



Air gripper—HFCQ Series

Parallel open/close hollow style



Ordering code

HFCQ 20 E

① ② ③

① Model

HFCQ: Air finger
(Double acting, parallel hollow type)

HFCQ series are all attached with magnet.

② Bore size

16 20 25 32 40 50 63

③ Push rod mechanism

Blank: Without push rod mechanism

E: Cylinder push rod mechanism



V: Spring push rod mechanism



[Note] The push rod mechanism can only be used with $\phi 32/\phi 40/\phi 50/\phi 63$.

Push rod mechanism

F-HFCQ 32 E

① ② ③

① Model

HFCQ: Air finger
(Double acting, parallel hollow type)

② Bore size

32 40 50 63

③ Push rod mechanism type

E: Cylinder push rod mechanism



V: Spring push rod mechanism



Specification

| Bore size (mm) | 16 | 20 | 25 | 32 | 40 | 50 | 63 |
|---------------------------------|--|-----------------------|------------------------|---------------------------------------|-------------------------|------------------------|------------------------|
| Acting type | Double acting | | | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | | | |
| Operating pressure | 28~100psi(0.2~0.7MPa) | | | 22~100psi(0.15~0.7MPa) | | | |
| Temperature | -20~70°C | | | | | | |
| Lubrication | Not required | | | | | | |
| Repeatability mm | ± 0.01 | | | | | | |
| Max. frequency | 120(c.p.m) | | | 60(c.p.m) | | | |
| Sensor switches | DMSH(S) | | | | | | |
| Port size | M3 \times 0.5 | | | M5 \times 0.8 | | | |
| Hollow diameter | $\phi 3^{+0.04}_{+0}$ | $\phi 3^{+0.04}_{+0}$ | $\phi 4^{+0.048}_{+0}$ | $\phi 6^{+0.04}_{+0}$ | $\phi 10^{+0.058}_{+0}$ | $\phi 12^{+0.07}_{+0}$ | $\phi 16^{+0.07}_{+0}$ |
| Push rod mechanism | - | | | Cylinder or Spring push rod mechanism | | | |
| Port size of push rod mechanism | - | | | M5 \times 0.8 | | | |

[Note] Sensor switch should be ordered additionally.



Air gripper(parallel open/close hollow style) **AIRTAC**

HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

Specification of Cylinder push rod mechanism

| Model | HFCQ32E | HFCQ40E | HFCQ50E | HFCQ63E |
|----------------------|--|------------------------|---------|---------|
| Acting type | Double acting | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Operating pressure | 28~100psi(0.2~0.7MPa) | 22~100psi(0.15~0.7MPa) | | |
| Temperature | -20~70 °C | | | |
| Lubrication | Not required | | | |
| Push stroke mm | 7 | 8 | 14 | 15 |
| Max. frequency | 60(c.p.m) | | | |
| Sensor switches | DMSH(S) | | | |
| Push force N(0.5MPa) | 45 | 130 | 204 | 335 |
| Weight g | 560 | 790 | 1350 | 2280 |

Specification of Spring push rod mechanism

| Model | HFCQ32V | HFCQ40V | HFCQ50V | HFCQ63V |
|---------------------|---------|---------|---------|---------|
| Push stroke mm | 7 | 8 | 14 | 15 |
| Push spring force N | 5~12 | 9~18 | 16~31 | 24~40 |
| Weight g | 530 | 730 | 1270 | 2190 |

Gripping force and stroke

| Model | Gripping force per finger Effective valve(N) | | Opening/Closing stroke (Both sides)(mm) | Weight (g) |
|--------|--|----------|---|------------|
| | Internal | External | | |
| HFCQ16 | 15 | 9 | 4 | 100 |
| HFCQ20 | 26 | 21 | 4 | 140 |
| HFCQ25 | 45 | 36 | 6 | 220 |
| HFCQ32 | 77 | 62 | 8 | 430 |
| HFCQ40 | 118 | 97 | 8 | 560 |
| HFCQ50 | 187 | 155 | 12 | 950 |
| HFCQ63 | 329 | 280 | 16 | 1600 |

Note) The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm($\Phi 16\sim\Phi 25$) or L=30mm($\Phi 32\sim\Phi 63$).

Add) Please refer to page 374 for the definition of "L".

