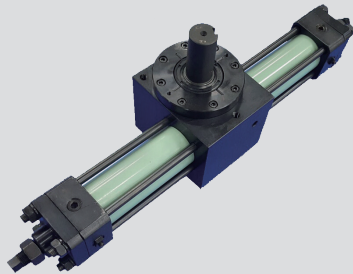


KP70R series



Features

- Rack-and-pinion rotary cylinder.
- Improved stopper durability by side stopper method.
- It can use for high output with commercial pressure increase (35bar -> 70bar).
- Applicable in a compact space.

ex) KP35R-Ø40 Output: 440Kgf
KP70R-Ø32 Output: 563Kgf

It is possible to design compact in space compared to output.

Symbol



How to Order

KP70R - H FA 40 - 90

① ② ③ ④ ⑤ ⑥ ⑦

① Series

| | | |
|-------|-----------------|-----------------------|
| KP70R | Rotary cylinder | 70kgf/cm ² |
|-------|-----------------|-----------------------|

② Type

| | |
|-----|-------------|
| Nil | Standard |
| H | With magnet |

③ Mounting style

| | |
|----|---------------|
| SD | Standard |
| FA | Top flange |
| FB | Bottom flange |

④ Bore size

| | |
|----|-----|
| 32 | Ø32 |
| 40 | Ø40 |
| 50 | Ø50 |
| 63 | Ø63 |
| 80 | Ø80 |

⑤ Rotating angle

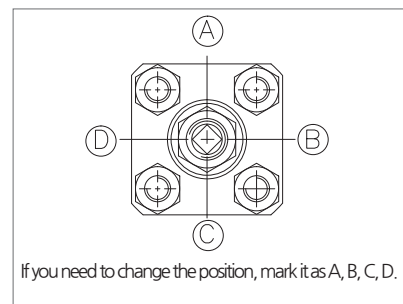
| | |
|-----|------|
| 90 | 90° |
| 180 | 180° |

⑥ Port position

| | |
|-------|-----------------------|
| Nil | A (Standard) |
| B,C,D | Refer to figure below |

⑦ Cushion valve position

| | |
|-------|-----------------------|
| Nil | B (Standard) |
| A,C,D | Refer to figure below |



Specifications

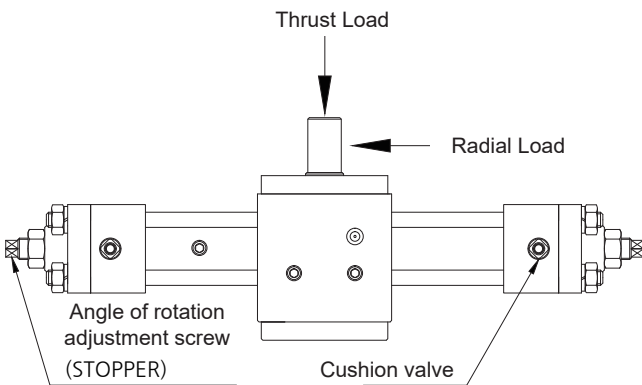
| | |
|--|--|
| Type | KP70R |
| Bore size | Ø32, Ø40, Ø50, Ø63, Ø80 |
| Variation | Rack and pinion type |
| Rotating angle | 90°, 180° |
| Angle adjustment | ±5° |
| Rated torque (at 70kgf/cm ²) | Ø32:210N·m, Ø40:490N·m, Ø50:1020N·m, Ø63:2000N·m, Ø80:3700N·m, |
| Max. operating pressure | 69.8kgf/cm ² (7MPa) |
| Proof pressure | 99.8kgf/cm ² (10MPa) |
| Min. operating pressure | 5kgf/cm ² (0.5MPa) |
| Ambient & fluid temperature | 10 ~ 60°C |
| Working oil | Petroleum-based fluid |
| Tolerance of thread | KS class 2 |
| Mounting style | SD, FA, FB |

Volume of Fluid Required for Rotation

Unit : ml

| Rotating angle Bore size (mm) | 90° | 180° |
|----------------------------------|-------|-------|
| Ø32 | 28.3 | 53.4 |
| Ø40 | 51.9 | 99.5 |
| Ø50 | 104.3 | 202.6 |
| Ø63 | 203.8 | 399.9 |
| Ø80 | 410.5 | 788.3 |

