | 45 | 25 | 90 | 140 | 9 | 160 | 250 | 270 |
| 160 | 72 | M36×2.0 | 18 | 115 | 60 | 15 | 115 | 180 | 10 | 206 | 300 | 320 |
| 200 | 72 | M36×2.0 | 24 | 135 | 70 | 35 | 135 | 220 | 12 | 245 | 320 | 345 |

## FAC



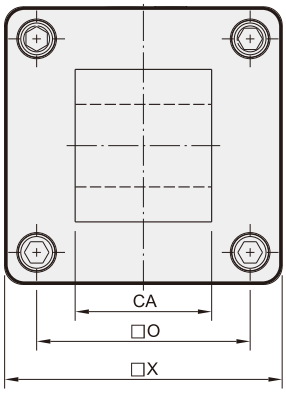

| Code / Tube I.D. | A | E | F | FB | FD | FF | FR | FU | FX | ZF |
|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | M27×2.0 | 20 | 16 | 45 | 180 | 90 | 211 | 140 | 186 |
| 160 | 72 | M36×2.0 | 20 | 18 | 60 | 230 | 115 | 283 | 184 | 206 |
| 200 | 72 | M36×2.0 | 25 | 22 | 70 | 270 | 135 | 320 | 220 | 211 |

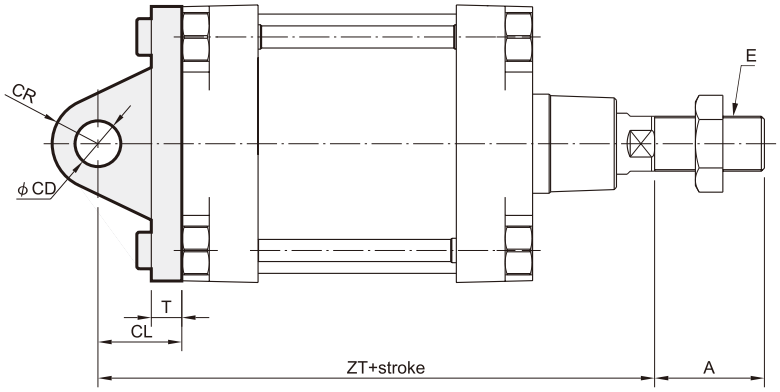
## FBC




| Code / Tube I.D. | A | C | E | F | FB | FF | FR | FU | FX | ZF |
|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | 65 | M27×2.0 | 20 | 16 | 180 | 90 | 211 | 140 | 245 |
| 160 | 72 | 80 | M36×2.0 | 20 | 18 | 230 | 115 | 283 | 184 | 280 |
| 200 | 72 | 95 | M36×2.0 | 25 | 22 | 270 | 135 | 320 | 220 | 300 |

