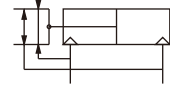


Parallel Gripper with dust-proof cover and roller bearing style **AIRTAC**

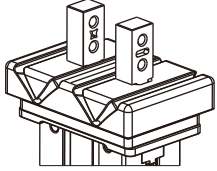
HFKP Series



Ordering code

HFKP 32

① ② ③

① Model	② Bore size	③ Finger type
HFKP: Parallel Gripper with dust-proof cover and roller bearing style(Double acting)	16 20 25 32	Blank: Standard 

[Note]:HFKP series are all standard come with magnet. (not includes sensor)

Specification

Bore size (mm)	16	20	25	32
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	22~100psi(0.15~0.7MPa)			
Temperature°C	-20~70			
Lubrication	Not required			
Repeatability mm	±0.01			±0.02
Max. frequency	180(c.p.m)			60(c.p.m)
Sensor switches	CMSH, DMSH, EMSH, CMSG, DMSG, EMSG			
Port size	M5×0.8			

[Note1]Refer to P535 for detail of sensor switch.

Gripping force and stroke

Bore size		16	20	25	32
Gripping force per finger Effective value(N)	Closed	30	42	65	158
	open	40	66	104	193
Opening/Closing stroke(Both sides)(mm)		6	10	14	22
Weight (g)		130	251	475	792

[Note] The gripping force in the above table is at working pressure of 0.5MPa, and with a gripping point of L=20mm.

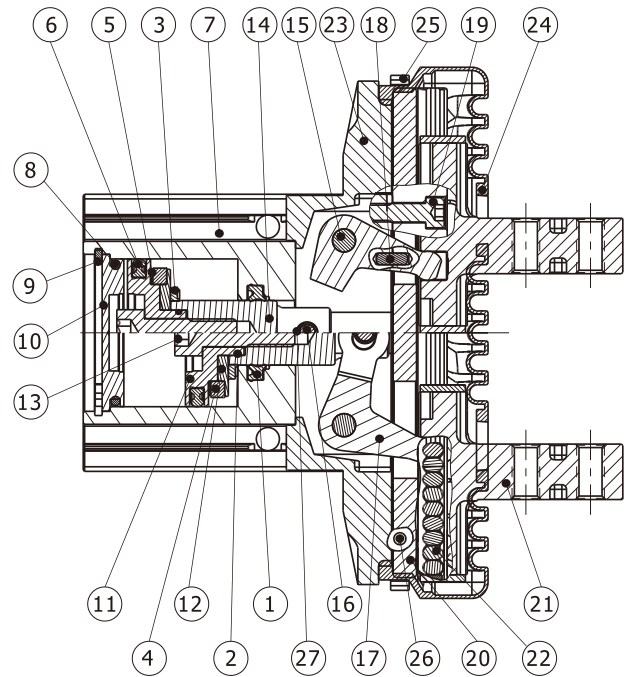
Add) Please refer to page 509 for the definition of "L".

HFKP Series

Inner structure and material of major parts

NO.	Item	NO.	Item
1	Rod packing	15	Pin
2	O-ring	16	Pin
3	Bumper	17	Curved bar
4	Magnet	18	Pin
5	Magnet washer	19	Countersink screw
6	Piston seal	20	Guide roller
7	Body	21	Clamping jaw
8	O-ring	22	Guide rail
9	C clip	23	Dustproof cover ring
10	Back cover	24	Dustproof cover
11	Piston	25	Fixed rod
12	Magnet fixed flake	26	Screw
13	Countersink screw	27	Pin bushing
14	Piston rod		

[Note]: No. 25 and No. 26 in the above table are only for HFKP32.



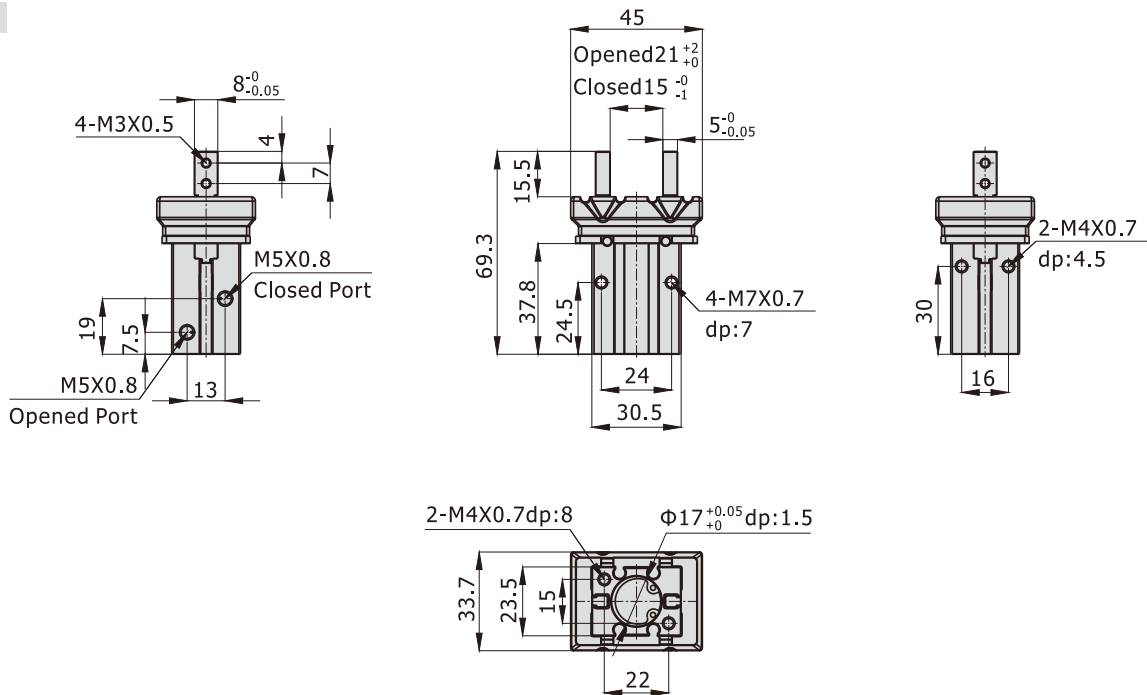
Parallel Gripper with dust-proof cover and roller bearing style **AIRTAC**

HFKP Series

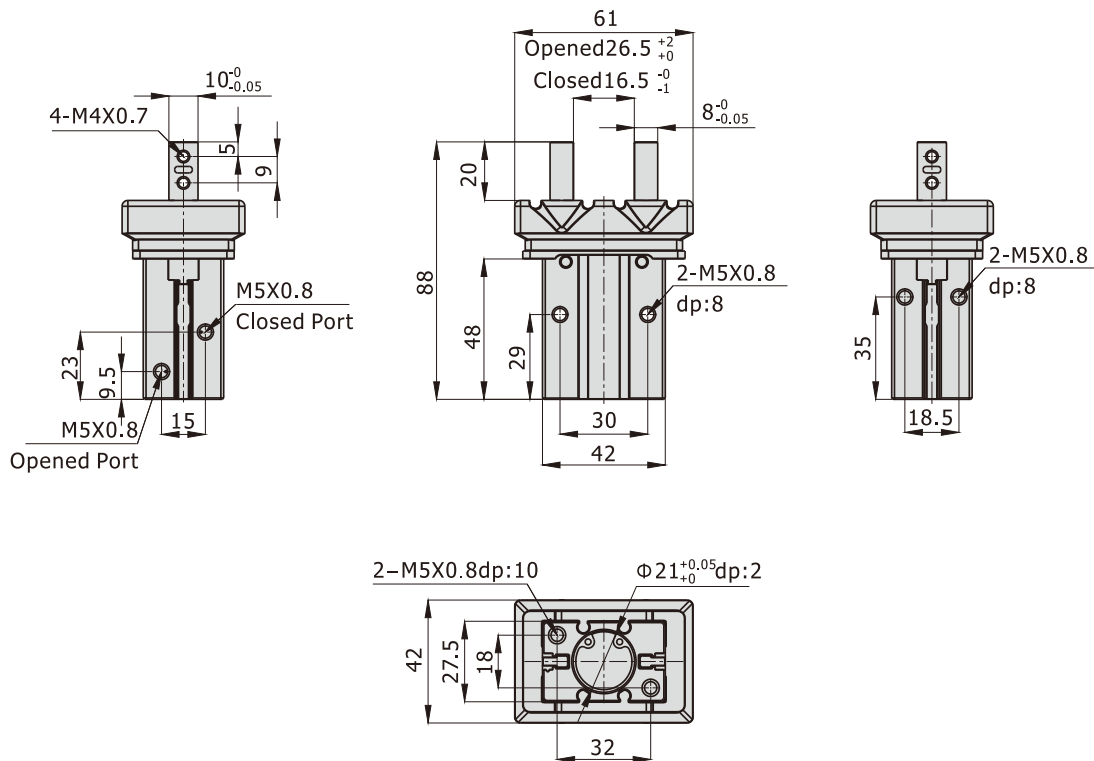
Dimensions

HFKP16

[Unit: mm]

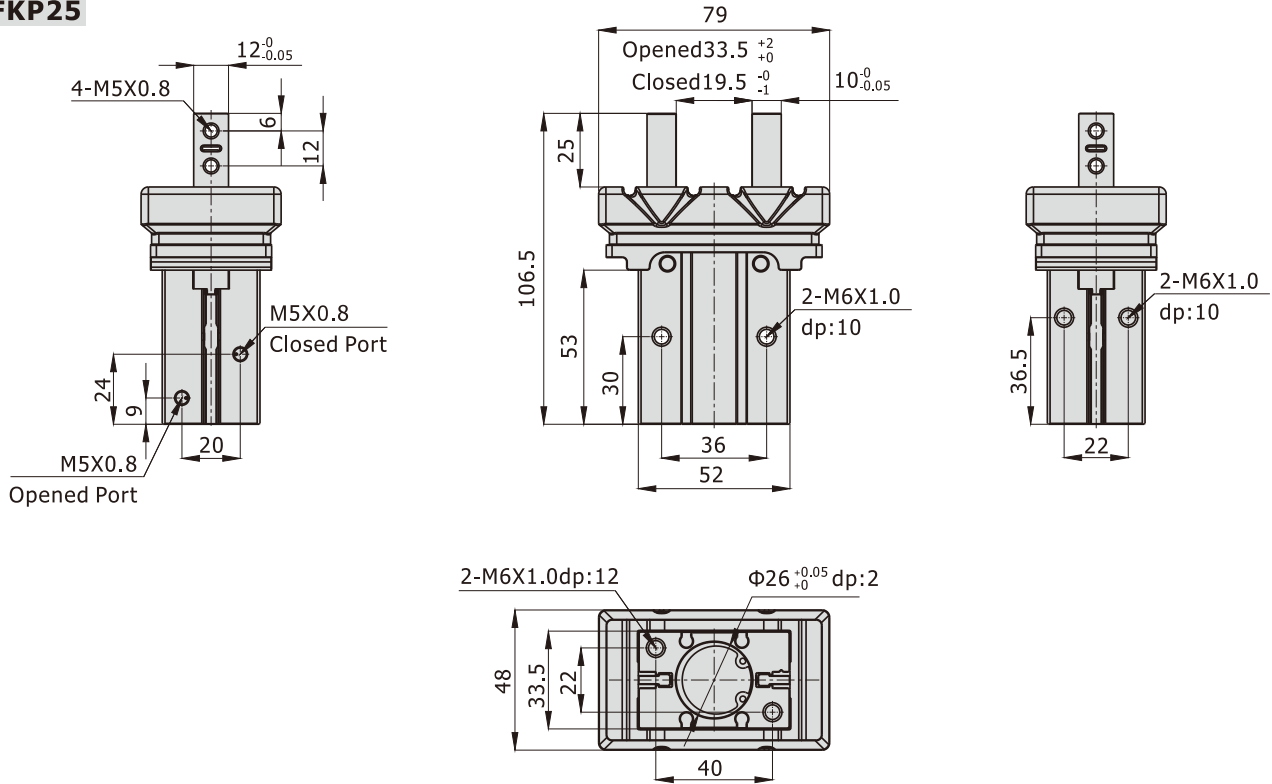


HFKP20

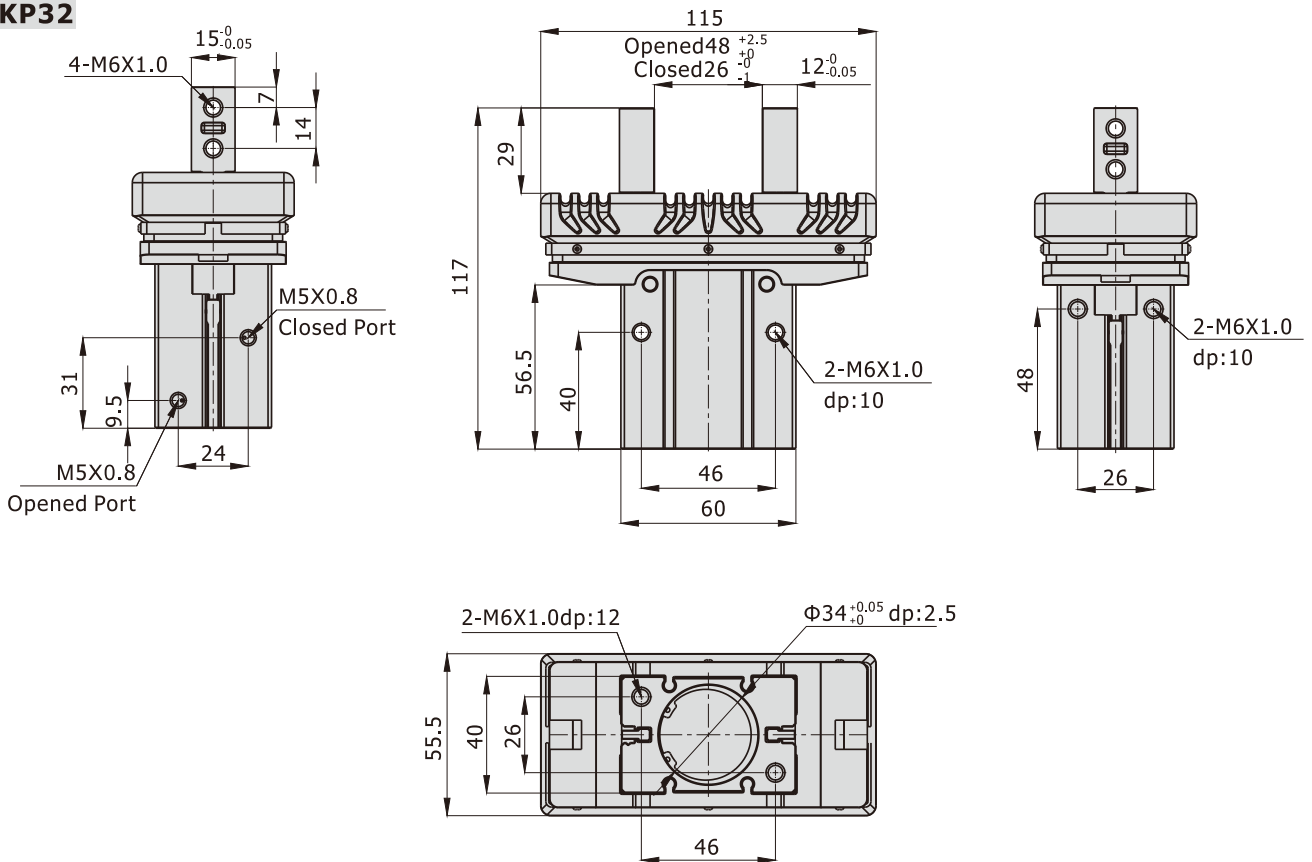


HFKP Series

HFKP25



HFKP32



HFKP Series

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



③ the confirmation of the external force put on the gripping jaw

1. The selection of the gripping force

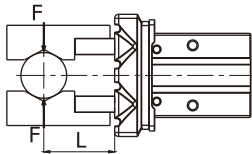
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient $a=4$, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	The work-pieces as shown in the left :	$\mu = 0.2$	$\mu = 0.1$
	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: $2 \times \mu F > mg$ so: $F > \frac{mg}{2 \times \mu}$ Safety coefficient is a, so F is: $F = \frac{mg}{2 \times \mu} \times a$	$F = \frac{mg}{2 \times 0.2} \times 4 = 10 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 4 = 20 \times mg$
		10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

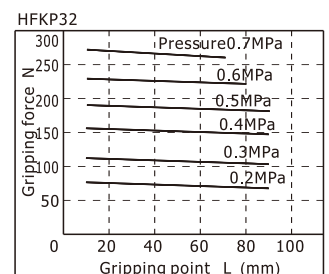
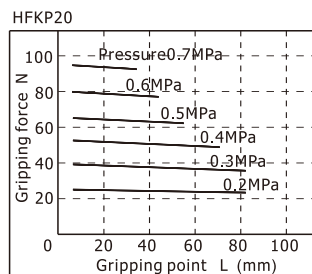
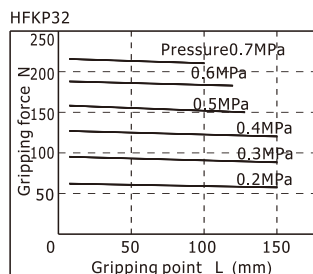
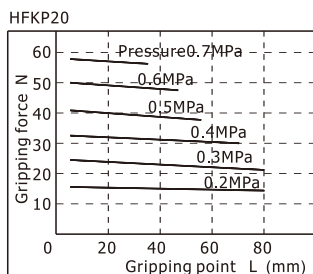
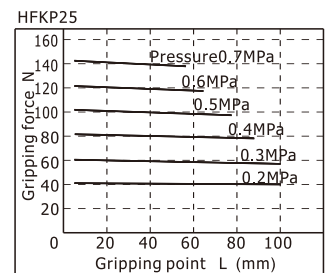
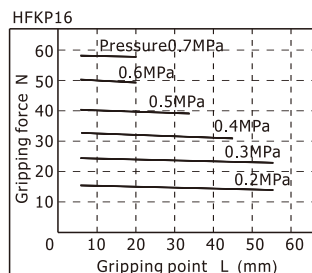
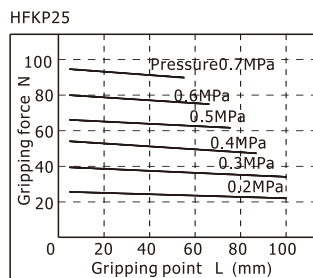
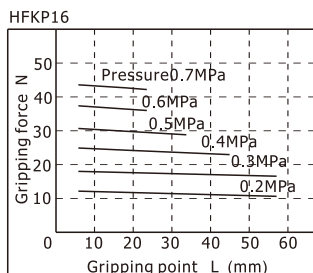
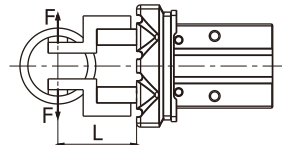
Note) If the friction coefficient $\mu > 0.2$, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

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

Closed gripping force



Opened gripping force

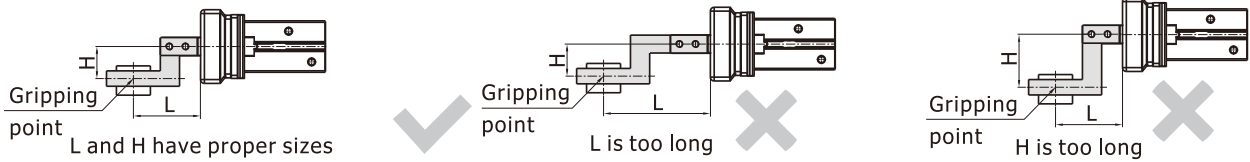


HFKP Series

2. The selection of the gripping point

2.1) Please select the gripping point within the limited field shown below.

Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.

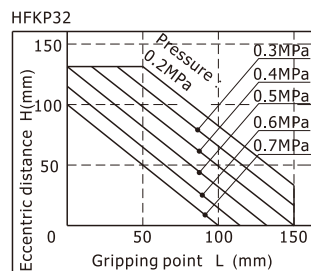
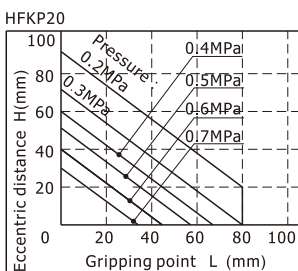
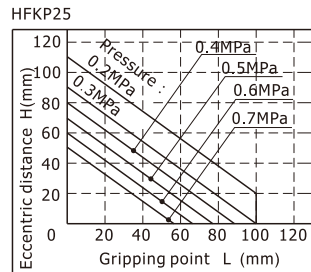
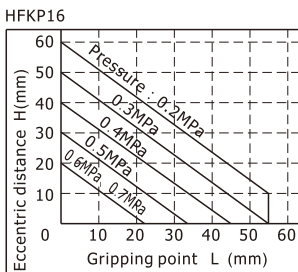
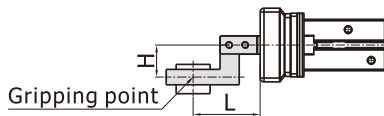


3. The confirmation of the external force put on the gripping jaw.

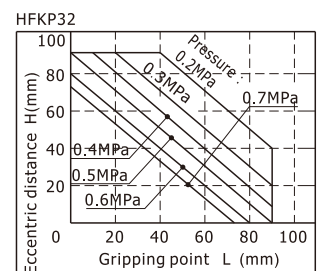
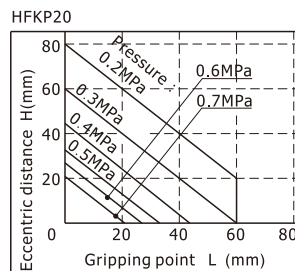
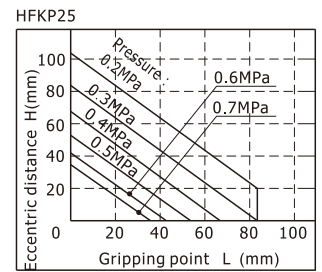
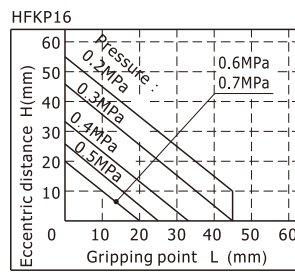
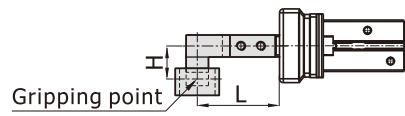
Bore size	The allowed vertical loads Fv(N)	Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
		Mp	My	Mr		
16	147	0.68	0.68	1.36	$\frac{\text{Allowable load(N)} \times \text{M(Maximum permissible moment)(N.m)}}{L \times 10^{-3}}$ Unit conversion constant	In the guide rail of HFKP16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, Allowable load F= 0.68/(30×10 ⁻³) = 22.7(N) Actual load f=10(N)<22.7(N) To meet the using requirements
20	221	1.32	1.32	2.65		
25	382	1.94	1.94	3.88		
32	514	3	3	6		

[Note] The loads and torque values of said are all static values.

Closed gripping points



Opened clamping point

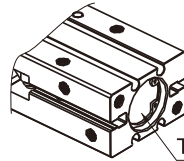
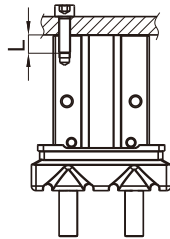


HF KP Series

Installation and application

1. 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.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. 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.

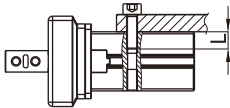
Tail installation type



The bore of the tail is used for mounting and positioning

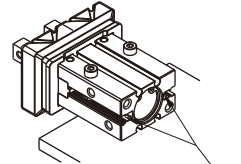
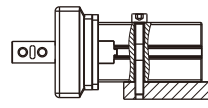
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
16	M4×0.7	2.1N.m	8mm	Φ17mm ^{+0.05} ₀	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm ^{+0.05} ₀	2mm
25	M6×1.0	7.3N.m	12mm	Φ26mm ^{+0.05} ₀	2mm
32	M6×1.0	7.9N.m	12mm	Φ34mm ^{+0.05} ₀	2.5mm

The installation of the front threaded hole



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	10

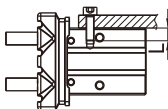
The installation of the front through hole



When installed from front through holes, sensors can not be installed in the sensor grooves that are interfered by screws.

Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
16	M3×0.5	0.88	8
20	M4×0.7	2.1	10
25	M5×0.8	4.3	12
32	M5×0.8	4.3	13

Surface installation type



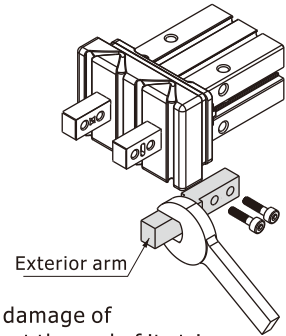
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
16	M4×0.7	1.6	4.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10
32	M6×1.0	5.9	10

HFKP Series

Installation and application

6. 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.

Bore size	The bolts type	Max. locking moment(Nm)
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9

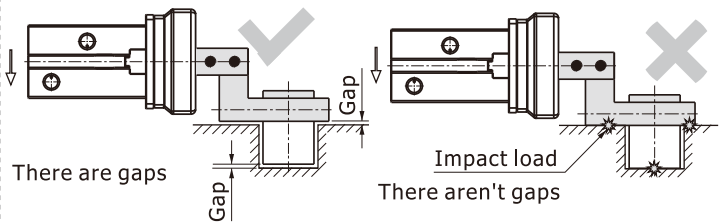
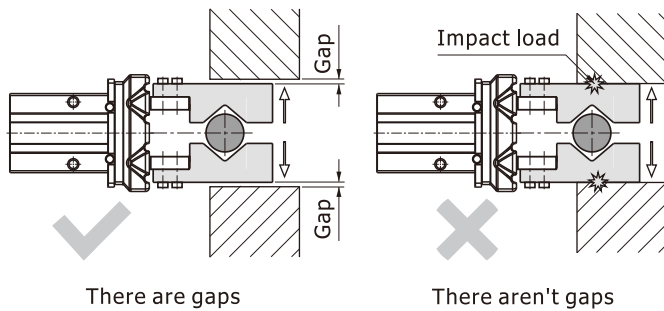


7. Confirm that there is no external forces exerted on the gripping jaw.

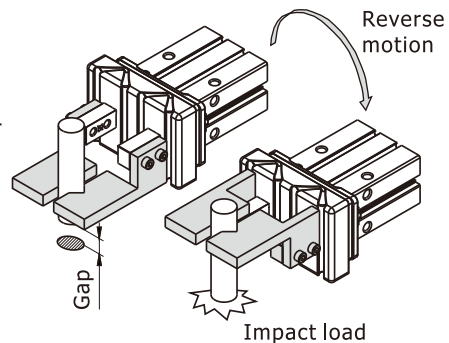
Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

7.1) The end of stroke under the open state of air gripper

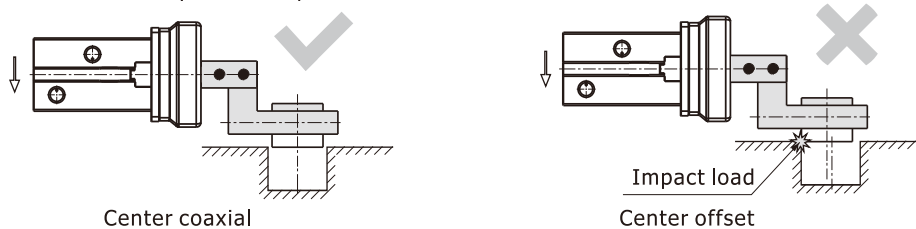
7.2) The end of stroke under the move state of air gripper



7.3) Reverse motion state When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



8. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



9. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.

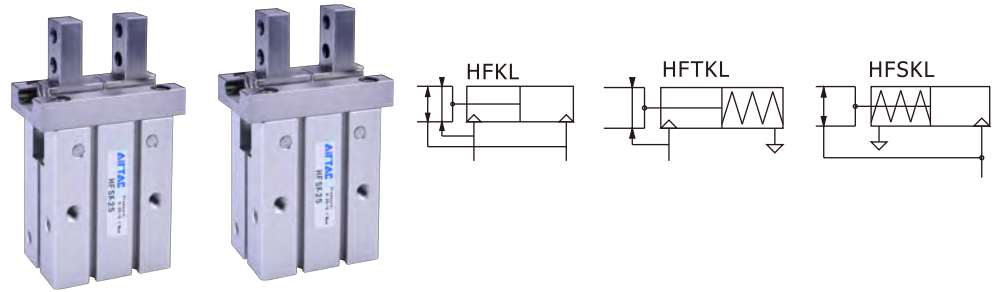
10. People can not enter the movement path of air gripper and articles can not be placed on the path too.

11. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.



Air gripper—HFKL Series

Parallel style with guide track—Roller bearing and longer stroke



Ordering code

HFKL 20 □

① ② ③

① Model

HFKL: Air finger(Double acting/Longer stroke)

HFSKL: Air finger(Single acting and normally closed/Longer stroke)

HFTKL: Air finger(Single acting and normally opened/Longer stroke)

② Bore size

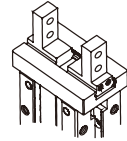
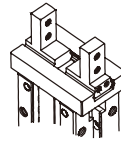
10 16 20 25

HFKL series are all attached with magnet.
Sensor should be ordered individually.

③ Finger type

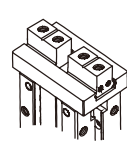
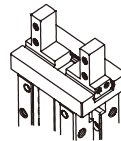
Blank: Standard

N: Thru.hole mounting type



B: Side mounting type

F: Bottom mounting type



Specification

Bore size (mm)		10	16	20	25
Acting type		Double acting		Single acting	
Fluid		Air(to be filtered by 40μm filter element)			
Operating pressure	Double acting	10	28~100psi(0.2~0.7MPa)		
		16/20/25	22~100psi(0.15~0.7MPa)		
Single acting	10	50~100psi(0.35~0.7MPa)			
		16/20/25	36~100psi(0.25~0.7MPa)		
Temperature		-20~70°C			
Lubrication		Not required			
Repeatability mm		±0.01			
Max. frequency		120(c.p.m)			
Sensor switches		CMSh DMSH, EMSH		CMSG, DMSG, EMSG CMSh, DMSH, EMSH	
Port size		M3×0.5		M5×0.8	

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style—Roller bearing/Longer stroke) **AIRTAC**

HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$

Gripping force and stroke

Acting type		Double acting(HFKL)				Single acting_NO (HFTKL)				Single acting_NC (HFSKL)			
Bore size		10	16	20	25	10	16	20	25	10	16	20	25
Gripping force per finger Effective value(N)	External	11	34	45	69	7	27	35	55	-	-	-	-
	Internal	17	45	68	102	-	-	-	-	13	38	59	87
Opening/Closing stroke(Both sides)(mm)		8	12	18	22	8	12	18	22	8	12	18	22
Weight (g)	F Type	64	146	275	484	74	154	294	530	73	154	294	528
	Others	64	146	273	489	73	155	292	525	72	155	292	523

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 493 for the definition of "L".