Precautions



Allowable Radial and Thrust Loads

| Load(kgf) | Radial Load | Thrust Load |
|---------------|-------------|-------------|
| Bore size(mm) | | |
| Ø32 | 70 | 40 |
| Ø40 | 145 | 80 |
| Ø50 | 190 | 110 |
| Ø63 | 250 | 150 |
| Ø80 | 300 | 180 |

- ※ Avoid from applying a greater load (than those listed above) directly to the rod.
- ※ At the rotating end of the rotary actuator, bring the shaft into contact with the rotation angle adjusting screw under the condition of sufficient cushioning effect.
- ※ If the cushion is not effective, the rotation angle adjusting screw may be damaged.
- ※ When using without shock absorber, be sure to use a cushion and shock absorber as the rack, pinion or stop key may be damaged.
- ※ Remove the low-pressure air from the cylinder and slowly increase the pressure to the operating pressure.

Mass

Unit : kg

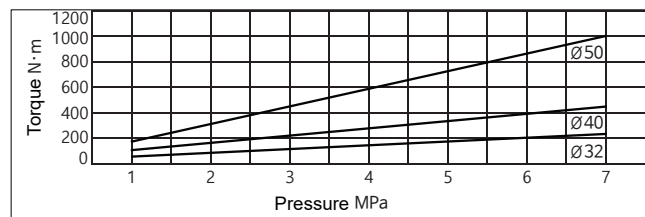
| Bore size | Basic mass(SD) | Mounting mass |
|-----------|----------------|---------------|
| | Standard | FA, FB |
| Ø32-90° | 6.4 | 0.94 |
| Ø32-180° | 6.6 | |
| Ø40-90° | 10.3 | 1.57 |
| Ø40-180° | 10.7 | |
| Ø50-90° | 16.6 | 2.09 |
| Ø50-180° | 17.4 | |
| Ø63-90° | 28.8 | 3.56 |
| Ø63-180° | 30.4 | |
| Ø80-90° | 47.5 | 6.54 |
| Ø80-180° | 50.6 | |

<Calculation>

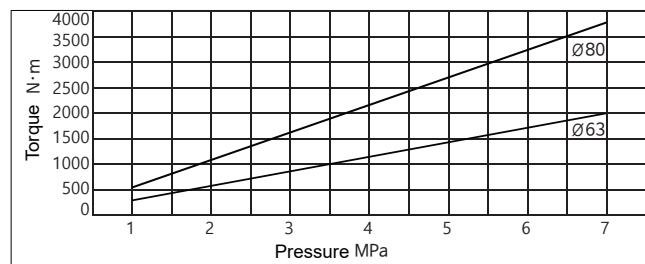
q)) KP70R-1FA40-180
Basic mass: 10.7
FA mounting: 1.57
10.7 + 1.57 = 12.27kg

