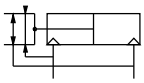
Parallel open/close style

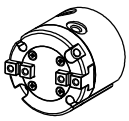
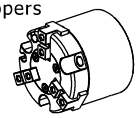


Ordering code

HFC Y 20

1 2 3

① Model
HFC: Air finger (Double acting, parallel type)

② Finger type	
I : Two grippers 	Y : Three grippers 
X : Four grippers 	

③ Bore size
16 20 25 32 40 50 63
HFC series are all attached with magnet.

Product feature

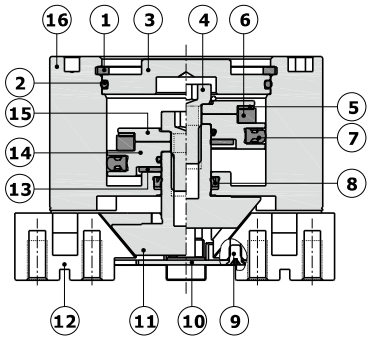
1. Cuniform block is adopted in the interior of the air gripper to afford larger gripper force.
2. The bumper is adopted in the front of piston, which can reduce the noise of metal bump.
3. A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of 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℃						
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

Note: inner structure & material data sheet is based on certain bore size.
Please contact AirTAC if you need inner structure & material data sheet for specific bore size.

HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

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".

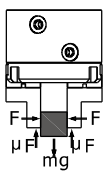
How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force >> **②the 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 :		μ=0.2	μ=0.1
 n: number of gripper F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: n×μF>mg so: $F>\frac{mg}{n\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{n\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 10 times of the mass of the gripped objects	$F=\frac{mg}{2\times0.1}\times4=20\times mg$ 20 times of the mass of the gripped objects

Note) If the friction coefficientμ>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.

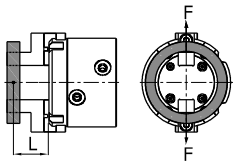
1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Air gripper(parallel open/close style)

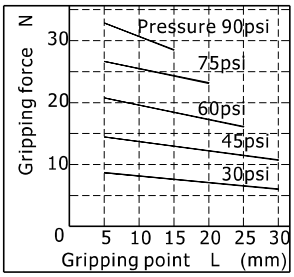
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

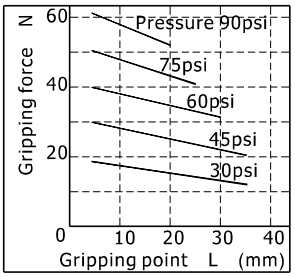
Opened gripping force(I Type)



