



Twist clamp cylinder and Rotary clamp cylinder

P314 QDK Series Plane Rotary clamp cylinder



- QDK, QDK*U available
- Bore size: 20 25 32 40
- Port size: M5 1/8"

P317 QCK Series Rotary clamp cylinder



- QCK, QCK*M available
- Bore size: 12 16 20 25 32 40 50 63
- Port size: M5 1/8" 1/4"



Horizontal rotary clamp cylinder—QDK Series

Compendium of QDK Series



Criteria for selection: Cylinder thrust

Unit: Newton(N)

| Bore size | Rod size | Acting type | Operating pressure(MPa) | | | | | | | |
|-----------|----------|-------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 |
| 20 | 12 | IN(Clamp) | - | 20.1 | 40.2 | 60.3 | 80.4 | 100.5 | 120.6 | 140.7 |
| 25 | 12 | IN(Clamp) | 17.7 | 55.5 | 93.3 | 131.1 | 168.9 | 206.7 | 244.5 | 282.3 |
| 32 | 12 | IN(Clamp) | 43.1 | 111.2 | 181.3 | 250.4 | 319.5 | 388.6 | 457.7 | 526.8 |
| 40 | 16 | IN(Clamp) | 75.2 | 180.7 | 286.2 | 391.7 | 497.2 | 602.7 | 708.2 | 813.7 |

Installation and application



1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.
5. To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.



Horizontal rotary clamp cylinder

QDK Series

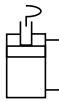


Specification

| Bore size(mm) | 20 | 25 | 32 | 40 |
|----------------------|--|----|----|------|
| Acting type | Double acting | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | | |
| Proof pressure | 1.5MPa(220psi) | | | |
| Temperature | -20~70°C | | | |
| Rotation angle | 90° | | | |
| Repeatability | ±2° | | | |
| Rotation direction | Turn left or turn right | | | |
| Rotation stroke(mm) | 0(Horizontal rotary) | | | |
| Clamping stroke (mm) | 5 | | | |
| Cushion type | Bumper | | | |
| Port size | M5×0.8 | | | 1/8" |

Add) please refer to Page 353 for the specific content of sensor switch.

Symbol



Product feature

1. Complete rotation on horizontal plane, so more save space compare with QCK series.
2. Boss front end cap and flush front end cap are available.
3. Double pins in the rotation guide groove to increase stability.
4. There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Ordering code

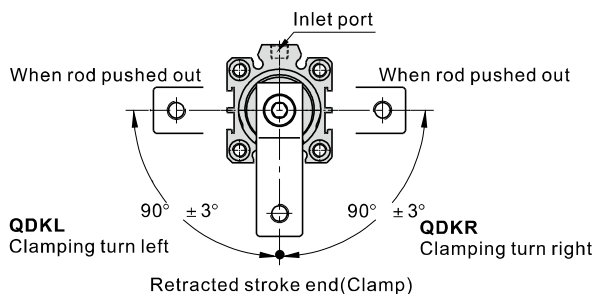
QDK L 32×5 S U □

① ② ③ ④ ⑤ ⑥ ⑦

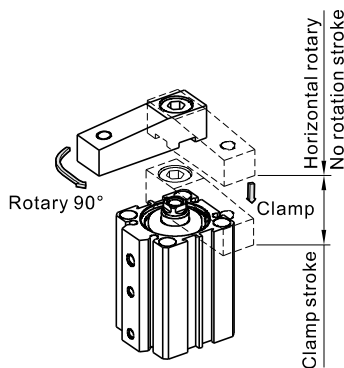
| ① Model | ② Rotation direction | ③ Bore size | ④ Clamping stroke | ⑤ Magnet | ⑥ Front cover type | ⑦ Thread type [Note1] |
|---------------------------------------|---|-------------|-------------------|----------------|---|-----------------------|
| QDK: Horizontal rotary clamp cylinder | L: Push and turn left R: Push and turn right | 20 25 32 40 | 5: 5mm | S: With magnet | Blank: Boss front end cap U: Flush front end cap | Blank: PT G: G |

[Note1] When the thread is standard, the code is blank.

The definition of rotation direction and angle

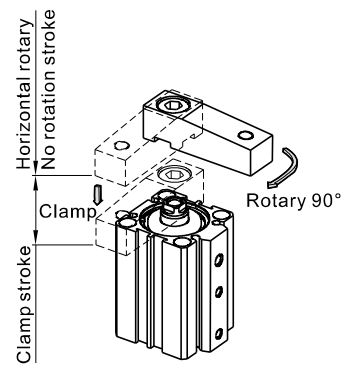


Levorotary(QDKL):
When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is call edlevorotary.



The order code is L

Dextrorotary(QDKR):
When the piston of cylinder moves downward, the swivel arms moves clockwise. this is called dextrorotary.