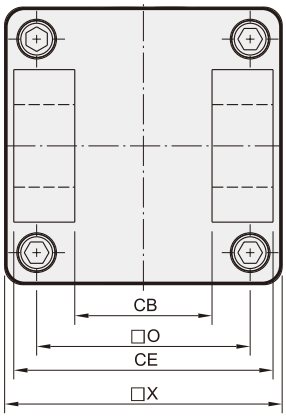
## CA

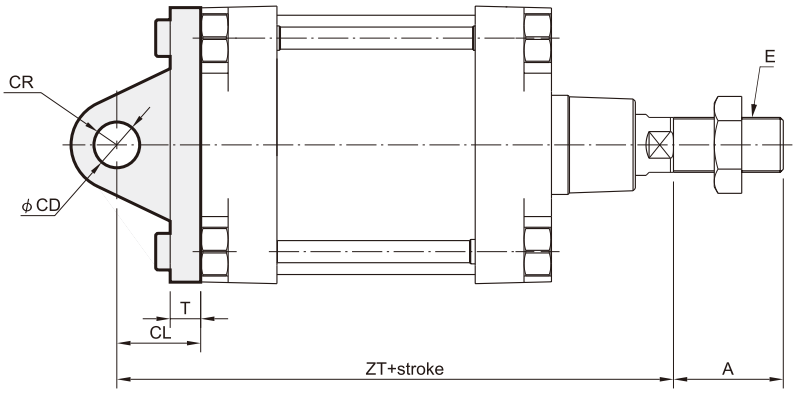



| Code / Tube I.D. | A | CA | CD | CL | CR | E | O | T | X | ZT |
|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | 69.5 $^{0}_{-0.7}$ | 25H9 | 50 | R25 | M27×2.0 | 110 | 20 | 140 | 275 |
| 160 | 72 | 89.5 $^{0}_{-0.7}$ | 30H9 | 55 | R30 | M36×2.0 | 140 | 20 | 180 | 315 |
| 200 | 72 | 90 $^{-0.5}_{-0.9}$ | 30H9 | 60 | R30 | M36×2.0 | 175 | 21 | 218 | 335 |