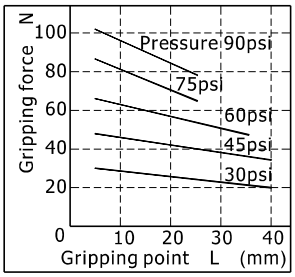
HFCI16



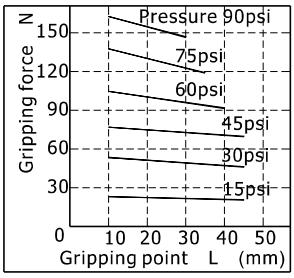
HFCI20



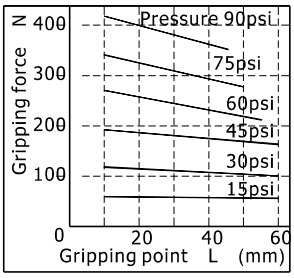
HFCI25



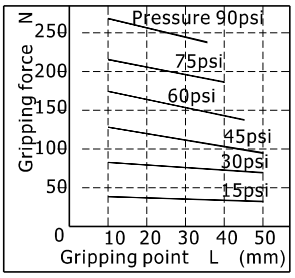
HFCI32



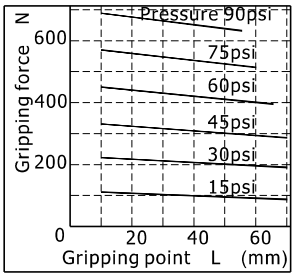
HFCI50



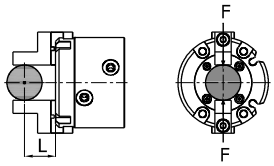
HFCI40



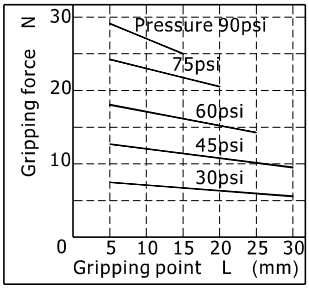
HFCI63



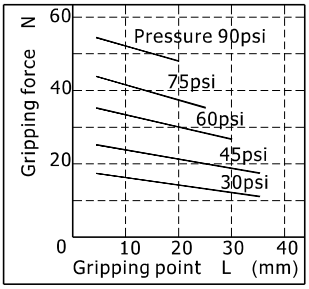
Closed gripping force(I Type)



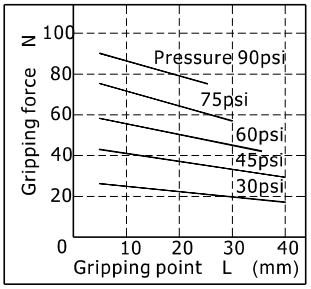
HFCI16



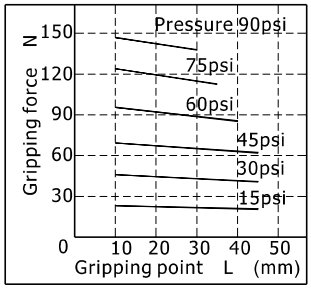
HFCI20



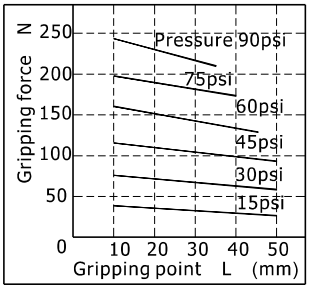
HFCI25



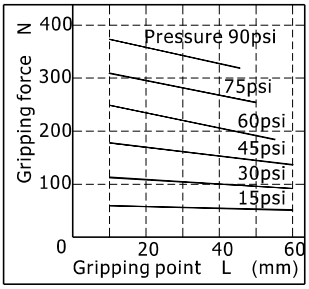
HFCI32



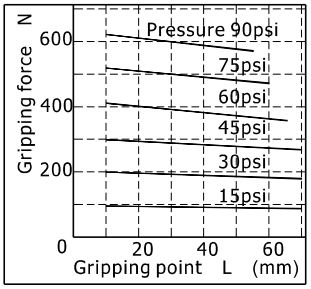
HFCI40



HFCI50



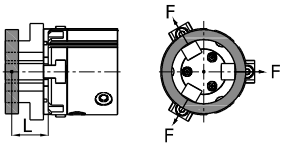
HFCI63



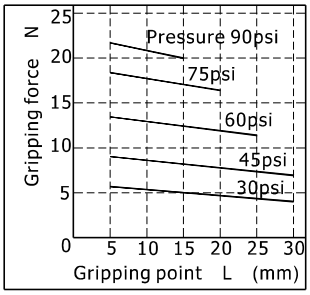
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

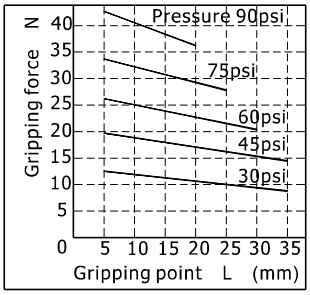
Opened gripping force(Y Type)