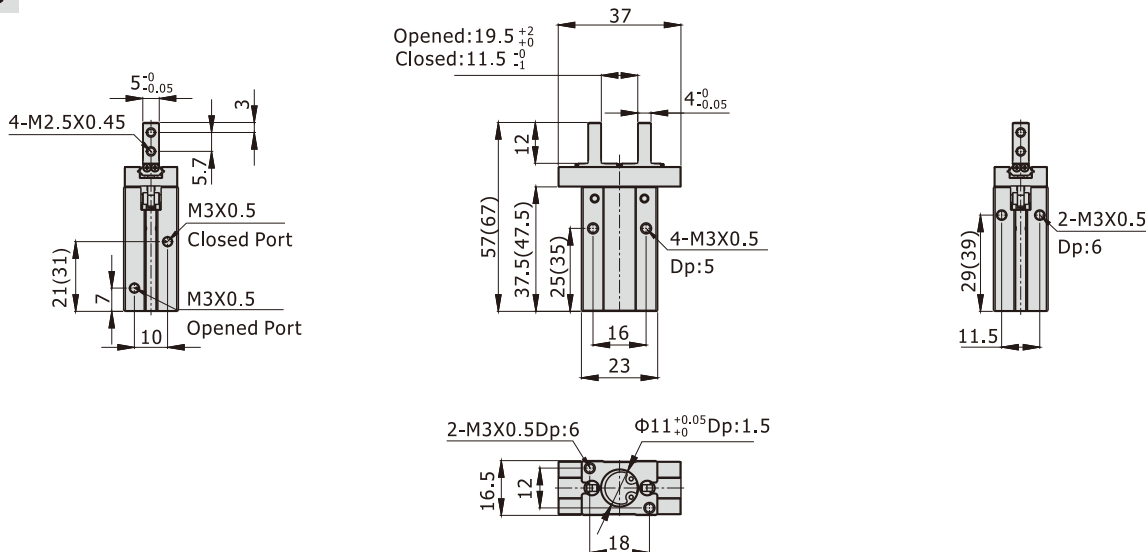
Inner structure

Inner structure is the same as "HFK series", Please refer to page 490 for details.

Dimensions

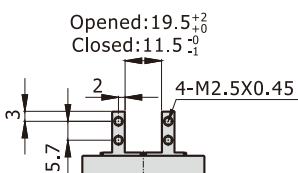
HFKL10

[Unit: mm]

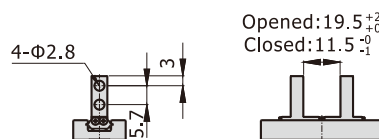


[Note]The values in "()" in the above table are single acting type sizes.

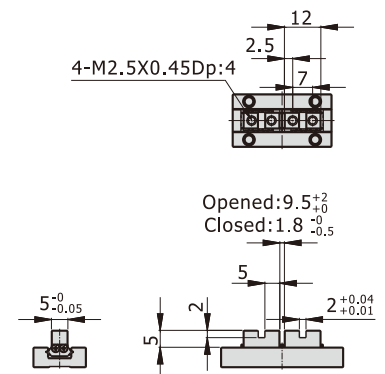
Side mounting type(B type)



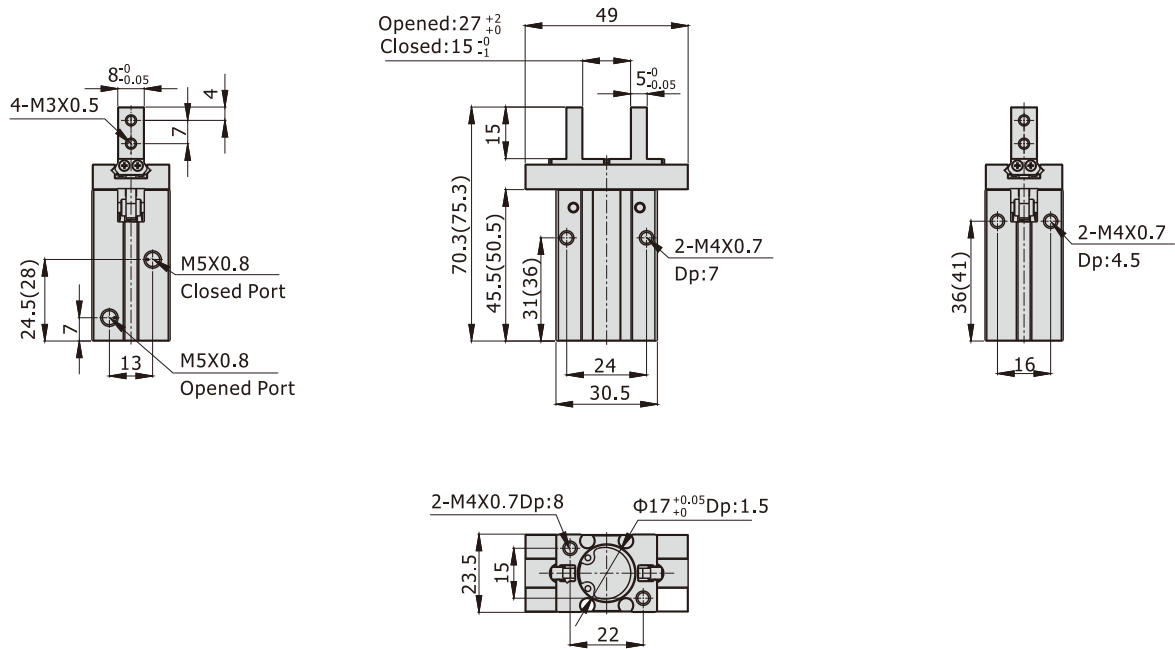
Thru.hole mounting type(N type)



Bottom mounting type(F type)

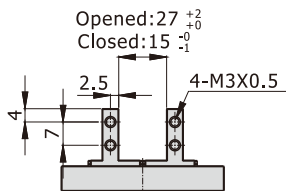


HFKL16

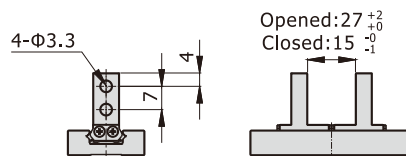


[Note]The values in "()" in the above table are single acting type sizes.

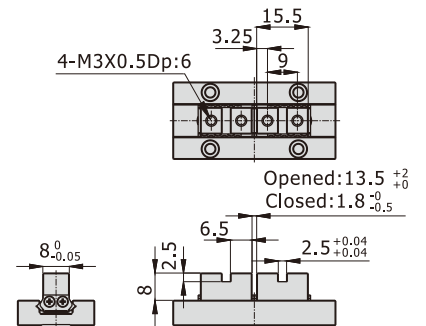
Side mounting type(B type)



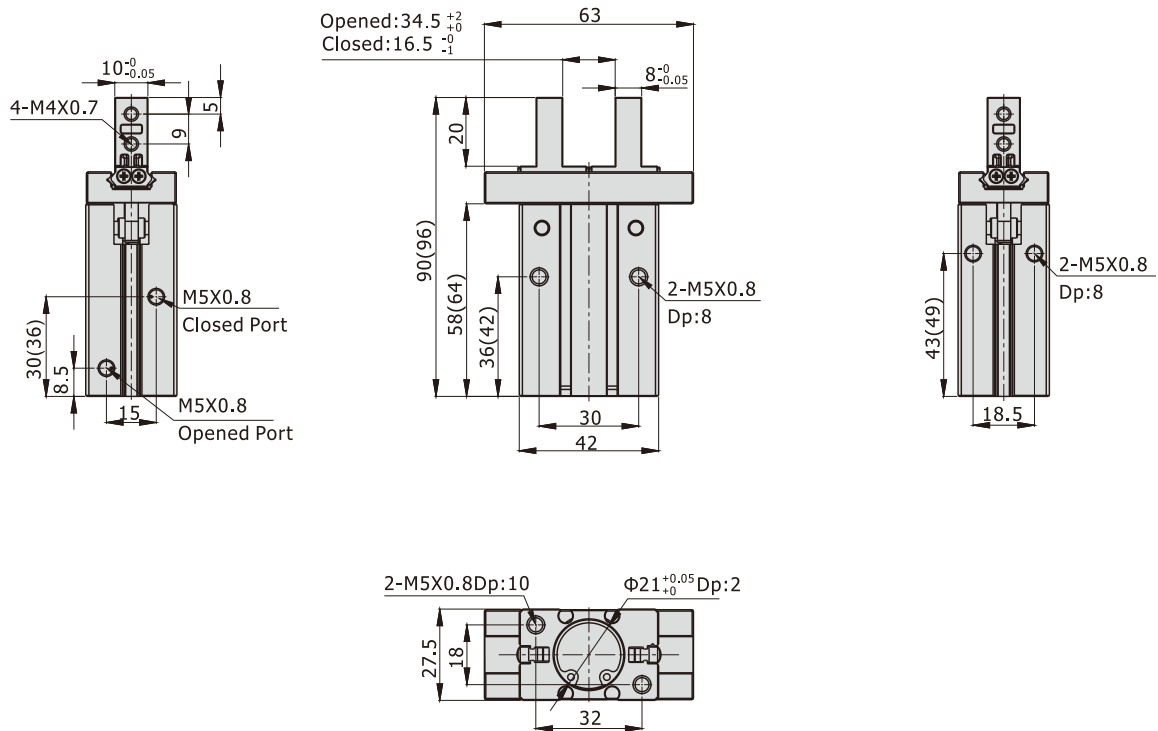
Thru.hole mounting type(N type)



Bottom mounting type(F type)

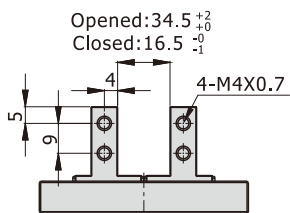


HFKL20

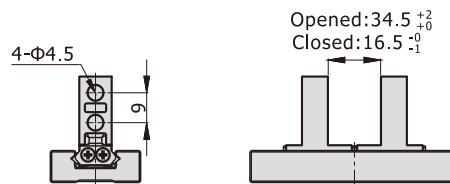


[Note]The values in "()" in the above table are single acting type sizes.

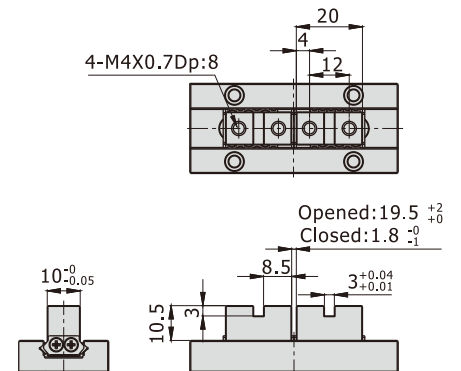
Side mounting type(B type)



Thru.hole mounting type(N type)



Bottom mounting type(F type)

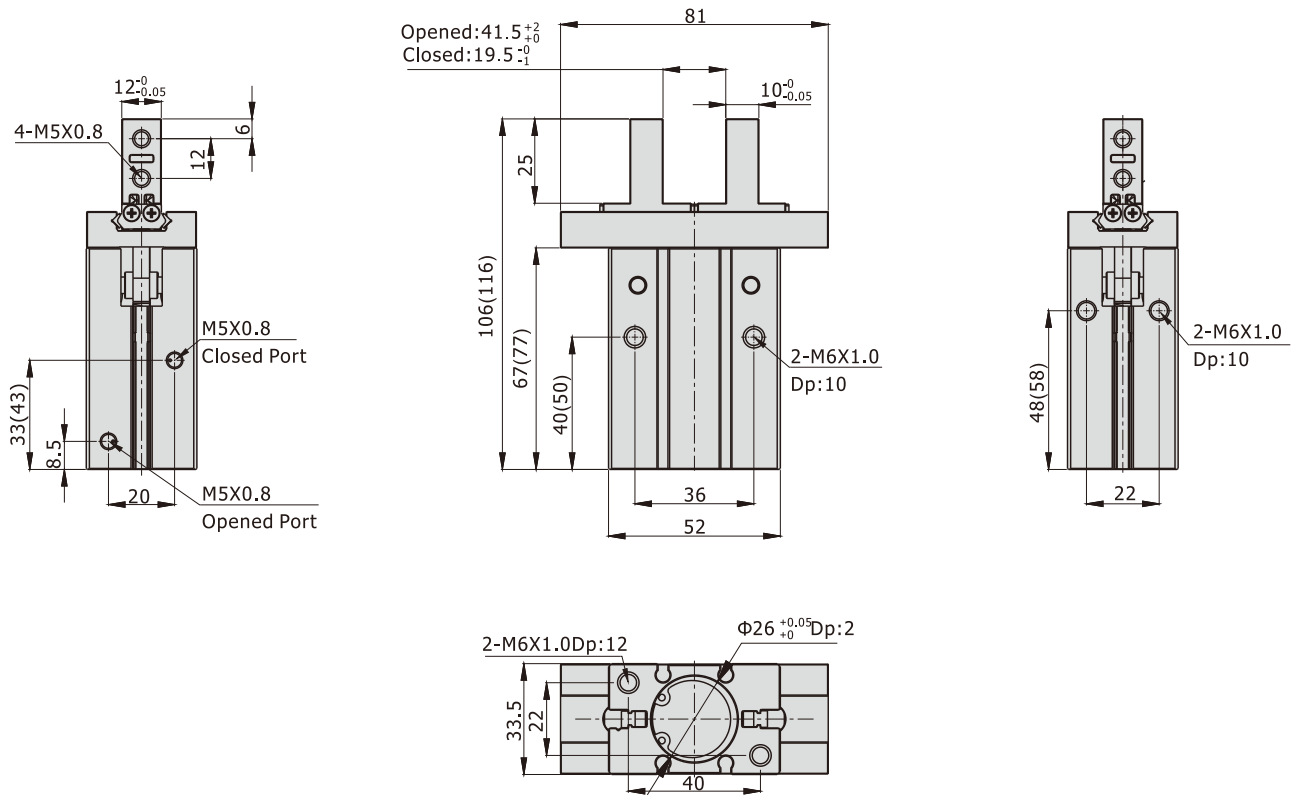


Air gripper(parallel style——Roller bearing/Longer stroke) **AIRTAC**

HFKL Series

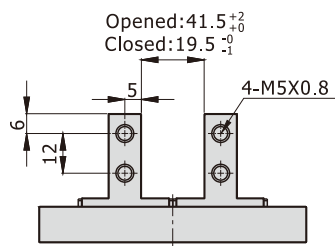
Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$

HFKL25

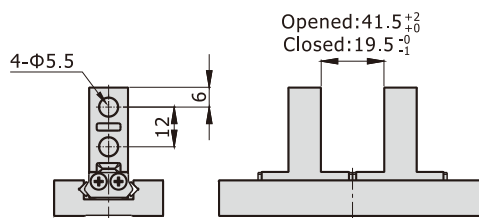


[Note]The values in "()" in the above table are single acting type sizes.

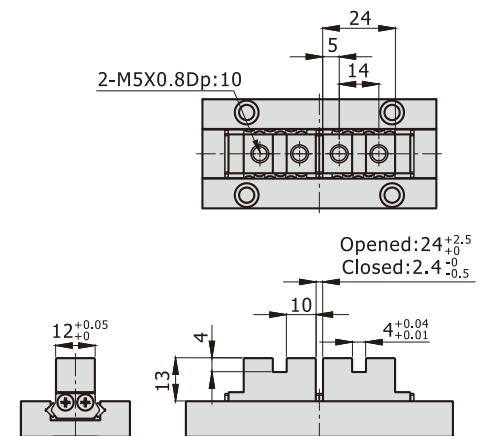
Side mounting type(B type)



Thru.hole mounting type(N type)



Bottom mounting type(F type)



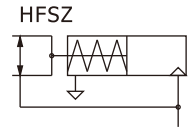
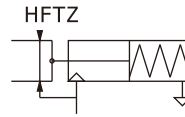
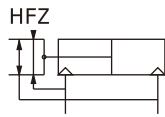
How to select product \ Installation and application

Please refer to HFK series for details.



Air gripper—HFZ Series

Parallel style with guide track—Ball bearing



Ordering code

HFZ 20 □

① ② ③

① Model

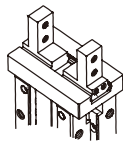
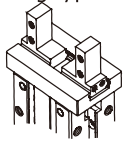
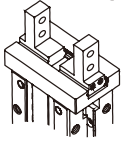
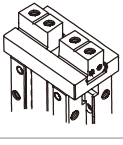
HFZ: Air finger(Double acting)
 HFSZ: Air finger
 (Single acting and normally closed)
 HFTZ: Air finger
 (Single acting and normally opened)

② Bore size

6 10 16 20 25 32 40

HFZ series are all attached with magnet.
 Sensor should be ordered individually.

③ Finger type

Bore size	Finger type	
6 10 16 20 25 32 40	Blank: Standard 	
6	B: Side mounting type 	N: Thru.hole mounting type 
	F: Bottom mounting type 	

Specification

Bore size (mm)		6	10	16	20	25	32	40
Acting type		Double acting		Single acting				
Fluid		Air(to be filtered by 40μm filter element)						
Operating pressure	Double acting	Φ6, Φ10	28~100psi(0.2~0.7MPa)					
		Others	22~100psi(0.15~0.7MPa)					
	Single acting	Φ6, Φ10	50~100psi(0.35~0.7MPa)					
Others		36~100psi(0.25~0.7MPa)						
Temperature		-20~70°C						
Lubrication		Not required						
Repeatability mm		±0.01					±0.02	
Max. frequency		180(c.p.m)					60(c.p.m)	
Sensor switches		CMSH DMSH,EMSH		CMSG, DMSG, EMSG CMSH,DMSH,EMSH				
Port size		M3×0.5			M5×0.8			

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style——Ball bearing)

HFZ Series

Bore size: $\Phi 6$, $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

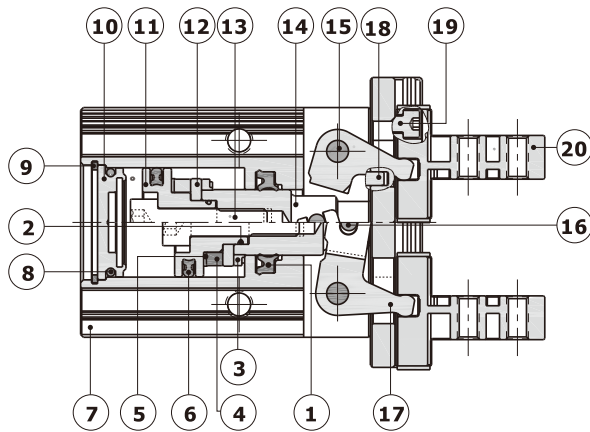
Gripping force and stroke

Acting type		Double acting(HFZ)							Single acting_NO (HFTZ)							Single acting_NC (HFSZ)						
Bore size		6	10	16	20	25	32	40	6	10	16	20	25	32	40	6	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	3.3	11	34	45	69	160	255	1.9	7	27	35	55	133	220	-	-	-	-	-	-	-
	Internal	6.1	17	45	68	102	195	320	-	-	-	-	-	-	-	3.7	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		3	4	6	10	14	22	30	3	4	6	10	14	22	30	3	4	6	10	14	22	30
Weight (g)	F Type	24	-	-	-	-	-	-	25	-	-	-	-	-	-	25	-	-	-	-	-	-
	Others	25	56	124	236	428	729	1268	26	57	125	238	430	778	1365	26	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 442 for the definition of "L".

Inner structure



NO.	Item
1	Rod packing
2	O-ring
3	Bumper
4	Magnet
5	Magnet washer
6	Piston seal
7	Body
8	O-ring
9	C clip
10	Back cover
11	Piston
12	Magnet fixed flake
13	Screw
14	Piston rod
15	Pin
16	Pin
17	Curved bar
18	Pin
19	Countersink screw
20	Assembly of clamping jaw and guide rail

Air gripper(parallel style)——Ball bearing



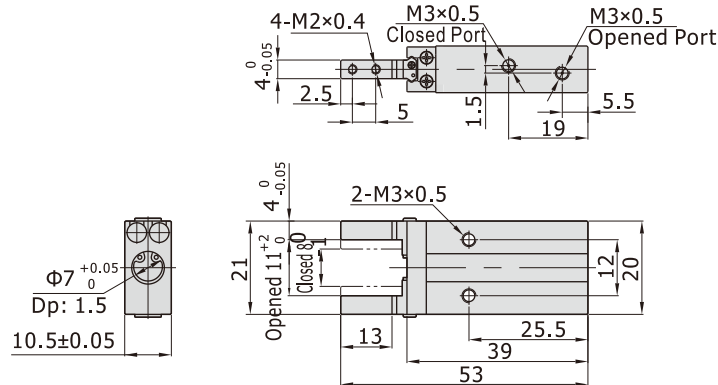
HFZ Series

Bore size: $\Phi 6$, $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

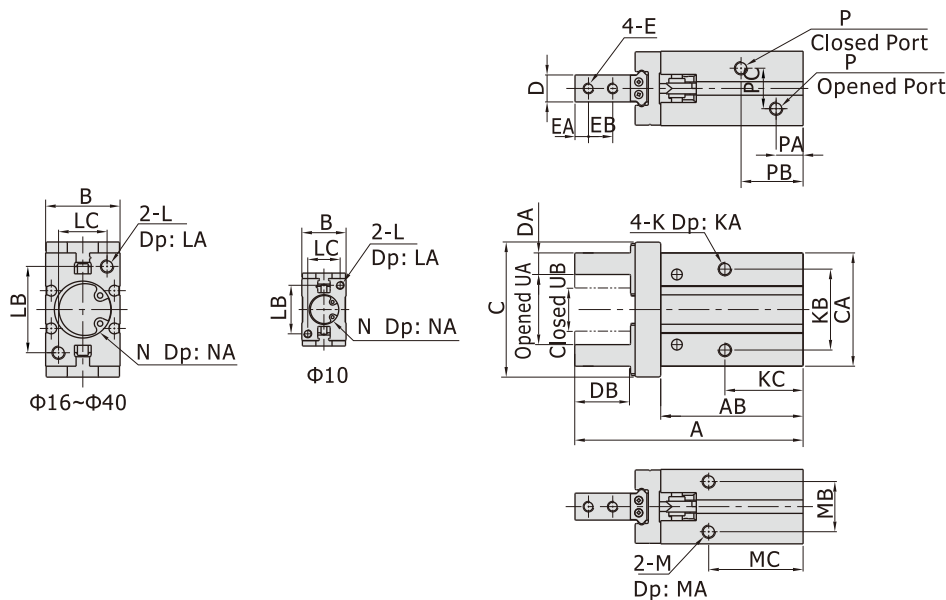
Dimensions

Standard

$\Phi 6$



$\Phi 10 \sim \Phi 40$



[Unit: mm]

Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA	EB	K	KA	KB	KC	L
HFZ10	57	37.5	16.5	30	23	5 ^{-0.05} ₀	4 ⁰ _{-0.05}	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23	M3×0.5
HFZ16	67.5	42.5	23.5	39	30.5	8 ^{-0.05} ₀	5 ⁰ _{-0.05}	15	M3×0.5	4	7	M4×0.7	7	24	24.5	M4×0.7
HFZ20	85	53	27.5	53	42	10 ^{-0.05} ₀	8 ⁰ _{-0.05}	20	M4×0.7	5	9	M5×0.8	8	30	29	M5×0.8
HFZ25	103	64	33.5	71	52	12 ^{-0.05} ₀	10 ⁰ _{-0.05}	25	M5×0.8	6	12	M6×1.0	10	36	30	M6×1.0
HFZ32	113(122)	67(76)	40	106	60	15 ^{-0.05} ₀	12 ⁰ _{-0.05}	29	M6×1.0	7	14	M6×1.0	10	46	40(49)	M6×1.0
HFZ40	139(152)	83(96)	48	132	72	18 ^{-0.05} ₀	14 ⁰ _{-0.05}	36	M8×1.25	9	17	M8×1.25	12	56	49(62)	M8×1.25

Model\Item	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFZ10	6	18	12	M3×0.5	6	11.5	27	$\Phi 11^{+0.05}$ ₀	1.5	M3×0.5	7	19	10	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFZ16	8	22	15	M4×0.7	4.5	16	30	$\Phi 17^{+0.05}$ ₀	1.5	M5×0.8	7.5	19	13	21 ⁺² ₀	15 ⁰ ₋₁
HFZ20	10	32	18	M5×0.8	8	18.5	35	$\Phi 21^{+0.05}$ ₀	2	M5×0.8	9.5	23	15	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFZ25	12	40	22	M6×1.0	10	22	36.5	$\Phi 26^{+0.05}$ ₀	2	M5×0.8	9	24	20	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFZ32	12	46	26	M6×1.0	10	26	48(57)	$\Phi 34^{+0.05}$ ₀	2.5	M5×0.8	9.5	31(40)	24	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFZ40	16	56	32	M8×1.25	12	32	58(71)	$\Phi 42^{+0.05}$ ₀	2.5	M5×0.8	10.5	38(50)	28	60 ^{+2.5} ₀	30 ⁰ ₋₁

[Note] The values in "()" in the above table are single acting type sizes.

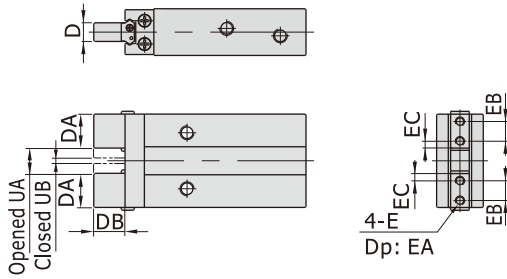
Air gripper(parallel style——Ball bearing)

HFZ Series

Bore size: $\Phi 6$, $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Bottom mounting type(F type)

$\Phi 6$



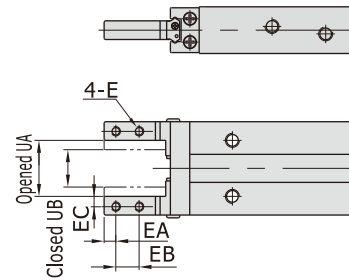
[Unit: mm]

Model\Item	D	DA	DB	EA	EB	E
HFZ6F	4 _{-0.05} ⁰	7.5	7	3	3.5	M2×0.4

Model\Item	UA(Opened)	UB(Closed)
HFZ6F	5 ₀ ^{+1.5}	1.8 _{-0.5} ⁰

Side mounting type(B type)

$\Phi 6$



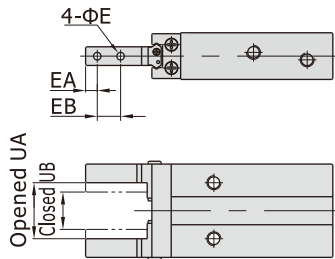
[Unit: mm]

Model\Item	E	EA	EB	EC
HFZ6B	M2×0.4	2.5	5	2

Model\Item	UA(Opened)	UB(Closed)
HFZ6B	11 ₀ ⁺²	8 ₋₁ ⁰

Thru-hole mounting type(N type)

$\Phi 6$



[Unit: mm]

Model\Item	E	EA	EB
HFZ6N	2.3	2.5	5

Model\Item	UA(Opened)	UB(Closed)
HFZ6N	11 ₀ ⁺²	8 ₋₁ ⁰

[Note] The other dimensions are the same as standard type.

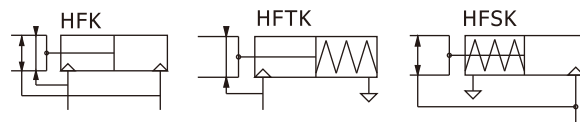
How to select product \ Installation and application

Please refer to HFK series for details.



Air gripper—HFK Series

Parallel style with guide track—Roller bearing



Ordering code

HFK 20 □

① ② ③

① Model

HFK: Air finger(Double acting)

HFSK: Air finger
(Single acting and normally closed)

HFTK: Air finger
(Single acting and normally opened)

② Bore size

10 16 20 25 32 40

HFK series are all attached with magnet.
Sensor should be ordered individually.

③ Finger type

Bore size	Finger type	
10 16 20 25 32 40	Blank: Standard	B: Side mounting type
	R: Narrow type	F: Bottom mounting type
	N: Thru.hole mounting type	W: Side mounting and arrow type
	M: Thru.hole mounting and narrow type	
10 16 20 25		

Specification

Bore size (mm)		10	16	20	25	32	40
Acting type		Double acting		Single acting			
Fluid		Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	Φ10	28~100psi(0.2~0.7MPa)				
		Others	22~100psi(0.15~0.7MPa)				
	Single acting	Φ10	50~100psi(0.35~0.7MPa)				
		Others	36~100psi(0.25~0.7MPa)				
Temperature		-20~70°C					
Lubrication		Not required					
Repeatability mm		±0.01				±0.02	
Max. frequency		180(c.p.m)				60(c.p.m)	
Sensor switches		CMSh DMSH, EMSH		CMSG, DMSG, EMSG CMSh, DMSH, EMSH			
Port size		M3×0.5		M5×0.8			

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style—roller bearing)

HFK Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

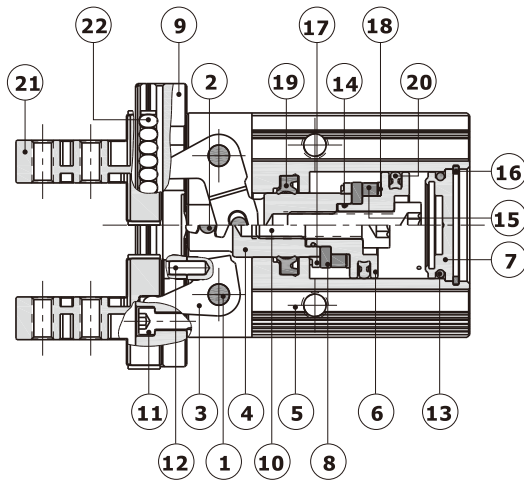
Gripping force and stroke

Acting type		Double acting(HFK)						Single acting_NO (HFTK)						Single acting_NC (HFSK)					
Bore size		10	16	20	25	32	40	10	16	20	25	32	40	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	11	34	45	69	160	255	7	27	35	55	133	220	-	-	-	-	-	-
	Internal	17	45	68	102	195	320	-	-	-	-	-	-	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		4	6	10	14	22	30	4	6	10	14	22	30	4	6	10	14	22	30
Weight (g)	F Type	56	124	236	418	750	1340	57	125	238	420	799	1437	57	125	238	420	799	1437
	Others	56	124	236	428	729	1268	57	125	238	430	778	1365	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 493 for the definition of "L".