Theoretical Output Torque Charts

Bore size Ø32, Ø40, Ø50



Bore size Ø63, Ø80



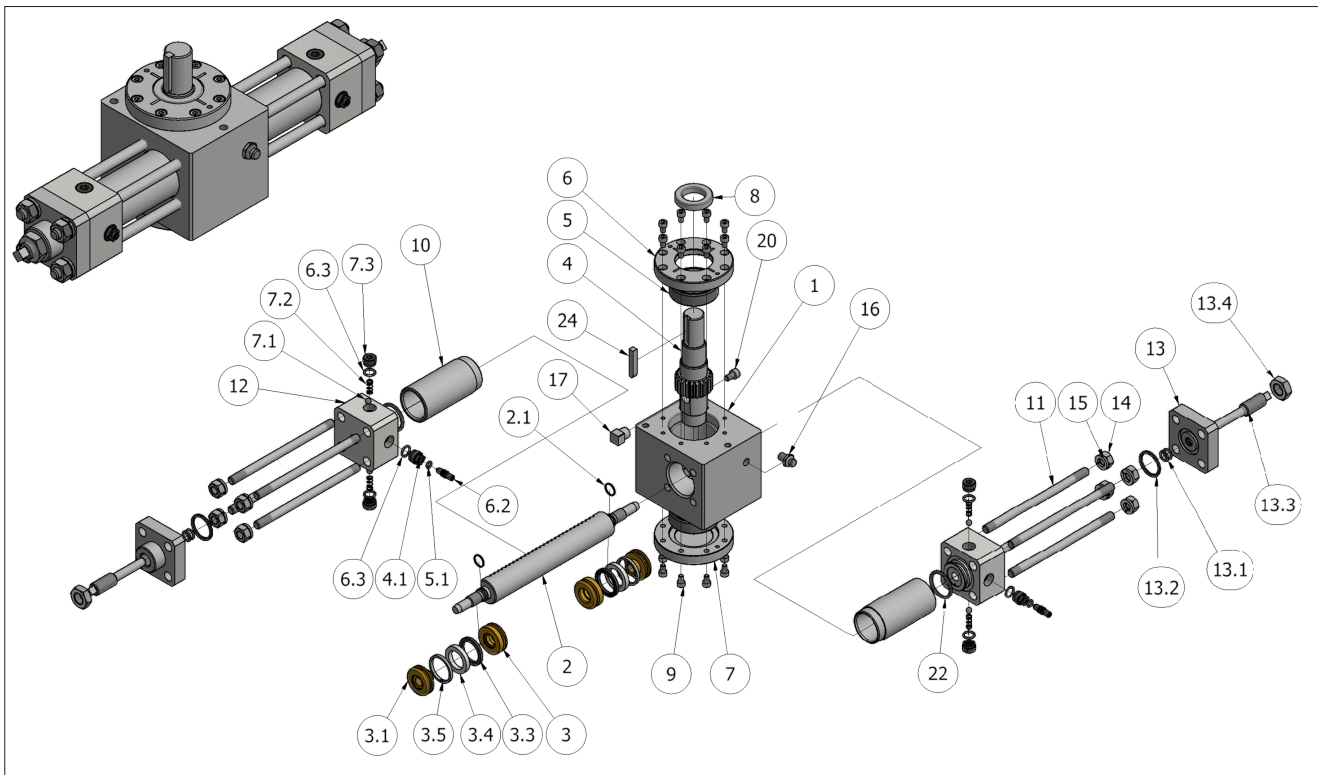
※ 1MPa=10.2kgf/cm², 100N·m=10.2kgf·m

How to Read the Graph

If the operating pressure is 2MPa and the required torque is 400N·m, find the point where the pressure intersects the vertical axis and the horizontal axis of the torque. Select the cylinder Ø80 (cylinder bore) above the intersection.

Note) Determine the effective torque based on the following data.
When the inertia force is low: 60-80%
When the inertia force is high: 25-35%

Structure



Part List

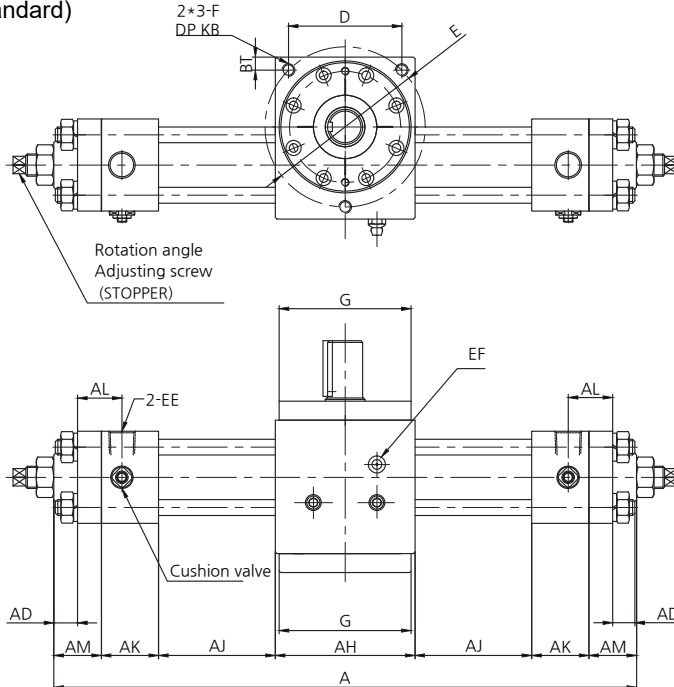
| Part no. | Parts | Material | Quantity | Part no. | Parts | Material | Quantity |
|----------|------------------|----------|----------|----------|---------------------|------------------|----------|
| 1 | BASE | SS400 | 1 | 8 | OIL SEAL | NBR | 1 |
| 2 | RACK GEAR | SCM440 | 1 | 9 | WRENCH BOLT | SCM435 | 16 |
| 3 | PISTON | BC6 | 2 | 10 | TUBE | STKM13C / STS304 | 2 |
| 3.1 | MAGNET HOLDER | BC6 | 2 | 11 | TIE ROD | SM45C | 8 |
| 3.2 | PISTON (일체형) | SM45C | 1 | 12 | HEAD COVER | SS400 | 2 |
| 3.4 | MAGNET | PLASTIC | 2 | 13.3 | STOPPER COVER | SS400 | 2 |
| 4 | PINION GEAR | SCM440 | 1 | 13.4 | STOPPER | SM45C | 2 |
| 4.1 | CUSHION NEEDLE | SUM24L | 2 | 13.4 | HEX NUT for STOPPER | SM45C | 2 |
| 5 | BEARING | - | 2 | 14 | NUT for TIE ROD | SM45C | 8 |
| 6 | TOP COVER | SM45C | 1 | 15 | WASHER for COVER | SWRH | 8 |
| 6.2 | CUSHION BODY | SUM24L | 2 | 16 | GREASE NIPPLE | BRASS | 1 |
| 7 | CAP COVER | SM45C | 1 | 17 | STOPPER KEY | SM45C | 1 |
| 7.1 | STEEL BALL | SUJ2 | 4 | 20 | WRENCH BOLT | SCM435 | 1 |
| 7.2 | SPRING for CHEAK | SUP | 4 | 24 | KEY | SM45C | 1 |
| 7.3 | CHECK BODY | SUM42L | 4 | | | | |