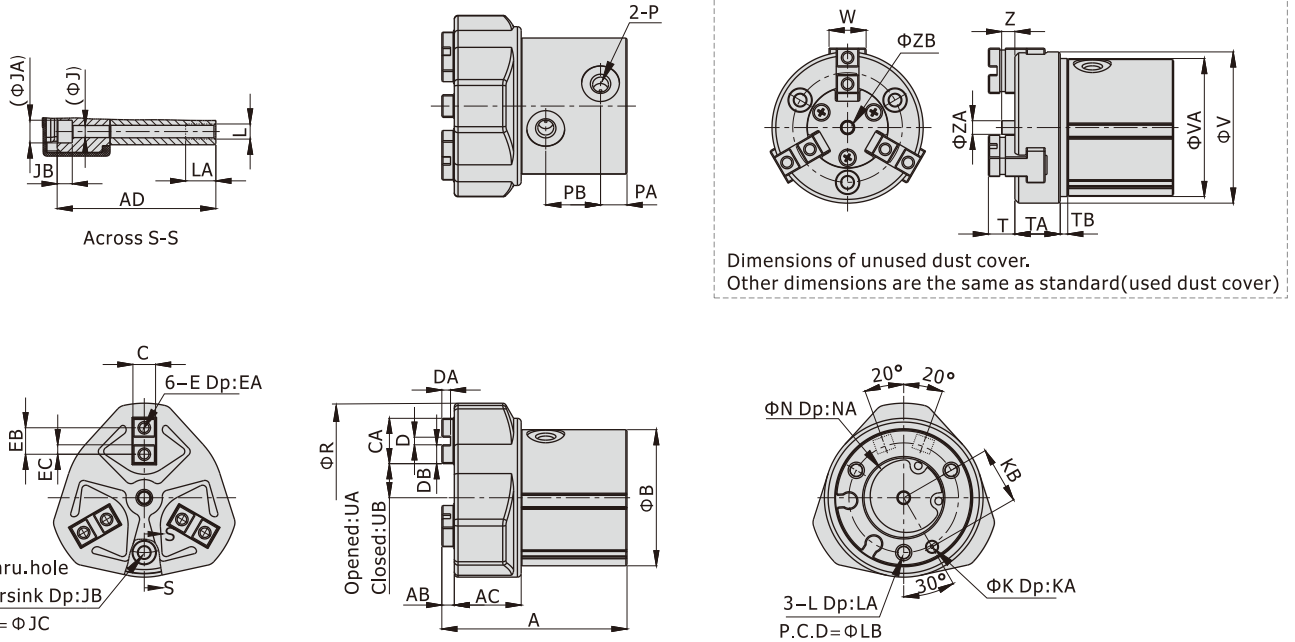
Air gripper(parallel open/close hollow style) **AIRTAC**

HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

Dimensions

HFCQ16~25



[Unit: mm]

| Bore size\Item | A | AB | AC | AD | B | C | CA | D | DA | DB | E | EA | EB | EC | J | JA | JB | JC | K | KA | KB | L |
|----------------|----|----|----|----|----|-------------------------------------|----|-------------------------------------|--------------------------------|-----|--------|----|----|-----|-----|----|----|----|-------------------------------------|----|----|--------|
| 16 | 46 | 3 | 16 | 39 | 31 | 5 ^{-0.01} _{-0.03} | 11 | 2 ^{+0.04} _{+0.01} | 2 ^{+0.2} ₀ | 4.5 | M3×0.5 | 5 | 6 | 2 | 3.2 | 6 | 4 | 24 | 3 ^{+0.04} _{+0.01} | 3 | 12 | M4×0.7 |
| 20 | 49 | 3 | 18 | 42 | 36 | 6 ^{-0.01} _{-0.03} | 12 | 2 ^{+0.04} _{+0.01} | 2 ^{+0.2} ₀ | 5 | M3×0.5 | 5 | 7 | 2.5 | 3.2 | 6 | 4 | 29 | 3 ^{+0.04} _{+0.01} | 3 | 15 | M4×0.7 |
| 25 | 55 | 3 | 20 | 47 | 42 | 6 ^{-0.01} _{-0.03} | 14 | 2 ^{+0.04} _{+0.01} | 2 ^{+0.2} ₀ | 6 | M3×0.5 | 5 | 8 | 3 | 3.2 | 6 | 4 | 34 | 3 ^{+0.04} _{+0.01} | 3 | 18 | M4×0.7 |

| Bore size\Item | LA | LB | N | NA | P | PA | PB | R | UA | UB | T | TA | TB | V | VA | W | Z | ZA | ZB |
|----------------|----|----|----------------------------------|-----|--------|----|----|----|------|-----|---|------|----|----|------|----|-----|-----|----------------------------------|
| 16 | 8 | 24 | 17 ^{+0.05} ₀ | 1.5 | M3×0.5 | 7 | 14 | 44 | 9 | 7 | 7 | 10.5 | 3 | 34 | 31.5 | 8 | 3.5 | 3.7 | 3 ^{+0.04} ₀ |
| 20 | 8 | 29 | 21 ^{+0.05} ₀ | 1.5 | M5×0.8 | 7 | 14 | 50 | 10 | 8 | 7 | 12 | 3 | 40 | 36.5 | 10 | 3.5 | 3.7 | 3 ^{+0.04} ₀ |
| 25 | 8 | 34 | 26 ^{+0.05} ₀ | 1.5 | M5×0.8 | 8 | 17 | 59 | 12.5 | 9.5 | 8 | 13 | 3 | 47 | 42.5 | 12 | 4.5 | 4.7 | 4 ^{+0.048} ₀ |