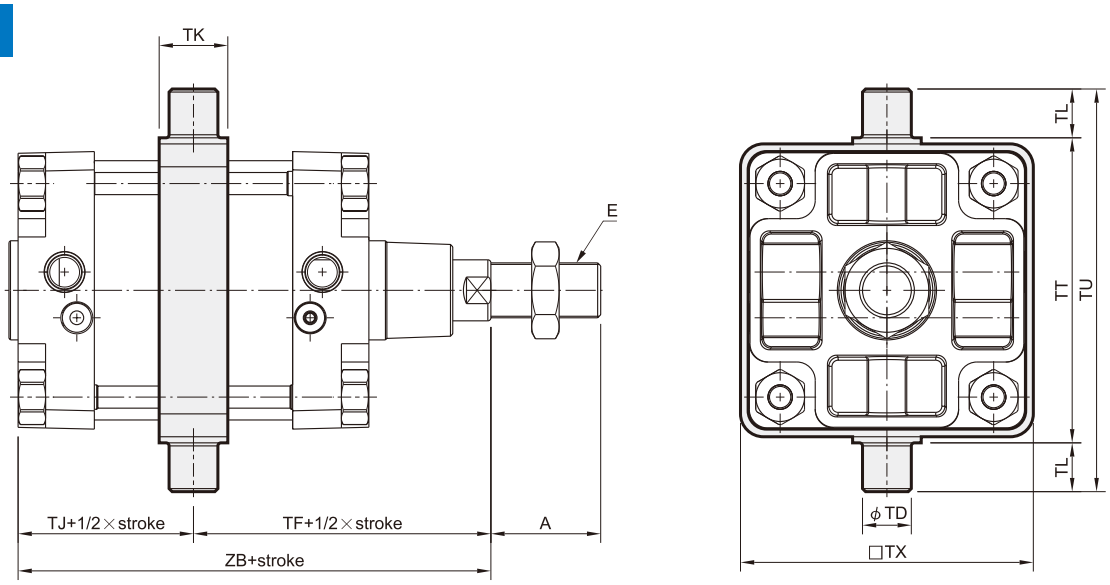
## CB



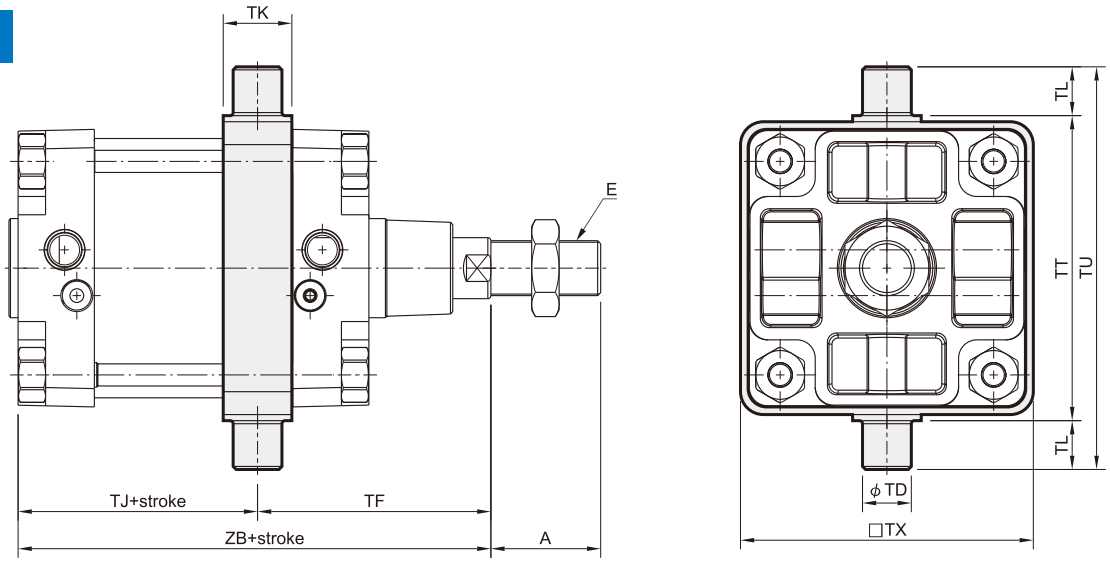

| Code / Tube I.D. | A | CB | CD | CE | CL | CR | E | O | T | X | ZT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | 70H14 | 25H9 | 130h14 | 50 | R25 | M27×2.0 | 110 | 20 | 140 | 275 |
| 160 | 72 | 90H14 | 30H9 | 170h14 | 55 | R30 | M36×2.0 | 140 | 20 | 180 | 315 |
| 200 | 72 | 90H14 | 30H9 | 170h14 | 60 | R30 | M36×2.0 | 175 | 21 | 218 | 335 |

## TC



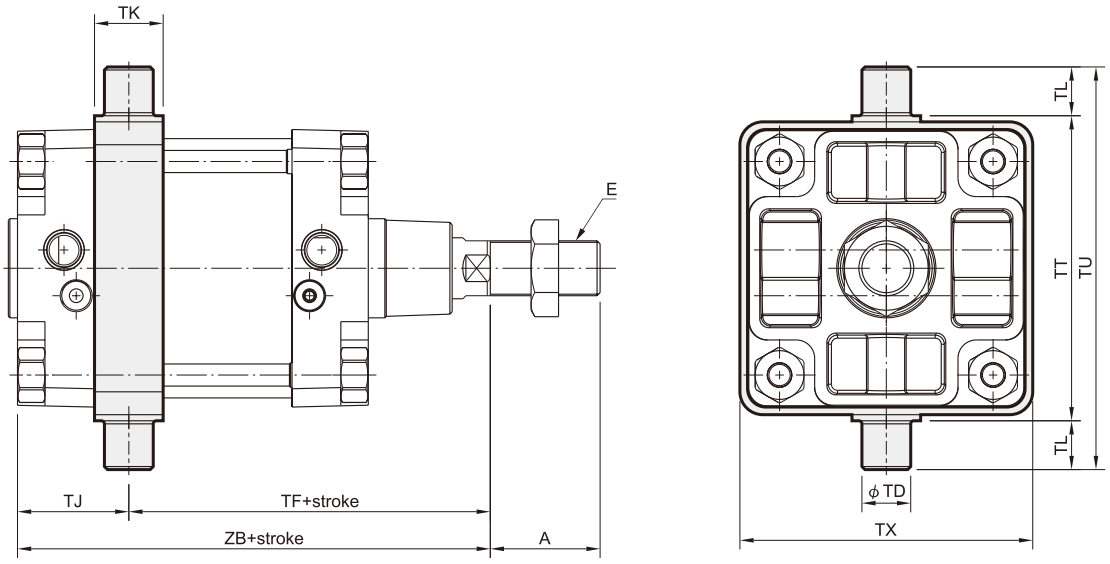

| Code / Tube I.D. | A | E | TD | TF | TJ | TK | TL | TT | TU | TX | ZB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 54 | M27×2.0 | 25e9 | 145 | 80 | 40 | 25 | 160 | 210 | 155 | 225 |
| 160 | 72 | M36×2.0 | 32e9 | 170 | 90 | 45 | 32 | 200 | 264 | 192 | 260 |
| 200 | 72 | M36×2.0 | 32e9 | 185 | 90 | 45 | 32 | 250 | 314 | 240 | 275 |