Packing List

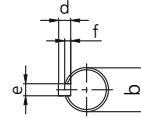
| Part no. | Parts | Material | Quantity | Bore size | | | | |
|----------|---------------------------|----------|----------|--------------------|------------|-------------|-------------|-------------|
| | | | | Ø32 | Ø40 | Ø50 | Ø63 | Ø80 |
| 2.1 | O-RING for RACK GEAR | NBR | 2 | 1A-S12.5 | 1A-P14 | 1A-P18 | 1B-P22A | 1A-P29 |
| 3.3 | PISTON PACKING | NBR | 2 | OMKMR(32x24.5x3.2) | USH30x40x6 | USH 40x50x6 | USH 53x63x6 | USH 70x80x6 |
| 3.5 | WEAR RING | NBR | 2 | - | 40x35x10W | 50x45x10W | 63x58x10W | 80x75x10W |
| 5.1 | O-RING for CUSHION NEEDLE | NBR | 2 | 1B-P5 | 1B-P5 | 1B-P5 | 1B-P5 | 1B-P6 |
| 6.3 | O-RING for C.B | NBR | 6 | 1B-P10 | 1B-P10 | 1B-P10 | 1B-P10 | 1B-P11 |
| 13.1 | O-RING(IN) for STOPPER | NBR | 2 | 1B-P9 | 1B-P9 | 1B-P14 | 1B-P16 | 1B-P20 |
| 13.2 | O-RING(SIDE) for STOPPER | NBR | 2 | 1B-G25 | 1B-G30 | 1B-G30 | 1B-G30 | 1B-G35 |
| 22 | O-RING for TUBE | NBR | 2 | 1B-P26/1B-G30 | 1B-G35 | 1B-G45 | 1B-G58 | 1B-G75 |

Dimensions-Rotating Angle 90°

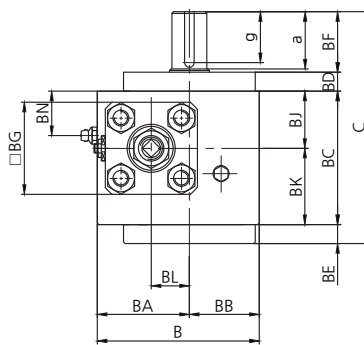
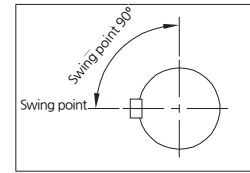
SD Type (Standard)