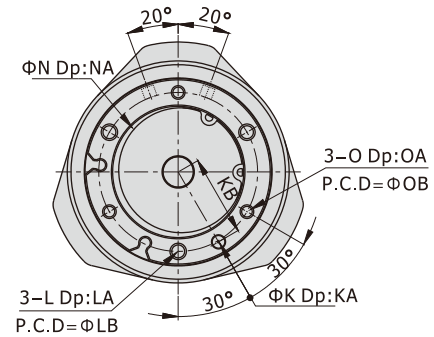
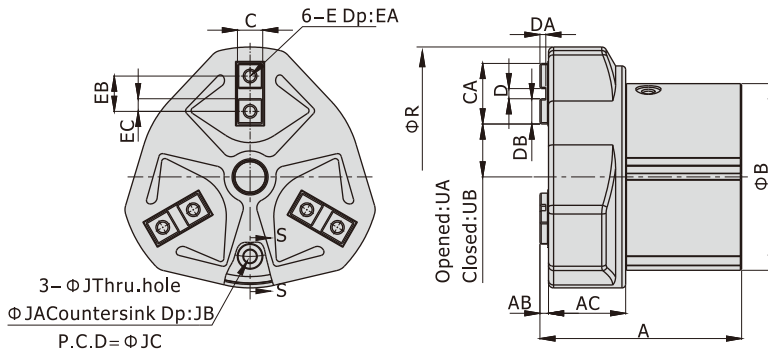
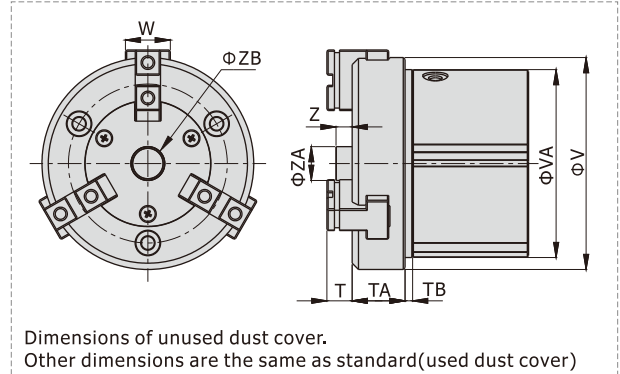
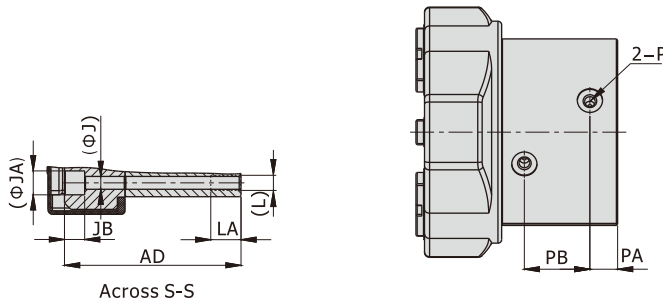
Air gripper(parallel open/close hollow style)



HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

HFCQ32~63



[Unit: mm]

| Bore size\Item | A | AB | AC | AD | B | C | CA | D | DA | DB | E | EA | EB | EC | J | JA | JB | JC | K | KA | KB | L |
|----------------|----|----|----|----|----|--------------------------------------|----|-------------------------------------|--------------------------------|----|--------|----|----|-----|-----|-----|----|----|-------------------------------------|----|----|---------|
| 32 | 63 | 3 | 24 | 54 | 55 | 8 ^{-0.01} _{-0.03} | 20 | 2 ^{+0.04} _{+0.01} | 2 ^{+0.2} ₀ | 9 | M4×0.7 | 8 | 11 | 4.5 | 4.2 | 8 | 7 | 44 | 4 ^{+0.04} _{+0.01} | 4 | 22 | M5×0.8 |
| 40 | 66 | 3 | 26 | 57 | 62 | 8 ^{-0.01} _{-0.03} | 21 | 3 ^{+0.04} _{+0.01} | 2 ^{+0.2} ₀ | 9 | M4×0.7 | 8 | 12 | 4.5 | 4.2 | 8 | 7 | 52 | 4 ^{+0.04} _{+0.01} | 4 | 26 | M5×0.8 |
| 50 | 80 | 3 | 31 | 70 | 74 | 10 ^{-0.01} _{-0.03} | 24 | 4 ^{+0.04} _{+0.01} | 2 ^{+0.2} ₀ | 10 | M5×0.8 | 10 | 14 | 5 | 5.1 | 9.5 | 8 | 63 | 5 ^{+0.04} _{+0.01} | 5 | 32 | M6×1.0 |
| 63 | 91 | 4 | 37 | 79 | 92 | 12 ^{-0.01} _{-0.03} | 28 | 6 ^{+0.04} _{+0.01} | 3 ^{+0.2} ₀ | 11 | M5×0.8 | 10 | 17 | 5.5 | 6.6 | 11 | 8 | 78 | 6 ^{+0.04} _{+0.01} | 6 | 40 | M8×1.25 |