Inner structure



NO.	Item	NO.	Item
1	Pin	12	Pin
2	Pin	13	O-ring
3	Curved bar	14	O-ring
4	Piston rod	15	Magnet
5	Body	16	C clip
6	Piston	17	Bumper
7	Back cover	18	Magnet washer
8	Magnet fixed flake	19	Rod packing
9	Rail	20	Piston seal
10	Countersink screw	21	Clamping jaw
11	Countersink screw	22	Guide roller

Air gripper(parallel style—roller bearing)

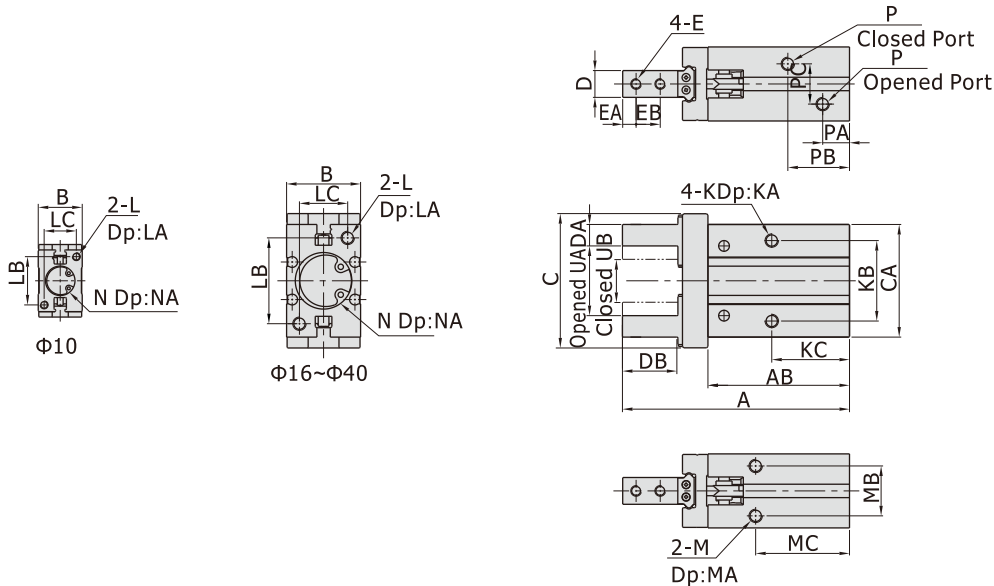


HFK Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Dimensions

Standard



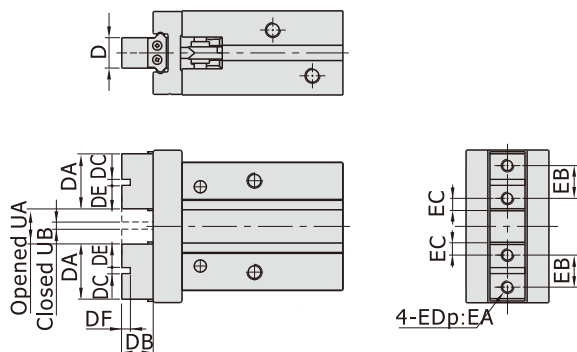
Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA	EB	K	KA	KB	KC
HFK10	57	37.5	16.5	30	23	5 ⁰ _{-0.05}	4 ⁰ _{-0.05}	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23
HFK16	67.5	42.5	23.5	39	30.5	8 ⁰ _{-0.05}	5 ⁰ _{-0.05}	15	M3×0.5	4	7	M4×0.7	7	24	24.5
HFK20	85	53	27.5	53	42	10 ⁰ _{-0.05}	8 ⁰ _{-0.05}	20	M4×0.7	5	9	M5×0.8	8	30	29
HFK25	103	64	33.5	71	52	12 ⁰ _{-0.05}	10 ⁰ _{-0.05}	25	M5×0.8	6	12	M6×1.0	10	36	30
HFK32	113(122)	67(76)	40	106	60	15 ⁰ _{-0.05}	12 ⁰ _{-0.05}	29	M6×1.0	7	14	M6×1.0	10	46	40(49)
HFK40	139(152)	83(96)	48	132	72	18 ⁰ _{-0.05}	14 ⁰ _{-0.05}	36	M8×1.25	9	17	M8×1.25	12	56	49(62)

Model\Item	L	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFK10	M3×0.5	6	18	12	M3×0.5	6	11.5	27	$\Phi 11^{+0.05}_0$	1.5	M3×0.5	7	19	10	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16	M4×0.7	8	22	15	M4×0.7	4.5	16	30	$\Phi 17^{+0.05}_0$	1.5	M5×0.8	7.5	19	13	21 ⁺² ₀	15 ⁰ ₋₁
HFK20	M5×0.8	10	32	18	M5×0.8	8	18.5	35	$\Phi 21^{+0.05}_0$	2	M5×0.8	9.5	23	15	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25	M6×1.0	12	40	22	M6×1.0	10	22	36.5	$\Phi 26^{+0.05}_0$	2	M5×0.8	9	24	20	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32	M6×1.0	12	46	26	M6×1.0	10	26	48(57)	$\Phi 34^{+0.05}_0$	2.5	M5×0.8	9.5	31(40)	24	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40	M8×1.25	16	56	32	M8×1.25	12	32	58(71)	$\Phi 42^{+0.05}_0$	2.5	M5×0.8	10.5	38(50)	28	60 ^{+2.5} ₀	30 ⁰ ₋₁

[Note]The values in "()" in the above table are single acting type sizes.

Bottom mounting type(F type) $\Phi 10$ ~ $\Phi 40$

[Unit: mm]



Model\Item	D	DA	DB	DC	DE	E
HFK10F	5 ⁰ _{-0.05}	11	5	2 ^{+0.04} _{+0.01}	4.5	M2.5×0.45
HFK16F	8 ⁰ _{-0.05}	14	8	2.5 ^{+0.04} _{+0.01}	5.8	M3×0.5
HFK20F	10 ⁰ _{-0.05}	18	10.5	3 ^{+0.04} _{+0.01}	7.5	M4×0.7
HFK25F	12 ⁰ _{-0.05}	22	13	4 ^{+0.04} _{+0.01}	9	M5×0.8
HFK32F	15 ⁰ _{-0.05}	34.5	18	5 ^{+0.04} _{+0.01}	14.8	M6×1.0
HFK40F	18 ⁰ _{-0.05}	41.5	22	6 ^{+0.04} _{+0.01}	17.7	M8×1.25

Model\Item	DF	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10F	2	4	6	2.45	5.5 ⁺² ₀	1.8 ⁰ _{-0.5}
HFK16F	2.5	6	8	3.05	7.5 ⁺² ₀	1.8 ⁰ _{-0.5}
HFK20F	3	8	10	3.95	11.5 ⁺² ₀	1.8 ⁰ _{-0.5}
HFK25F	4	10	12	4.9	16 ^{+2.5} ₀	2.4 ⁰ _{-0.5}
HFK32F	5	12	20	7.3	25 ^{+2.5} ₀	3.4 ⁰ _{-0.5}
HFK40F	6	16	24	8.7	33 ⁺³ ₀	3.4 ⁰ _{-0.5}

[Note] The other dimensions are the same as standard type.

Air gripper(parallel style—roller bearing)

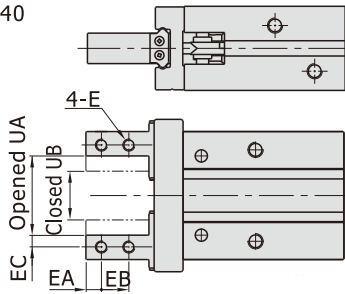


HFK Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Side mounting type(B type)

$\Phi 10 \sim \Phi 40$

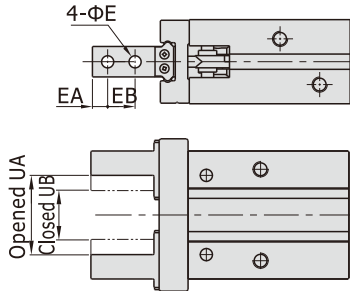


[Unit: mm]

Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10B	M2.5×0.45	3	5.7	2	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16B	M3×0.5	4	7	2.5	21 ⁺² ₀	15 ⁰ ₋₁
HFK20B	M4×0.7	5	9	4	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25B	M5×0.8	6	12	5	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32B	M6×1.0	7	14	6	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40B	M8×1.25	9	17	7	60 ^{+2.5} ₀	30 ⁰ ₋₁

Thru-hole mounting type(N type)

$\Phi 10 \sim \Phi 40$

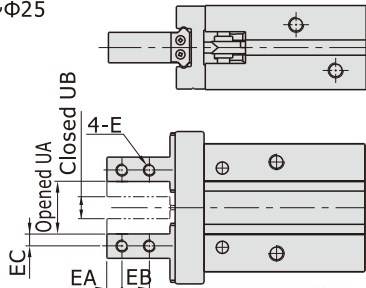


[Unit: mm]

Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10N	2.8	3	5.7	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16N	3.3	4	7	21 ⁺² ₀	15 ⁰ ₋₁
HFK20N	4.5	5	9	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25N	5.5	6	12	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32N	6.5	7	14	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40N	9	9	17	60 ^{+2.5} ₀	30 ⁰ ₋₁

Side mounting and narrow type(W type)

$\Phi 10 \sim \Phi 25$

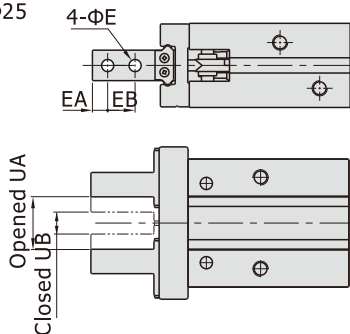


[Unit: mm]

Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10W	M2.5×0.45	3	5.7	2	10 ⁺² ₀	6 ⁰ ₋₁
HFK16W	M3×0.5	4	7	2.5	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20W	M4×0.7	5	9	4	17 ⁺² ₀	7 ⁰ ₋₁
HFK25W	M5×0.8	6	12	5	23 ^{+2.5} ₀	9 ⁰ ₋₁

Thru-hole mounting and narrow type(M type)

$\Phi 10 \sim \Phi 25$

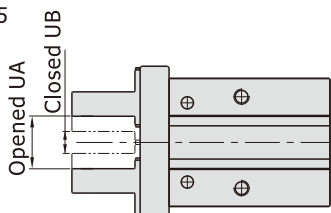


[Unit: mm]

Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10M	2.8	3	5.7	10 ⁺² ₀	6 ⁰ ₋₁
HFK16M	3.3	4	7	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20M	4.5	5	9	17 ⁺² ₀	7 ⁰ ₋₁
HFK25M	5.5	6	12	23 ^{+2.5} ₀	9 ⁰ ₋₁

Narrow type(R type)

$\Phi 10 \sim \Phi 25$



[Unit: mm]

Model\Item	UA(Opened)	UB(Closed)
HFK10R	10 ⁺² ₀	6 ⁰ ₋₁
HFK16R	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20R	17 ⁺² ₀	7 ⁰ ₋₁
HFK25R	23 ^{+2.5} ₀	9 ⁰ ₋₁

How to select product

Please select pneumatic finger according to the following steps:

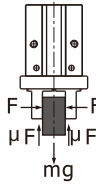
① The selection of the effective gripping force

② the confirmation of the gripping point

③ the confirmation of the external force put on the gripping jaw

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

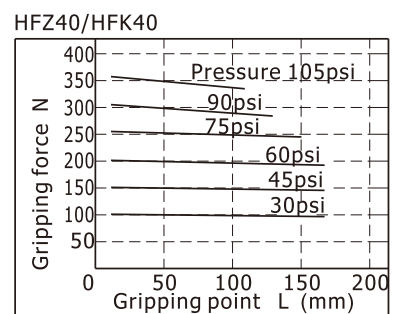
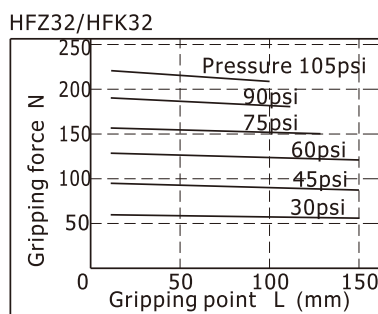
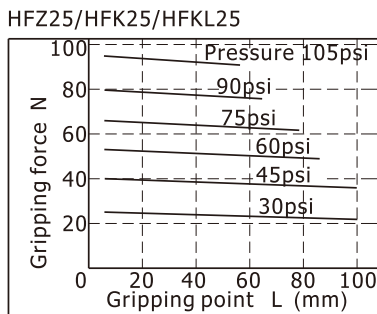
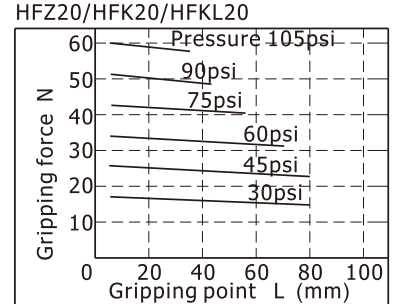
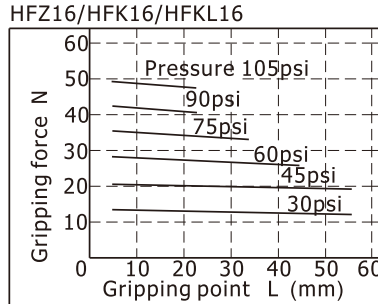
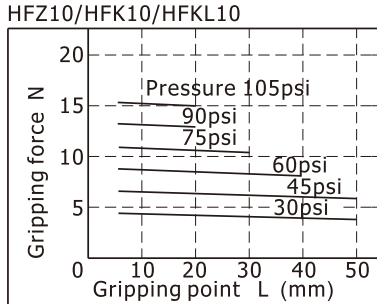
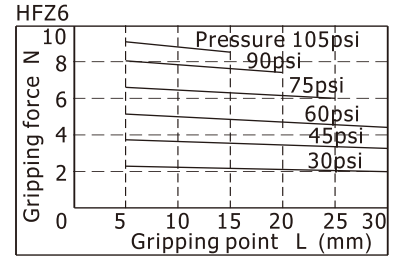
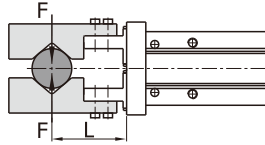
1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Air gripper(parallel style)

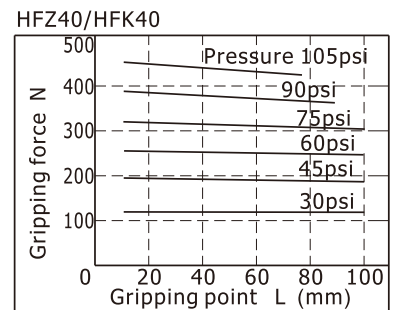
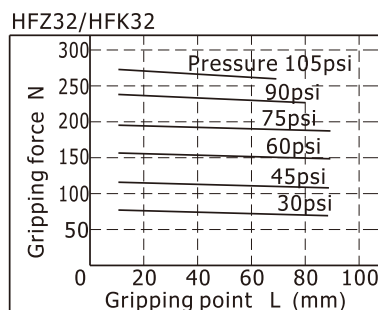
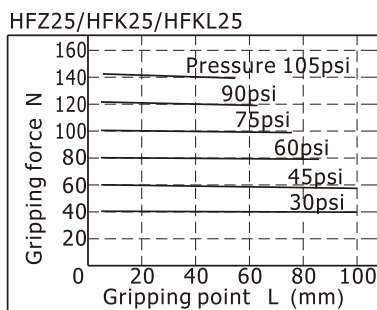
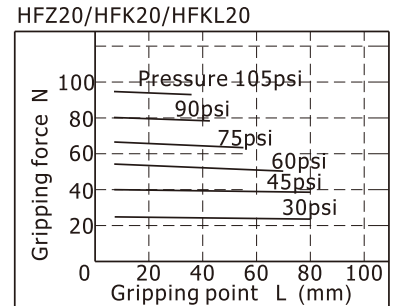
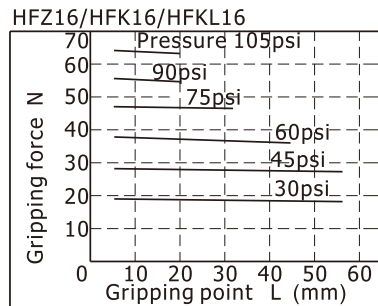
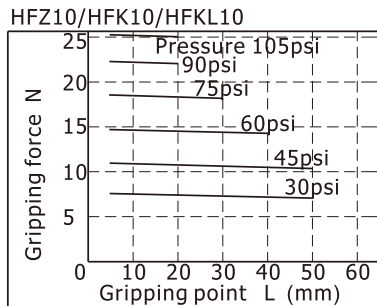
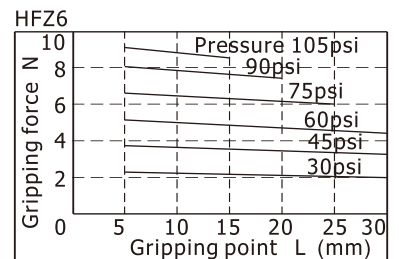
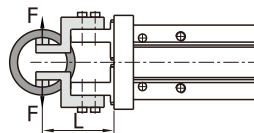
HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Double acting type closed gripping force



Double acting type opened gripping force

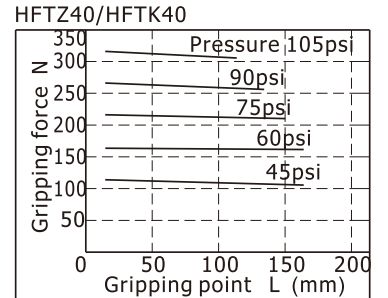
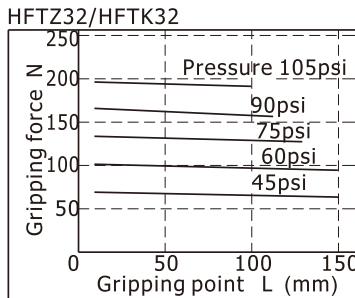
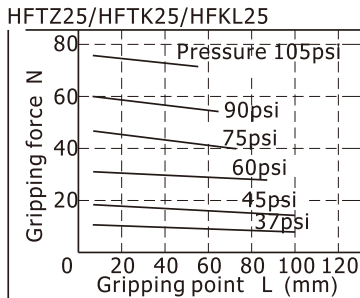
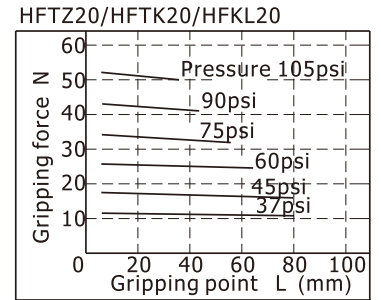
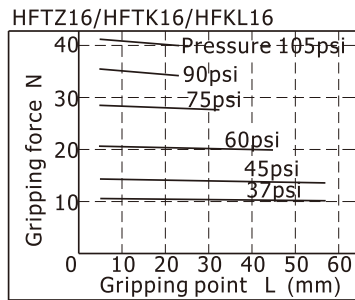
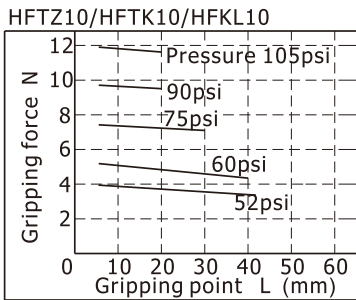
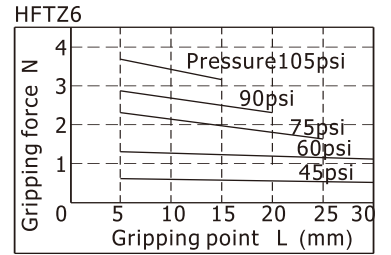
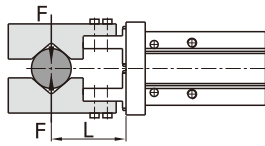


Air gripper(parallel style)

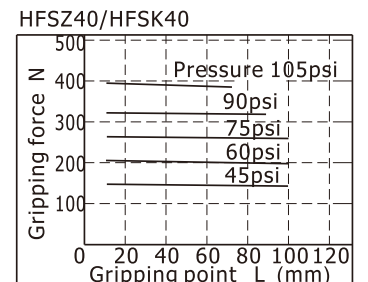
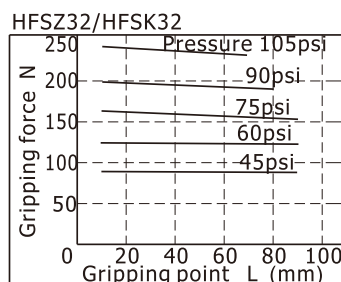
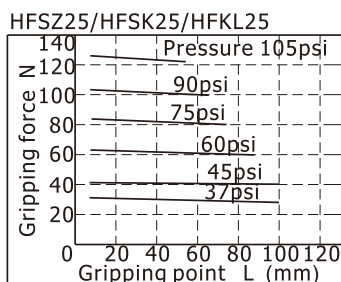
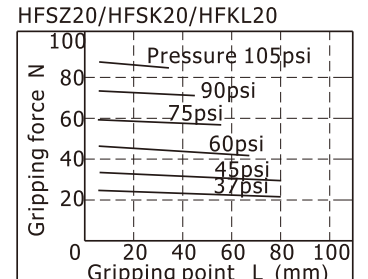
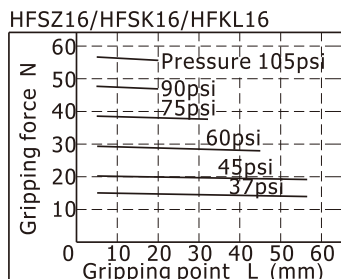
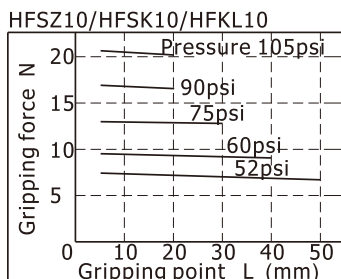
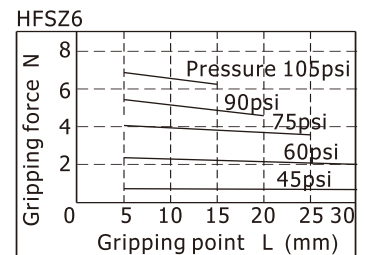
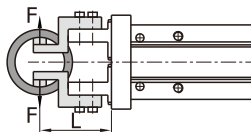
HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Single acting normally opened gripping force



Single acting normally closed clamping force



Air gripper(parallel style)

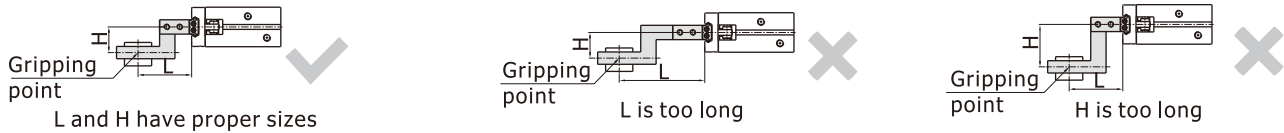
HFZ,HFK,HFKL Series

Bore size: $\Phi 10, \Phi 16, \Phi 20, \Phi 25, \Phi 32, \Phi 40$

2. The selection of the gripping point

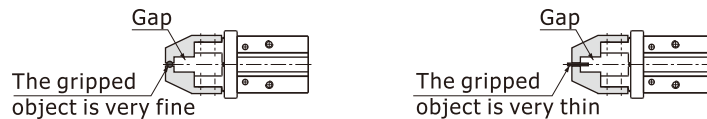
2.1) Please select the gripping point within the limited field shown below.

Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.



3. The confirmation of the external force put on the gripping jaw.

Bore size	The allowed vertical loads Fv(N)			Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
	HFK	HFZ	HFKL	Mp	My	Mr		
6	-	10	-	0.04	0.04	0.08	$\text{Allowable load(N)} = \frac{M(\text{Maximum permissible moment})(\text{N.m})}{L \times 10^{-3}}$ Unit conversion constant	In the guide rail of HFK16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, 0.68 $\text{Allowable load } F = \frac{0.68}{30 \times 10^{-3}} = 22.7(\text{N})$ Actual load f=10(N) < 22.7(N) To meet the using requirements
10	87	58	87	0.26	0.26	0.53		
16	147	98	147	0.68	0.68	1.36		
20	221	147	221	1.32	1.32	2.65		
25	382	255	382	1.94	1.94	3.88		
32	514	343	-	3	3	6		
40	735	490	-	4.5	4.5	9		

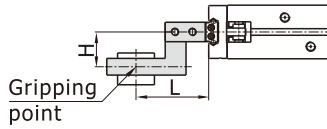
[Note] The loads and torque values of said are all static values.

Air gripper(parallel style)

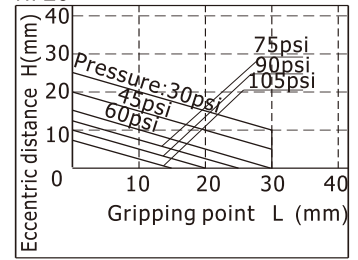
HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

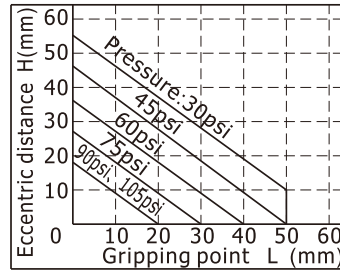
The range of the closed gripping points



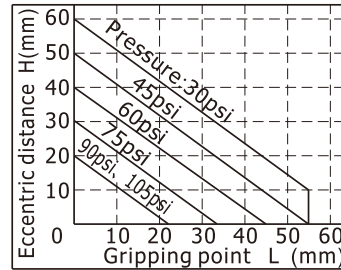
HFZ6



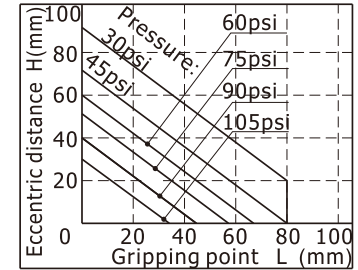
HFZ10/HFK10/HFKL10



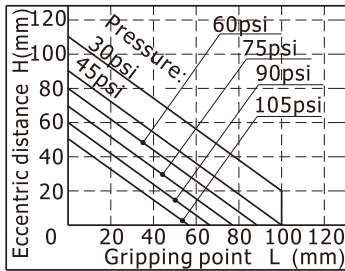
HFZ16/HFK16/HFKL16



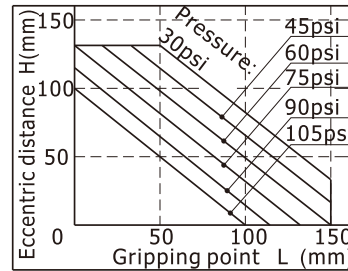
HFZ20/HFK20/HFKL20



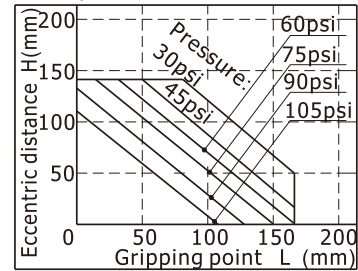
HFZ25/HFK25/HFKL25



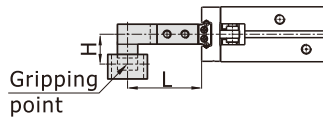
HFZ32/HFK32



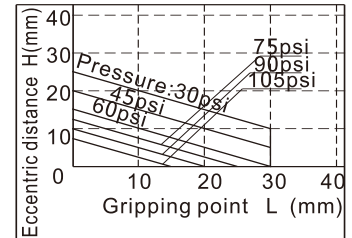
HFZ40/HFK40



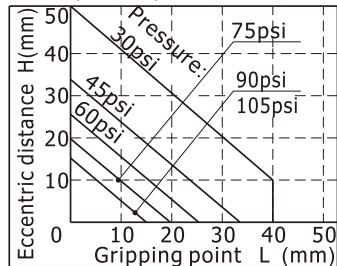
The range of the opened clamping point



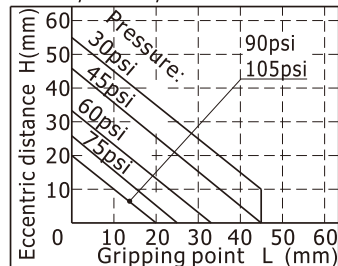
HFZ6



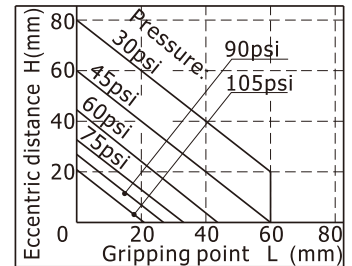
HFZ10/HFK10/HFKL10



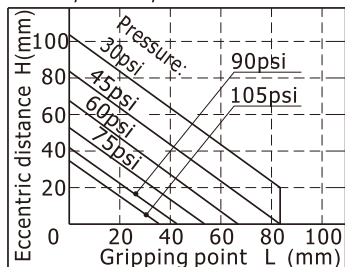
HFZ16/HFK16/HFKL16



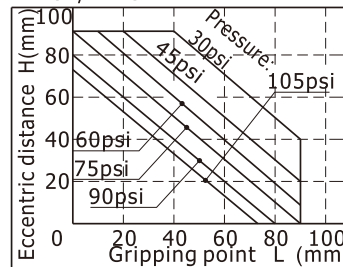
HFZ20/HFK20/HFKL20



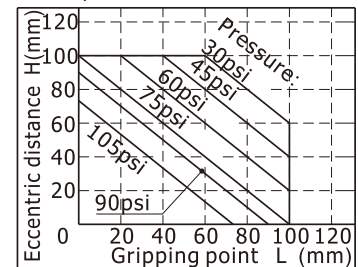
HFZ25/HFK25/HFKL25



HFZ32/HFK32



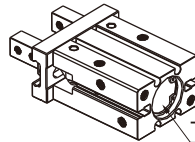
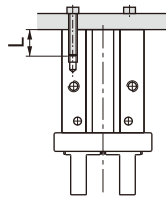
HFZ40/HFK40



Installation and application

1. 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.
2. Don't use the air gripper under strong external force and impact force.
3. Please contact with us when the single acting type clamps only with the spring force.
4. When install and fix the air gripper, avoid falling down, collision and damage.
5. When fixing the gripping jaw parts, don't twist the gripping jaw.
6. 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.

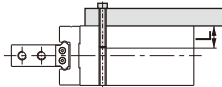
Tail installation type



The bore of the tail is used for mounting and positioning

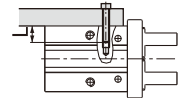
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.05}_0$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_0$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_0$	2mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_0$	2mm
32	M6×1.0	7.9N.m	12mm	Φ34mm $^{+0.05}_0$	2.5mm
40	M8×1.25	17.7N.m	16mm	Φ42mm $^{+0.05}_0$	2.5mm

The installation of the front threaded hole



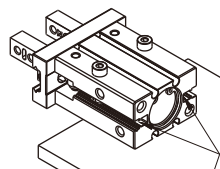
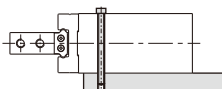
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.88	10
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	12
40	M8×1.25	17.7	12

Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.9	6
16	M4×0.7	1.6	4.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10
32	M6×1.0	5.9	10
40	M8×1.25	13.7	12

The installation of the front through hole



When installed from front through holes, sensors can not be installed in the sensor grooves that are interfered by screws.

Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M2.5×0.45	0.49	-
10	M2.5×0.45	0.49	5
16	M3×0.5	0.88	8
20	M4×0.7	2.1	10
25	M5×0.8	4.3	12
32	M5×0.8	4.3	13
40	M6×1.0	7.3	16

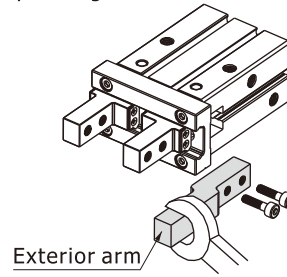
Air gripper(parallel style)

HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

7. 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.

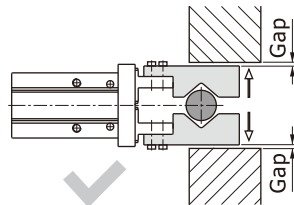
Bore size	The bolts type	Max. locking moment(Nm)
6	M2×0.4	0.15
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9
40	M8×1.25	11.8



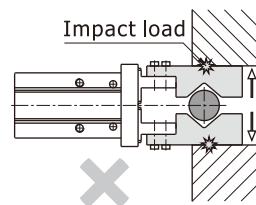
8. Confirm that there is no external forces exerted on the gripping jaw.

Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

8.1) The end of stroke under the open state of air gripper

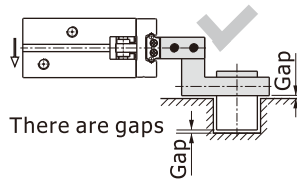


There are gaps

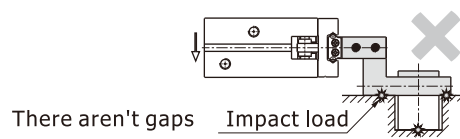


There aren't gaps

8.2) The end of stroke under the move state of air gripper



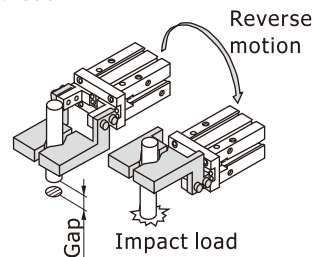
There are gaps



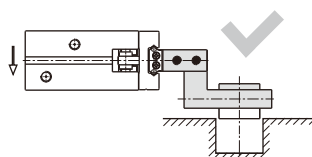
There aren't gaps

8.3) Reverse motion state

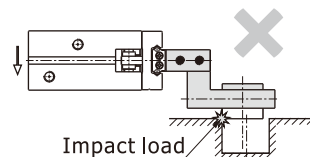
When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



9. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



Center coaxial



Impact load
Center offset

10. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.