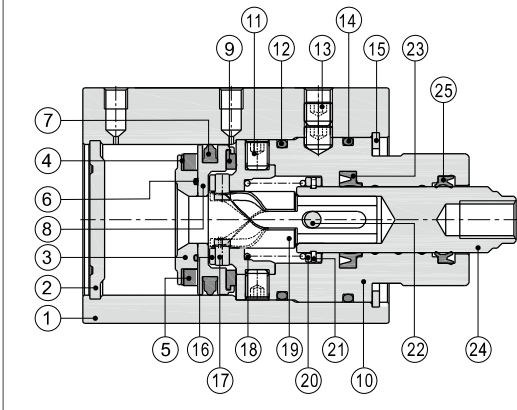
The order code is R

Horizontal rotary clamp cylinder

QDK Series

Inner structure and material of major parts

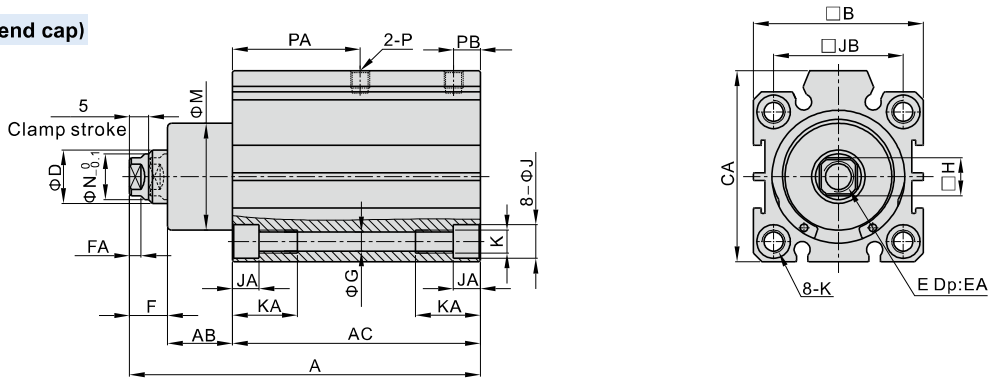
QDK(Boss front end cap)



| NO. | Item | Material | NO. | Item | Material |
|-----|---------------|--|-----|---------------------|-----------------|
| 1 | Body | Aluminum alloy | 13 | Fixing screw | Carbon steel |
| 2 | Back cover | Aluminum alloy | 14 | O-ring | NBR |
| 3 | Magnet holder | Aluminum alloy | 15 | C clip | Spring steel |
| 4 | Magnet washer | NBR | 16 | Middle seat | SCR440 |
| 5 | Magnet | Sintered metal (Neodymium-iron-boron) | 17 | Pin | SUJ2 |
| | | | 18 | Spring | Stainless steel |
| 6 | O-ring | NBR | 19 | Rotary axis | Scr440 |
| 7 | Piston seal | NBR | 20 | Stop flake | Stainless steel |
| 8 | Piston | Aluminum alloy(Φ40)/brass(Other) | 21 | C clip | Spring steel |
| 9 | Bumper | TPU | 22 | Pin | SUJ2 |
| 10 | Front cover | Aluminum alloy | 23 | Front cover parking | NBR |
| 11 | Fixing screw | Carbon steel | 24 | Piston rod | Scr440 |
| 12 | O-ring | NBR | 25 | Front cover parking | NBR |

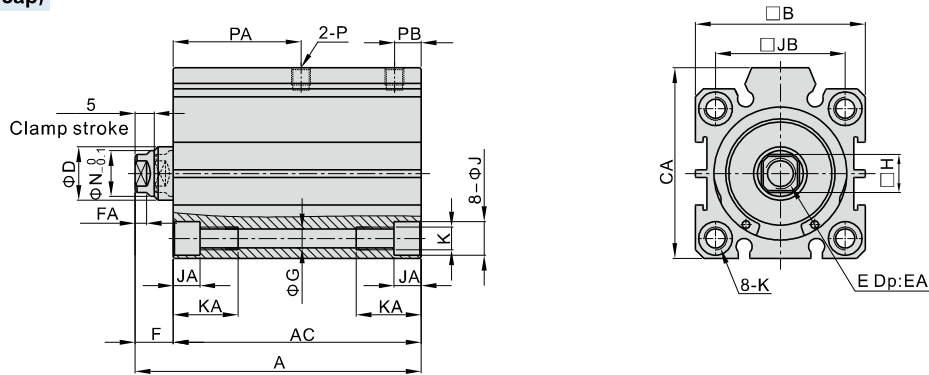
Dimensions

QDK(Boss front end cap)



| Bore size\Item | A | AB | AC | B | CA | D | E | EA | F | FA | G | H | J | JA | JB | K | KA | M | N | P | PA | PB |
|----------------|------|------|----|------|------|----|---------|----|----|----|-----|----|------|-----|----|---------|----|----|----|--------|------|----|
| 20 | 86.5 | 16.5 | 60 | 34 | - | 12 | M6X1.0 | 12 | 10 | 3 | 4.2 | 8 | 7.3 | 4.5 | 24 | M5X0.8 | 14 | 24 | 10 | M5X0.8 | 31.5 | 7 |
| 25 | 86.5 | 16.5 | 60 | 40 | - | 12 | M8X1.25 | 12 | 10 | 3 | 5.2 | 10 | 9 | 5.5 | 28 | M6X1.0 | 17 | 26 | - | M5X0.8 | 31 | 7 |
| 32 | 92 | 17 | 65 | 44.5 | 50 | 14 | M8X1.25 | 12 | 10 | 3 | 5.2 | 10 | 9 | 5.5 | 34 | M6X1.0 | 17 | 28 | 12 | M5X0.8 | 33.5 | 7 |
| 40 | 98 | 18 | 70 | 52 | 58.5 | 16 | M8X1.25 | 12 | 10 | 3 | 6.8 | 14 | 10.5 | 6.5 | 40 | M8X1.25 | 20 | 30 | - | 1/8" | 35 | 9 |