| Bore size\Item | LA | LB | N | NA | O | OA | OB | P | PA | PB | R | UA | UB | T | TA | TB | V | VA | W | Z | ZA | ZB |
|----------------|----|----|----------------------------------|-----|--------|----|----|--------|----|----|-----|------|------|----|------|-----|-----|------|----|---|------|-----------------------------------|
| 32 | 10 | 44 | 34 ^{+0.05} ₀ | 2 | M4×0.7 | 8 | 44 | M5×0.8 | 10 | 19 | 76 | 15.5 | 11.5 | 9 | 15.5 | 2.5 | 62 | 55.5 | 14 | 5 | 7.4 | 6 ^{+0.048} ₀ |
| 40 | 10 | 52 | 42 ^{+0.05} ₀ | 2 | M4×0.7 | 8 | 52 | M5×0.8 | 11 | 19 | 86 | 19 | 15 | 9 | 17.5 | 2.5 | 72 | 62.5 | 16 | 5 | 11.4 | 10 ^{+0.058} ₀ |
| 50 | 12 | 63 | 52 ^{+0.05} ₀ | 2 | M5×0.8 | 10 | 63 | M5×0.8 | 11 | 26 | 103 | 24 | 18 | 10 | 21 | 3 | 84 | 74.5 | 18 | 6 | 13.4 | 12 ^{+0.07} ₀ |
| 63 | 16 | 78 | 65 ^{+0.05} ₀ | 2.5 | M6×1.0 | 12 | 78 | M5×0.8 | 13 | 29 | 125 | 31 | 23 | 12 | 26 | 3 | 102 | 92.5 | 24 | 7 | 17.4 | 16 ^{+0.07} ₀ |

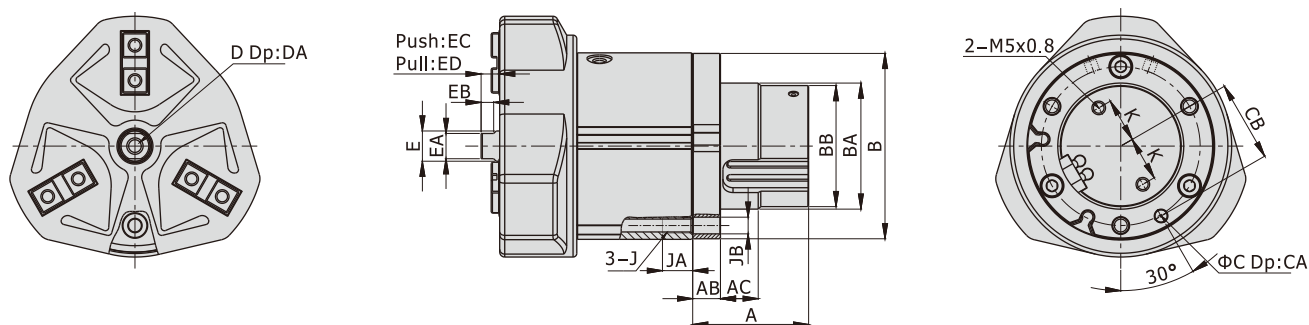
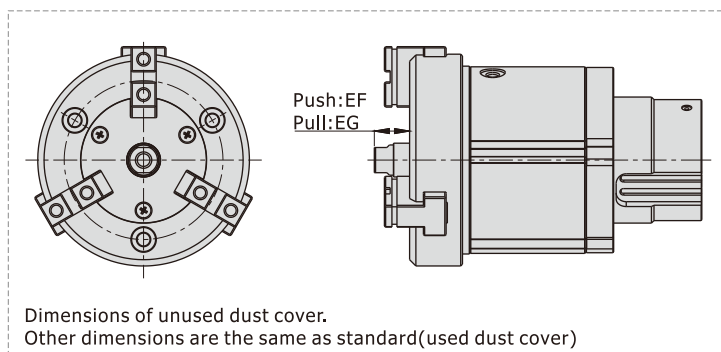


Air gripper(parallel open/close hollow style) **AIRTAC**

HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

HFCQ32E~63E (With Cylinder push rod mechanism)



[Unit: mm]

| Bore size\Item | A | AB | AC | B | BA | BB | C | CA | CB | D | DA | E | EA | EB | EC | ED | EF | EG | J | JA | JB | K |
|----------------|----|----|----|------|----------------|----|---------------------|----|----|---------|----|----|----|-----|----|----|----|----|---------|----|-----|------|
| 32 | 36 | 9 | 9 | 54.5 | $32_{-0.05}^0$ | 30 | $4_{+0.01}^{+0.04}$ | 4 | 22 | M3×0.5 | 6 | 6 | 5 | 3.5 | 14 | 7 | 20 | 13 | M5×0.8 | 10 | 5.5 | 9.5 |
| 40 | 38 | 9 | 12 | 61.5 | $40_{-0.05}^0$ | 38 | $4_{+0.01}^{+0.04}$ | 4 | 26 | M5×0.8 | 10 | 10 | 8 | 4.5 | 15 | 7 | 21 | 13 | M5×0.8 | 10 | 5.5 | 13.5 |
| 50 | 48 | 11 | 15 | 73.5 | $50_{-0.05}^0$ | 48 | $5_{+0.01}^{+0.04}$ | 5 | 32 | M6×1.0 | 12 | 12 | 10 | 5 | 21 | 7 | 28 | 14 | M6×1.0 | 12 | 6.6 | 17.5 |
| 63 | 53 | 13 | 18 | 91.5 | $60_{-0.05}^0$ | 58 | $6_{+0.01}^{+0.04}$ | 6 | 40 | M8×1.25 | 16 | 16 | 14 | 7 | 24 | 9 | 32 | 17 | M8×1.25 | 16 | 8.6 | 20 |