HFCY16



HFCY20



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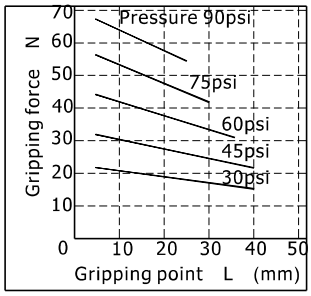

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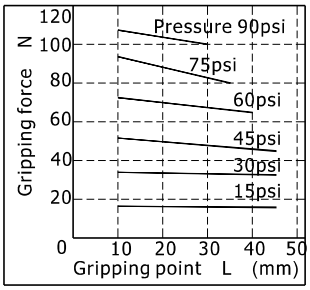

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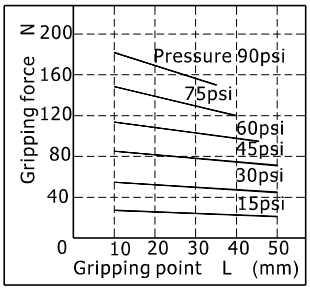

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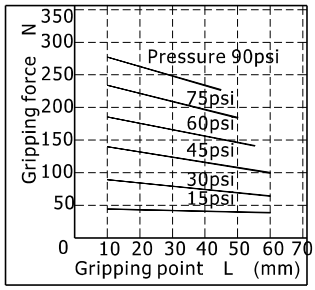

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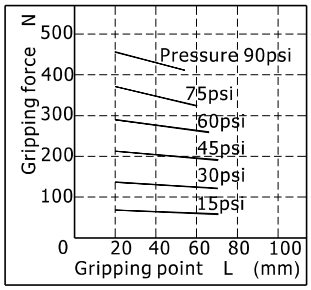
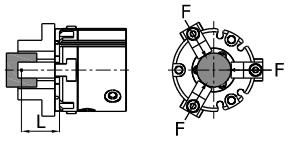


Closed gripping force(Y Type)



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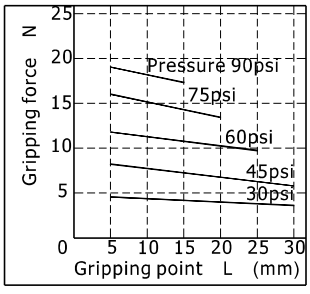

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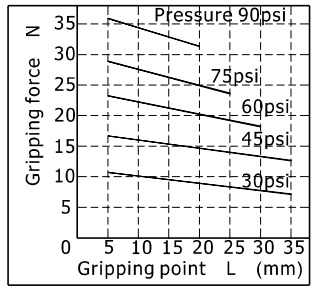
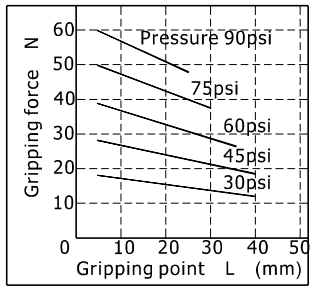
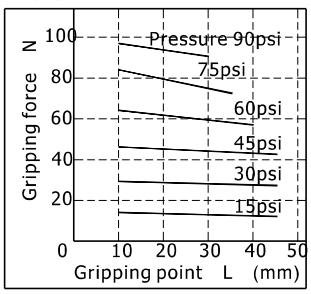


HFCY25



HFCY32



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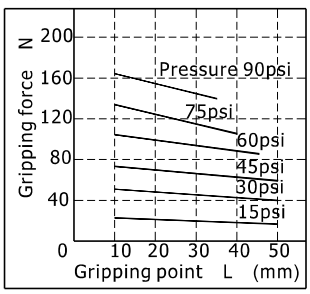
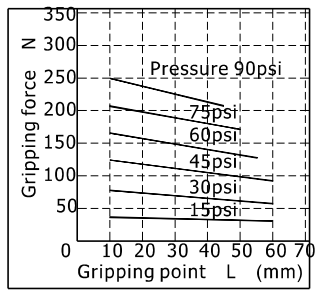