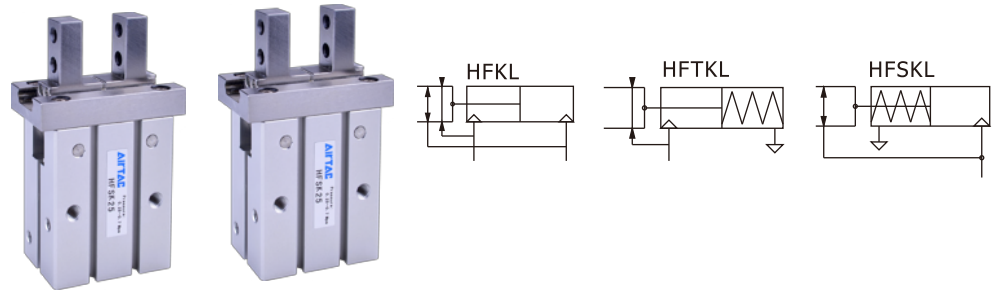
11. People can not enter the movement path of air gripper and articles can not be placed on the path too.

12. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.



Air gripper—HFKL Series

Parallel style with guide track—Roller bearing and longer stroke



Ordering code

HFKL 20 □

① ② ③

① Model

HFKL: Air finger(Double acting/Longer stroke)

HFSKL: Air finger(Single acting and normally closed/Longer stroke)

HFTKL: Air finger(Single acting and normally opened/Longer stroke)

② Bore size

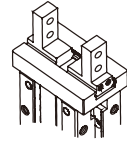
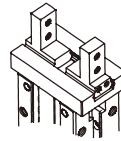
10 16 20 25

HFKL series are all attached with magnet.
Sensor should be ordered individually.

③ Finger type

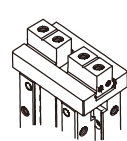
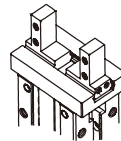
Blank: Standard

N: Thru.hole mounting type



B: Side mounting type

F: Bottom mounting type



Specification

Bore size (mm)		10	16	20	25
Acting type		Double acting		Single acting	
Fluid		Air(to be filtered by 40μm filter element)			
Operating pressure	Double acting	10	28~100psi(0.2~0.7MPa)		
		16/20/25	22~100psi(0.15~0.7MPa)		
Single acting	10	50~100psi(0.35~0.7MPa)			
	16/20/25	36~100psi(0.25~0.7MPa)			
Temperature		-20~70°C			
Lubrication		Not required			
Repeatability mm		±0.01			
Max. frequency		120(c.p.m)			
Sensor switches		CMSh DMSH, EMSH		CMSG, DMSG, EMSG CMSh, DMSH, EMSH	
Port size		M3×0.5		M5×0.8	

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style—Roller bearing/Longer stroke) **AIRTAC**

HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$

Gripping force and stroke

Acting type		Double acting(HFKL)				Single acting_NO (HFTKL)				Single acting_NC (HFSKL)			
Bore size		10	16	20	25	10	16	20	25	10	16	20	25
Gripping force per finger Effective value(N)	External	11	34	45	69	7	27	35	55	-	-	-	-
	Internal	17	45	68	102	-	-	-	-	13	38	59	87
Opening/Closing stroke(Both sides)(mm)		8	12	18	22	8	12	18	22	8	12	18	22
Weight (g)	F Type	64	146	275	484	74	154	294	530	73	154	294	528
	Others	64	146	273	489	73	155	292	525	72	155	292	523

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 493 for the definition of "L".

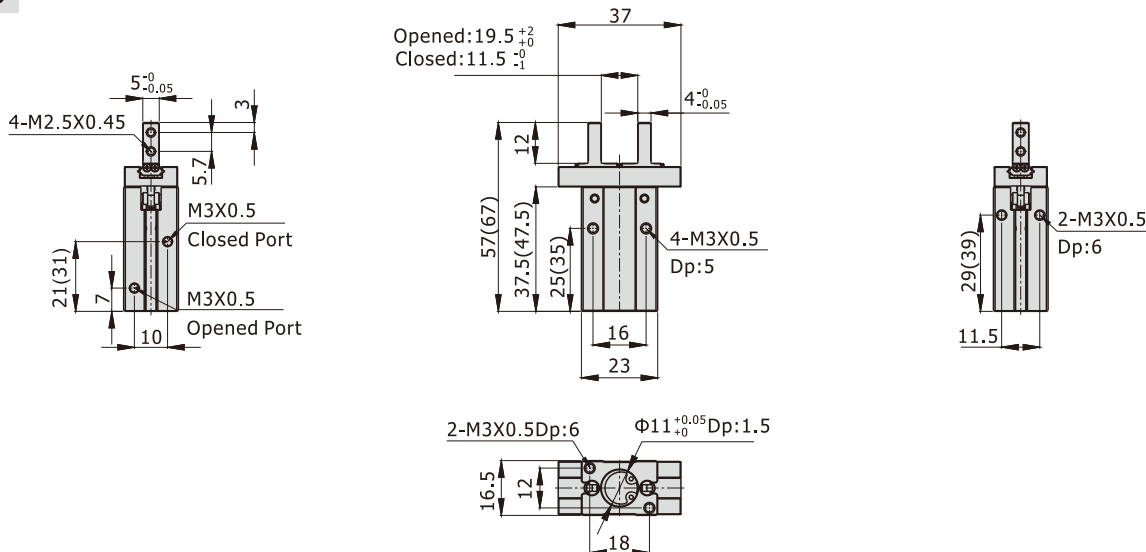
Inner structure

Inner structure is the same as "HFK series", Please refer to page 490 for details.

Dimensions

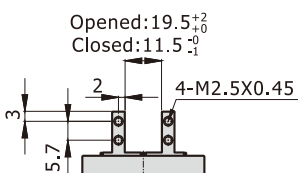
HFKL10

[Unit: mm]

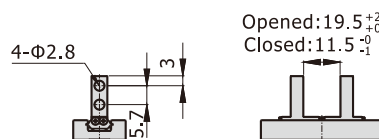


[Note]The values in "()" in the above table are single acting type sizes.

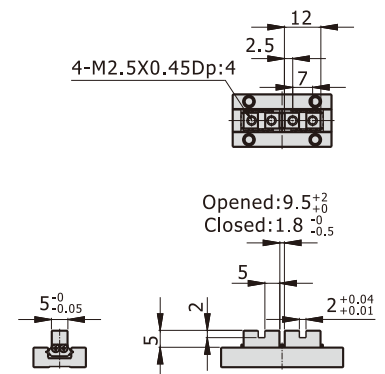
Side mounting type(B type)



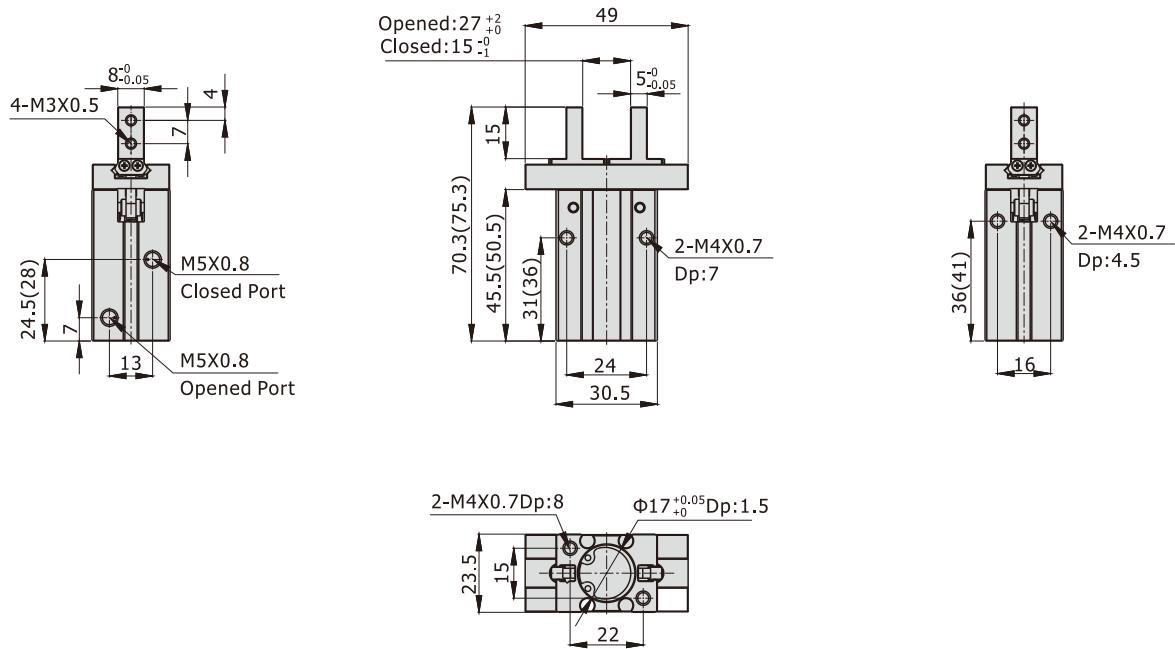
Thru.hole mounting type(N type)



Bottom mounting type(F type)

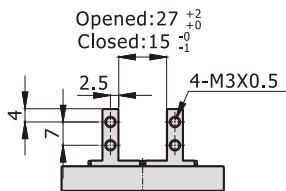


HFKL16

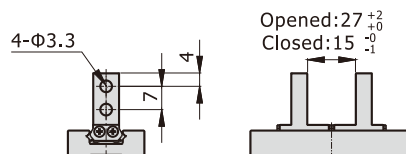


[Note]The values in “()” in the above table are single acting type sizes.

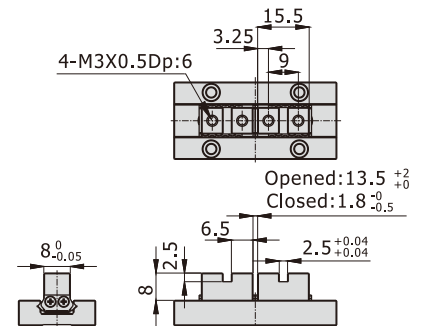
Side mounting type(B type)



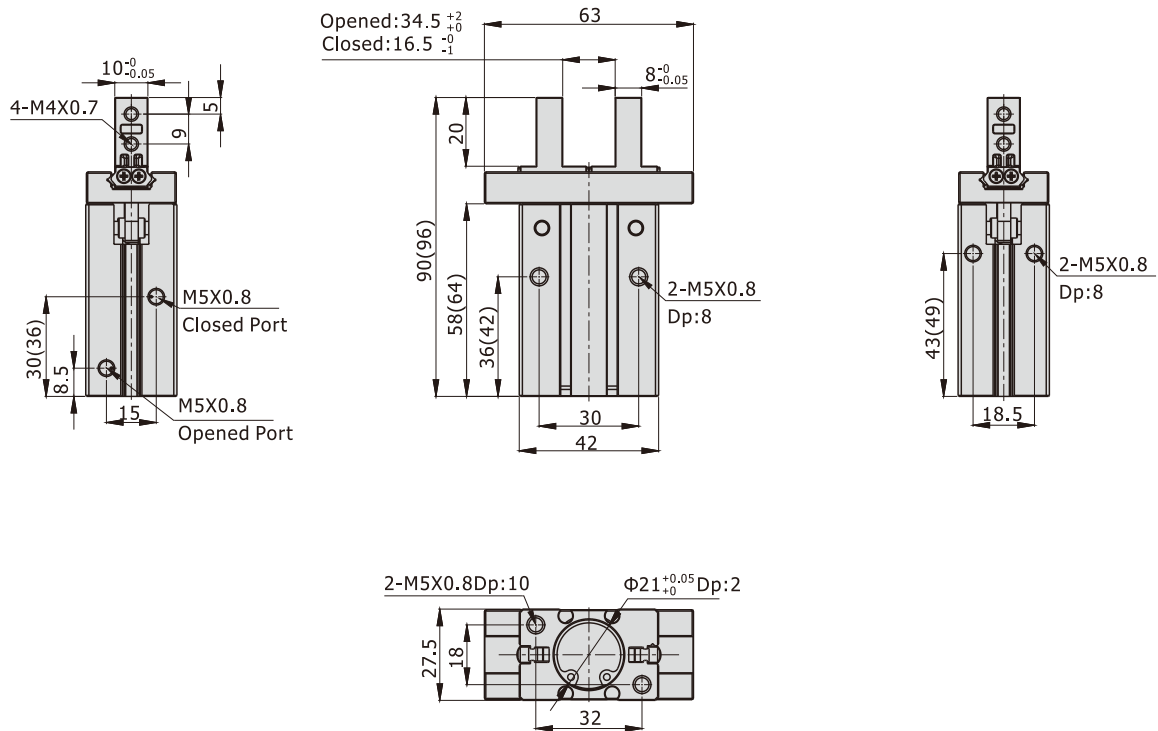
Thru.hole mounting type(N type)



Bottom mounting type(F type)

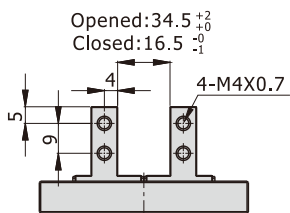


HFKL20

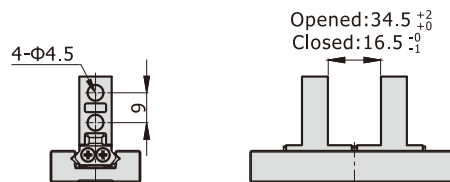


[Note]The values in "()" in the above table are single acting type sizes.

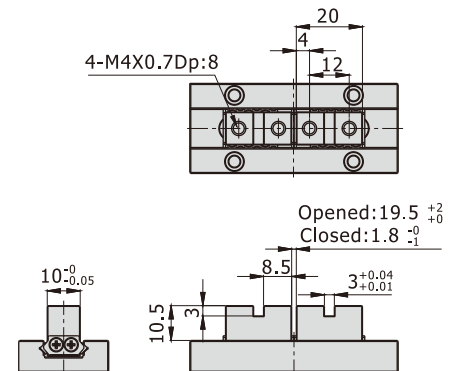
Side mounting type(B type)



Thru.hole mounting type(N type)



Bottom mounting type(F type)

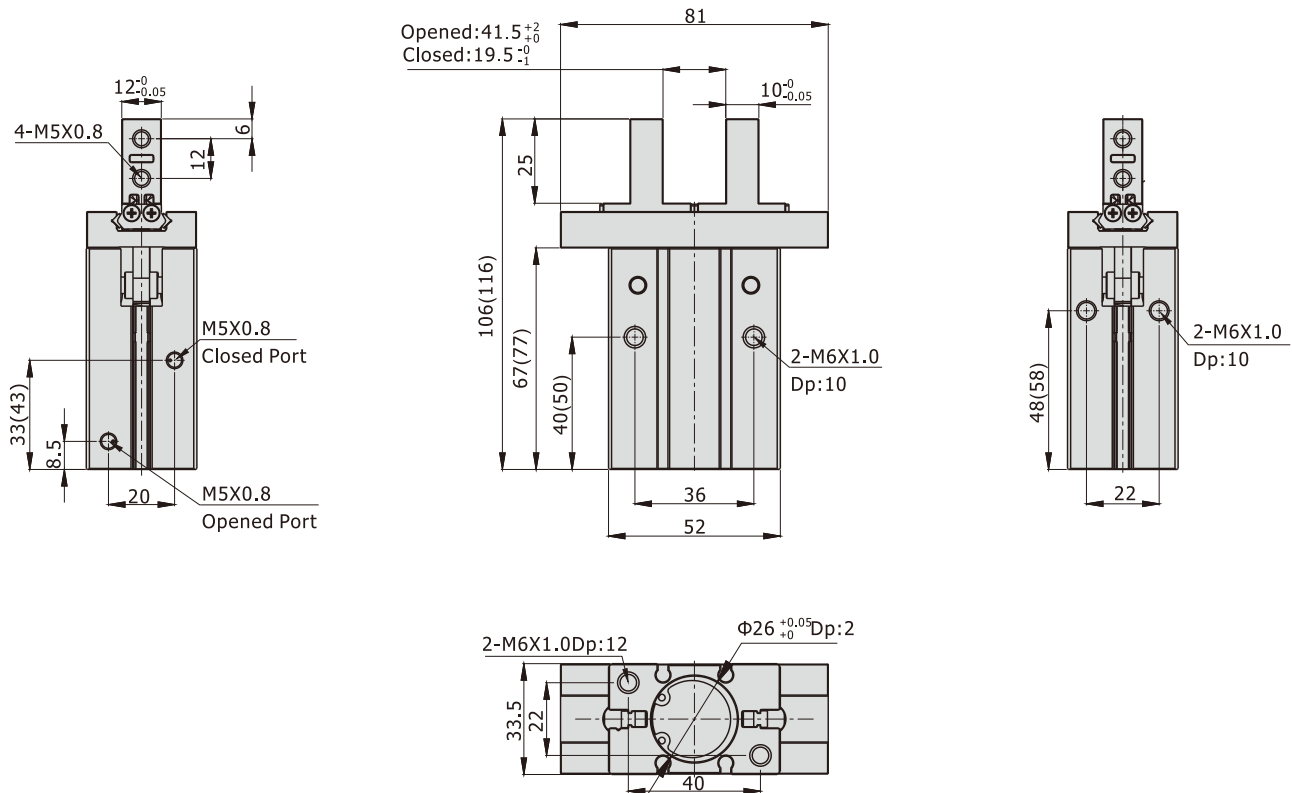


Air gripper(parallel style——Roller bearing/Longer stroke) **AIRTAC**

HFKL Series

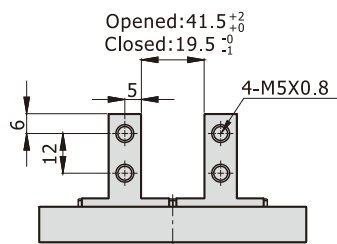
Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$

HFKL25

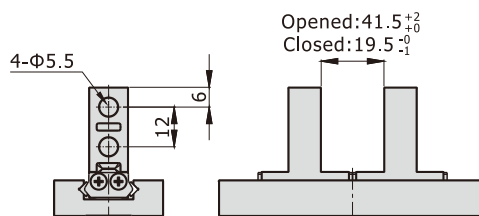


[Note]The values in "()" in the above table are single acting type sizes.

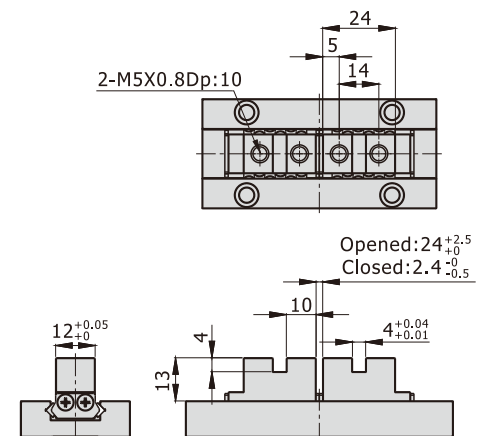
Side mounting type(B type)



Thru.hole mounting type(N type)



Bottom mounting type(F type)



How to select product \ Installation and application

Please refer to HFK series for details.



Air gripper—HFC Series

Parallel open/close style



Ordering code

HFC Y 20



① Model

HFC: Air finger
(Double acting, parallel type)

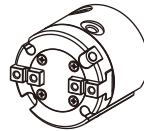
③ Bore size

16 20 25 32 40 50 63

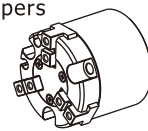
HFC series are all attached with magnet.

② Finger type

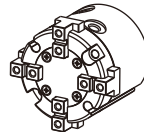
I : Two grippers



Y : Three grippers



X : Four grippers



Product feature

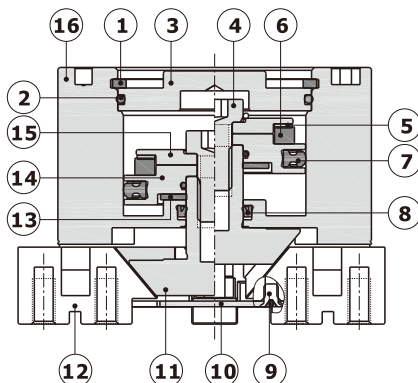
1. Uniform block is adopted in the interior of the air gripper to afford larger gripper force.
2. The bumper is adopted in the front of piston, which can reduce the noise of metal bump.
3. A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of repeated dismounting and positioning.
4. Precision repeating snatch which adopted roboticized equipment.
5. Kinds of series and styles for you to choice which snatch multiform workpiece.

Specification

Bore size (mm)	16	20	25	32	40	50	63
Acting type	Double acting						
Fluid	Air(to be filtered by 40μm 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	CMSH / DMSH / EMSH						
Port size	M3×0.5			M5×0.8			

[Note] Refer to P535 for detail of sensor.

Inner structure



NO.	Item	NO.	Item
1	C clip	9	Countersink screw
2	O-ring	10	Cover blank
3	Back cover	11	Piston rod
4	Screw	12	Gripper
5	Magnet washer	13	Bumper
6	Magnet	14	Piston
7	Piston seal	15	Magnet holder
8	Rod packing	16	Body

Gripping force and stroke

Model	Gripping force per finger Effective valve(N)		Opening/Closing stroke (Both sides)(mm)	
	Internal	External		
2 grippers	HFCI16	23	21	4
	HFCI20	42	37	4
	HFCI25	71	63	6
	HFCI32	123	111	8
	HFCI40	195	177	8
	HFCI50	306	280	12
	HFCI63	537	502	16
3 grippers	HFCY16	16	14	4
	HFCY20	28	25	4
	HFCY25	47	42	6
	HFCY32	82	74	8
	HFCY40	130	118	8
	HFCY50	204	187	12
	HFCY63	359	335	16
4 grippers	HFCX16	12	10	4
	HFCX20	21	19	4
	HFCX25	35	31	6
	HFCX32	61	55	8
	HFCX40	97	88	8
	HFCX50	153	140	12
	HFCX63	268	251	16

Note) The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm(Φ16~Φ25) or L=30mm(Φ32~Φ63).

Add) Please refer to page 468 for the definition of "L".

How to select product

Please select pneumatic finger according to the following steps:

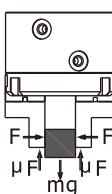
① The selection of the effective gripping force



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 : 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: $n \times \mu F > mg$	
		$\mu=0.2$ $F = \frac{mg}{2 \times 0.2} \times 4 = 10 \times mg$	$\mu=0.1$ $F = \frac{mg}{2 \times 0.1} \times 4 = 20 \times mg$
	Safety coefficient is a, so F is: $F = \frac{mg}{n \times \mu} \times a$	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.

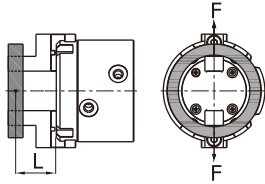
1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Air gripper(parallel open/close style)

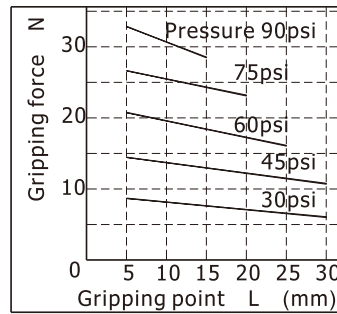
HFC Series

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

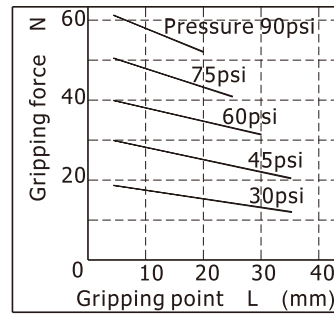
Opened gripping force(I Type)



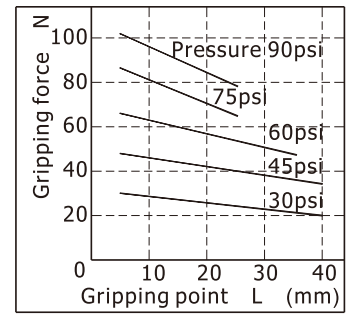
HFCI16



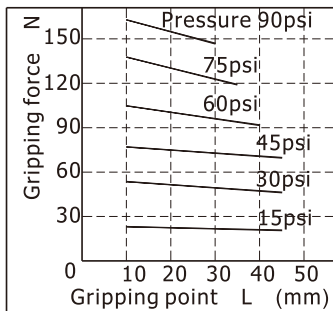
HFCI20



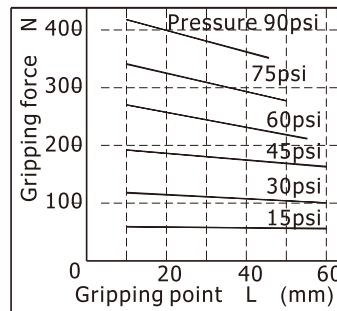
HFCI25



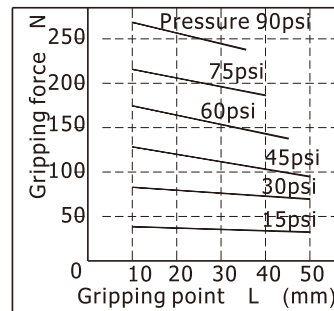
HFCI32



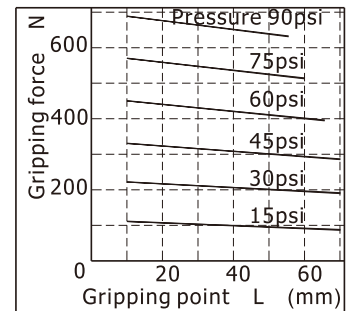
HFCI50



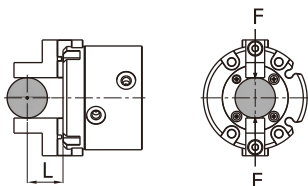
HFCI40



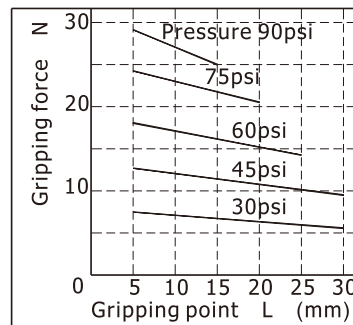
HFCI63



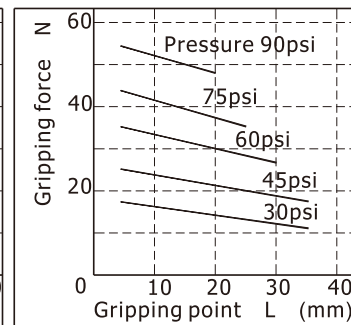
Closed gripping force(I Type)



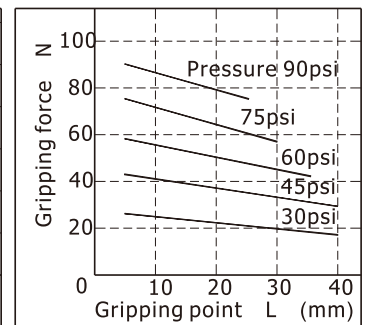
HFCI16



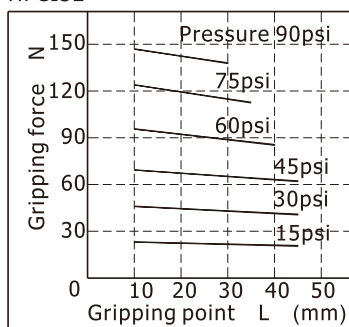
HFCI20



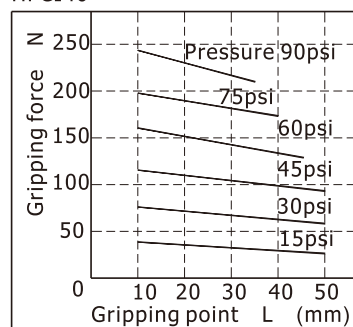
HFCI25



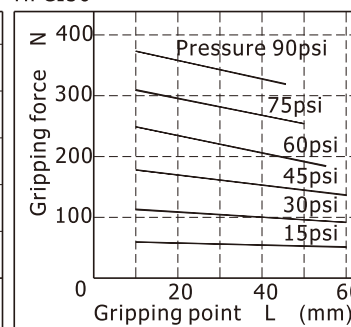
HFCI32



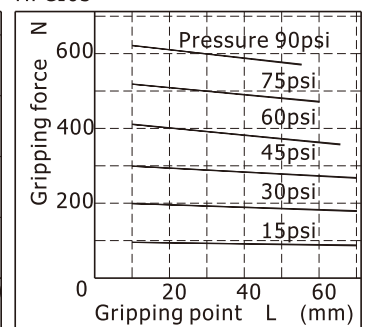
HFCI40



HFCI50



HFCI63

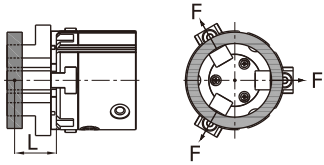


Air gripper(parallel open/close style)

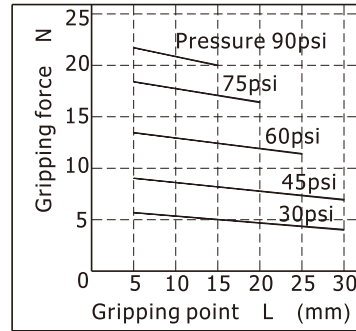
HFC Series

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

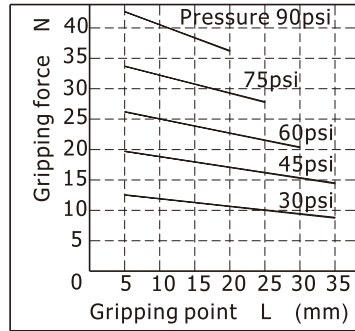
Opened gripping force(Y Type)



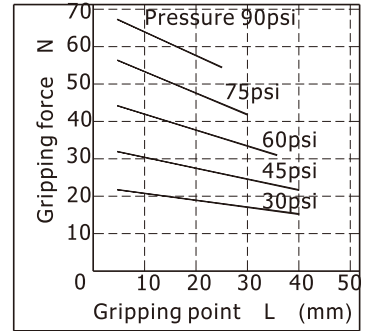
HFCY16



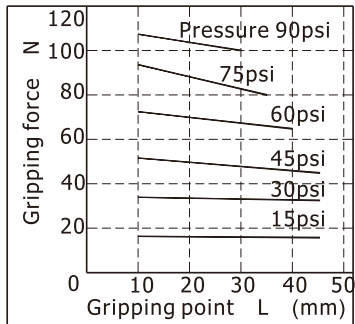
HFCY20



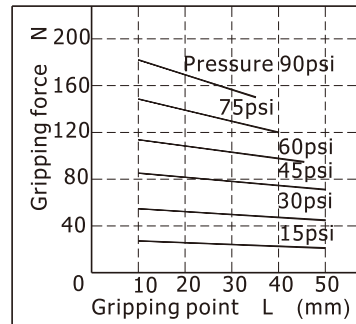
HFCY25



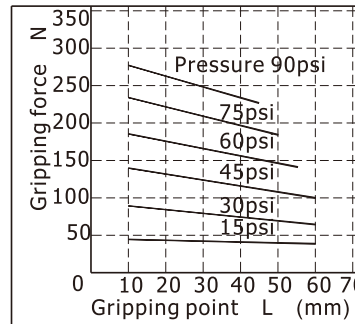
HFCY32



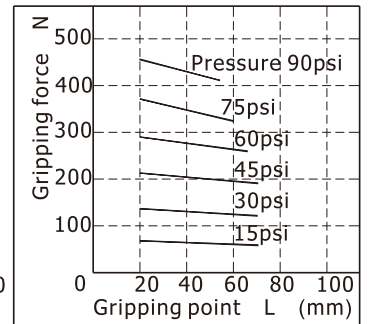
HFCY40



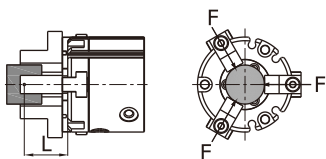
HFCY50



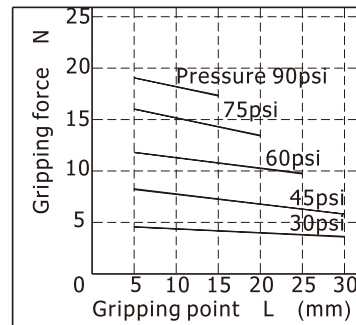
HFCY63



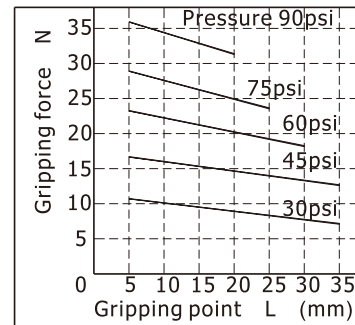
Closed gripping force(Y Type)