QDK-U(Flush front end cap)



| Bore size\Item | A | AC | B | CA | D | E | EA | F | FA | G | H | J | JA | JB | K | KA | N | P | PA | PB |
|----------------|----|----|------|------|----|---------|-----|----|----|-----|----|------|-----|----|---------|----|----|--------|------|----|
| 20 | 70 | 60 | 34 | - | 12 | M6X1.0 | 7.5 | 10 | 3 | 4.2 | 8 | 7.3 | 4.5 | 24 | M5X0.8 | 14 | 10 | M5X0.8 | 31.5 | 7 |
| 25 | 70 | 60 | 40 | - | 12 | M8X1.25 | 8 | 10 | 3 | 5.2 | 10 | 9 | 5.5 | 28 | M6X1.0 | 17 | - | M5X0.8 | 31 | 7 |
| 32 | 75 | 65 | 44.5 | 50 | 14 | M8X1.25 | 10 | 10 | 3 | 5.2 | 10 | 9 | 5.5 | 34 | M6X1.0 | 17 | 12 | M5X0.8 | 33.5 | 7 |
| 40 | 80 | 70 | 52 | 58.5 | 16 | M8X1.25 | 10 | 10 | 3 | 6.8 | 14 | 10.5 | 6.5 | 40 | M8X1.25 | 20 | - | 1/8" | 35 | 9 |

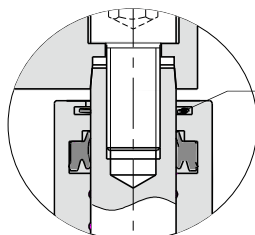


Rotary clamp cylinder—QCK Series

Compendium of QCK Series

Dustproof and welding slag out design

The front cover with stainless steel dust scraping ring, can keep the dust and welding slag out, and protect cylinder internal parts.



Stainless steel dust scraping ring

Two kinds of rod type

Taper type (with clamp arm)



Across flat position rod type (without clamp arm)

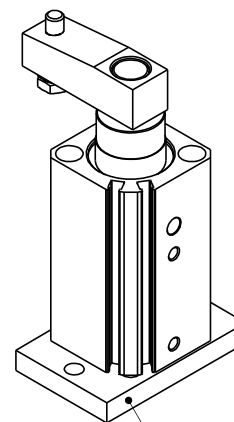


Be used on welding fixfure

It can be used on welding fixfure, the QPQ surface treatment prevent piston rod damage by welding slag; better than chrome plated piston rod.

Better commonness

The mounting dimension of body is the same as ACQ series, can use ACQ series' accessories.



ACQ series' accessories

Magnetic switch slots around the cylinder body

There are magnetic switch slots around the cylinder body convenient to install inducting switch.



Criteria for selection: Cylinder thrust

Unit: Newton(N)

| Bore size | Rod size | Acting type | Operating pressure(MPa) | | | | | | | |
|-----------|----------|--------------|-------------------------|-------|-------|--------|--------|--------|--------|--------|
| | | | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 |
| 12 | 6 | IN(Clamp) | 8.5 | 17.0 | 25.4 | 33.9 | 42.4 | 50.9 | 59.4 | 67.9 |
| | | OUT(Release) | 11.3 | 22.6 | 33.9 | 45.2 | 56.5 | 67.9 | 79.2 | 90.4 |
| 16 | 8 | IN(Clamp) | 15.1 | 30.2 | 45.2 | 60.3 | 75.4 | 90.5 | 105.6 | 120.6 |
| | | OUT(Release) | 20.1 | 40.2 | 60.3 | 80.4 | 100.5 | 120.6 | 140.7 | 160.8 |
| 20 | 12 | IN(Clamp) | 20.1 | 40.2 | 60.3 | 80.4 | 100.5 | 120.6 | 140.7 | 160.8 |
| | | OUT(Release) | 31.4 | 62.8 | 94.2 | 125.7 | 157.1 | 188.5 | 219.9 | 251.3 |
| 25 | 12 | IN(Clamp) | 37.8 | 75.6 | 113.3 | 151.1 | 188.9 | 226.7 | 264.4 | 302.2 |
| | | OUT(Release) | 49.1 | 98.2 | 147.3 | 196.3 | 245.4 | 294.5 | 343.6 | 392.7 |
| 32 | 16 | IN(Clamp) | 60.3 | 120.6 | 181.0 | 241.3 | 301.6 | 361.9 | 422.2 | 482.5 |
| | | OUT(Release) | 80.4 | 160.8 | 241.3 | 321.7 | 402.1 | 482.5 | 563.0 | 643.4 |
| 40 | 16 | IN(Clamp) | 105.6 | 211.1 | 316.7 | 422.2 | 527.8 | 633.3 | 738.9 | 844.5 |
| | | OUT(Release) | 125.7 | 251.3 | 377.0 | 502.7 | 628.3 | 754.0 | 879.6 | 1005.3 |
| 50 | 20 | IN(Clamp) | 164.9 | 329.9 | 494.8 | 659.7 | 824.7 | 989.6 | 1154.5 | 1319.5 |
| | | OUT(Release) | 196.3 | 392.7 | 589.0 | 785.4 | 981.7 | 1178.1 | 1374.4 | 1570.8 |
| 63 | 20 | IN(Clamp) | 280.3 | 560.6 | 840.9 | 1121.2 | 1401.5 | 1681.9 | 1962.2 | 2242.5 |
| | | OUT(Release) | 311.7 | 623.4 | 935.2 | 1246.9 | 1558.6 | 1870.3 | 2182.1 | 2493.8 |

Installation and application



1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40 μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.
5. To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.