HFCY50



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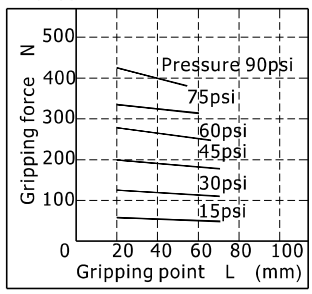
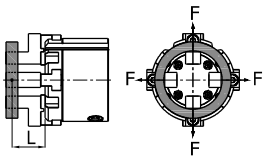


Air gripper(parallel open/close style)

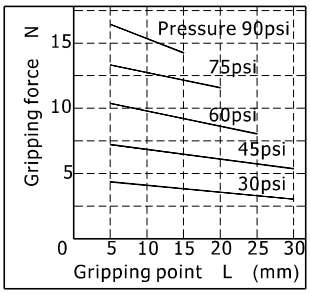
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Opened gripping force(X Type)



HFCX16



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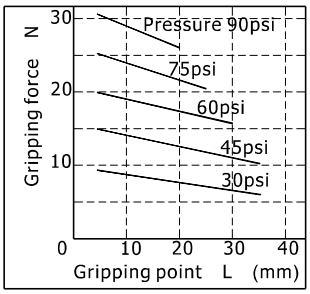

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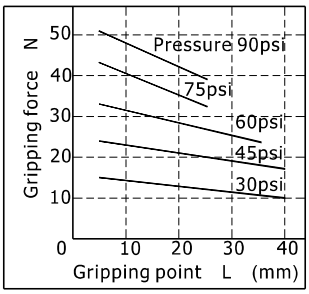

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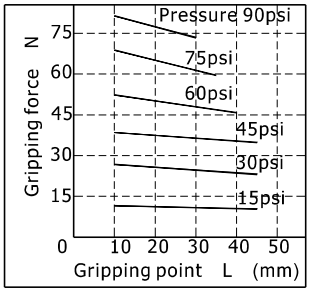
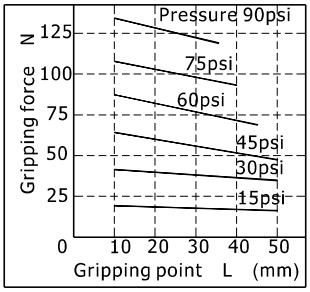
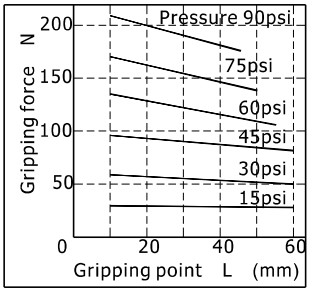


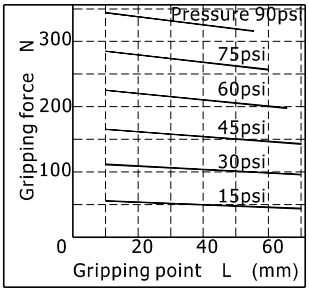
HFCX40



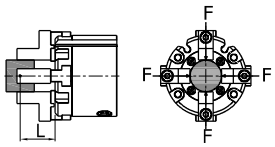
HFCX50



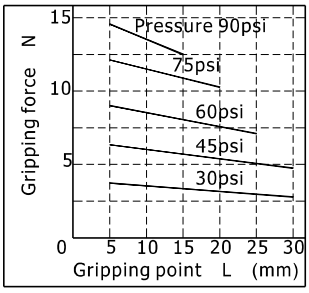
HFCX63



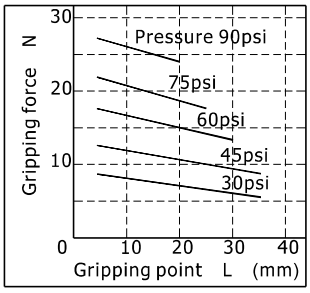
Closed gripping force(X Type)