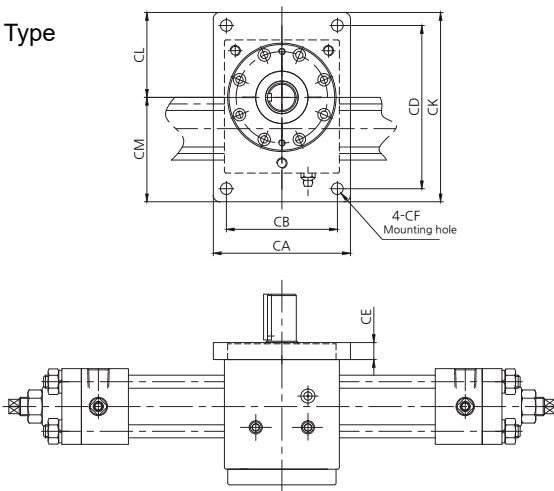
* Shaft end



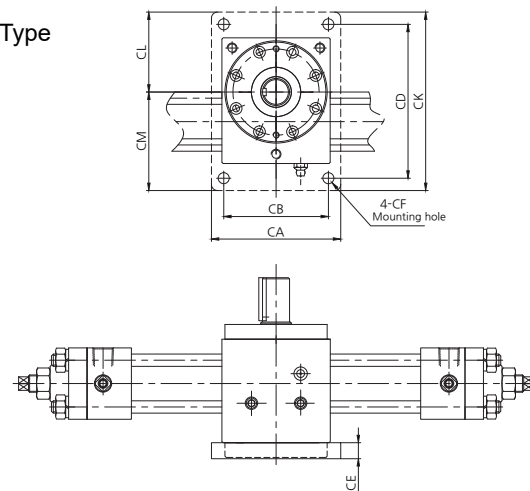
Detail shaft end (S=2/1)



FA Type



FB Type



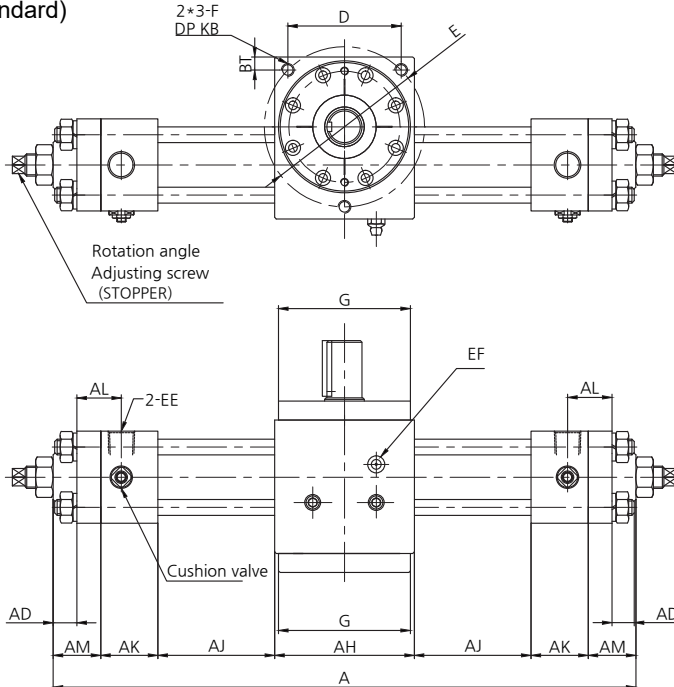
Unit : mm

| Bore size | A | AD | AH | AJ | AK | AL | AM | B | BA | BB | BC | BD | BE | BF | BG | BJ | BK | BL | BN | BT | C | CA | CB | CD |
|-----------|-----|----|-----|------|----|------|------|-----|-----|----|-----|----|----|----|------|----|----|----|----|------|-----|-----|-----|-----|
| Ø32 | 367 | 14 | 88 | 73.5 | 36 | 28 | 30 | 102 | 58 | 44 | 84 | 12 | 12 | 38 | □58 | 36 | 48 | 24 | 28 | 8.2 | 146 | 105 | 85 | 125 |
| Ø40 | 388 | 15 | 106 | 78 | 31 | 28 | 32 | 125 | 72 | 53 | 97 | 13 | 14 | 60 | □65 | 43 | 54 | 30 | 30 | 9.9 | 184 | 125 | 100 | 150 |
| Ø50 | 453 | 15 | 120 | 93.5 | 35 | 38 | 38 | 140 | 80 | 60 | 112 | 15 | 15 | 60 | □76 | 50 | 62 | 40 | 35 | 10.9 | 202 | 145 | 120 | 170 |
| Ø63 | 550 | 17 | 144 | 116 | 35 | 49 | 58 | 168 | 96 | 72 | 133 | 14 | 16 | 84 | □90 | 60 | 73 | 50 | 40 | 13.7 | 247 | 175 | 140 | 210 |
| Ø80 | 603 | 23 | 168 | 127 | 41 | 49.5 | 49.5 | 200 | 116 | 84 | 156 | 18 | 20 | 84 | □110 | 68 | 88 | 59 | 40 | 15 | 278 | 210 | 170 | 250 |