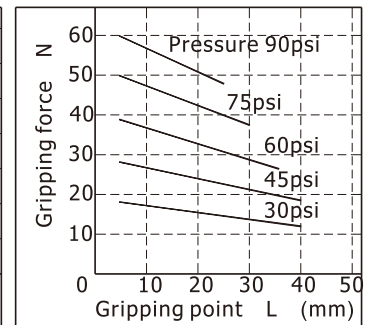
HFCY16



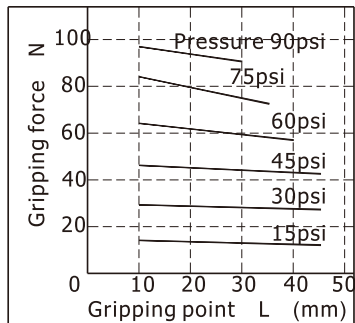
HFCY20



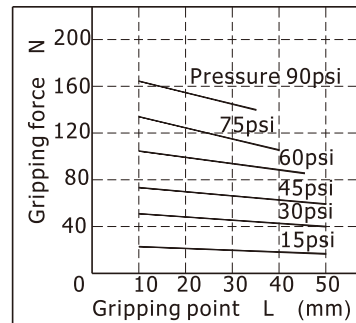
HFCY25



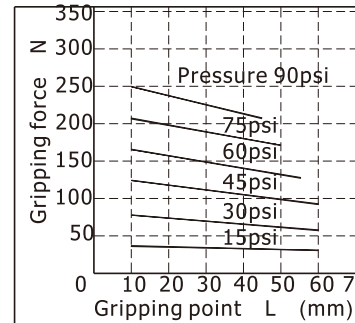
HFCY32



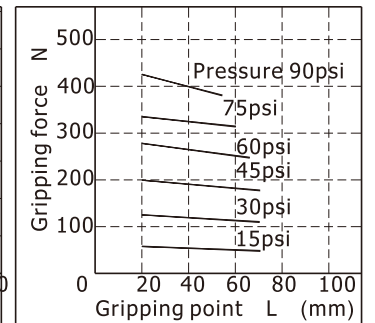
HFCY40



HFCY50



HFCY63

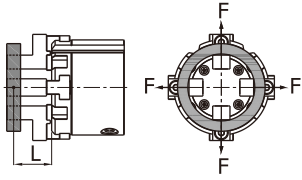


Air gripper(parallel open/close style)

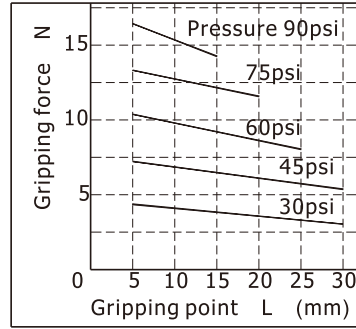
HFC Series

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

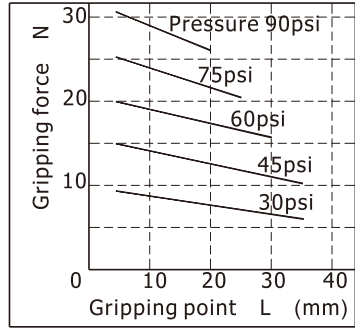
Opened gripping force(X Type)



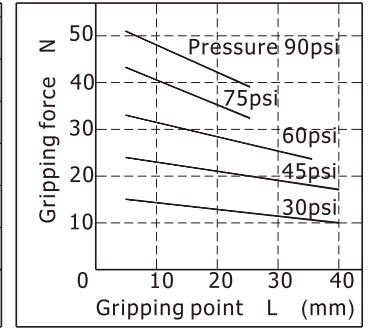
HFCX16



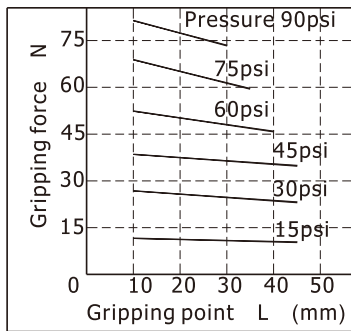
HFCX20



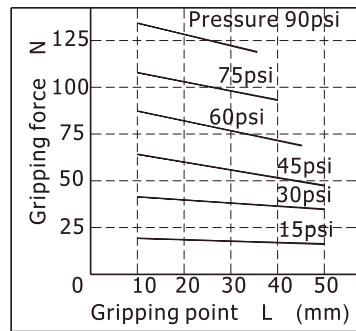
HFCX25



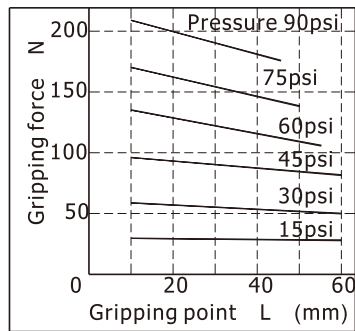
HFCX32



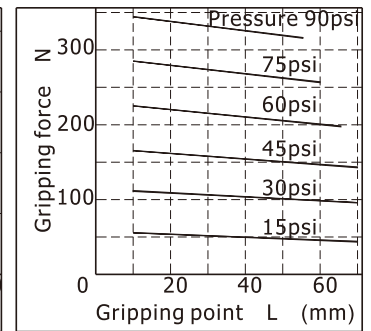
HFCX40



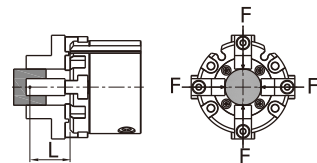
HFCX50



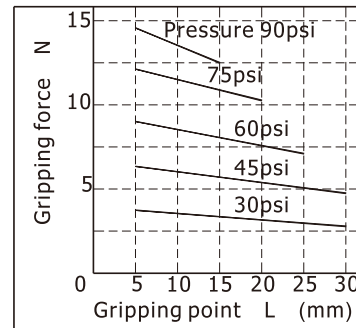
HFCX63



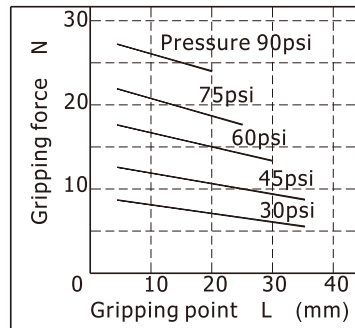
Closed gripping force(X Type)



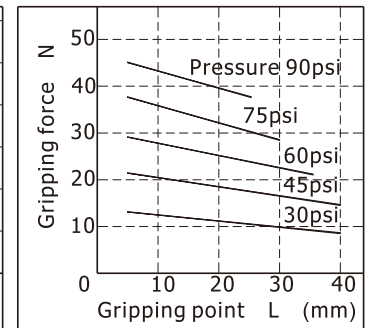
HFCX16



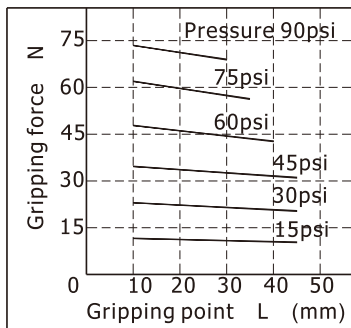
HFCX20



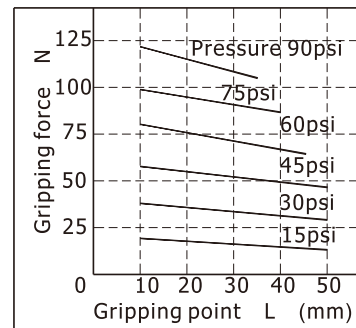
HFCX25



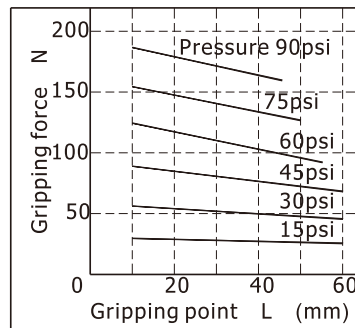
HFCX32



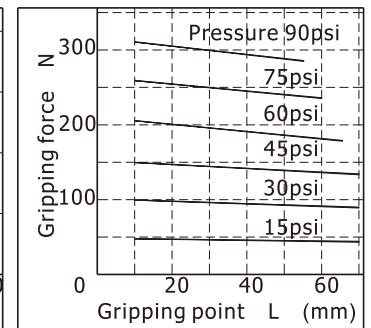
HFCX40



HFCX50



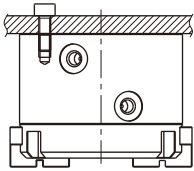
HFCX63



Installation and application

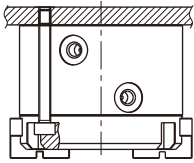
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. 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



Model	Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
HFCI HFCX	16	M4×0.7	2.1	8	Φ17 ^{+0.05} ₀	1.5
	20	M4×0.7	2.1	8	Φ21 ^{+0.05} ₀	1.5
	25	M4×0.7	2.1	8	Φ26 ^{+0.05} ₀	1.5
	32	M5×0.8	4.3	10	Φ34 ^{+0.05} ₀	2
	40	M6×1.0	7.3	12	Φ42 ^{+0.05} ₀	2
	50	M6×1.0	7.3	12	Φ52 ^{+0.05} ₀	2
HFCY	63	M6×1.0	7.3	12	Φ65 ^{+0.05} ₀	2.5
	16	M3×0.5	0.88	6	Φ17 ^{+0.05} ₀	1.5
	20	M3×0.5	0.88	6	Φ21 ^{+0.05} ₀	1.5
	25	M4×0.7	2.1	8	Φ26 ^{+0.05} ₀	1.5
	32	M4×0.7	2.1	8	Φ34 ^{+0.05} ₀	2
	40	M5×0.8	4.3	10	Φ42 ^{+0.05} ₀	2
	50	M5×0.8	4.3	10	Φ52 ^{+0.05} ₀	2
	63	M6×1.0	7.3	12	Φ65 ^{+0.05} ₀	2.5

The installation of the front through hole

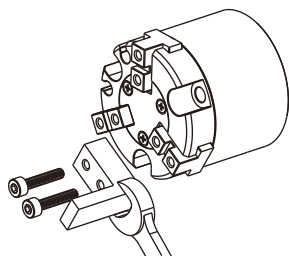


Model	Bore size	The bolts type	Max. locking moment(Nm)
HFCI HFCX	16	M3×0.5	0.88
	20	M3×0.5	0.88
	25	M3×0.5	0.88
	32	M4×0.7	2.1
	40	M5×0.8	4.3
	50	M5×0.8	4.3
HFCY	63	M5×0.8	4.3
	16	M3×0.5	0.88
	20	M3×0.5	0.88
	25	M4×0.7	2.1
	32	M4×0.7	2.1
	40	M5×0.8	4.3
	50	M5×0.8	4.3
	63	M6×1.0	7.3

6. 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 moment(Nm)
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

Air gripper(parallel open/close style)

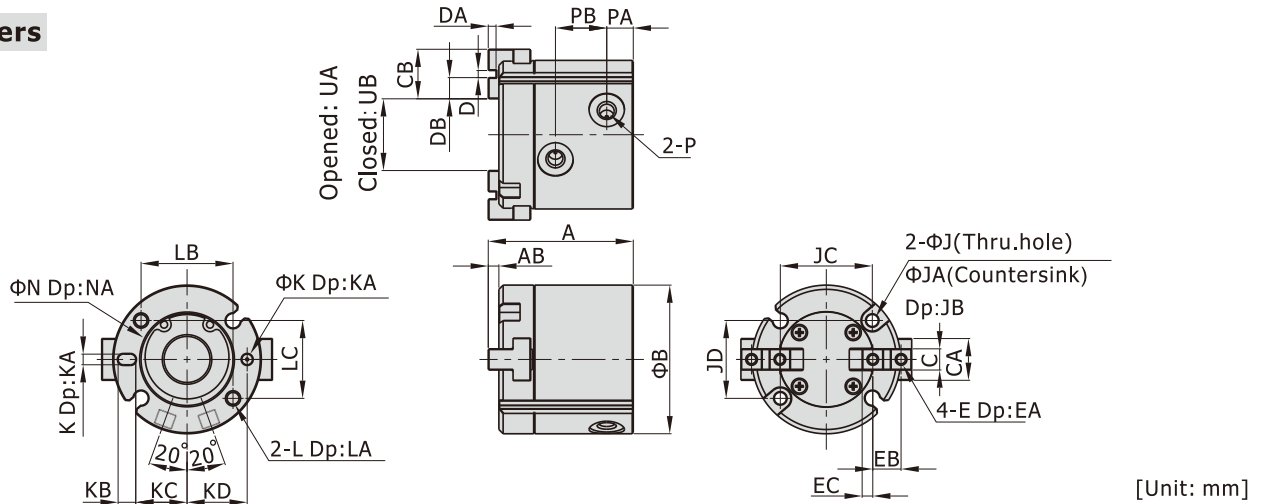
HFC Series

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

Dimensions

Two grippers

$\Phi 16 \sim \Phi 25$

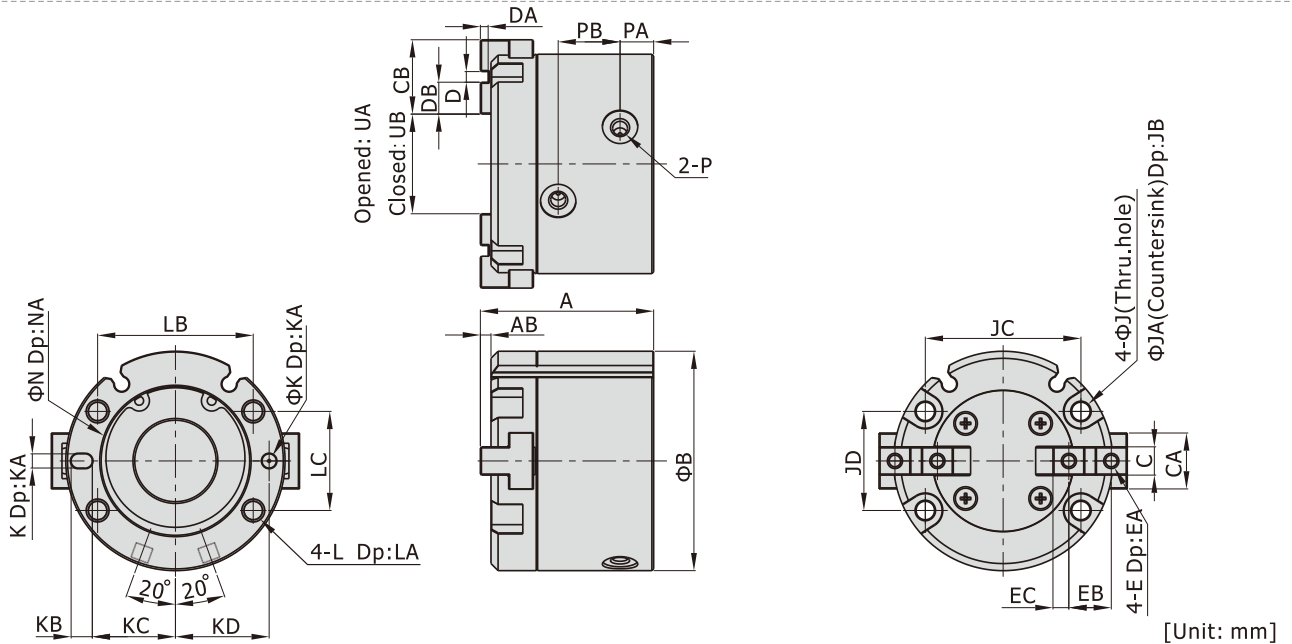


[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
HFCI16	35	3	30	5 ^{-0.01/-0.03}	8	10	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	4	M3×0.5	5	6	2	3.4	6	6	18	16
HFCI20	39	3	36	6 ^{-0.01/-0.03}	10	12	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	5	M3×0.5	5	7	2.5	3.4	6	6	24	18
HFCI25	41	3	42	6 ^{-0.01/-0.03}	12	14	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	6	M3×0.5	5	8	3	3.4	6	6	26	22

Model\Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCI16	2 ^{+0.04/+0.01}	2	3	11	12.5	M4×0.7	8	18	16	17 ^{+0.05/0}	1.5	M3×0.5	7	10	14	10
HFCI20	2 ^{+0.04/+0.01}	2	3	13	14.5	M4×0.7	8	24	18	21 ^{+0.05/0}	1.5	M5×0.8	7	13	16	12
HFCI25	3 ^{+0.04/+0.01}	3	5	14.5	17	M4×0.7	8	26	22	26 ^{+0.05/0}	1.5	M5×0.8	7.5	14.5	20	14

$\Phi 32 \sim \Phi 63$



[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
HFCI32	45	3	55	8 ^{-0.01/-0.03}	14	20	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	9	M4×0.7	8	11	4.5	4.2	8	9	38	25
HFCI40	49	3	62	8 ^{-0.01/-0.03}	16	21	3 ^{+0.04/+0.01}	2 ^{+0.2/0}	9	M4×0.7	8	12	4.5	5.2	9.5	9	44	28
HFCI50	57	3	70	10 ^{-0.01/-0.03}	18	24	4 ^{+0.04/+0.01}	2 ^{+0.2/0}	10	M5×0.8	9	14	5	5.2	9.5	12	52	34
HFCI63	68	4	86	12 ^{-0.01/-0.03}	24	28	6 ^{+0.04/+0.01}	3 ^{+0.2/0}	11	M5×0.8	9	17	5.5	5.2	9.5	14	66	38

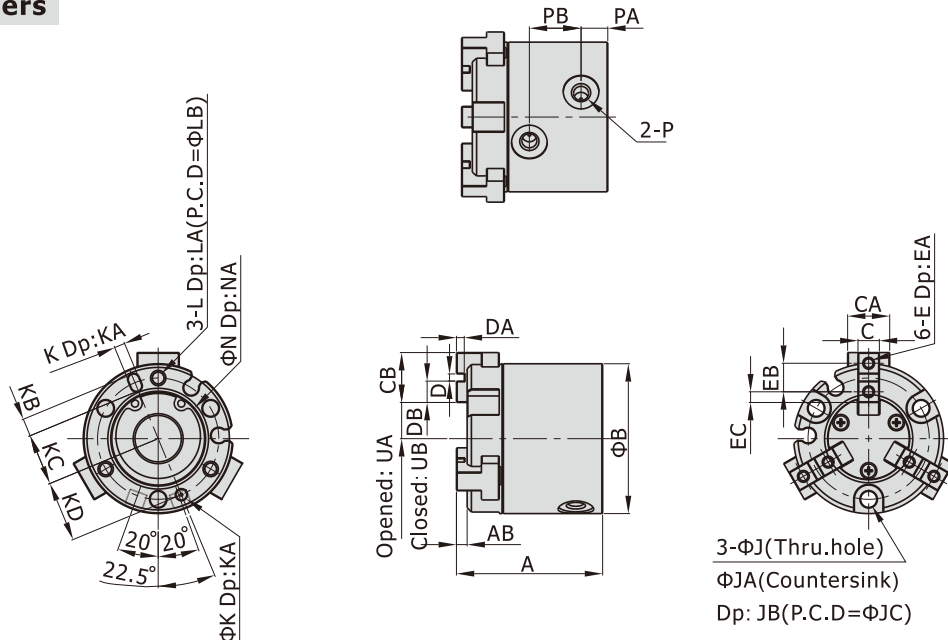
Model\Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCI32	3 ^{+0.04/+0.01}	3	5	20.5	23	M5×0.8	10	38	25	34 ^{+0.05/0}	2	M5×0.8	8.5	16	24	16
HFCI40	4 ^{+0.04/+0.01}	4	6	23.5	26.5	M6×1.0	12	44	28	42 ^{+0.05/0}	2	M5×0.8	9.5	17.5	28	20
HFCI50	4 ^{+0.04/+0.01}	4	6	28	31	M6×1.0	12	52	34	52 ^{+0.05/0}	2	M5×0.8	9.5	21	34	22
HFCI63	5 ^{+0.04/+0.01}	5	7	34.5	38	M6×1.0	12	66	38	65 ^{+0.05/0}	2.5	M5×0.8	12	24	46	30

Air gripper(parallel open/close style)

HFC Series

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

Three grippers



[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC
HFCY16	35	3	30	5 ^{-0.01} _{-0.03}	8	10	2 ^{+0.04} _{+0.01}	2 ^{+0.2} ₀	4	M3×0.5	5	6	2	3.4	6	6	25
HFCY20	39	3	36	6 ^{-0.01} _{-0.03}	10	12	2 ^{+0.04} _{+0.01}	2 ^{+0.2} ₀	5	M3×0.5	5	7	2.5	3.4	6	6	29
HFCY25	41	3	42	6 ^{-0.01} _{-0.03}	12	14	2 ^{+0.04} _{+0.01}	2 ^{+0.2} ₀	6	M3×0.5	5	8	3	4.5	8	9	34
HFCY32	45	3	52	8 ^{-0.01} _{-0.03}	14	20	2 ^{+0.04} _{+0.01}	2 ^{+0.2} ₀	9	M4×0.7	8	11	4.5	4.5	8	9	44
HFCY40	49	3	62	8 ^{-0.01} _{-0.03}	16	21	3 ^{+0.04} _{+0.01}	2 ^{+0.2} ₀	9	M4×0.7	8	12	4.5	5.5	9.5	9	53
HFCY50	57	3	70	10 ^{-0.01} _{-0.03}	18	24	4 ^{+0.04} _{+0.01}	2 ^{+0.2} ₀	10	M5×0.8	9	14	5	5.5	9.5	12	62
HFCY63	68	4	86	12 ^{-0.01} _{-0.03}	24	28	6 ^{+0.04} _{+0.01}	3 ^{+0.2} ₀	11	M5×0.8	9	17	5.5	6.6	11	14	76

Model\Item	K	KA	KB	KC	KD	L	LA	LB	N	NA	P	PA	PB	UA	UB
HFCY16	2 ^{+0.04} _{+0.01}	2	3	11	12.5	M3×0.5	6	25	17 ^{+0.05} ₀	1.5	M3×0.5	7	10	7	5
HFCY20	2 ^{+0.04} _{+0.01}	2	3	13	14.5	M3×0.5	6	29	21 ^{+0.05} ₀	1.5	M5×0.8	7	13	8	6
HFCY25	3 ^{+0.04} _{+0.01}	3	5	14.5	17	M4×0.7	8	34	26 ^{+0.05} ₀	1.5	M5×0.8	7.5	14.5	10	7
HFCY32	3 ^{+0.04} _{+0.01}	3	5	19.5	22	M4×0.7	8	44	34 ^{+0.05} ₀	2	M5×0.8	8.5	16	12	8
HFCY40	4 ^{+0.04} _{+0.01}	4	6	23.5	26.5	M5×0.8	10	53	42 ^{+0.05} ₀	2	M5×0.8	9.5	17.5	14	10
HFCY50	4 ^{+0.04} _{+0.01}	4	6	28	31	M5×0.8	10	62	52 ^{+0.05} ₀	2	M5×0.8	9.5	21	17	11
HFCY63	5 ^{+0.04} _{+0.01}	5	7	34.5	38	M6×1.0	12	76	65 ^{+0.05} ₀	2.5	M5×0.8	12	24	23	15

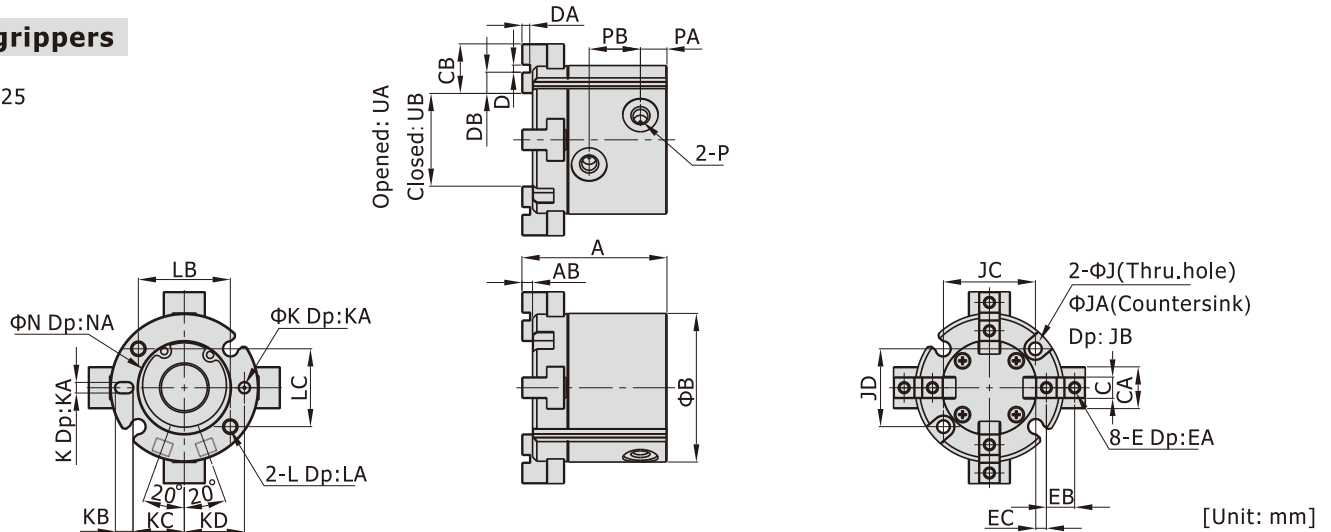
Air gripper(parallel open/close style)

HFC Series

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

Four grippers

$\Phi 16 \sim \Phi 25$

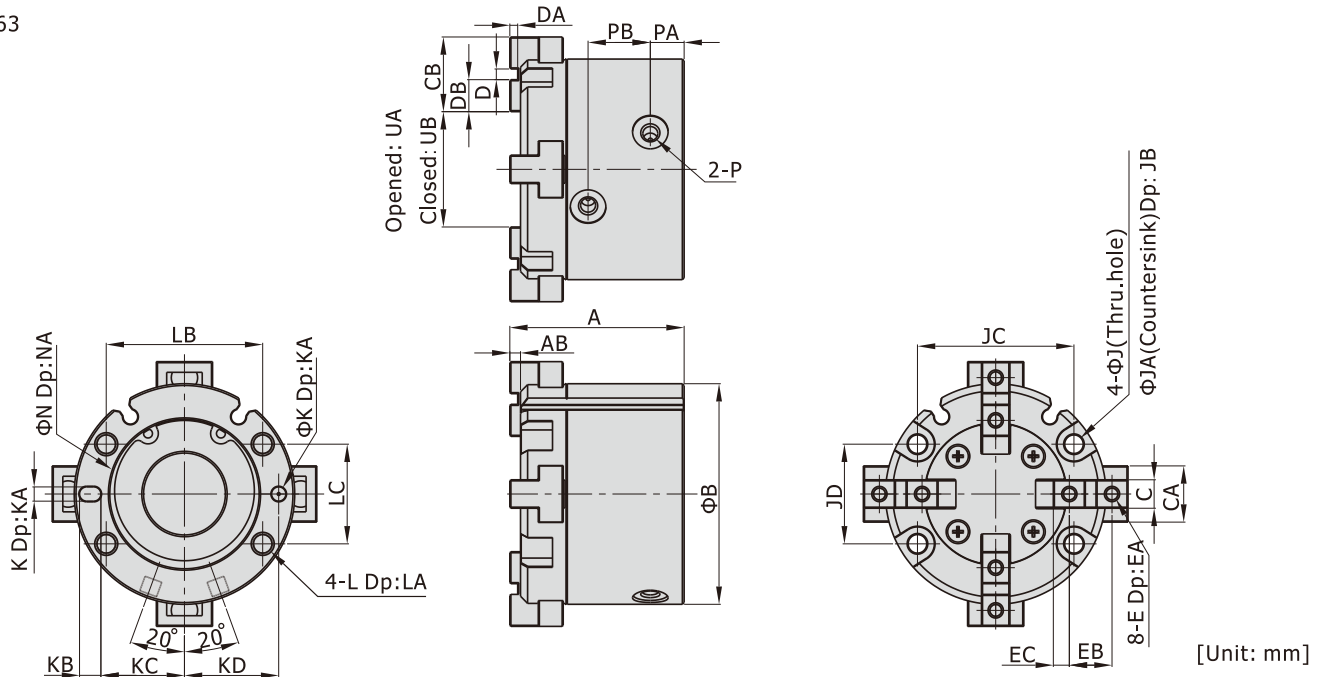


[Unit: mm]

Model/Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
HFCX16	35	3	30	5 ^{-0.01/-0.03}	8	10	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	4	M3×0.5	5	6	2	3.4	6	6	18	16
HFCX20	39	3	36	6 ^{-0.01/-0.03}	10	12	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	5	M3×0.5	5	7	2.5	3.4	6	6	24	18
HFCX25	41	3	42	6 ^{-0.01/-0.03}	12	14	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	6	M3×0.5	5	8	3	3.4	6	6	26	22

Model/Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCX16	2 ^{+0.05/0}	2	3	11	12.5	M4×0.7	8	18	16	17 ^{+0.05/0}	1.5	M3×0.5	7	10	17	13
HFCX20	2 ^{+0.05/0}	2	3	13	14.5	M4×0.7	8	24	18	21 ^{+0.05/0}	1.5	M5×0.8	7	13	19	15
HFCX25	3 ^{+0.05/0}	3	5	14.5	17	M4×0.7	8	26	22	26 ^{+0.05/0}	1.5	M5×0.8	7.5	14.5	26	20

$\Phi 32 \sim \Phi 63$



[Unit: mm]

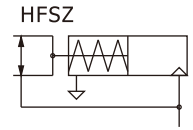
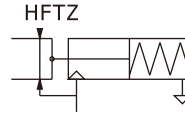
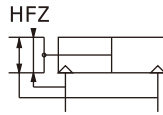
Model/Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
HFCX32	45	3	55	8 ^{-0.01/-0.03}	14	20	2 ^{+0.04/+0.01}	2 ^{+0.2/0}	9	M4×0.7	8	11	4.5	4.2	8	9	38	25
HFCX40	49	3	62	8 ^{-0.01/-0.03}	16	21	3 ^{+0.04/+0.01}	2 ^{+0.2/0}	9	M4×0.7	8	12	4.5	5.2	9.5	9	44	28
HFCX50	57	3	70	10 ^{-0.01/-0.03}	18	24	4 ^{+0.04/+0.01}	2 ^{+0.2/0}	10	M5×0.8	9	14	5	5.2	9.5	12	52	34
HFCX63	68	4	86	12 ^{-0.01/-0.03}	24	28	6 ^{+0.04/+0.01}	3 ^{+0.2/0}	11	M5×0.8	9	17	5.5	5.2	9.5	14	66	38

Model/Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCX32	3 ^{+0.04/+0.01}	3	5	20.5	23	M5×0.8	10	38	25	34 ^{+0.05/0}	2	M5×0.8	8.5	16	28	20
HFCX40	4 ^{+0.04/+0.01}	4	6	23.5	26.5	M6×1.0	12	44	28	42 ^{+0.05/0}	2	M5×0.8	9.5	17.5	32	24
HFCX50	4 ^{+0.04/+0.01}	4	6	28	31	M6×1.0	12	52	34	52 ^{+0.05/0}	2	M5×0.8	9.5	21	38	26
HFCX63	5 ^{+0.04/+0.01}	5	7	34.5	38	M6×1.0	12	66	38	65 ^{+0.05/0}	2.5	M5×0.8	12	24	51	35



Air gripper—HFZ Series

Parallel style with guide track—Ball bearing



Ordering code

HFZ 20 □

① ② ③

① Model

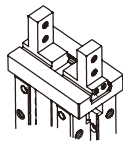
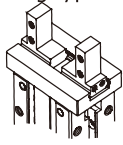
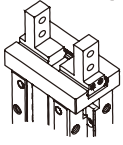
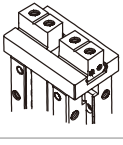
HFZ: Air finger(Double acting)
 HFSZ: Air finger
 (Single acting and normally closed)
 HFTZ: Air finger
 (Single acting and normally opened)

② Bore size

6 10 16 20 25 32 40

HFZ series are all attached with magnet.
 Sensor should be ordered individually.