## TA




| Code / Tube I.D. | A | E | TD | TF | without magnet | | magnet | | TK | TL | TT | TX | TU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TJ | ZB | TJ | ZB | | | | | |
| 125 | 54 | M27×2.0 | 25e9 | 125 | 100 | 225 | 146 | 271 | 40 | 25 | 160 | 155 | 210 |
| 160 | 72 | M36×2.0 | 32e9 | 152.5 | 107.5 | 260 | 157.5 | 310 | 45 | 32 | 200 | 192 | 264 |
| 200 | 72 | M36×2.0 | 32e9 | 173.5 | 101.5 | 275 | 145.5 | 319 | 45 | 32 | 250 | 240 | 275 |

## TB

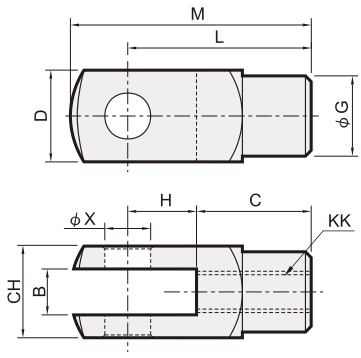



| Code / Tube I.D. | A | E | TD | TJ | without magnet | | magnet | | TK | TL | TT | TX | TU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TF | ZB | TF | ZB | | | | | |
| 125 | 54 | M27×2.0 | 25e9 | 60 | 165 | 225 | 211 | 271 | 40 | 25 | 160 | 155 | 210 |
| 160 | 72 | M36×2.0 | 32e9 | 72.5 | 187.5 | 260 | 237.5 | 310 | 45 | 32 | 200 | 192 | 264 |
| 200 | 72 | M36×2.0 | 32e9 | 78.5 | 196.5 | 275 | 240.5 | 319 | 45 | 32 | 250 | 240 | 275 |