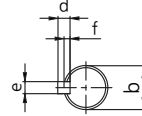
| Bore size | CE | CF | CK | CL | CM | D | E | EE | EF | F | G | KB | Shaft end | | | | | |
|-----------|----|-----|-----|-----|-----|-------|-----|-----------|-----------|-----------|--------|----|-----------|-------|----|----|-----|----|
| | | | | | | | | | | | | | a | b | d | e | f | g |
| Ø32 | 12 | Ø9 | 145 | 55 | 70 | 71.4 | 101 | Rc(PT)3/8 | Rc(PT)1/8 | M8×P1.25 | Ø83h7 | 20 | 36 | Ø22h7 | 6 | 6 | 3 | 32 |
| Ø40 | 15 | Ø9 | 180 | 65 | 85 | 86.2 | 122 | Rc(PT)3/8 | Rc(PT)1/8 | M8×P1.25 | Ø104h7 | 20 | 58 | Ø30h7 | 7 | 8 | 4 | 50 |
| Ø50 | 16 | Ø11 | 195 | 75 | 95 | 98.3 | 139 | Rc(PT)1/2 | Rc(PT)1/4 | M10×P1.5 | Ø117h7 | 18 | 58 | Ø38h7 | 8 | 10 | 5 | 50 |
| Ø63 | 18 | Ø14 | 240 | 90 | 120 | 116.7 | 165 | Rc(PT)1/2 | Rc(PT)1/4 | M12×P1.75 | Ø140h7 | 18 | 82 | Ø50h7 | 9 | 14 | 5.5 | 70 |
| Ø80 | 22 | Ø16 | 290 | 110 | 140 | 137.9 | 195 | Rc(PT)3/4 | Rc(PT)1/4 | M16×P2.0 | Ø164h7 | 21 | 82 | Ø55h7 | 10 | 16 | 6 | 70 |

Dimensions-Rotating Angle 180°

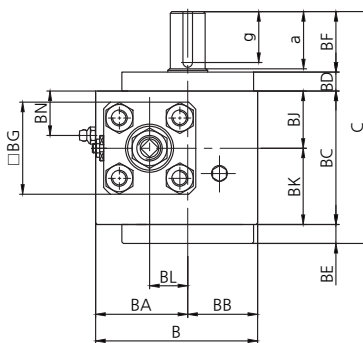
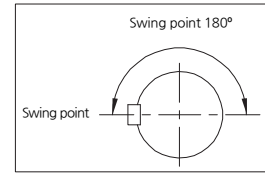
**SD Type
(Standard)**