HFCX16



HFCX20



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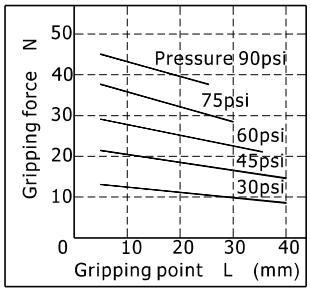
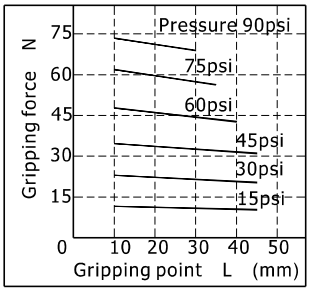


HFCX32



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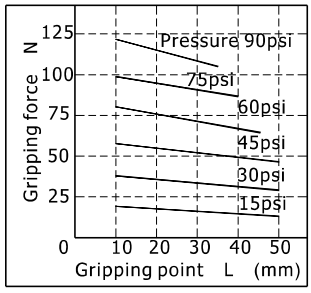
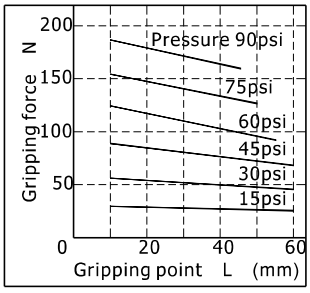
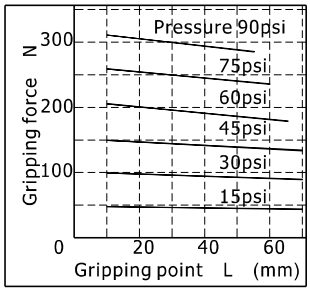


HFCX50



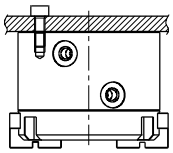
HFCX63



Installation and application

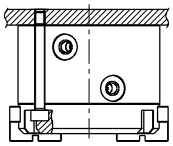
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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 torgue 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	$\Phi17^{+0.05}_{0}$	1.5
	20	M4×0.7	2.1	8	$\Phi21^{+0.05}_{0}$	1.5
	25	M4×0.7	2.1	8	$\Phi26^{+0.05}_{0}$	1.5
	32	M5×0.8	4.3	10	$\Phi34^{+0.05}_{0}$	2
	40	M6×1.0	7.3	12	$\Phi42^{+0.05}_{0}$	2
	50	M6×1.0	7.3	12	$\Phi52^{+0.05}_{0}$	2
	63	M6×1.0	7.3	12	$\Phi65^{+0.05}_{0}$	2.5
HFCY	16	M3×0.5	0.88	6	$\Phi17^{+0.05}_{0}$	1.5
	20	M3×0.5	0.88	6	$\Phi21^{+0.05}_{0}$	1.5
	25	M4×0.7	2.1	8	$\Phi26^{+0.05}_{0}$	1.5
	32	M4×0.7	2.1	8	$\Phi34^{+0.05}_{0}$	2
	40	M5×0.8	4.3	10	$\Phi42^{+0.05}_{0}$	2
	50	M5×0.8	4.3	10	$\Phi52^{+0.05}_{0}$	2
	63	M6×1.0	7.3	12	$\Phi65^{+0.05}_{0}$	2.5

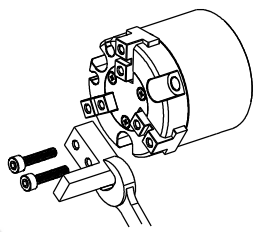
The installation of the front through hole



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
	63	M5×0.8	4.3
HFCY	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