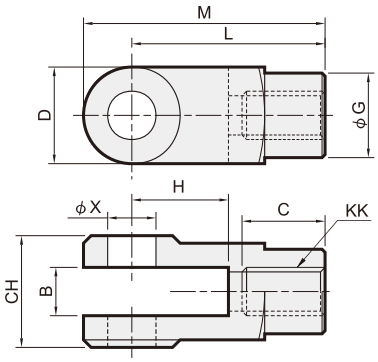
## Y connector

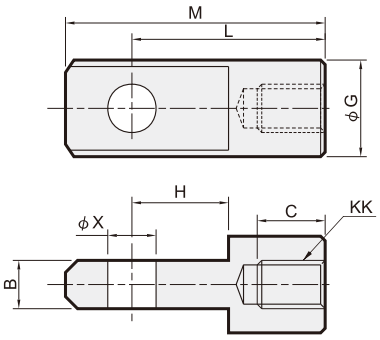
## I connector

ϕ32, ϕ40




ϕ50~ϕ100




| Code / Tube I.D. | B | | C | | CH | | D | | G | | H | | L | | KK | | M | | X H9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | |
| 32 | $10^{+0.5}_{+0.15}$ | $10^{-0.1}_{-0.2}$ | 20 | 17 | 19 | | 19 | | ϕ18 | ϕ20 | 20 | 15 | 40 | 40 | M10×1.25 | | 52 | 52 | $\phi 10^{+0.04}_{0}$ |
| 40 | $12^{+0.5}_{+0.15}$ | $12^{-0.1}_{-0.2}$ | 24 | 21 | 24 | | 24 | | ϕ20 | ϕ24 | 24 | 18 | 48 | 48 | M12×1.25 | | 62 | 62 | $\phi 12^{+0.04}_{0}$ |
| 50 | $16^{+0.3}_{+0.1}$ | $16^{-0.1}_{-0.3}$ | 28 | 23 | 32 | | 32 | | ϕ28 | ϕ32 | 32 | 32 | 64 | 64 | M16×1.5 | | 89 | 86 | $\phi 16^{+0.04}_{0}$ |
| 63 | $16^{+0.3}_{+0.1}$ | $16^{-0.1}_{-0.3}$ | 28 | 23 | 32 | | 32 | | ϕ28 | ϕ32 | 32 | 32 | 64 | 64 | M16×1.5 | | 89 | 86 | $\phi 16^{+0.04}_{0}$ |
| 80 | $20^{+0.3}_{+0.1}$ | $20^{-0.1}_{-0.3}$ | 33 | 30 | 45 | | 40 | | ϕ36 | ϕ36 | 40 | 40 | 80 | 80 | M20×1.5 | | 100 | 108 | $\phi 20^{+0.05}_{0}$ |
| 100 | $20^{+0.3}_{+0.1}$ | $20^{-0.1}_{-0.3}$ | 33 | 30 | 45 | | 40 | | ϕ36 | ϕ36 | 40 | 40 | 80 | 80 | M20×1.5 | | 100 | 108 | $\phi 20^{+0.05}_{0}$ |

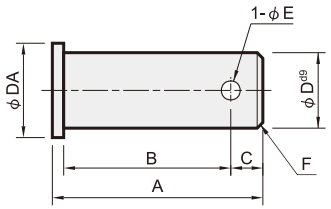
## Order example

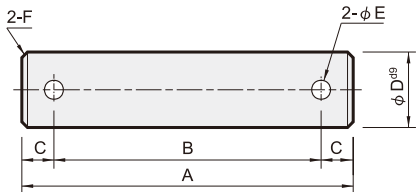
※MCQV / MCQI are common accessories.

PIN – MCQV – 40 – Y – P

- PIN
- TUBE I.D.
- TYPE
  - **Y** : for Y&I connector
  - **CB** : for CA&CB accessory
- **P** : with split pin

## Pin



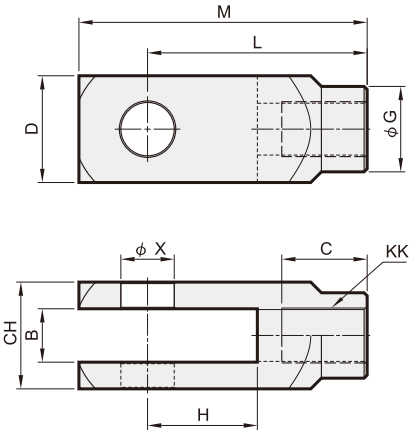

### for Y.I connector

| Code / Tube I.D. | A | B | C | D d9 | DA | E | F | Split pin |
|---|---|---|---|---|---|---|---|---|
| 32 | 30 | 25 | 3.5 | $\phi 10^{-0.06}_{-0.09}$ | 14 | 3.2 | 1 | 3.2×20L |
| 40 | 37 | 30 | 5 | $\phi 12^{-0.06}_{-0.09}$ | 16 | 3.2 | 1 | 3.2×20L |
| 50 ~ 63 | 47 | 37 | 7 | $\phi 16^{-0.05}_{-0.09}$ | 22 | 4 | 1 | 4×25L |
| 80 ~ 100 | 62 | 50 | 8 | $\phi 20^{-0.06}_{-0.11}$ | 30 | 5 | 1.5 | 5×35L |