③ Finger type

Bore size	Finger type	
6 10 16 20 25 32 40	Blank: Standard 	
6	B: Side mounting type 	N: Thru.hole mounting type 
	F: Bottom mounting type 	

Specification

Bore size (mm)		6	10	16	20	25	32	40	
Acting type		Double acting		Single acting					
Fluid		Air(to be filtered by 40μm filter element)							
Operating pressure	Double acting	Φ6, Φ10	28~100psi(0.2~0.7MPa)						
		Others	22~100psi(0.15~0.7MPa)						
	Single acting	Φ6, Φ10	50~100psi(0.35~0.7MPa)						
Others		36~100psi(0.25~0.7MPa)							
Temperature		-20~70°C							
Lubrication		Not required							
Repeatability mm		±0.01						±0.02	
Max. frequency		180(c.p.m)						60(c.p.m)	
Sensor switches		CMSH DMSH,EMSH			CMSG, DMSG, EMSG CMSH,DMSH,EMSH				
Port size		M3×0.5			M5×0.8				

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style——Ball bearing)

HFZ Series

Bore size: $\Phi 6$, $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

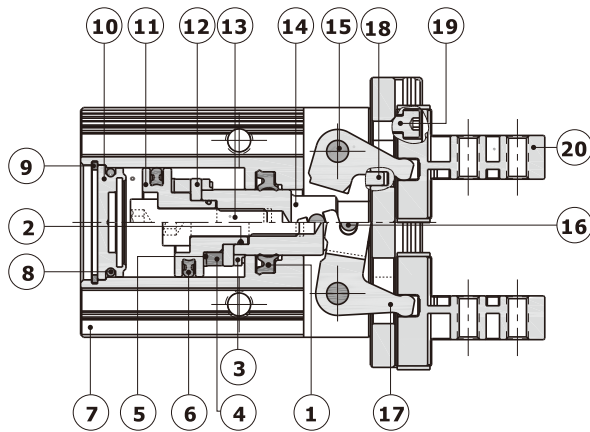
Gripping force and stroke

Acting type		Double acting(HFZ)							Single acting_NO (HFTZ)							Single acting_NC (HFSZ)						
Bore size		6	10	16	20	25	32	40	6	10	16	20	25	32	40	6	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	3.3	11	34	45	69	160	255	1.9	7	27	35	55	133	220	-	-	-	-	-	-	-
	Internal	6.1	17	45	68	102	195	320	-	-	-	-	-	-	-	3.7	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		3	4	6	10	14	22	30	3	4	6	10	14	22	30	3	4	6	10	14	22	30
Weight (g)	F Type	24	-	-	-	-	-	-	25	-	-	-	-	-	-	25	-	-	-	-	-	-
	Others	25	56	124	236	428	729	1268	26	57	125	238	430	778	1365	26	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 442 for the definition of "L".

Inner structure



NO.	Item
1	Rod packing
2	O-ring
3	Bumper
4	Magnet
5	Magnet washer
6	Piston seal
7	Body
8	O-ring
9	C clip
10	Back cover
11	Piston
12	Magnet fixed flake
13	Screw
14	Piston rod
15	Pin
16	Pin
17	Curved bar
18	Pin
19	Countersink screw
20	Assembly of clamping jaw and guide rail

Air gripper(parallel style)——Ball bearing



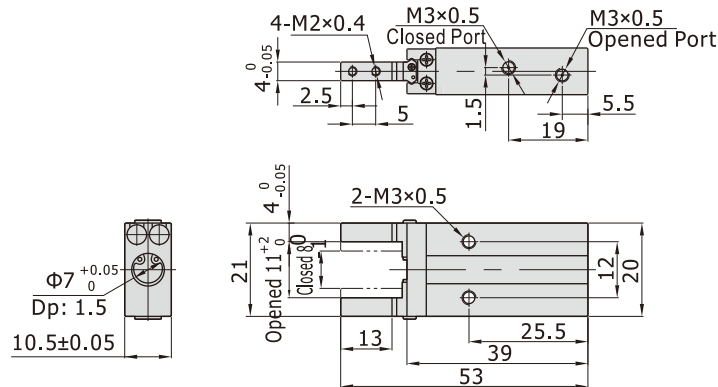
HFZ Series

Bore size: $\Phi 6$, $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

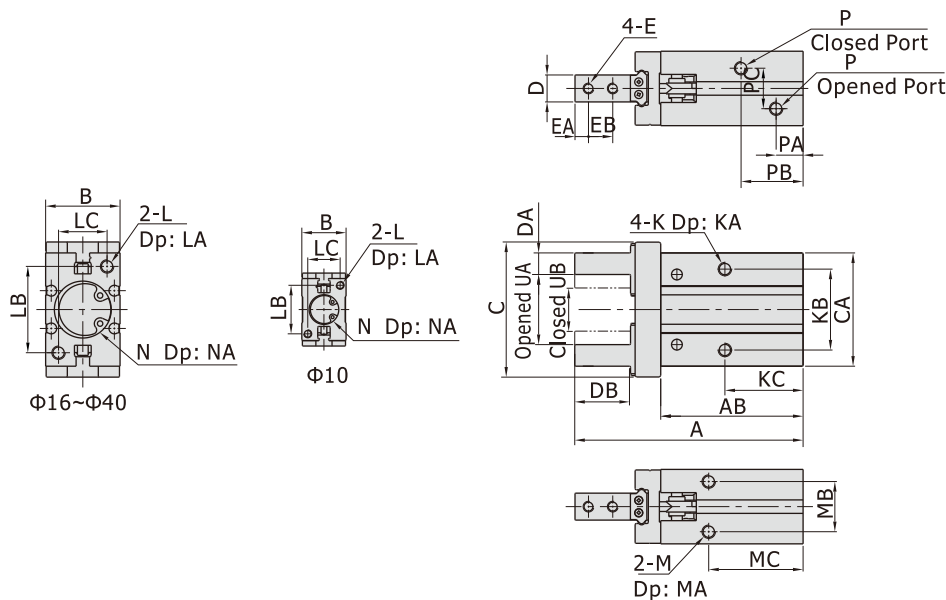
Dimensions

Standard

$\Phi 6$



$\Phi 10 \sim \Phi 40$



[Unit: mm]

Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA	EB	K	KA	KB	KC	L
HFZ10	57	37.5	16.5	30	23	5 ^{-0.05} ₀	4 ⁰ _{-0.05}	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23	M3×0.5
HFZ16	67.5	42.5	23.5	39	30.5	8 ^{-0.05} ₀	5 ⁰ _{-0.05}	15	M3×0.5	4	7	M4×0.7	7	24	24.5	M4×0.7
HFZ20	85	53	27.5	53	42	10 ^{-0.05} ₀	8 ⁰ _{-0.05}	20	M4×0.7	5	9	M5×0.8	8	30	29	M5×0.8
HFZ25	103	64	33.5	71	52	12 ^{-0.05} ₀	10 ⁰ _{-0.05}	25	M5×0.8	6	12	M6×1.0	10	36	30	M6×1.0
HFZ32	113(122)	67(76)	40	106	60	15 ^{-0.05} ₀	12 ⁰ _{-0.05}	29	M6×1.0	7	14	M6×1.0	10	46	40(49)	M6×1.0
HFZ40	139(152)	83(96)	48	132	72	18 ^{-0.05} ₀	14 ⁰ _{-0.05}	36	M8×1.25	9	17	M8×1.25	12	56	49(62)	M8×1.25

Model\Item	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFZ10	6	18	12	M3×0.5	6	11.5	27	$\Phi 11^{+0.05}$ ₀	1.5	M3×0.5	7	19	10	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFZ16	8	22	15	M4×0.7	4.5	16	30	$\Phi 17^{+0.05}$ ₀	1.5	M5×0.8	7.5	19	13	21 ⁺² ₀	15 ⁰ ₋₁
HFZ20	10	32	18	M5×0.8	8	18.5	35	$\Phi 21^{+0.05}$ ₀	2	M5×0.8	9.5	23	15	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFZ25	12	40	22	M6×1.0	10	22	36.5	$\Phi 26^{+0.05}$ ₀	2	M5×0.8	9	24	20	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFZ32	12	46	26	M6×1.0	10	26	48(57)	$\Phi 34^{+0.05}$ ₀	2.5	M5×0.8	9.5	31(40)	24	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFZ40	16	56	32	M8×1.25	12	32	58(71)	$\Phi 42^{+0.05}$ ₀	2.5	M5×0.8	10.5	38(50)	28	60 ^{+2.5} ₀	30 ⁰ ₋₁

[Note] The values in "()" in the above table are single acting type sizes.

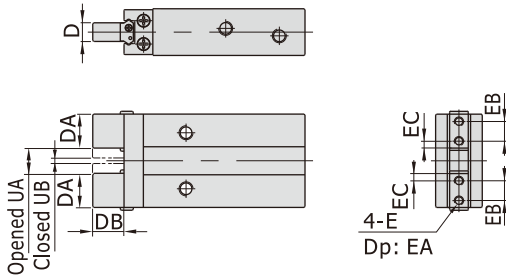
Air gripper(parallel style——Ball bearing)

HFZ Series

Bore size: $\Phi 6$, $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Bottom mounting type(F type)

$\Phi 6$



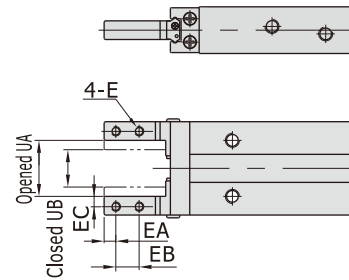
[Unit: mm]

Model\Item	D	DA	DB	EA	EB	E
HFZ6F	4 _{-0.05} ⁰	7.5	7	3	3.5	M2×0.4

Model\Item	UA(Opened)	UB(Closed)
HFZ6F	5 ₀ ^{+1.5}	1.8 _{-0.5} ⁰

Side mounting type(B type)

$\Phi 6$



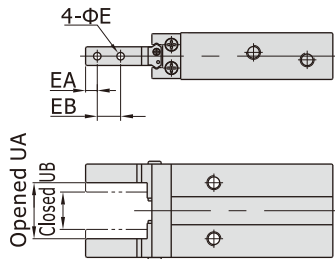
[Unit: mm]

Model\Item	E	EA	EB	EC
HFZ6B	M2×0.4	2.5	5	2

Model\Item	UA(Opened)	UB(Closed)
HFZ6B	11 ₀ ⁺²	8 ₋₁ ⁰

Thru-hole mounting type(N type)

$\Phi 6$



[Unit: mm]

Model\Item	E	EA	EB
HFZ6N	2.3	2.5	5

Model\Item	UA(Opened)	UB(Closed)
HFZ6N	11 ₀ ⁺²	8 ₋₁ ⁰

[Note] The other dimensions are the same as standard type.

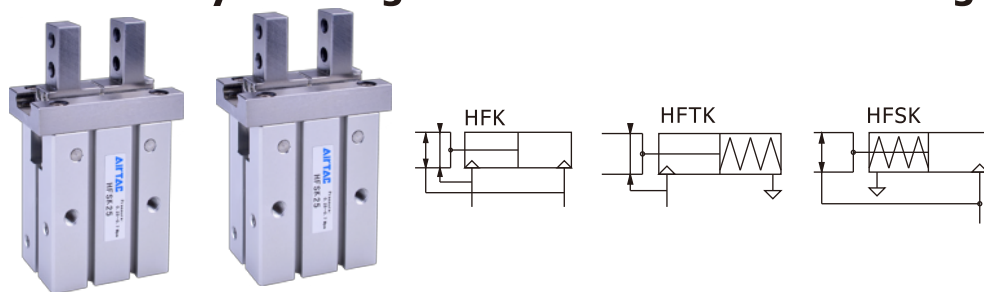
How to select product \ Installation and application

Please refer to HFK series for details.



Air gripper—HFK Series

Parallel style with guide track—Roller bearing



Ordering code

HFK 20 □

① ② ③

① Model

HFK: Air finger(Double acting)

HFSK: Air finger
(Single acting and normally closed)

HFTK: Air finger
(Single acting and normally opened)

② Bore size

10 16 20 25 32 40

HFK series are all attached with magnet.
Sensor should be ordered individually.

③ Finger type

Bore size	Finger type	
10 16 20 25 32 40	Blank: Standard	B: Side mounting type
	R: Narrow type	F: Bottom mounting type
10 16 20 25	N: Thru.hole mounting type	W: Side mounting and arrow type
	M: Thru.hole mounting and narrow type	

Specification

Bore size (mm)		10	16	20	25	32	40
Acting type		Double acting		Single acting			
Fluid		Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	Φ10	28~100psi(0.2~0.7MPa)				
		Others	22~100psi(0.15~0.7MPa)				
	Single acting	Φ10	50~100psi(0.35~0.7MPa)				
		Others	36~100psi(0.25~0.7MPa)				
Temperature		-20~70°C					
Lubrication		Not required					
Repeatability mm		±0.01				±0.02	
Max. frequency		180(c.p.m)				60(c.p.m)	
Sensor switches		CMSh DMSH, EMSH		CMSG, DMSG, EMSG CMSh, DMSH, EMSH			
Port size		M3×0.5		M5×0.8			

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style——roller bearing)

HFK Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

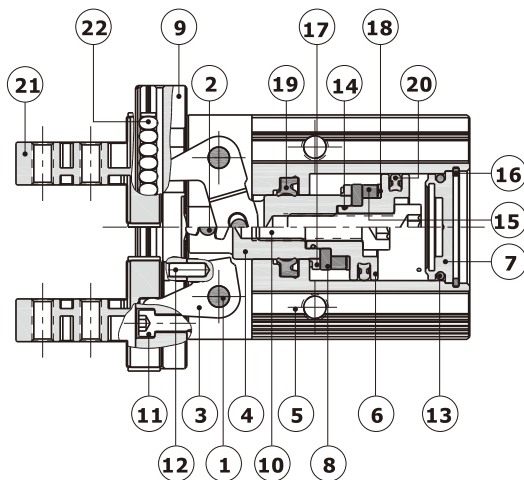
Gripping force and stroke

Acting type		Double acting(HFK)						Single acting_NO (HFTK)						Single acting_NC (HFSK)					
Bore size		10	16	20	25	32	40	10	16	20	25	32	40	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	11	34	45	69	160	255	7	27	35	55	133	220	-	-	-	-	-	-
	Internal	17	45	68	102	195	320	-	-	-	-	-	-	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		4	6	10	14	22	30	4	6	10	14	22	30	4	6	10	14	22	30
Weight (g)	F Type	56	124	236	418	750	1340	57	125	238	420	799	1437	57	125	238	420	799	1437
	Others	56	124	236	428	729	1268	57	125	238	430	778	1365	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 493 for the definition of "L".

Inner structure



NO.	Item	NO.	Item
1	Pin	12	Pin
2	Pin	13	O-ring
3	Curved bar	14	O-ring
4	Piston rod	15	Magnet
5	Body	16	C clip
6	Piston	17	Bumper
7	Back cover	18	Magnet washer
8	Magnet fixed flake	19	Rod packing
9	Rail	20	Piston seal
10	Countersink screw	21	Clamping jaw
11	Countersink screw	22	Guide roller

Air gripper(parallel style—roller bearing)

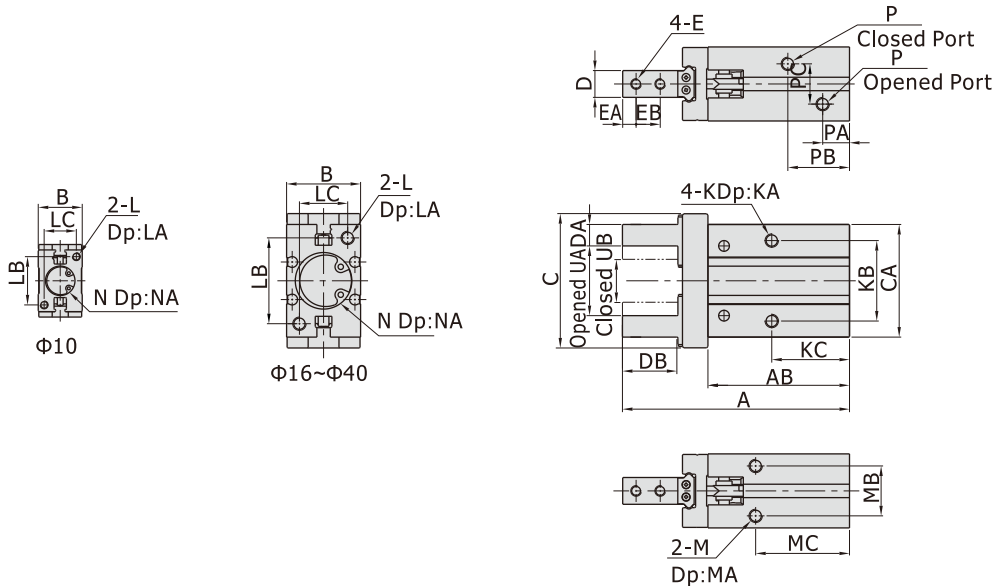


HFK Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Dimensions

Standard



[Unit: mm]

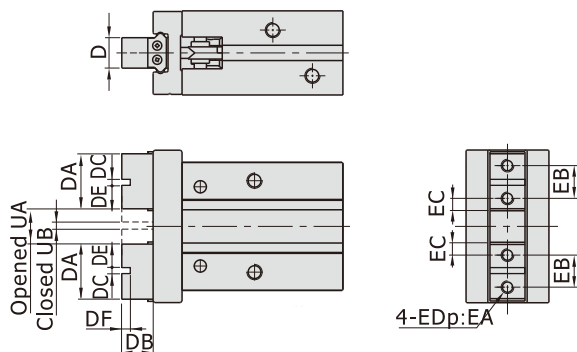
Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA	EB	K	KA	KB	KC
HFK10	57	37.5	16.5	30	23	5 ⁰ _{-0.05}	4 ⁰ _{-0.05}	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23
HFK16	67.5	42.5	23.5	39	30.5	8 ⁰ _{-0.05}	5 ⁰ _{-0.05}	15	M3×0.5	4	7	M4×0.7	7	24	24.5
HFK20	85	53	27.5	53	42	10 ⁰ _{-0.05}	8 ⁰ _{-0.05}	20	M4×0.7	5	9	M5×0.8	8	30	29
HFK25	103	64	33.5	71	52	12 ⁰ _{-0.05}	10 ⁰ _{-0.05}	25	M5×0.8	6	12	M6×1.0	10	36	30
HFK32	113(122)	67(76)	40	106	60	15 ⁰ _{-0.05}	12 ⁰ _{-0.05}	29	M6×1.0	7	14	M6×1.0	10	46	40(49)
HFK40	139(152)	83(96)	48	132	72	18 ⁰ _{-0.05}	14 ⁰ _{-0.05}	36	M8×1.25	9	17	M8×1.25	12	56	49(62)

Model\Item	L	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFK10	M3×0.5	6	18	12	M3×0.5	6	11.5	27	$\Phi 11^{+0.05}_0$	1.5	M3×0.5	7	19	10	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16	M4×0.7	8	22	15	M4×0.7	4.5	16	30	$\Phi 17^{+0.05}_0$	1.5	M5×0.8	7.5	19	13	21 ⁺² ₀	15 ⁰ ₋₁
HFK20	M5×0.8	10	32	18	M5×0.8	8	18.5	35	$\Phi 21^{+0.05}_0$	2	M5×0.8	9.5	23	15	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25	M6×1.0	12	40	22	M6×1.0	10	22	36.5	$\Phi 26^{+0.05}_0$	2	M5×0.8	9	24	20	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32	M6×1.0	12	46	26	M6×1.0	10	26	48(57)	$\Phi 34^{+0.05}_0$	2.5	M5×0.8	9.5	31(40)	24	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40	M8×1.25	16	56	32	M8×1.25	12	32	58(71)	$\Phi 42^{+0.05}_0$	2.5	M5×0.8	10.5	38(50)	28	60 ^{+2.5} ₀	30 ⁰ ₋₁

[Note]The values in "()" in the above table are single acting type sizes.

Bottom mounting type(F type) $\Phi 10$ ~ $\Phi 40$

[Unit: mm]



Model\Item	D	DA	DB	DC	DE	E
HFK10F	5 ⁰ _{-0.05}	11	5	2 ^{+0.04} _{+0.01}	4.5	M2.5×0.45
HFK16F	8 ⁰ _{-0.05}	14	8	2.5 ^{+0.04} _{+0.01}	5.8	M3×0.5
HFK20F	10 ⁰ _{-0.05}	18	10.5	3 ^{+0.04} _{+0.01}	7.5	M4×0.7
HFK25F	12 ⁰ _{-0.05}	22	13	4 ^{+0.04} _{+0.01}	9	M5×0.8
HFK32F	15 ⁰ _{-0.05}	34.5	18	5 ^{+0.04} _{+0.01}	14.8	M6×1.0
HFK40F	18 ⁰ _{-0.05}	41.5	22	6 ^{+0.04} _{+0.01}	17.7	M8×1.25

Model\Item	DF	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10F	2	4	6	2.45	5.5 ⁺² ₀	1.8 ⁰ _{-0.5}
HFK16F	2.5	6	8	3.05	7.5 ⁺² ₀	1.8 ⁰ _{-0.5}
HFK20F	3	8	10	3.95	11.5 ⁺² ₀	1.8 ⁰ _{-0.5}
HFK25F	4	10	12	4.9	16 ^{+2.5} ₀	2.4 ⁰ _{-0.5}
HFK32F	5	12	20	7.3	25 ^{+2.5} ₀	3.4 ⁰ _{-0.5}
HFK40F	6	16	24	8.7	33 ⁺³ ₀	3.4 ⁰ _{-0.5}

[Note] The other dimensions are the same as standard type.

Air gripper(parallel style—roller bearing)

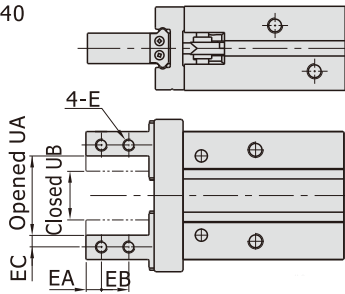


HFK Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Side mounting type(B type)

$\Phi 10 \sim \Phi 40$

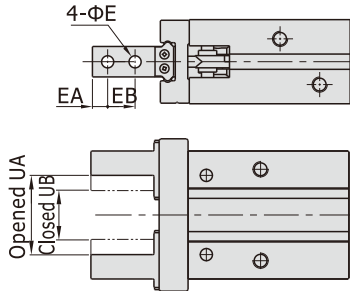


[Unit: mm]

Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10B	M2.5×0.45	3	5.7	2	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16B	M3×0.5	4	7	2.5	21 ⁺² ₀	15 ⁰ ₋₁
HFK20B	M4×0.7	5	9	4	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25B	M5×0.8	6	12	5	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32B	M6×1.0	7	14	6	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40B	M8×1.25	9	17	7	60 ^{+2.5} ₀	30 ⁰ ₋₁

Thru-hole mounting type(N type)

$\Phi 10 \sim \Phi 40$

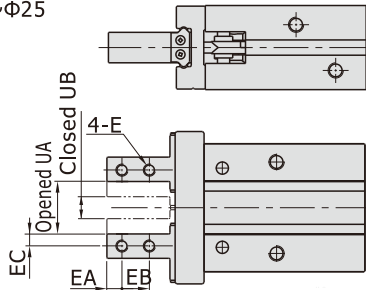


[Unit: mm]

Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10N	2.8	3	5.7	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16N	3.3	4	7	21 ⁺² ₀	15 ⁰ ₋₁
HFK20N	4.5	5	9	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25N	5.5	6	12	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32N	6.5	7	14	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40N	9	9	17	60 ^{+2.5} ₀	30 ⁰ ₋₁

Side mounting and narrow type(W type)

$\Phi 10 \sim \Phi 25$

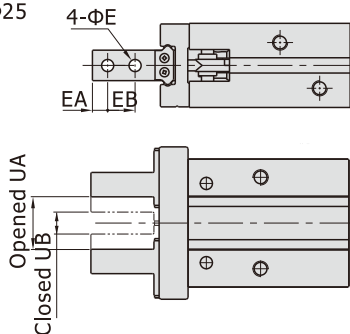


[Unit: mm]

Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10W	M2.5×0.45	3	5.7	2	10 ⁺² ₀	6 ⁰ ₋₁
HFK16W	M3×0.5	4	7	2.5	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20W	M4×0.7	5	9	4	17 ⁺² ₀	7 ⁰ ₋₁
HFK25W	M5×0.8	6	12	5	23 ^{+2.5} ₀	9 ⁰ ₋₁

Thru-hole mounting and narrow type(M type)

$\Phi 10 \sim \Phi 25$

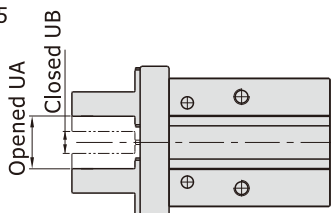


[Unit: mm]

Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10M	2.8	3	5.7	10 ⁺² ₀	6 ⁰ ₋₁
HFK16M	3.3	4	7	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20M	4.5	5	9	17 ⁺² ₀	7 ⁰ ₋₁
HFK25M	5.5	6	12	23 ^{+2.5} ₀	9 ⁰ ₋₁

Narrow type(R type)

$\Phi 10 \sim \Phi 25$



[Unit: mm]

Model\Item	UA(Opened)	UB(Closed)
HFK10R	10 ⁺² ₀	6 ⁰ ₋₁
HFK16R	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20R	17 ⁺² ₀	7 ⁰ ₋₁
HFK25R	23 ^{+2.5} ₀	9 ⁰ ₋₁

How to select product

Please select pneumatic finger according to the following steps:

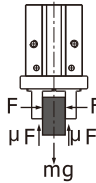
① The selection of the effective gripping force

② the confirmation of the gripping point

③ the confirmation of the external force put on the gripping jaw

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

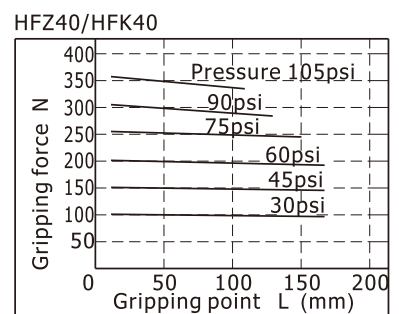
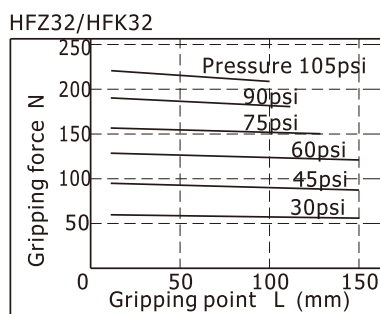
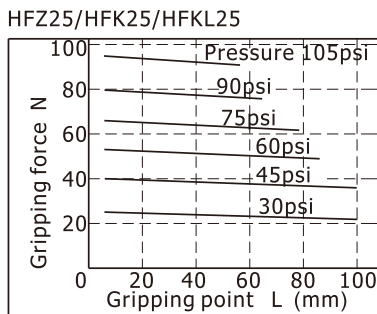
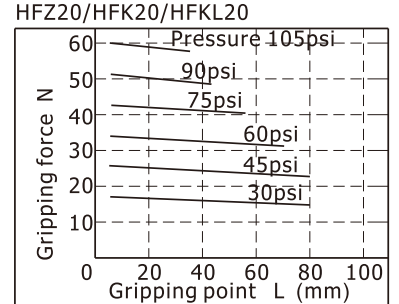
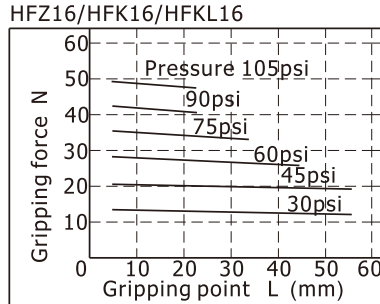
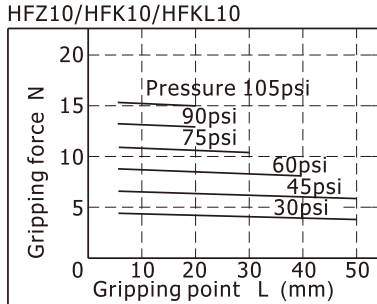
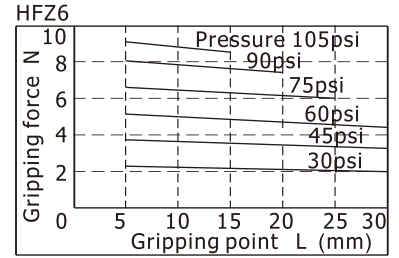
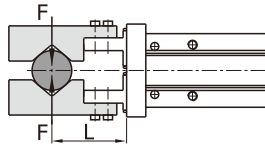
1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Air gripper(parallel style)

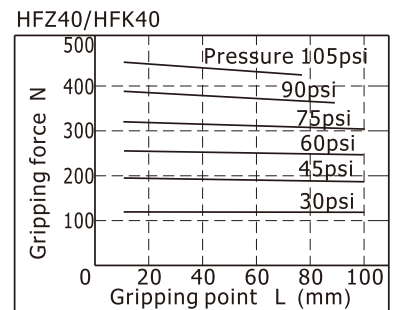
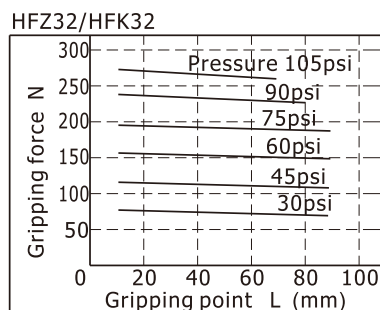
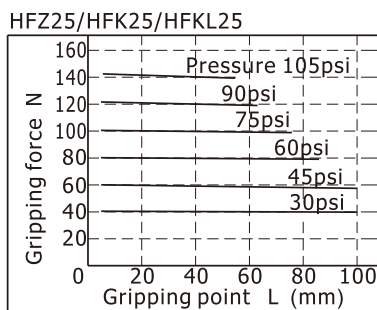
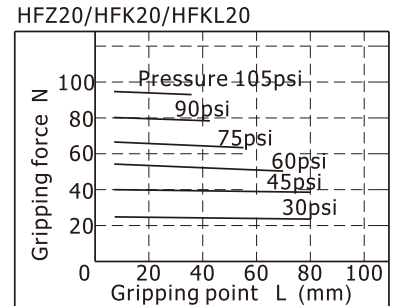
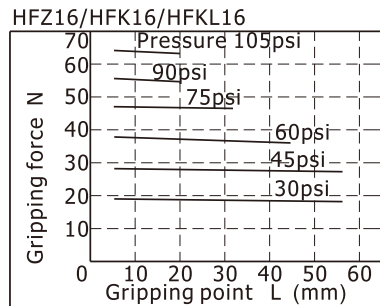
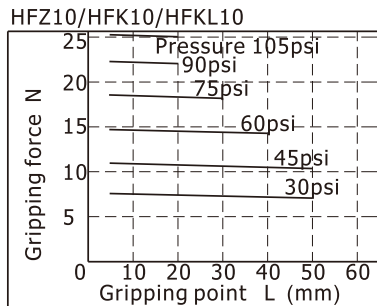
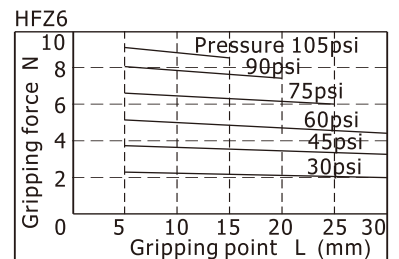
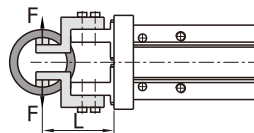
HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Double acting type closed gripping force