Rotary clamp cylinder

QCK Series



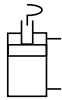
Specification

| Bore size(mm) | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | |
|----------------------|---|----|-----|----|------|----|------|----|----|
| Acting type | Double acting | | | | | | | | |
| Fluid | Air(to be filtered by 40 μm filter element) | | | | | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi)(1.5~10bar) | | | | | | | | |
| Proof pressure | 1.5MPa(215psi)(15bar) | | | | | | | | |
| Temperature | -20~70°C | | | | | | | | |
| Speed range | 50~200mm/s | | | | | | | | |
| Rotation angle | 90° | | | | | | | | |
| Repeatability | ±2° | | | | | | | | |
| Rotation direction | Turn left or turn right | | | | | | | | |
| Rotation stroke(mm) | 7.5 | | 9.5 | | 15 | | 19 | | |
| Clamping stroke (mm) | 10 | 20 | 10 | 20 | 30 | 10 | 20 | 30 | 50 |
| Stroke tolerance | +1.0 0 | | | | | | | | |
| Cushion type | Bumper | | | | | | | | |
| Port size [Note1] | M5×0.8 | | | | 1/8" | | 1/4" | | |

[Note1]PT thread, G thread are available.

Add) QCK series are all attached with magnet, please refer to Page 353 for the specific content of sensor switch.

Symbol



Product feature

1. It can be used on welding fixture, the QPQ surface treatment prevent piston rod damage by welding slag; better than chrome plated piston rod.
2. The front cover with stainless steel dust scraping ring, can keep the dust and welding slag out, and protect cylinder internal parts.
3. The mounting dimension of body is the same as ACQ series, can use ACQ series' accessories.

Ordering code

QCK L 32 × 10 S M FB □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

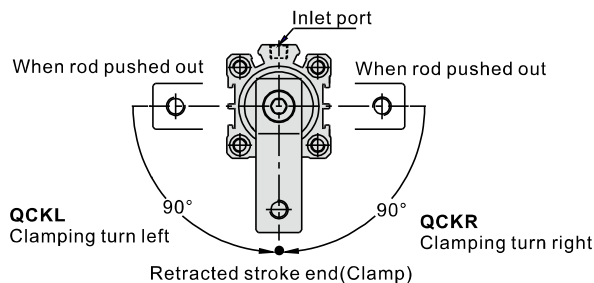
| ① Model | ② Rotation direction | ③ Bore size | ④ Clamping stroke | ⑤ Magnet | ⑥ Rod type | ⑦ Mounting type [Note1] | ⑧ Thread type [Note2] |
|----------------------------|---|-------------|-------------------|----------------|---|----------------------------------|-----------------------|
| QCK: Rotary clamp cylinder | L: Push and turn left R: Push and turn right | 12 | 10 20 | S: With magnet | Blank: Taper type (with clamp arm) M: Across flat position type(without clamp arm) | Blank: No bracket FB: FB type | Blank: PT G: G |
| | | 16 | 10 20 30 | | | | |
| | | 20 | | | | | |
| | | 25 | | | | | |
| | | 32 | 10 20 30 50 | | | | |
| | | 40 | | | | | |
| | | 50 | | | | | |
| 63 | | | | | | | |

[Note1] Back flange is same as ACQ series (please refer right table), if need front flange, please contact us.

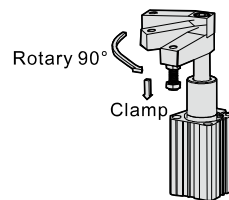
[Note2] When the thread is standard, the code is blank.

| Bore size\Accessories | FB | Material | Bore size\Accessories | FB | Material |
|-----------------------|-----------|----------------|-----------------------|-----------|----------|
| 12 | F-ACQ12FA | Aluminum alloy | 32 | F-ACQ32FA | |
| 16 | F-ACQ16FA | | 40 | F-ACQ40FA | |
| 20 | F-ACQ20FA | | 50 | F-ACQ50FA | |
| 25 | F-ACQ25FA | | 63 | F-ACQ63FA | |

The definition of rotation direction and angle

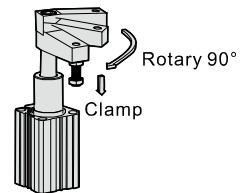


Levorotatory(QCKL):
When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is called levorotatory.



The order code is **L**

Dextrorotatory(QCKR):
When the piston of cylinder moves downward, the swivel arms moves clockwise, this is called dextrorotatory.