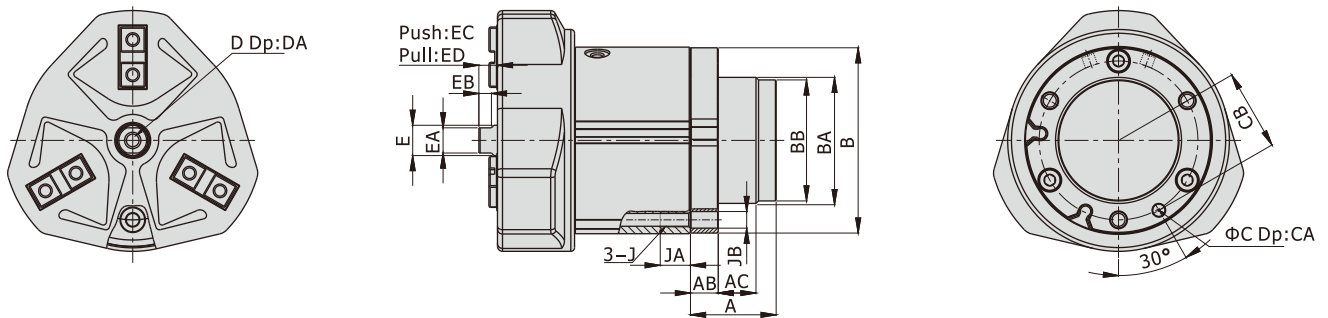
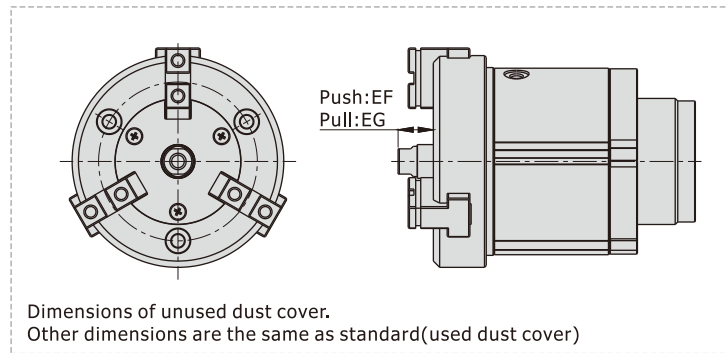


Air gripper(parallel open/close hollow style) **AIRTAC**

HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

HFCQ32V~63V (With Spring push rod mechanism)



[Unit: mm]

| Bore size\Item | A | AB | AC | B | BA | BB | C | CA | CB | D | DA | E | EA | EB | EC | ED | EF | EG | J | JA | JB |
|----------------|----|----|----|------|----------------|----|---------------------|----|----|---------|----|----|----|-----|----|----|----|----|---------|----|-----|
| 32 | 20 | 9 | 11 | 54.5 | $32_{-0.05}^0$ | - | $4_{+0.01}^{+0.04}$ | 4 | 22 | M3×0.5 | 6 | 6 | 5 | 3.5 | 14 | 7 | 20 | 13 | M5×0.8 | 10 | 5.5 |
| 40 | 24 | 9 | 15 | 61.5 | $40_{-0.05}^0$ | - | $4_{+0.01}^{+0.04}$ | 4 | 26 | M5×0.8 | 10 | 10 | 8 | 4.5 | 15 | 7 | 21 | 13 | M5×0.8 | 10 | 5.5 |
| 50 | 34 | 11 | 15 | 73.5 | $50_{-0.05}^0$ | 48 | $5_{+0.01}^{+0.04}$ | 5 | 32 | M6×1.0 | 12 | 12 | 10 | 5 | 21 | 7 | 28 | 14 | M6×1.0 | 12 | 6.6 |
| 63 | 40 | 13 | 18 | 91.5 | $60_{-0.05}^0$ | 58 | $6_{+0.01}^{+0.04}$ | 6 | 40 | M8×1.25 | 16 | 16 | 14 | 7 | 24 | 9 | 32 | 17 | M8×1.25 | 16 | 8.6 |

Air gripper(parallel open/close hollow style)



HFCQ Series

Bore size: $\Phi 16, \Phi 20, \Phi 25, \Phi 32, \Phi 40, \Phi 50, \Phi 63$

How to select product

Please select pneumatic finger according to the following steps:

① The selection of the effective gripping force



② the confirmation of the gripping point

1. The selection of the gripping force

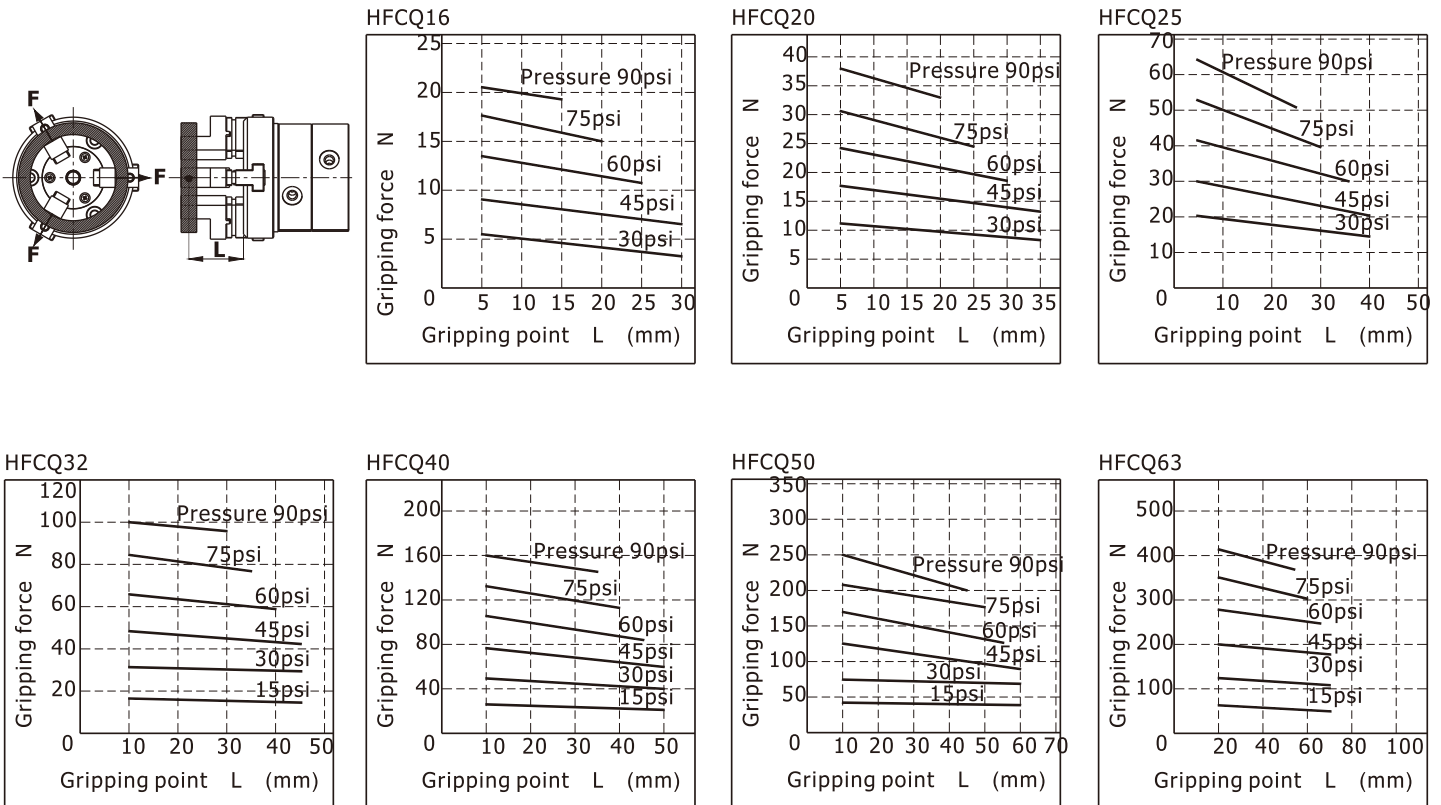
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient $a=4$, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

| The work-pieces as shown in the left : | | $\mu = 0.2$ | $\mu = 0.1$ |
|--|---|---|--|
| | n: number of gripper F: Gripping force (N) μ : friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity ($=9.8m/s^2$) | The condition that the work-pieces won't drop is: $n \times \mu F > mg$ so: $F > \frac{mg}{n \times \mu}$ Safety coefficient is a, so F is: $F = \frac{mg}{n \times \mu} \times a$ | $F = \frac{mg}{2 \times 0.2} \times 4 = 10 \times mg$ $F = \frac{mg}{2 \times 0.1} \times 4 = 20 \times mg$ |
| | | 10 times of the mass of the gripped objects | 20 times of the mass of the gripped objects |

Note) If the friction coefficient $\mu > 0.2$, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Opened gripping force



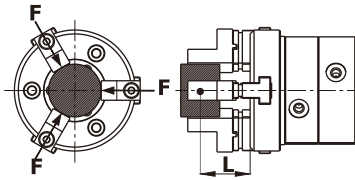
Air gripper(parallel open/close hollow style)



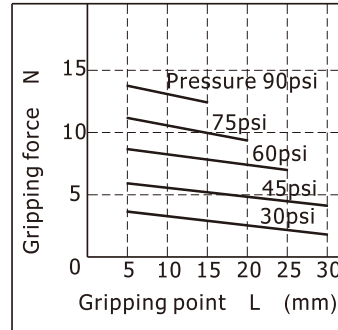
HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