Double acting type opened gripping force

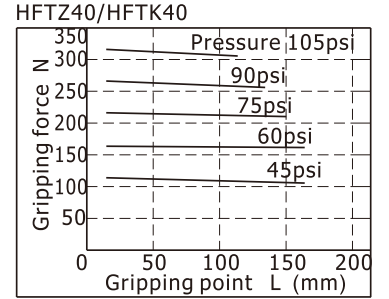
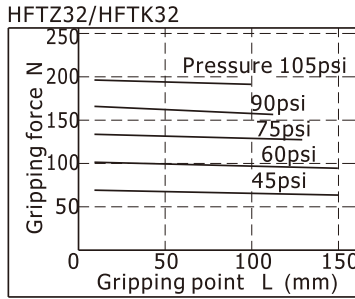
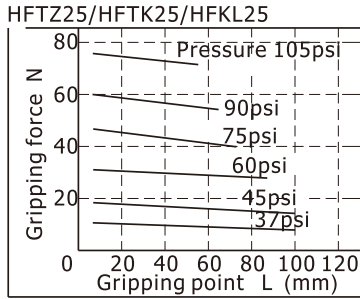
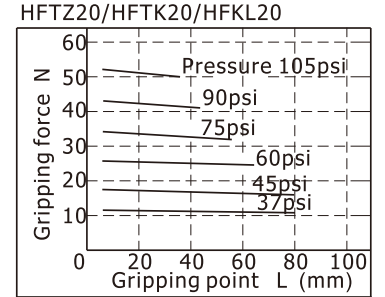
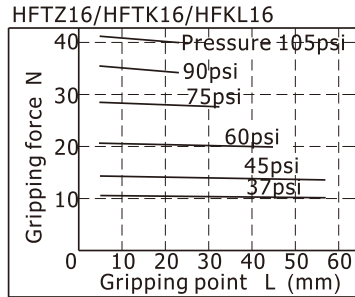
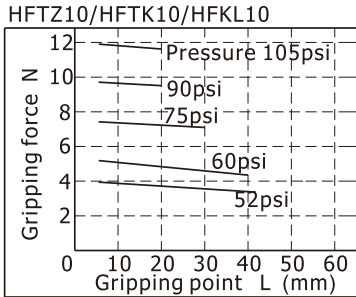
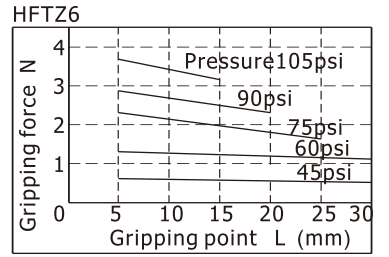
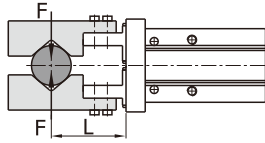


Air gripper(parallel style)

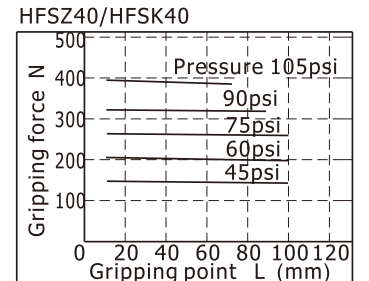
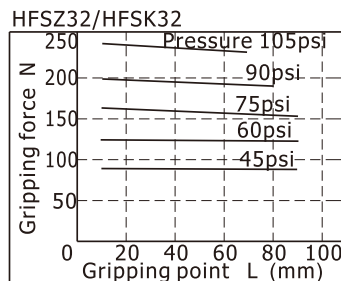
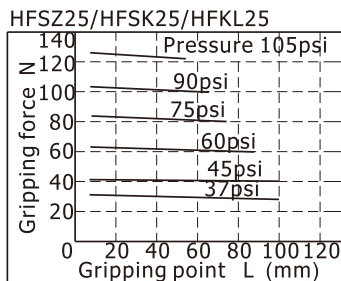
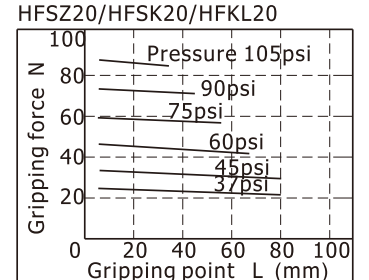
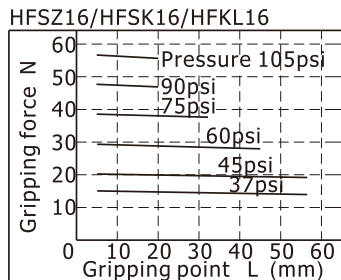
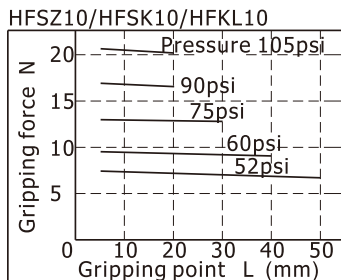
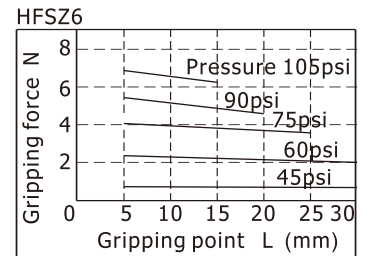
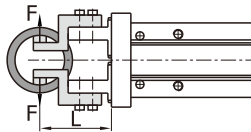
HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

Single acting normally opened gripping force



Single acting normally closed clamping force



Air gripper(parallel style)

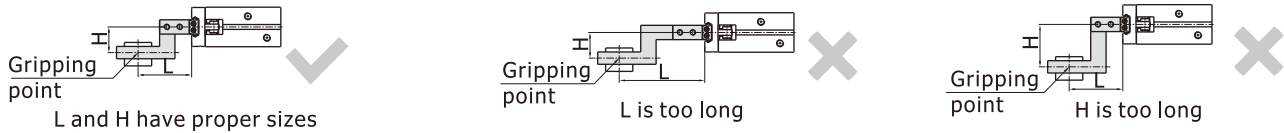
HFZ,HFK,HFKL Series

Bore size: $\Phi 10, \Phi 16, \Phi 20, \Phi 25, \Phi 32, \Phi 40$

2. The selection of the gripping point

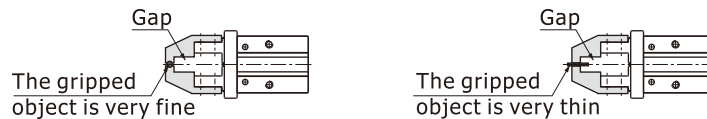
2.1) Please select the gripping point within the limited field shown below.

Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.



3. The confirmation of the external force put on the gripping jaw.

Bore size	The allowed vertical loads Fv(N)			Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
	HFK	HFZ	HFKL	Mp	My	Mr		
6	-	10	-	0.04	0.04	0.08	$\text{Allowable load(N)} = \frac{M(\text{Maximum permissible moment})(\text{N.m})}{L \times 10^{-3}}$ Unit conversion constant	In the guide rail of HFK16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, 0.68 $\text{Allowable load } F = \frac{0.68}{30 \times 10^{-3}} = 22.7(\text{N})$ Actual load f=10(N) < 22.7(N) To meet the using requirements
10	87	58	87	0.26	0.26	0.53		
16	147	98	147	0.68	0.68	1.36		
20	221	147	221	1.32	1.32	2.65		
25	382	255	382	1.94	1.94	3.88		
32	514	343	-	3	3	6		
40	735	490	-	4.5	4.5	9		

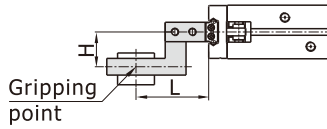
[Note] The loads and torque values of said are all static values.

Air gripper(parallel style)

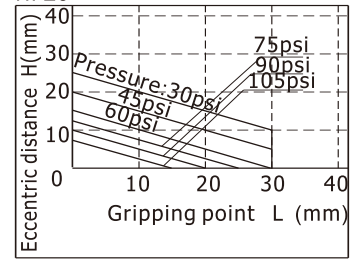
HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

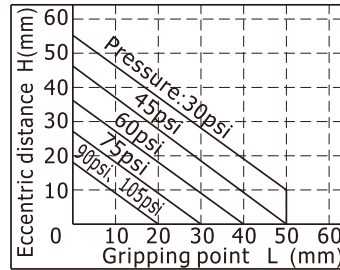
The range of the closed gripping points



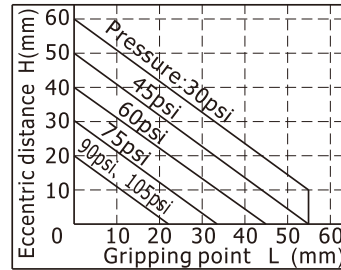
HFZ6



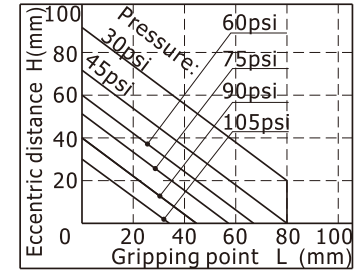
HFZ10/HFK10/HFKL10



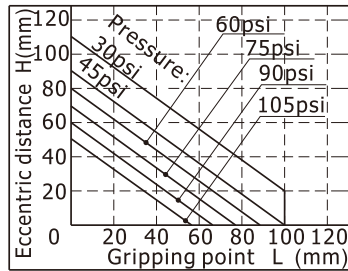
HFZ16/HFK16/HFKL16



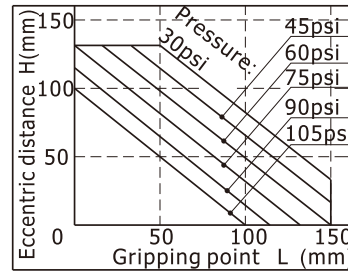
HFZ20/HFK20/HFKL20



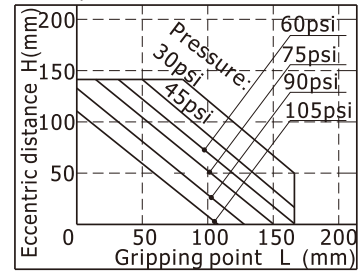
HFZ25/HFK25/HFKL25



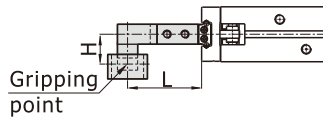
HFZ32/HFK32



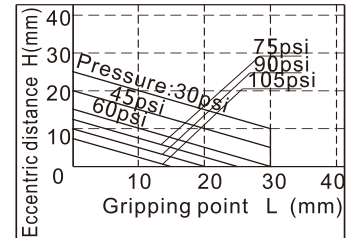
HFZ40/HFK40



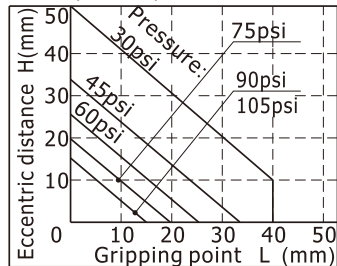
The range of the opened clamping point



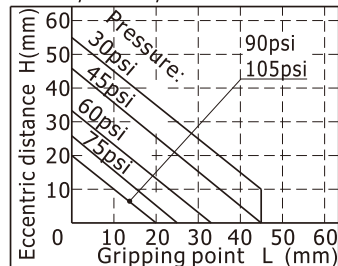
HFZ6



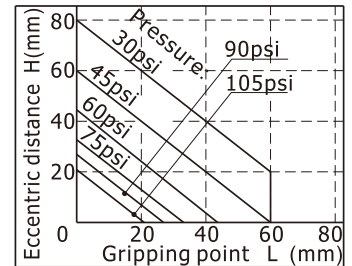
HFZ10/HFK10/HFKL10



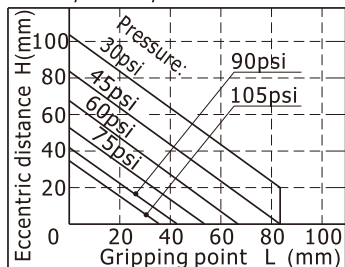
HFZ16/HFK16/HFKL16



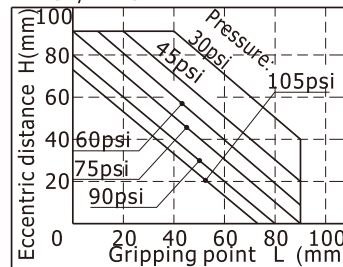
HFZ20/HFK20/HFKL20



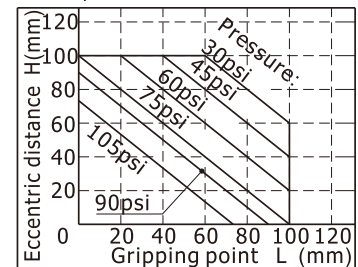
HFZ25/HFK25/HFKL25



HFZ32/HFK32



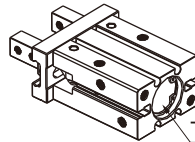
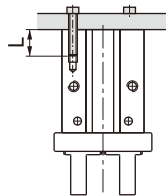
HFZ40/HFK40



Installation and application

1. 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.
2. Don't use the air gripper under strong external force and impact force.
3. Please contact with us when the single acting type clamps only with the spring force.
4. When install and fix the air gripper, avoid falling down, collision and damage.
5. When fixing the gripping jaw parts, don't twist the gripping jaw.
6. 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.

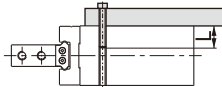
Tail installation type



The bore of the tail is used for mounting and positioning

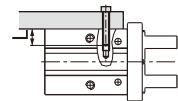
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.05}_0$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_0$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_0$	2mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_0$	2mm
32	M6×1.0	7.9N.m	12mm	Φ34mm $^{+0.05}_0$	2.5mm
40	M8×1.25	17.7N.m	16mm	Φ42mm $^{+0.05}_0$	2.5mm

The installation of the front threaded hole



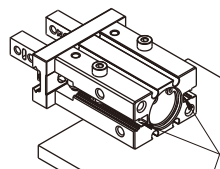
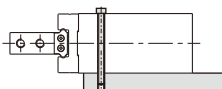
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.88	10
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	12
40	M8×1.25	17.7	12

Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.9	6
16	M4×0.7	1.6	4.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10
32	M6×1.0	5.9	10
40	M8×1.25	13.7	12

The installation of the front through hole



When installed from front through holes, sensors can not be installed in the sensor grooves that are interfered by screws.

Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M2.5×0.45	0.49	-
10	M2.5×0.45	0.49	5
16	M3×0.5	0.88	8
20	M4×0.7	2.1	10
25	M5×0.8	4.3	12
32	M5×0.8	4.3	13
40	M6×1.0	7.3	16

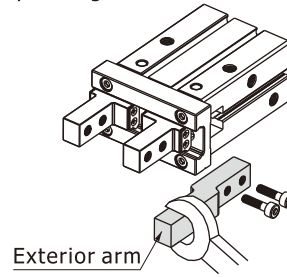
Air gripper(parallel style)

HFZ,HFK,HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$, $\Phi 32$, $\Phi 40$

7. 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.

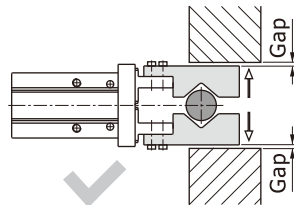
Bore size	The bolts type	Max. locking moment(Nm)
6	M2×0.4	0.15
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9
40	M8×1.25	11.8



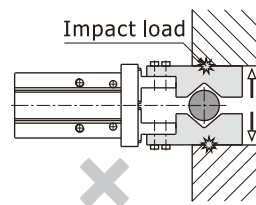
8. Confirm that there is no external forces exerted on the gripping jaw.

Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

8.1) The end of stroke under the open state of air gripper

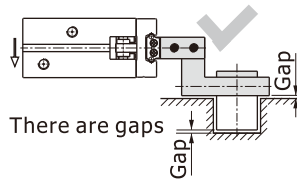


There are gaps

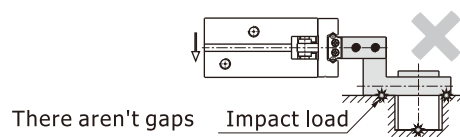


There aren't gaps

8.2) The end of stroke under the move state of air gripper



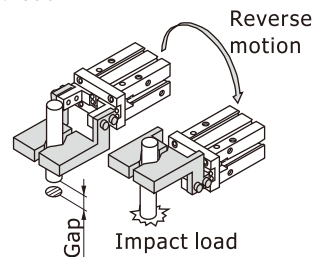
There are gaps



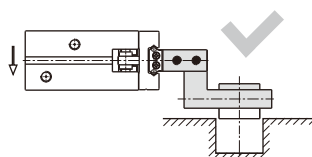
There aren't gaps

8.3) Reverse motion state

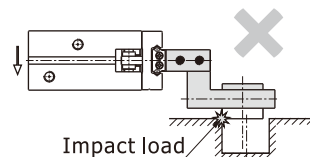
When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



9. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



Center coaxial



Center offset

10. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.

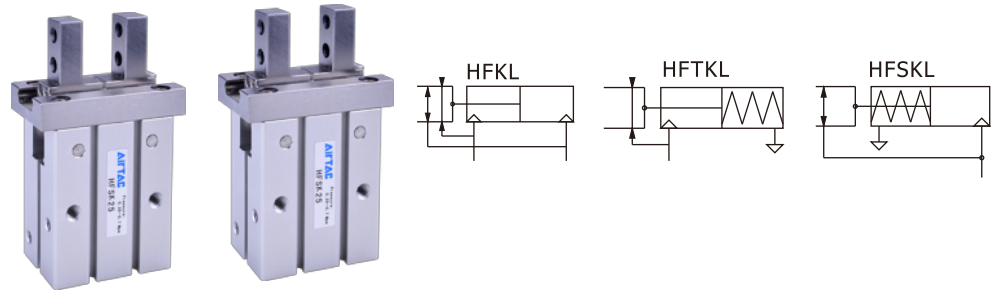
11. People can not enter the movement path of air gripper and articles can not be placed on the path too.

12. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.



Air gripper—HFKL Series

Parallel style with guide track—Roller bearing and longer stroke



Ordering code

HFKL 20 □

① ② ③

① Model

HFKL: Air finger(Double acting/Longer stroke)

HFSKL: Air finger(Single acting and normally closed/Longer stroke)

HFTKL: Air finger(Single acting and normally opened/Longer stroke)

② Bore size

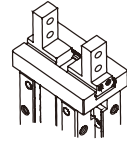
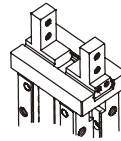
10 16 20 25

HFKL series are all attached with magnet.
Sensor should be ordered individually.

③ Finger type

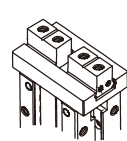
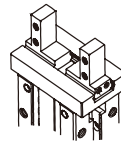
Blank: Standard

N: Thru.hole mounting type



B: Side mounting type

F: Bottom mounting type



Specification

Bore size (mm)		10	16	20	25
Acting type		Double acting		Single acting	
Fluid		Air(to be filtered by 40μm filter element)			
Operating pressure	Double acting	10	28~100psi(0.2~0.7MPa)		
		16/20/25	22~100psi(0.15~0.7MPa)		
Single acting	10	50~100psi(0.35~0.7MPa)			
	16/20/25	36~100psi(0.25~0.7MPa)			
Temperature		-20~70°C			
Lubrication		Not required			
Repeatability mm		±0.01			
Max. frequency		120(c.p.m)			
Sensor switches		CMSh DMSH, EMSH		CMSG, DMSG, EMSG CMSh, DMSH, EMSH	
Port size		M3×0.5		M5×0.8	

Add) Refer to P535 for detail of sensor.



Air gripper(parallel style—Roller bearing/Longer stroke) **AIRTAC**

HFKL Series

Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$

Gripping force and stroke

Acting type		Double acting(HFKL)				Single acting_NO (HFTKL)				Single acting_NC (HFSKL)			
Bore size		10	16	20	25	10	16	20	25	10	16	20	25
Gripping force per finger Effective value(N)	External	11	34	45	69	7	27	35	55	-	-	-	-
	Internal	17	45	68	102	-	-	-	-	13	38	59	87
Opening/Closing stroke(Both sides)(mm)		8	12	18	22	8	12	18	22	8	12	18	22
Weight (g)	F Type	64	146	275	484	74	154	294	530	73	154	294	528
	Others	64	146	273	489	73	155	292	525	72	155	292	523

[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Add) Please refer to page 493 for the definition of "L".

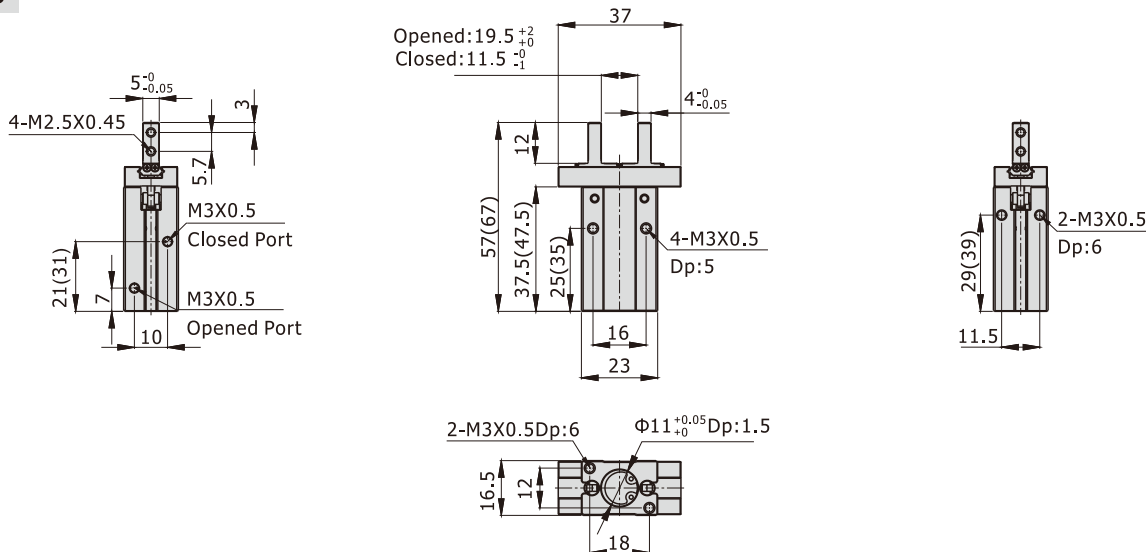
Inner structure

Inner structure is the same as "HFK series", Please refer to page 490 for details.

Dimensions

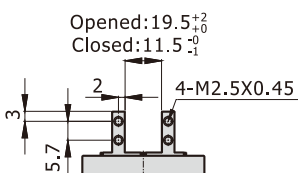
HFKL10

[Unit: mm]

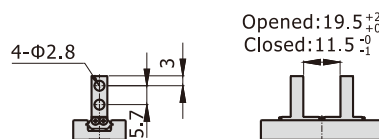


[Note]The values in "()" in the above table are single acting type sizes.

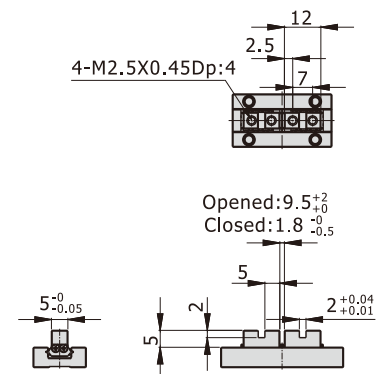
Side mounting type(B type)



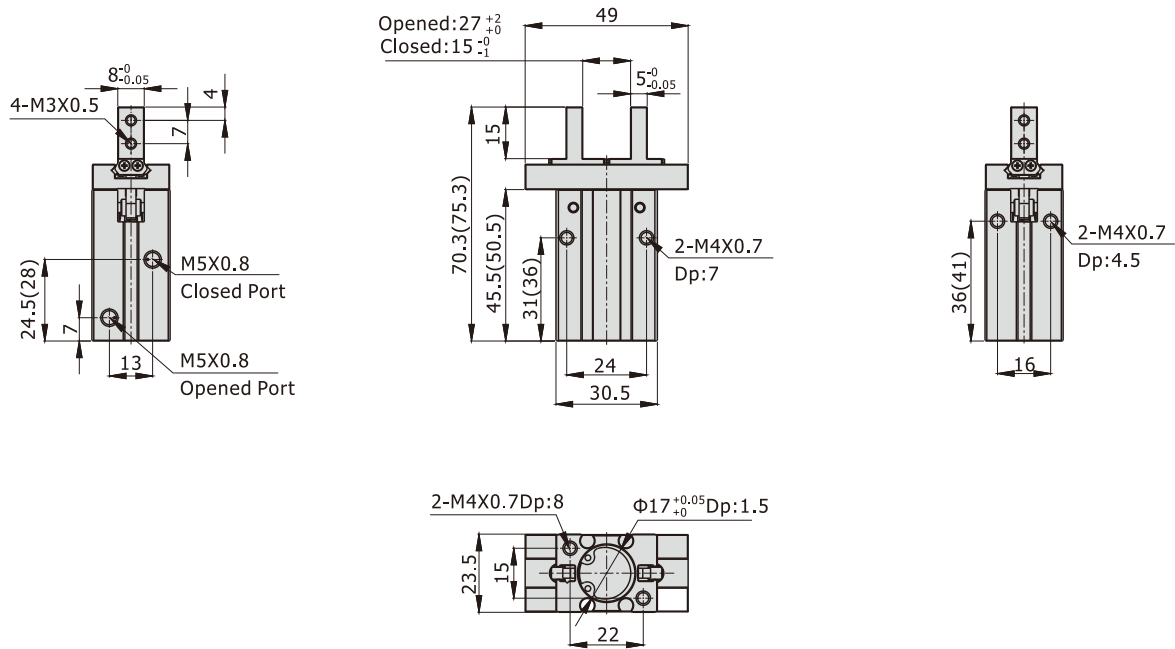
Thru.hole mounting type(N type)



Bottom mounting type(F type)

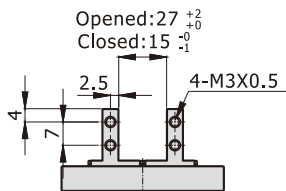


HFKL16

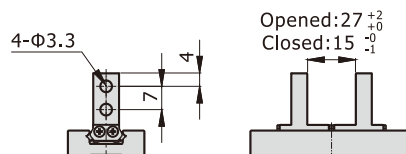


[Note]The values in "()" in the above table are single acting type sizes.

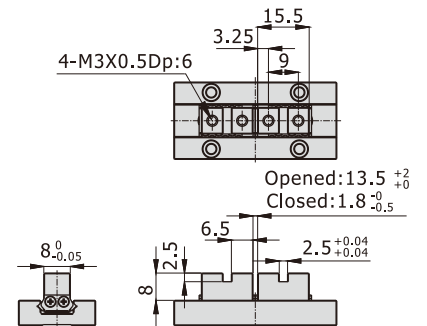
Side mounting type(B type)



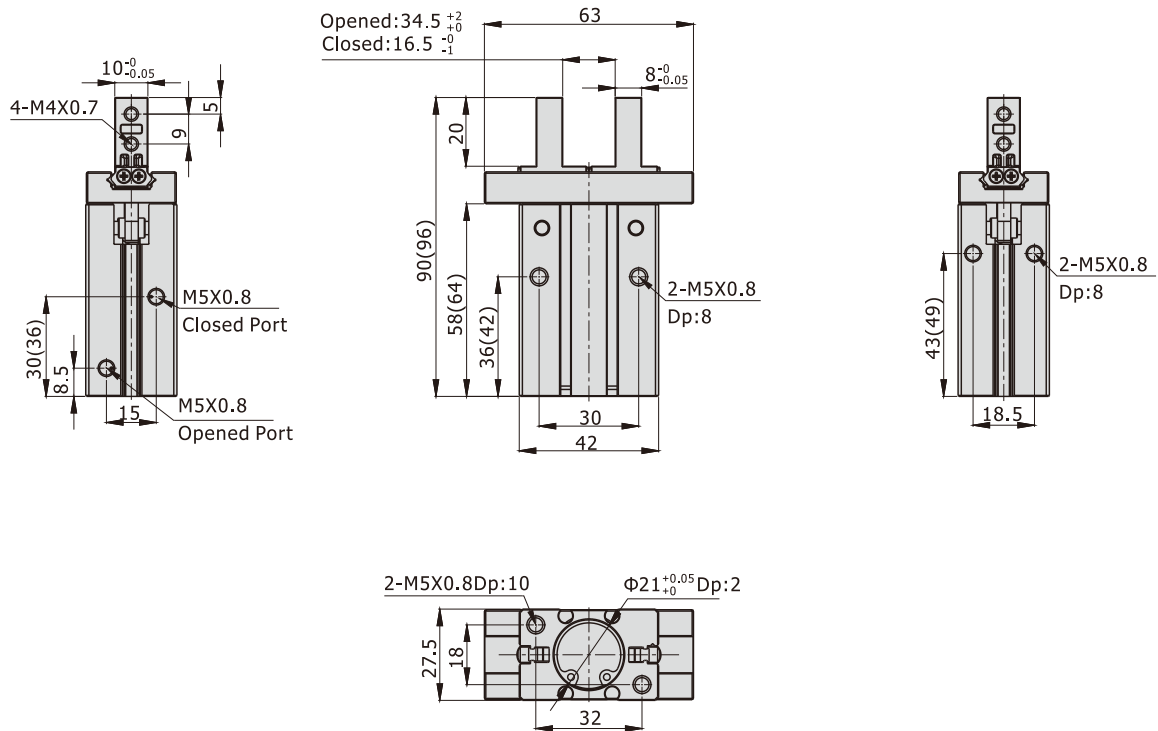
Thru.hole mounting type(N type)



Bottom mounting type(F type)

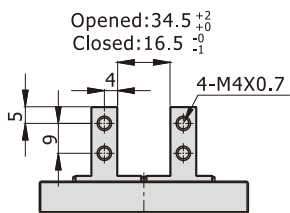


HFKL20

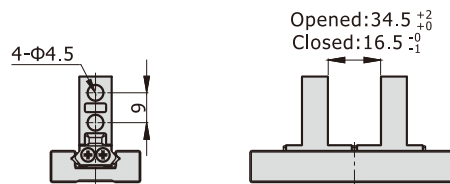


[Note]The values in "()" in the above table are single acting type sizes.