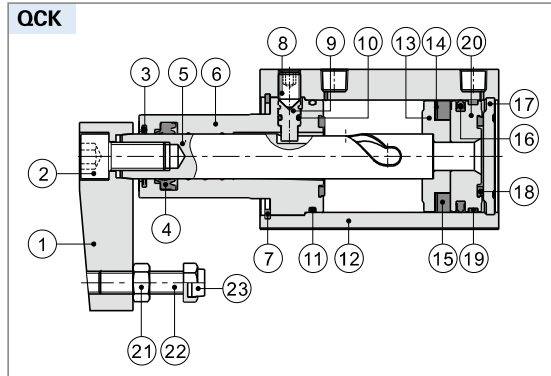


The order code is **R**

Rotary clamp cylinder

QCK Series

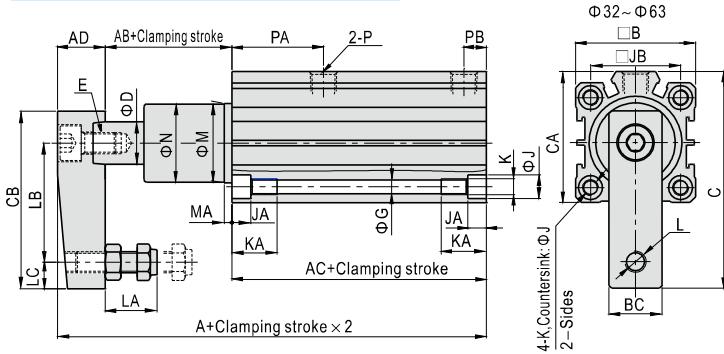
Inner structure and material of major parts



| NO. | Item | Material | NO. | Item | Material |
|-----|---------------------|---|-----|---------------|---|
| 1 | Rocker | Carbon steel | 14 | Magnet washer | NBR |
| 2 | Screw | Carbon steel | 15 | Magnet | Sintered metal (Neodymium-iron-boron(Φ12~Φ25)) |
| 3 | Dust scraping ring | No(Φ12, Φ16) Stainless steel(Others) | | | Plastic(Others) |
| 4 | Front cover packing | NBR | 16 | Piston seal | NBR |
| 5 | Piston rod | Scr440 | 17 | Back cover | Aluminum alloy |
| 6 | Front cover | Aluminum alloy | 18 | Bumper | TPU(Φ12~Φ25)\NBR(Others) |
| 7 | C Clip | Spring steel | 19 | Wear ring | No(Φ12~Φ32) Wear resistant material(Others) |
| 8 | Screw | Carbon steel | | | |
| 9 | Operating screw | SCR440 | 20 | Piston | Brass(Φ12, Φ16) Aluminum alloy(Others) |
| 10 | O-ring | NBR | 21 | Screw | Carbon steel |
| 11 | O-ring | NBR | 22 | Fixing screw | Carbon steel |
| 12 | Body | Aluminum alloy | 23 | Bumper | PTFE(Φ12~Φ40)\POM(Others) |
| 13 | Magnet holder | Brass(Φ12, Φ16) Aluminum alloy(Others) | | | |

Dimensions

QCK□ (Taper type with clamp arm)

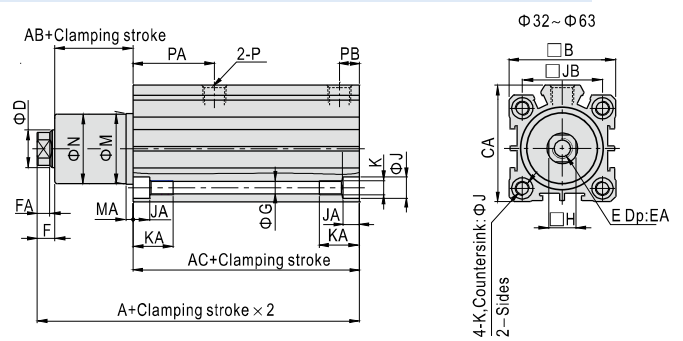


| Bore size\Item | A | AB | AC | AD | B | BC | C | CA | CB | D |
|----------------|-----|------|------|------|----|------|-------|------|----|----|
| 12 | 55 | 10.5 | 35.5 | 9 | 25 | 9 | 36.5 | - | 29 | 6 |
| 16 | 59 | 10.5 | 35.5 | 13 | 29 | 11 | 44.5 | - | 36 | 8 |
| 20 | 86 | 8 | 62 | 16 | 36 | 16 | 60 | - | 51 | 12 |
| 25 | 87 | 8 | 63 | 16 | 40 | 16 | 62 | - | 51 | 12 |
| 32 | 108 | 17.5 | 71.5 | 19 | 45 | 19 | 82 | 49.5 | 67 | 16 |
| 40 | 109 | 25 | 65 | 19 | 53 | 19 | 85.5 | 57 | 67 | 16 |
| 50 | 133 | 31 | 76.5 | 25.5 | 64 | 25.5 | 114 | 71 | 88 | 20 |
| 63 | 136 | 30.5 | 80 | 25.5 | 77 | 25.5 | 120.5 | 84 | 88 | 20 |

| Bore size\Item | E | G | J | JA | JB | JC | K |
|----------------|----------|-----|------|-----|------|----|---------|
| 12 | M3×0.5 | 3.3 | 6 | 3.5 | 15.5 | 22 | M4×0.7 |
| 16 | M5×0.8 | 3.3 | 6 | 3.5 | 20 | 28 | M4×0.7 |
| 20 | M8×1.25 | 5 | 9 | 5.5 | 25.5 | 36 | M6×1.0 |
| 25 | M8×1.25 | 5 | 9 | 5.5 | 28 | 40 | M6×1.0 |
| 32 | M10×1.5 | 5 | 9 | 5.5 | 34 | - | M6×1.0 |
| 40 | M10×1.5 | 5 | 9 | 5.5 | 40 | - | M6×1.0 |
| 50 | M12×1.75 | 6.5 | 10.5 | 6.5 | 50 | - | M8×1.25 |
| 63 | M12×1.75 | 8.5 | 14 | 9 | 60 | - | M10×1.5 |