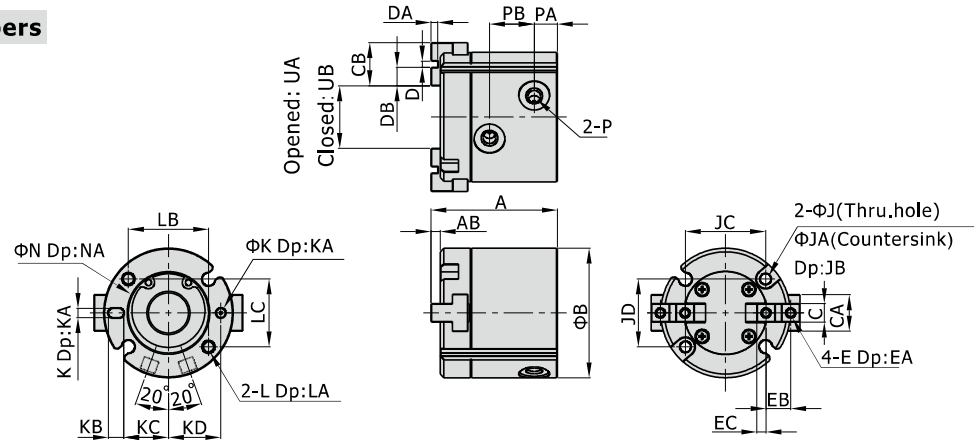


Bore size	The bolts type	Max. locking moment(Nm)
16	M3×0.5	0.59
20	M3×0.5	0.59
25	M3×0.5	0.59
32	M4×0.7	1.4
40	M4×0.7	1.4
50	M5×0.8	2.8
63	M5×0.8	2.8

Dimensions

Two grippers

Φ16~Φ25

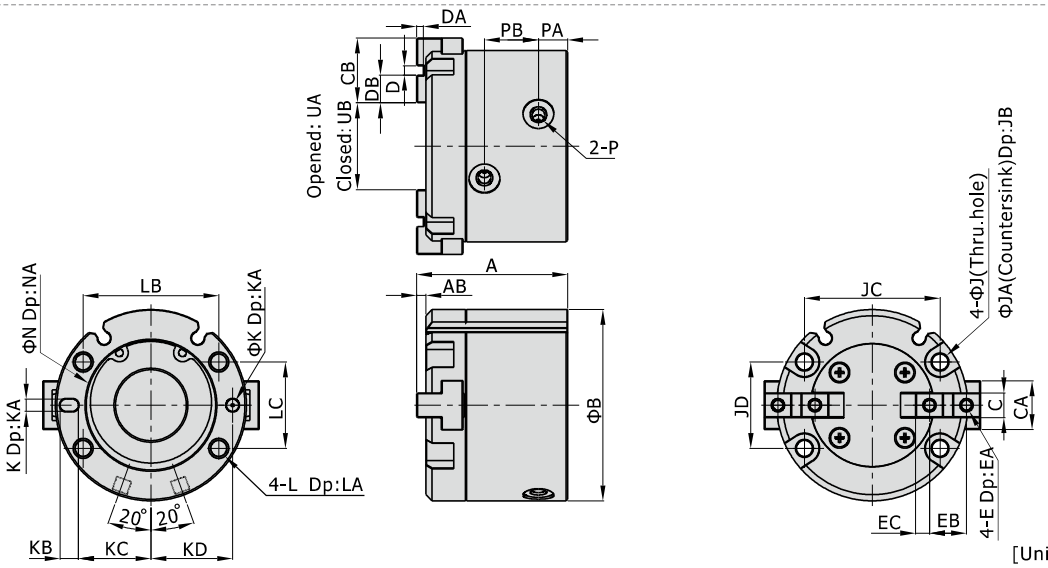


[Unit: mm]

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

Φ32~Φ63



[Unit: mm]