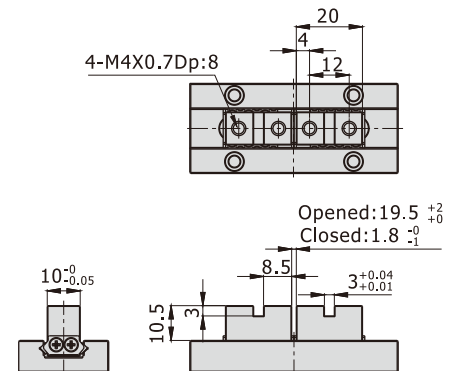
Side mounting type(B type)



Thru.hole mounting type(N type)



Bottom mounting type(F type)

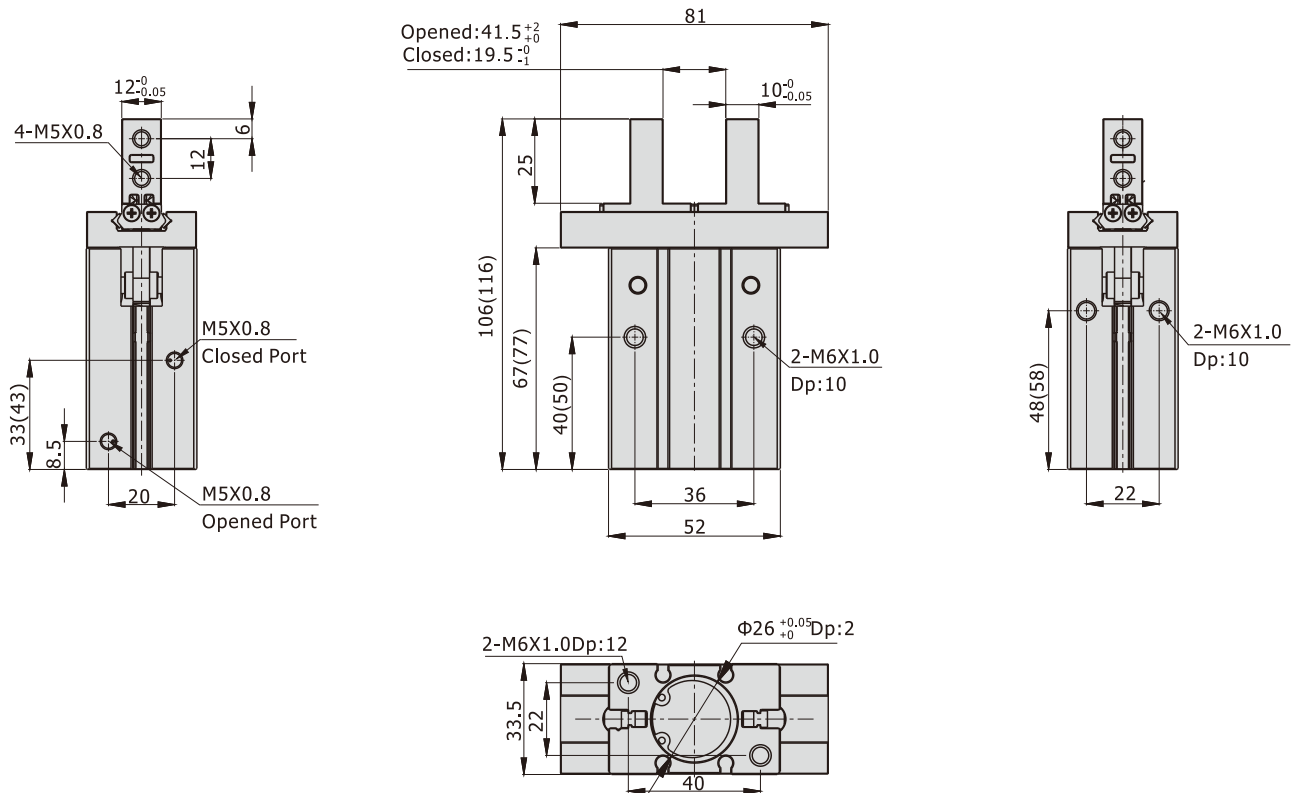


Air gripper(parallel style——Roller bearing/Longer stroke) **AIRTAC**

HFKL Series

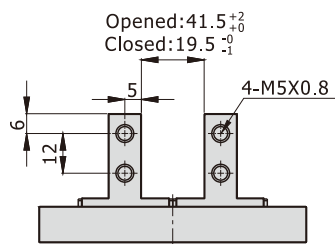
Bore size: $\Phi 10$, $\Phi 16$, $\Phi 20$, $\Phi 25$

HFKL25

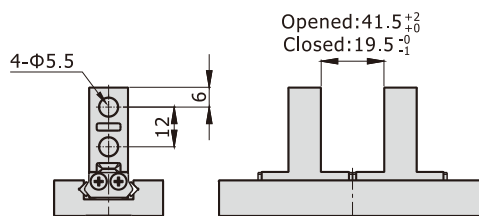


[Note]The values in "()" in the above table are single acting type sizes.

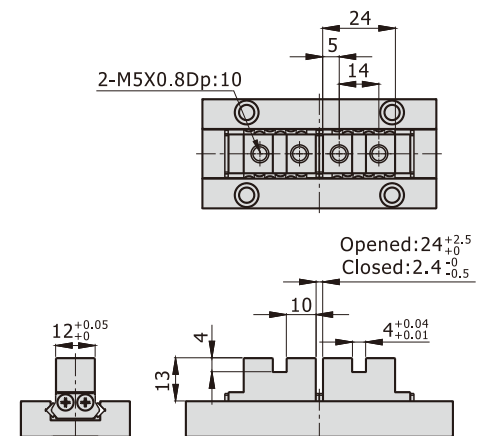
Side mounting type(B type)



Thru.hole mounting type(N type)



Bottom mounting type(F type)



How to select product \ Installation and application

Please refer to HFK series for details.



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	CM5H/DM5H/EM5H						
Port size	M3×0.5		M5×0.8				
Hollow diameter	$\Phi 3^{+0.05}_{+0}$	$\Phi 3^{+0.05}_{+0}$	$\Phi 4^{+0.05}_{+0}$	$\Phi 6^{+0.05}_{+0}$	$\Phi 10^{+0.05}_{+0}$	$\Phi 12^{+0.05}_{+0}$	$\Phi 16^{+0.05}_{+0}$
Push rod mechanism	-			Cylinder or Spring push rod mechanism			
Port size of push rod mechanism	-			M5×0.8			

[Note] Refer to P535 for detail of sensor.



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	CM5H/DMSH/EMSH			
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(Φ 16~ Φ 25) or L=30mm(Φ 32~ Φ 63).

Add) Please refer to page 482 for the definition of "L".

Air gripper(parallel open/close hollow style)

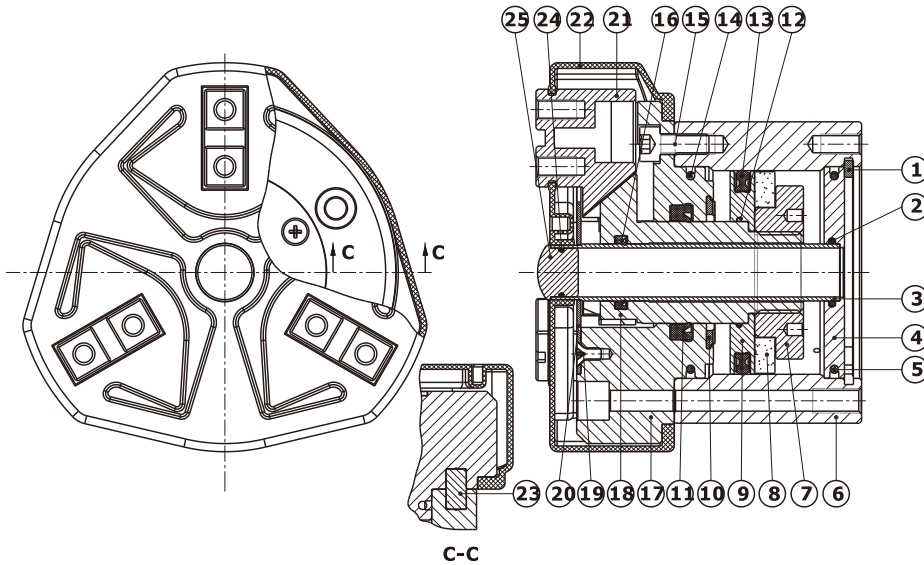


HFCQ Series

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

Inner structure

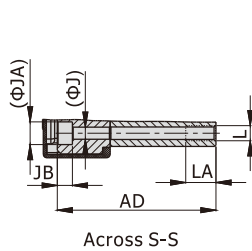
HFCQ32~63



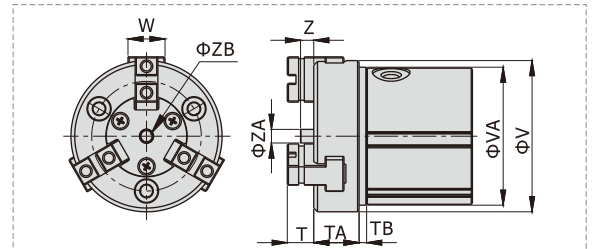
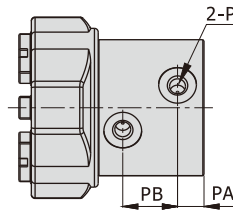
NO.	Item	NO.	Item
1	C clip	14	O-ring
2	O-ring	15	Countersink screw
3	Hollow tube	16	Rod packing
4	Back cover	17	Front cover
5	O-ring	18	Piston rod
6	Body	19	Screw
7	Magnet holder	20	Cover blank
8	Magnet	21	Jaw
9	Piston	22	Dustproof cover
10	Bumper	23	Pin
11	Rod packing	24	O-ring
12	O-ring	25	Dustproof pluger
13	Piston seal		

Dimensions

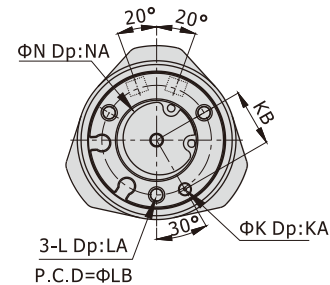
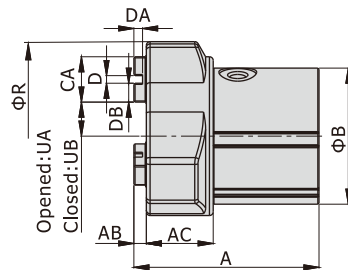
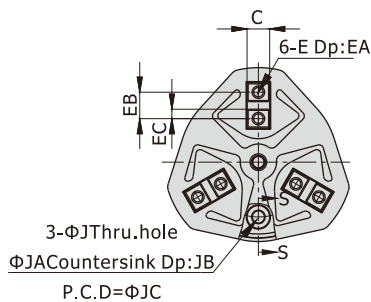
HFCQ16~25



Across S-S



Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)



[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 ^{+0.05} 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 ^{+0.05} 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 ^{+0.05} ₀

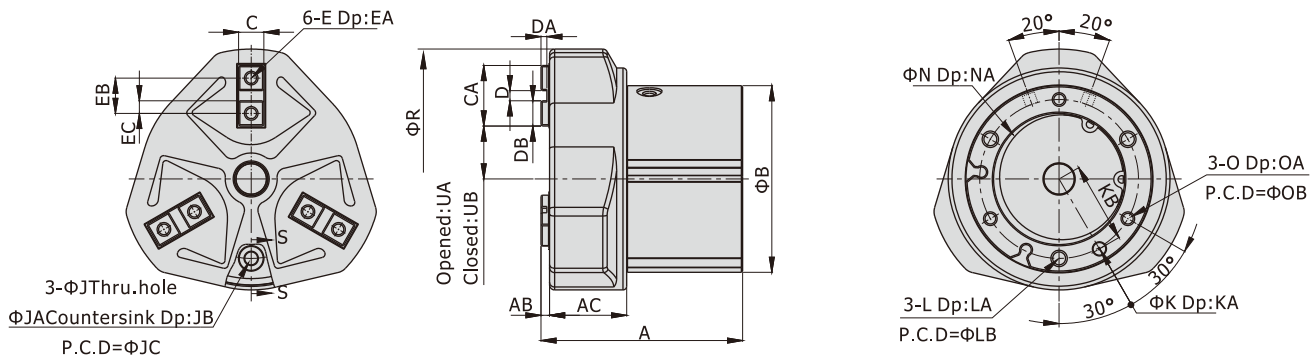
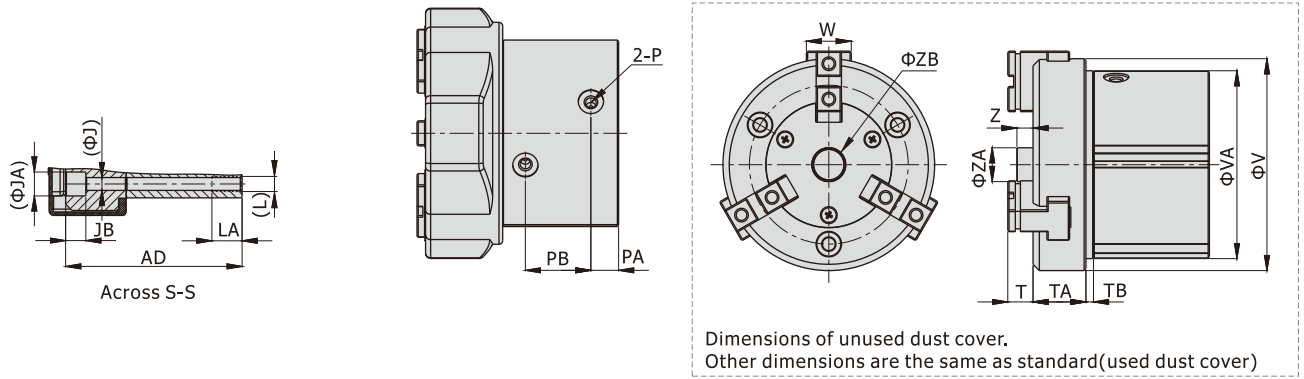
Air gripper(parallel open/close hollow style)



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 ^{+0.05} 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 ^{+0.05} 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 ^{+0.05} 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 ^{+0.05} ₀

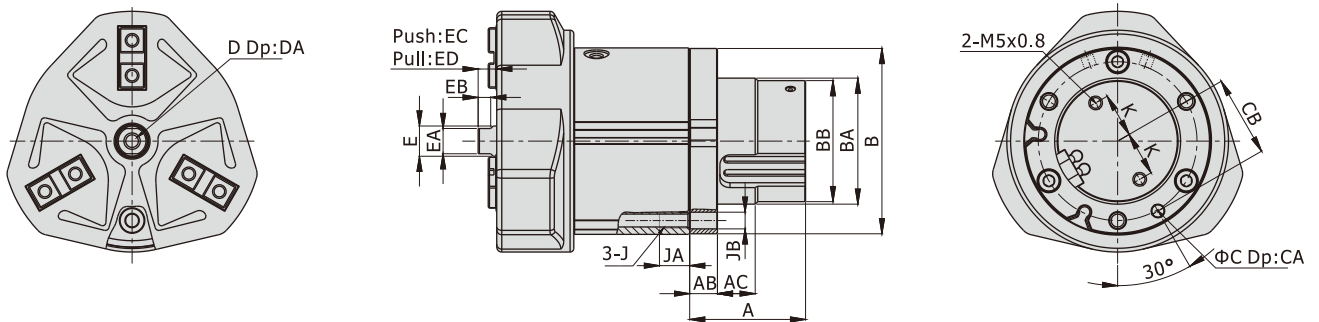
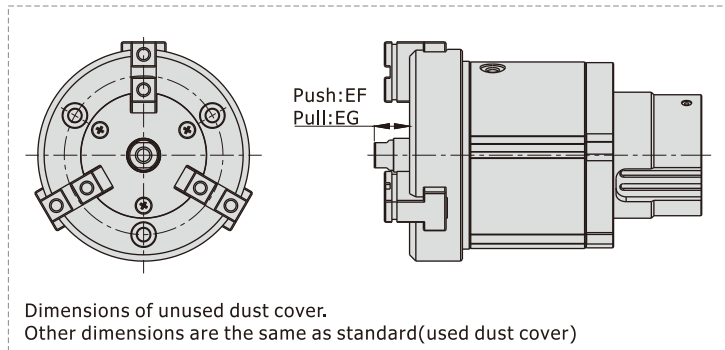


Air gripper(parallel open/close hollow style) **AIRTAC**

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]

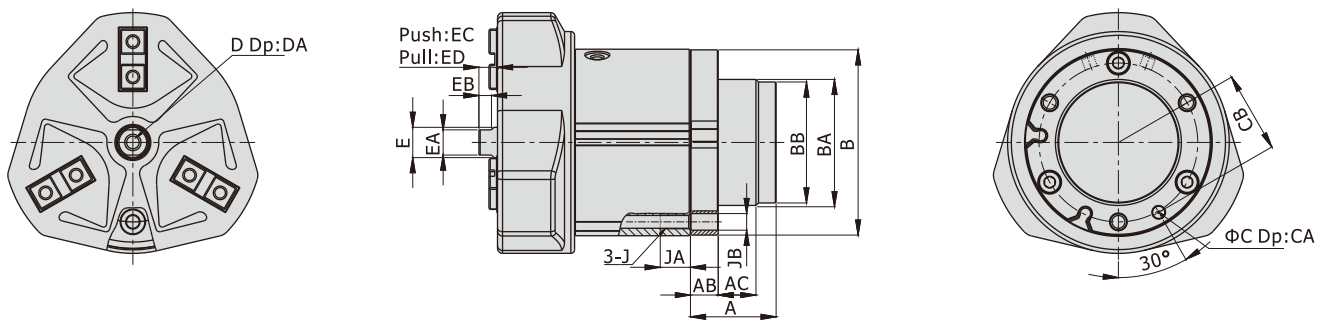
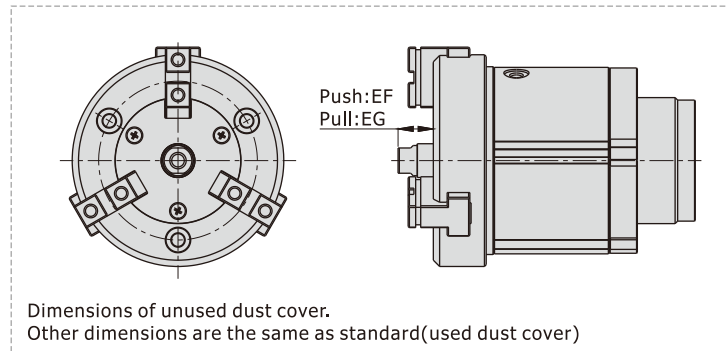
Bore size\Item	A	AB	AC	B	BA	BB	C	CA	CB	D	DA	E	EA	EB	EC	ED	EF	EG	J	JA	JB	K
32	36	9	9	54.5	$32_{-0.05}^0$	30	$4_{+0.01}^{+0.04}$	4	22	M3×0.5	6	6	5	3.5	14	7	20	13	M5×0.8	10	5.5	9.5
40	38	9	12	61.5	$40_{-0.05}^0$	38	$4_{+0.01}^{+0.04}$	4	26	M5×0.8	10	10	8	4.5	15	7	21	13	M5×0.8	10	5.5	13.5
50	48	11	15	73.5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

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:

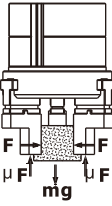
① The selection of the effective gripping force



② the confirmation of the gripping point

1. The selection of the gripping force

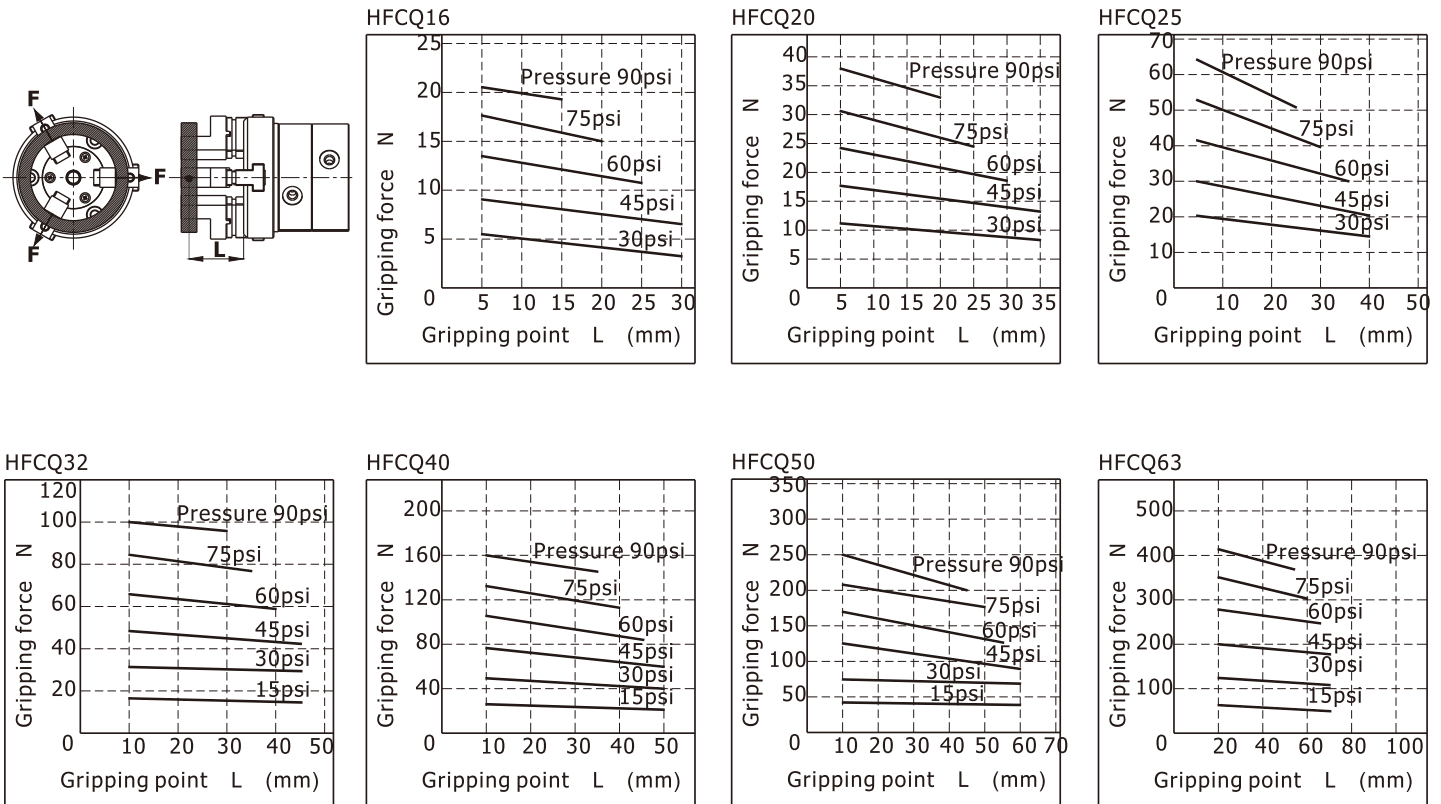
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient $a=4$, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

The work-pieces as shown in the left :		$\mu=0.2$	$\mu=0.1$
 <p>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 ($=9.8m/s^2$)</p>	<p>The condition that the work-pieces won't drop is: $n \times \mu F > mg$</p> <p>so: $F > \frac{mg}{n \times \mu}$</p> <p>Safety coefficient is a, so F is:</p> $F = \frac{mg}{n \times \mu} \times a$	$F = \frac{mg}{2 \times 0.2} \times 4 = 10 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 4 = 20 \times mg$
		<p>10 times of the mass of the gripped objects</p>	<p>20 times of the mass of the gripped objects</p>

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



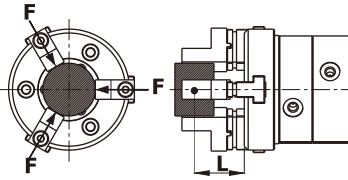
Air gripper(parallel open/close hollow style)



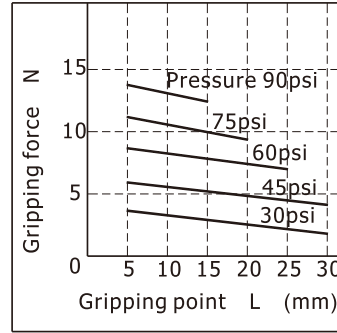
HFCQ Series

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

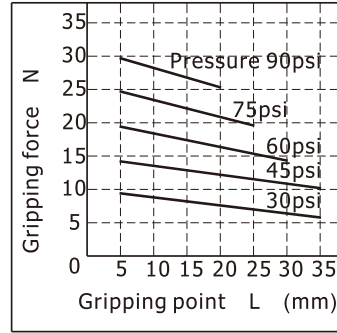
Closed gripping force



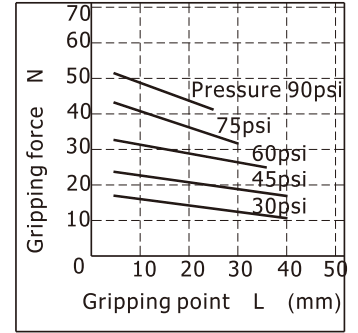
HFCQ16



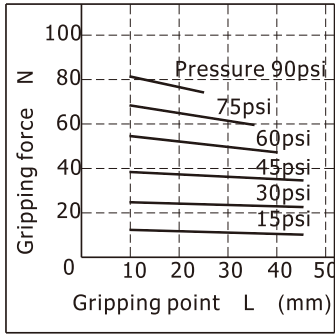
HFCQ20



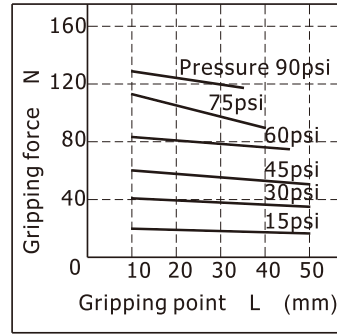
HFCQ25



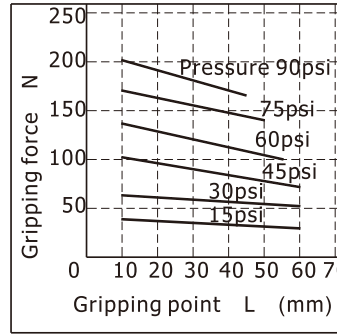
HFCQ32



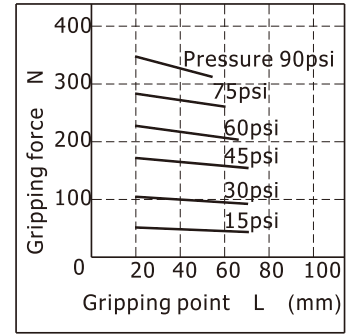
HFCQ40



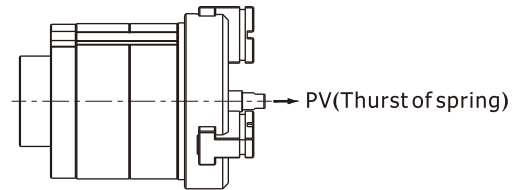
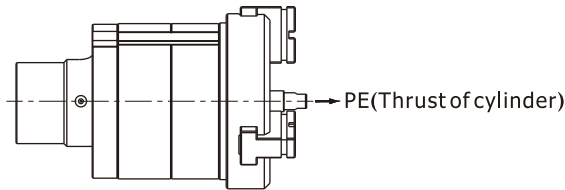
HFCQ50



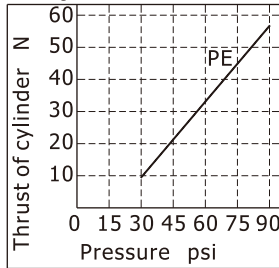
HFCQ63



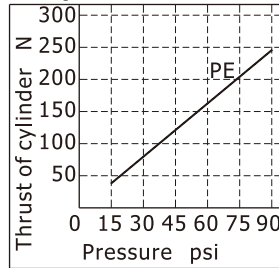
Effective thrust of Push rod mechanism



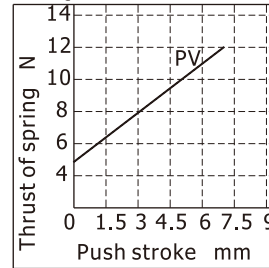
HFCQ32E



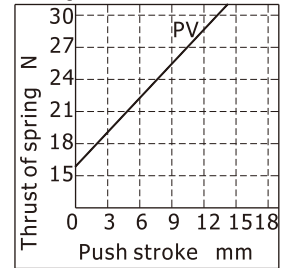
HFCQ50E



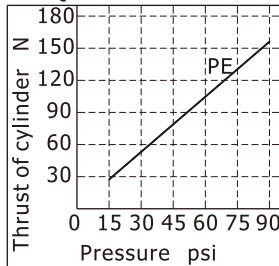
HFCQ32V



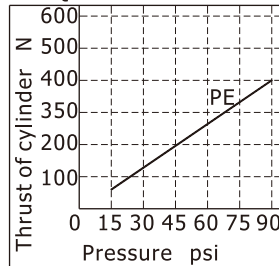
HFCQ50V



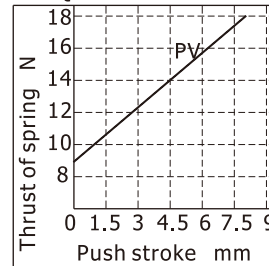
HFCQ40E



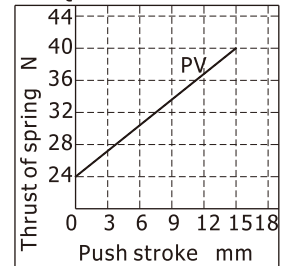
HFCQ63E



HFCQ40V



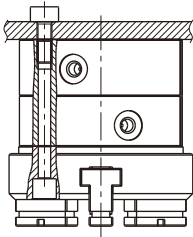
HFCQ63V



Installation and application

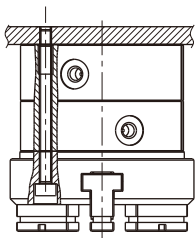
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. 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



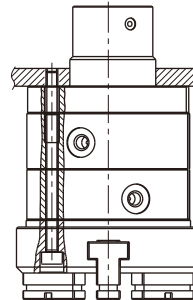
Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
16	M4×0.7	2.1	8	Φ17 ^{+0.05} ₀	1.5
20	M4×0.7	2.1	8	Φ21 ^{+0.05} ₀	1.5
25	M4×0.7	2.1	8	Φ26 ^{+0.05} ₀	1.5
32	M4×0.7	2.1	8	Φ34 ^{+0.05} ₀	2
	M5×0.8	4.3	10	Φ34 ^{+0.05} ₀	2
40	M4×0.7	2.1	8	Φ42 ^{+0.05} ₀	2
	M5×0.8	4.3	10	Φ42 ^{+0.05} ₀	2
50	M5×0.8	4.3	10	Φ52 ^{+0.05} ₀	2
	M6×1.0	7.3	12	Φ52 ^{+0.05} ₀	2
63	M6×1.0	7.3	12	Φ65 ^{+0.05} ₀	2.5
	M8×1.25	18	16	Φ65 ^{+0.05} ₀	2.5

The installation of the front through hole



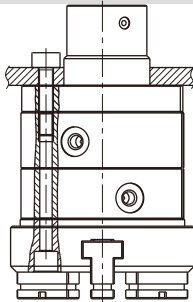
Bore size	The bolts type	Max. locking moment(N.m)
16	M3×0.5	0.88
20	M3×0.5	0.88
25	M3×0.5	0.88
32	M4×0.7	2.1
40	M4×0.7	2.1
50	M5×0.8	4.3
63	M6×1.0	7.3

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



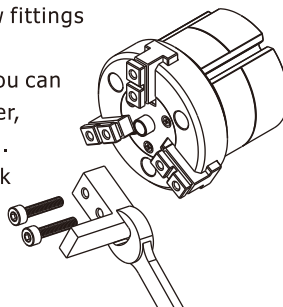
Bore size	The bolts type	Max. locking moment(N.m)
32	M4×0.7	2.1
40	M4×0.7	2.1
50	M5×0.8	4.3
63	M6×1.0	7.3

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	Φ32 ⁰ _{-0.05}
40	M5×0.8	4.3	10	Φ40 ⁰ _{-0.05}
50	M6×1.0	7.3	12	Φ50 ⁰ _{-0.05}
63	M8×1.25	18	16	Φ60 ⁰ _{-0.05}

6. 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 moment(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