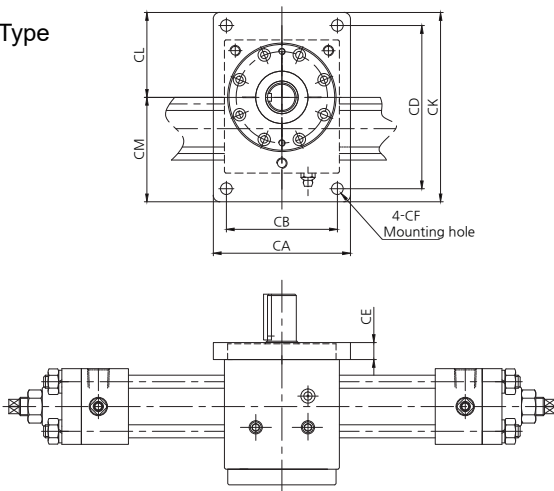
* Shaft end



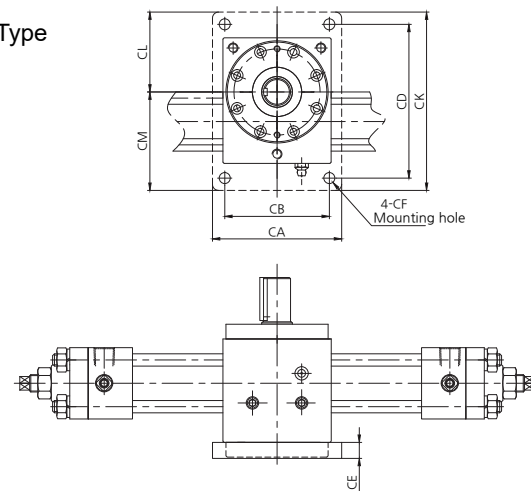
Detail shaft end
(S=2/1)



FA Type



FB Type



Unit : mm

| Bore size | A | AD | AH | AJ | AK | AL | AM | B | BA | BB | BC | BD | BE | BF | BG | BJ | BK | BL | BN | BT | C | CA | CB | CD |
|-----------|-----|----|-----|-------|----|------|------|-----|-----|----|-----|----|----|----|------|----|----|----|----|------|-----|-----|-----|-----|
| Ø32 | 442 | 14 | 88 | 111 | 36 | 28 | 30 | 102 | 58 | 44 | 84 | 12 | 12 | 38 | □58 | 36 | 48 | 24 | 28 | 8.2 | 146 | 105 | 85 | 125 |
| Ø40 | 473 | 15 | 106 | 120.5 | 31 | 28 | 32 | 125 | 72 | 53 | 97 | 13 | 14 | 60 | □65 | 43 | 54 | 30 | 30 | 9.9 | 184 | 125 | 100 | 150 |
| Ø50 | 558 | 15 | 120 | 146 | 35 | 38 | 38 | 140 | 80 | 60 | 112 | 15 | 15 | 60 | □76 | 50 | 62 | 40 | 35 | 10.9 | 202 | 145 | 120 | 170 |
| Ø63 | 682 | 17 | 144 | 182 | 35 | 49 | 52 | 168 | 96 | 72 | 133 | 14 | 16 | 84 | □90 | 60 | 73 | 50 | 40 | 13.7 | 247 | 175 | 140 | 210 |
| Ø80 | 743 | 23 | 168 | 197 | 41 | 49.5 | 49.5 | 200 | 116 | 84 | 156 | 18 | 20 | 84 | □110 | 68 | 88 | 59 | 40 | 15 | 278 | 210 | 170 | 250 |

| Bore size | CE | CF | CK | CL | CM | D | E | EE | EF | F | G | KB | Shaft end | | | | | |
|-----------|----|-----|-----|-----|-----|-------|-----|-----------|-----------|-----------|--------|----|-----------|-------|----|----|-----|----|
| | | | | | | | | | | | | | a | b | d | e | f | g |
| Ø32 | 12 | Ø9 | 145 | 55 | 70 | 71.4 | 101 | Rc(PT)3/8 | Rc(PT)1/8 | M8×P1.25 | Ø83h7 | 20 | 36 | Ø22h7 | 6 | 6 | 3 | 32 |
| Ø40 | 15 | Ø9 | 180 | 65 | 85 | 86.2 | 122 | Rc(PT)3/8 | Rc(PT)1/8 | M8×P1.25 | Ø104h7 | 20 | 58 | Ø30h7 | 7 | 8 | 4 | 50 |
| Ø50 | 16 | Ø11 | 195 | 75 | 95 | 98.3 | 139 | Rc(PT)1/2 | Rc(PT)1/4 | M10×P1.5 | Ø117h7 | 18 | 58 | Ø38h7 | 8 | 10 | 5 | 50 |
| Ø63 | 18 | Ø14 | 240 | 90 | 120 | 116.7 | 165 | Rc(PT)1/2 | Rc(PT)1/4 | M12×P1.75 | Ø140h7 | 18 | 82 | Ø50h7 | 9 | 14 | 5.5 | 70 |
| Ø80 | 22 | Ø16 | 290 | 110 | 140 | 137.9 | 195 | Rc(PT)3/4 | Rc(PT)1/4 | M16×P2.0 | Ø164h7 | 21 | 82 | Ø55h7 | 10 | 16 | 6 | 70 |