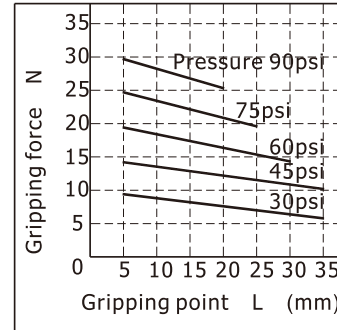
Closed gripping force



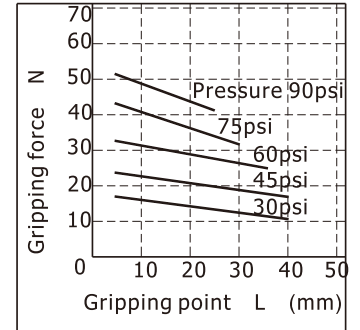
HFCQ16



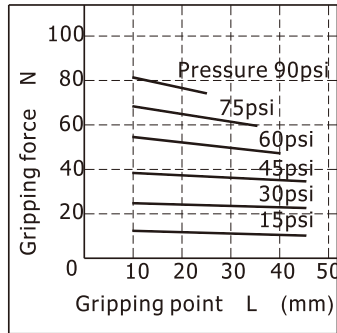
HFCQ20



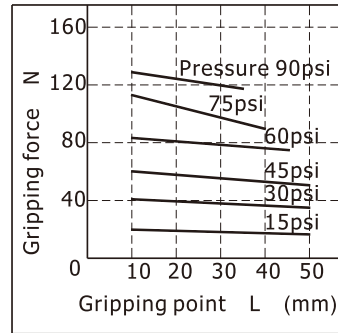
HFCQ25



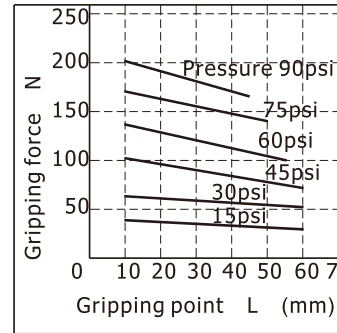
HFCQ32



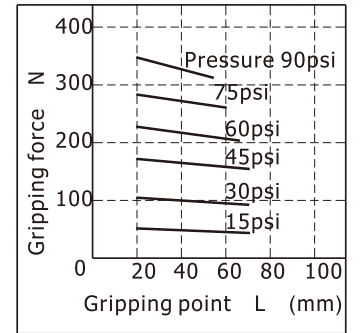
HFCQ40



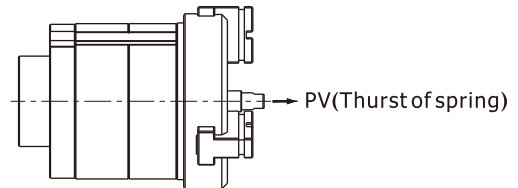
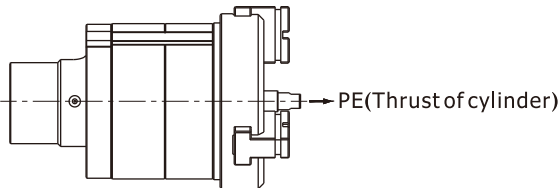
HFCQ50



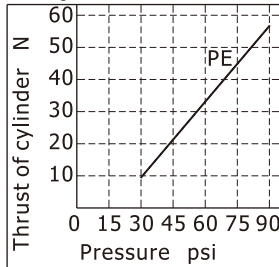
HFCQ63



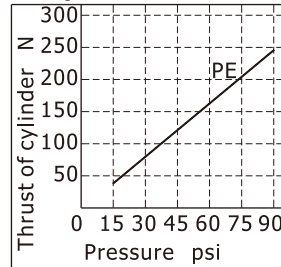
Effective thrust of Push rod mechanism



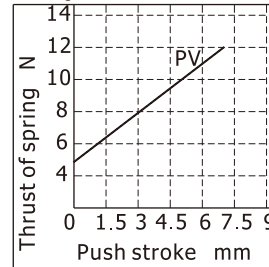
HFCQ32E



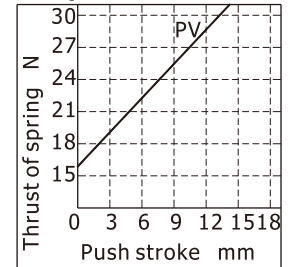
HFCQ50E



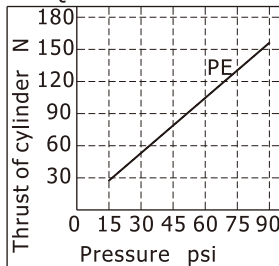
HFCQ32V



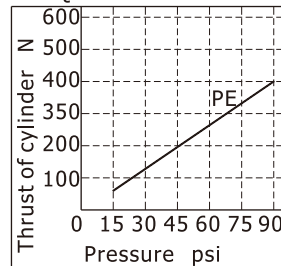
HFCQ50V



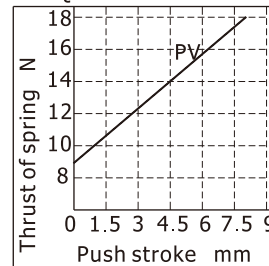
HFCQ40E



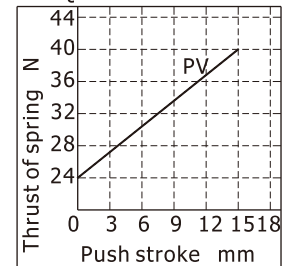
HFCQ63E



HFCQ40V



HFCQ63V



Air gripper(parallel open/close hollow style)