| Bore size\Item | KA | L | LA | LB | LC | M | MA | N | P | PA | PB |
|----------------|------|---------|-----------|----|----|----|-----|------|--------|------|------|
| 12 | 11 | M4×0.7 | 7~13 | 20 | 4 | 11 | 3 | 10.8 | M5×0.8 | 13.5 | 5.5 |
| 16 | 11 | M4×0.7 | 7~13 | 25 | 5 | 14 | 3 | 13.8 | M5×0.8 | 15 | 5.5 |
| 20 | 17 | M6×1.0 | 9.5~20.5 | 35 | 7 | 18 | 3 | 17.8 | M5×0.8 | 30 | 6 |
| 25 | 17 | M6×1.0 | 9.5~20.5 | 35 | 7 | 23 | 6 | 22.5 | M5×0.8 | 30 | 7 |
| 32 | 17 | M8×1.25 | 13.5~25.5 | 45 | 10 | 30 | 7 | 29.5 | 1/8" | 34.5 | 8.5 |
| 40 | 17 | M8×1.25 | 13.5~25.5 | 45 | 10 | 30 | 3 | 29.5 | 1/8" | 26.5 | 9 |
| 50 | 22 | M10×1.5 | 14.5~30 | 65 | 10 | 37 | 3.5 | 36.5 | 1/4" | 34 | 11.5 |
| 63 | 28.5 | M10×1.5 | 14.5~30 | 65 | 10 | 48 | 3.5 | 47.5 | 1/4" | 34.5 | 11.5 |

QCK□M (Across flat position type without clamp arm)



| Bore size\Item | A | AB | AC | B | CA | D | F | FA |
|----------------|------|------|------|----|------|----|-----|-----|
| 12 | 48 | 9.5 | 35.5 | 25 | - | 6 | 3 | 2.5 |
| 16 | 48 | 9.5 | 35.5 | 29 | - | 8 | 3 | 2.5 |
| 20 | 72.5 | 6.5 | 62 | 36 | - | 12 | 4 | 3 |
| 25 | 73.5 | 6.5 | 63 | 40 | - | 12 | 4 | 3 |
| 32 | 93.5 | 15.5 | 71.5 | 45 | 49.5 | 16 | 6.5 | 5.5 |
| 40 | 94.5 | 23 | 65 | 53 | 57 | 16 | 6.5 | 5.5 |
| 50 | 112 | 28 | 76.5 | 64 | 71 | 20 | 7.5 | 5.5 |
| 63 | 115 | 27.5 | 80 | 77 | 84 | 20 | 7.5 | 5.5 |

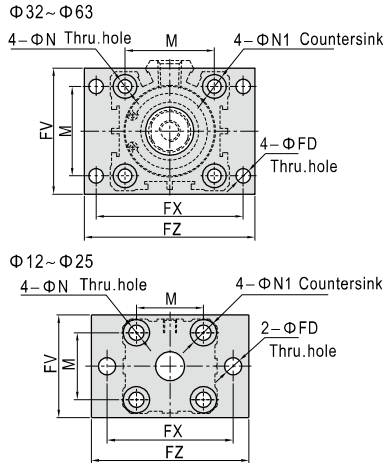
| Bore size\Item | H | E | EA | G | J | JA |
|----------------|----|----------|----|-----|------|-----|
| 12 | 5 | M3×0.5 | 6 | 3.3 | 6 | 3.5 |
| 16 | 7 | M5×0.8 | 7 | 3.3 | 6 | 3.5 |
| 20 | 10 | M8×1.25 | 13 | 5 | 9 | 5.5 |
| 25 | 10 | M8×1.25 | 13 | 5 | 9 | 5.5 |
| 32 | 14 | M10×1.5 | 15 | 5 | 9 | 5.5 |
| 40 | 14 | M10×1.5 | 15 | 5 | 9 | 5.5 |
| 50 | 17 | M12×1.75 | 20 | 6.5 | 10.5 | 6.5 |
| 63 | 17 | M12×1.75 | 20 | 8.5 | 14 | 9 |

| Bore size\Item | JB | JC | K | KA | M | MA | N | P | PA | PB |
|----------------|------|----|---------|------|----|-----|------|--------|------|------|
| 12 | 15.5 | 22 | M4×0.7 | 11 | 11 | 3 | 10.8 | M5×0.8 | 13.5 | 5.5 |
| 16 | 20 | 28 | M4×0.7 | 11 | 14 | 3 | 13.8 | M5×0.8 | 15 | 5.5 |
| 20 | 25.5 | 36 | M6×1.0 | 17 | 18 | 3 | 17.8 | M5×0.8 | 30 | 6 |
| 25 | 28 | 40 | M6×1.0 | 17 | 23 | 6 | 22.5 | M5×0.8 | 30 | 7 |
| 32 | 34 | - | M6×1.0 | 17 | 30 | 7 | 29.5 | 1/8" | 34.5 | 8.5 |
| 40 | 40 | - | M6×1.0 | 17 | 30 | 3 | 29.5 | 1/8" | 26.5 | 9 |
| 50 | 50 | - | M8×1.25 | 22 | 37 | 3.5 | 36.5 | 1/4" | 34 | 11.5 |
| 63 | 60 | - | M10×1.5 | 28.5 | 48 | 3.5 | 47.5 | 1/4" | 34.5 | 11.5 |