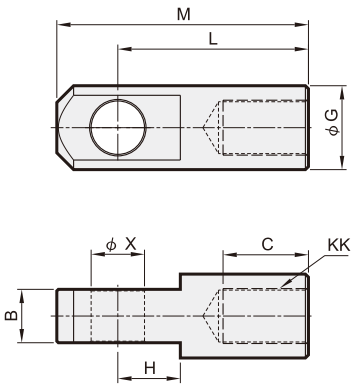
### for CA.CB

| Code / Tube I.D. | A | B | C | D d9 | E | F | Split pin |
|---|---|---|---|---|---|---|---|
| 32 | 69 | 55 | 7 | $\phi 10^{-0.05}_{-0.09}$ | 4 | 1.0 | 4×20L |
| 40 | 76 | 62 | 7 | $\phi 12^{-0.05}_{-0.09}$ | 4 | 1.0 | 4×20L |
| 50 | 84 | 70 | 7 | $\phi 12^{-0.05}_{-0.09}$ | 4 | 1.0 | 4×20L |
| 63 | 94 | 80 | 7 | $\phi 16^{-0.05}_{-0.09}$ | 4 | 1.0 | 4×30L |
| 80 | 117 | 100 | 8.5 | $\phi 16^{-0.05}_{-0.09}$ | 5 | 1.5 | 5×30L |
| 100 | 137 | 120 | 8.5 | $\phi 20^{-0.05}_{-0.09}$ | 5 | 1.5 | 5×35L |

## Y connector




## I connector



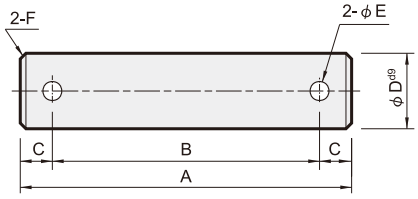

| Code / Tube I.D. | B | | C | | CH | | D | | G | | H | | KK | | L | | M | | X F7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I | Y | I |
| 125 | $30^{+0.52}_{0}$ | $30^{-0.2}_{-0.3}$ | 56 | 51 | 55 | | 55 | | 48 | 55 | 54 | 40 | M27×2.0 | | 110 | 110 | 148 | 145 | $30^{+0.52}_{+0}$ | $30^{+0.04}_{+0.02}$ |
| 160 | $35^{+0.62}_{0}$ | $35^{-0.2}_{-0.3}$ | 56 | 56 | 70 | | 70 | | 56 | 55 | 72 | 41 | M36×2.0 | | 144 | 125 | 189 | 165 | $35^{+0.05}_{+0.02}$ | $35^{+0.05}_{+0.02}$ |
| 200 | $35^{+0.62}_{0}$ | $35^{-0.2}_{-0.3}$ | 56 | 56 | 70 | | 70 | | 56 | 55 | 72 | 41 | M36×2.0 | | 144 | 125 | 189 | 165 | $35^{+0.05}_{+0.02}$ | $35^{+0.05}_{+0.02}$ |

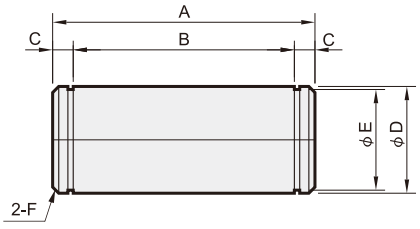
## Pin

### Order example

PIN – MCQV – 125 – Y – P

- PIN
- TUBE I.D.
- TYPE
  - **Y** : for Y&I connector
  - **CB** : for CA&CB accessory
- **P** : with split pin




### for ϕ125

| Code / Tube I.D. | A | B | C | D d9 | E | F | Split pin |
|---|---|---|---|---|---|---|---|
| CB | 157 | 140 | 8.5 | $\phi 25^{-0.07}_{-0.12}$ | 5 | 1.5 | 5×36L |
| Y | 81 | 64 | 8.5 | $\phi 30^{-0.07}_{-0.12}$ | 6.3 | 1.5 | 6.3×40L |

### for ϕ160, ϕ200

| Code / Tube I.D. | A | B | C | D | E | F | Snap ring |
|---|---|---|---|---|---|---|---|
| CB | 186 | 172 | 7 | $30^{e8-0.05}_{-0.09}$ | $28.6^{0}_{-0.21}$ | 2 | STW—30 |
| Y | 86 | 72 | 7 | $35^{h7-0}_{-0.03}$ | $33^{0}_{-0.25}$ | 2 | STW—35 |