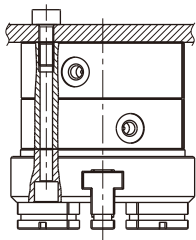
HFCQ Series

Bore size: $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$, $\Phi 50$, $\Phi 63$

Installation and application

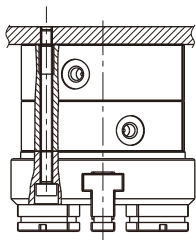
- Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
- Don't use the air gripper under strong external force and impact force.
- When install and fix the air gripper, avoid falling down, collision and damage.
- When fixing the gripping jaw parts, don't twist the gripping jaw.
- There are several kinds of installation method, and the locking torque of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



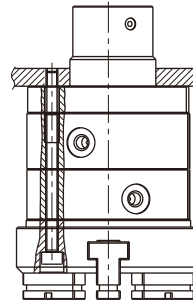
| Bore size | The bolts type | Max. locking moment(N.m) | Max. screwed depth(mm) | The aperture of the positioning bore(mm) | The depth of the positioning bore(mm) |
|-----------|----------------|--------------------------|------------------------|--|---------------------------------------|
| 16 | M4 × 0.7 | 2.1 | 8 | $\Phi 17^{+0.05}_0$ | 1.5 |
| 20 | M4 × 0.7 | 2.1 | 8 | $\Phi 21^{+0.05}_0$ | 1.5 |
| 25 | M4 × 0.7 | 2.1 | 8 | $\Phi 26^{+0.05}_0$ | 1.5 |
| 32 | M4 × 0.7 | 2.1 | 8 | $\Phi 34^{+0.05}_0$ | 2 |
| | M5 × 0.8 | 4.3 | 10 | $\Phi 34^{+0.05}_0$ | 2 |
| 40 | M4 × 0.7 | 2.1 | 8 | $\Phi 42^{+0.05}_0$ | 2 |
| | M5 × 0.8 | 4.3 | 10 | $\Phi 42^{+0.05}_0$ | 2 |
| 50 | M5 × 0.8 | 4.3 | 10 | $\Phi 52^{+0.05}_0$ | 2 |
| | M6 × 1.0 | 7.3 | 12 | $\Phi 52^{+0.05}_0$ | 2 |
| 63 | M6 × 1.0 | 7.3 | 12 | $\Phi 65^{+0.05}_0$ | 2.5 |
| | M8 × 1.25 | 18 | 16 | $\Phi 65^{+0.05}_0$ | 2.5 |

The installation of the front through hole



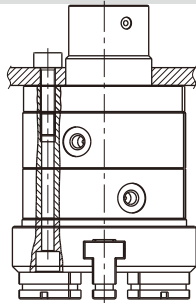
| Bore size | The bolts type | Max. locking mement(N.m) |
|-----------|----------------|--------------------------|
| 16 | M3 × 0.5 | 0.88 |
| 20 | M3 × 0.5 | 0.88 |
| 25 | M3 × 0.5 | 0.88 |
| 32 | M4 × 0.7 | 2.1 |
| 40 | M4 × 0.7 | 2.1 |
| 50 | M5 × 0.8 | 4.3 |
| 63 | M6 × 1.0 | 7.3 |

The installation of the front through hole(with push rod)



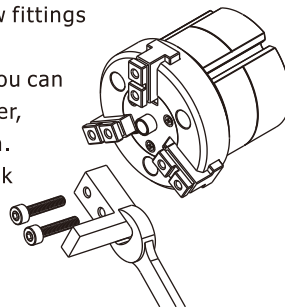
| Bore size | The bolts type | Max. locking mement(N.m) |
|-----------|----------------|--------------------------|
| 32 | M4 × 0.7 | 2.1 |
| 40 | M4 × 0.7 | 2.1 |
| 50 | M5 × 0.8 | 4.3 |
| 63 | M6 × 1.0 | 7.3 |

Tail installation type(with push rod)



| Bore size | The bolts type | Max. locking moment(N.m) | Max. screwed depth(mm) | The aperture of the positioning bore(mm) |
|-----------|----------------|--------------------------|------------------------|--|
| 32 | M5 × 0.8 | 4.3 | 10 | $\Phi 32^{0}_{-0.05}$ |
| 40 | M5 × 0.8 | 4.3 | 10 | $\Phi 40^{0}_{-0.05}$ |
| 50 | M6 × 1.0 | 7.3 | 12 | $\Phi 50^{0}_{-0.05}$ |
| 63 | M8 × 1.25 | 18 | 16 | $\Phi 60^{0}_{-0.05}$ |

- The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.



Install the gripping jaw fittings

| Bore size | The bolts type | Max. locking mement(N.m) |
|-----------|----------------|--------------------------|
| 16 | M3 × 0.5 | 0.59 |
| 20 | M3 × 0.5 | 0.59 |
| 25 | M3 × 0.5 | 0.59 |
| 32 | M4 × 0.7 | 1.4 |
| 40 | M4 × 0.7 | 1.4 |
| 50 | M5 × 0.8 | 2.8 |
| 63 | M5 × 0.8 | 2.8 |