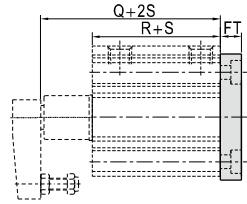
Rotary clamp cylinder

QCK Series

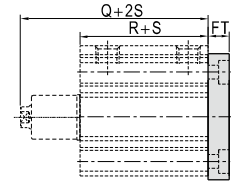
QCK-FB(With flange)



QCK□-FB(Taper type with clamp arm)



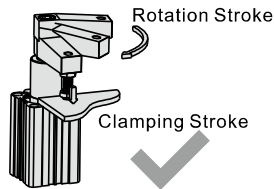
QCK□M-FB(Across flat position rod without clamp arm)



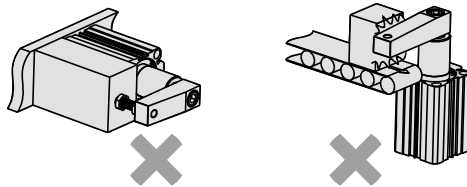
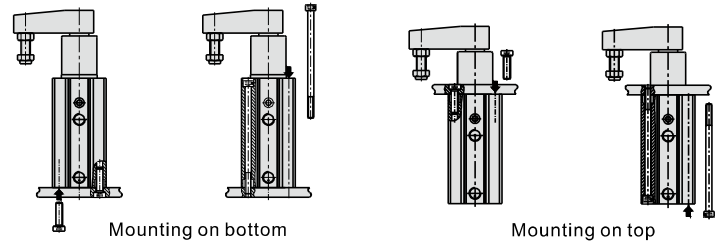
| Bore size\Item | R | Q(QCK□) | Q(QCK□M) | M | N | N1 | FD | FT | FV | FX | FZ |
|----------------|------|---------|----------|------|------|------|-----|-----|----|----|-----|
| 12 | 35.5 | 46 | 48 | 15.5 | 4.5 | 7.5 | 4.5 | 5.5 | 25 | 45 | 55 |
| 16 | 35.5 | 46 | 48 | 20 | 4.5 | 7.5 | 4.5 | 5.5 | 30 | 45 | 55 |
| 20 | 62 | 70 | 72.5 | 25.5 | 6.5 | 10.5 | 6.5 | 8 | 39 | 48 | 60 |
| 25 | 63 | 71 | 73.5 | 28 | 6.5 | 10.5 | 6.5 | 8 | 42 | 52 | 64 |
| 32 | 71.5 | 89 | 93.5 | 34 | 6.5 | 10.5 | 5.5 | 8 | 48 | 56 | 65 |
| 40 | 65 | 90 | 94.5 | 40 | 6.5 | 10.5 | 5.5 | 8 | 54 | 62 | 72 |
| 50 | 76.5 | 107.5 | 112 | 50 | 8.5 | 13.5 | 6.5 | 9 | 67 | 76 | 89 |
| 63 | 80 | 110.5 | 115 | 60 | 10.5 | 16.5 | 9 | 9 | 80 | 92 | 108 |

Installation and operation

- To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.
- The method of installation are mounted by flange on top or bottom.
- Before the cylinder is connected to pipeline sundries in the pipe must be eliminated, or may cause leakage.
- Please clean the piston-rod and dust scraping ring to protect the cylinder.
- The cylinder using normal magnet ring can use the same sensor as ACQ series. For the cylinder using strong magnet ring we suggest using AirTAC's CS1-69AM sensor.
- Because the rotary force is strong when the cylinder's acting, we suggest using flow control valve to control the speed to protect cylinder.
- Please install the cylinder following the right diagram.
- The installation method as the diagram below is wrong, and will injure the cylinder and shorten the cylinder life.

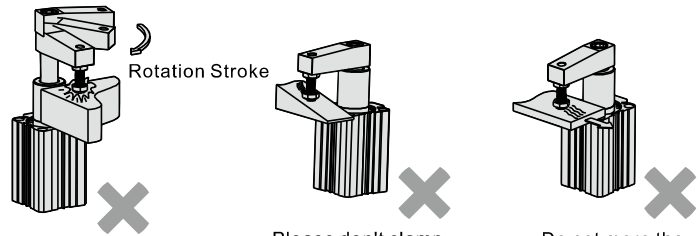


Only can clamping in clamping stroke.



Don't installed horizontally

Don't exert horizontally load or force



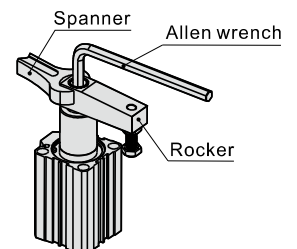
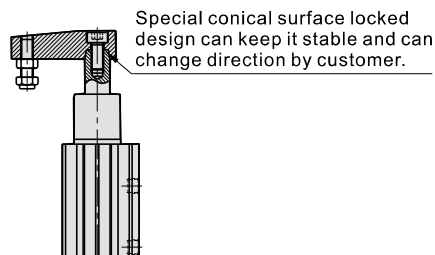
Please don't clamp when rotating.

Please don't clamp on bevel

Do not more the workpiece when clamped

9. Rocker

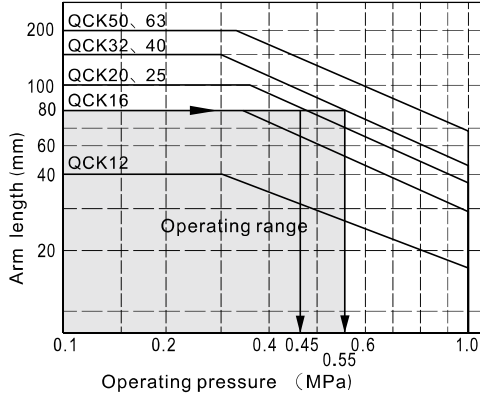
- The design of rocker can keep it stable and can change direction by customer.
- Please follow the diagram below on right side to assemble/disassemble the rocker by spanner and allen wrench; don't hold the body to assemble/disassemble rocker, or will damage the cylinder.
- If need customize rocker, please contact us.



QCK Series

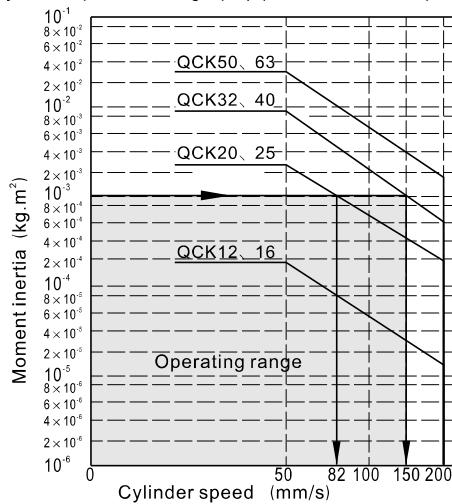
How to select product

- When arms are to be made separately, their length and weight should be within the following range.
- Allowable bending moment:
Use the arm length and operating pressure within graph(1) for allowable bending moment loaded piston rod.



Example: When arm length is 80mm, pressure should be less than
QCK20/25:0.45MPa
QCK32/40:0.55MPa

- Moment of inertia:
When the arm is long and heavy, damage of internal parts may be caused due to inertia. Use the inertia moment and cylinder speed within graph(2) based on arm requirements.



Example: When arm's moment of inertia is $10^{-3} \text{Kg}\cdot\text{m}^2$, cylinder speed should be less than
QCK20/25:82mm/s
QCK32/40:150mm/s

Note) The average speed of piston=the highest speed of piston/1.6

- Moment of inertia of cylinder's arm when rotating based on its rotary axis, shown in graph(3).

| Model | Moment of inertia(Kg·m ²) |
|----------|---------------------------------------|
| QCK12 | 3.555×10^{-6} |
| QCK16 | 1.053×10^{-5} |
| QCK20/25 | 5.257×10^{-5} |
| QCK32/40 | 1.653×10^{-4} |
| QCK50/63 | 7.387×10^{-4} |

- Calculation reference:

5.1)Moment of inertia of arm (I₁) : Refer to the graph(3) after the cylinder bore diameter is determined.

5.2)Moment of inertia of jig (I₂) : According to shape of the jig and the next item 6 "Calculation for moment of inertia", pick out a proper formula for calculation.
The jig shown on the right graph is a cylinder, its formula of moment of inertia is:

$$I_2 = (m_2 * D^2 * D) / 8 + m_2 * L * L$$

When QCK32 is selected: L=0.045m (arm length);

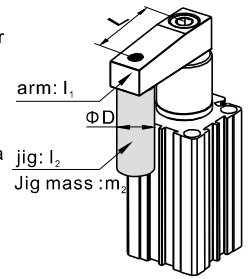
If D=0.04m m₂=0.4kg

From graph(3): I₁=1.653 × 10⁻⁴ (Kg·m²)

By Calculation : I₂=(m₂*D*D)/8+m₂*L*L= (0.4*0.04*0.04)/8+0.4*0.045*0.045 = 8.9 × 10⁻⁴ (Kg·m²)

Total value: I=I₁+I₂=10.553 × 10⁻⁴=1.0553 × 10⁻³ (Kg·m²)

According to graph(2), the highest speed of the cylinder should be less than 150 mm/s;
According to graph(1), it can be used under a pressure of 0.9Mpa. The average speed of piston=the highest speed of piston/1.6=94 mm/s.



- Calculation for moment of inertia

| Diagram | Calculation formula of moment of inertia |
|--|---|
| <p>1. Thin bar</p> <p>Position of rotary axis: Vertical to the bar and through the end</p> | $I = \frac{m_1 a_1^2 + m_2 a_2^2}{3}$ |
| <p>2. Thin bar</p> <p>Position of rotary axis: Vertical to the bar and through the center of gravity</p> | $I = \frac{m a^2}{12}$ |
| <p>3. Load at the end of lever arm</p> | $I = m_1 \times \frac{a_1^2}{3} + m_2 \times a_2^2 + k$ $k = m_2 \times \frac{2r^2}{5}$ |
| <p>4. Thin rectangular plate (Rectangular parallelepiped)</p> <p>Position of rotary axis: Parallel to side b and through the center of gravity</p> | $I = \frac{m a^2}{12}$ |
| <p>5. Thin rectangular plate (Rectangular parallelepiped)</p> <p>Position of rotary axis: Vertical to the plate and through the end</p> | $I = m_1 \times \frac{4a_1^2 + b^2}{12} + m_2 \times \frac{4a_2^2 + b^2}{12}$ |
| <p>6. Thin rectangular plate (Rectangular parallelepiped)</p> <p>Position of rotary axis: Through the center of gravity and vertical to the plate (Same as also thick rectangular plate)</p> | $I = \frac{m a^2 + m b^2}{12}$ |