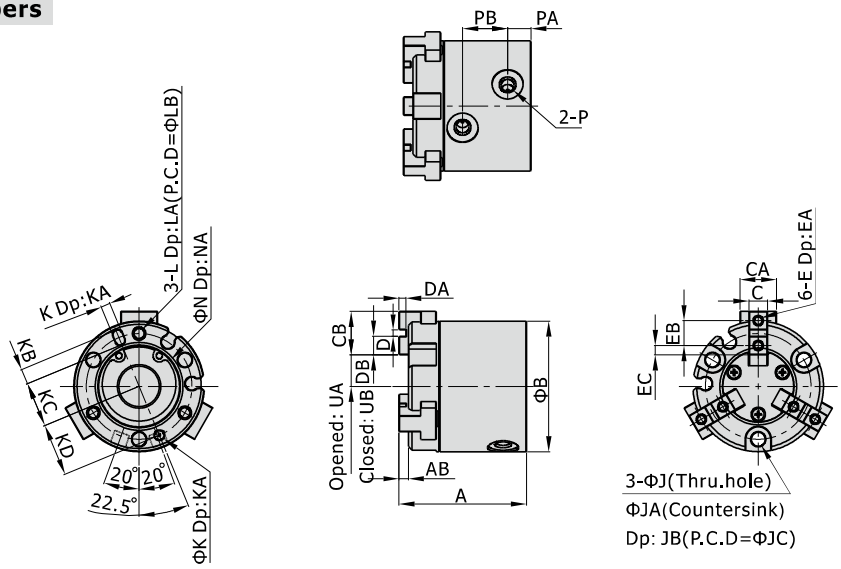
Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
HFCI32	45	3	55	$8^{-0.01}_{-0.03}$	14	20	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	11	4.5	4.2	8	9	38	25
HFCI40	49	3	62	$8^{-0.01}_{-0.03}$	16	21	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	12	4.5	5.2	9.5	9	44	28
HFCI50	57	3	70	$10^{-0.01}_{-0.03}$	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

HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

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

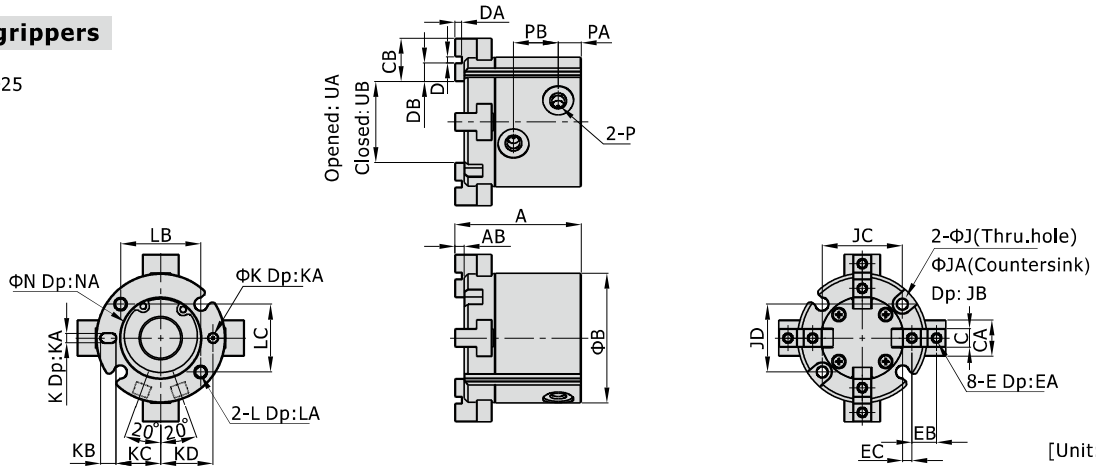
Model\Item	K	KA	KB	KC	KD	L	LA	LB	N	NA	P	PA	PB	UA	UB
HFCY16	$2^{+0.04}_{+0.01}$	2	3	11	12.5	M3×0.5	6	25	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	7	5
HFCY20	$2^{+0.04}_{+0.01}$	2	3	13	14.5	M3×0.5	6	29	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	8	6
HFCY25	$3^{+0.04}_{+0.01}$	3	5	14.5	17	M4×0.7	8	34	$26^{+0.05}_{0}$	1.5	M5×0.8	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

HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Four grippers

Φ16~Φ25

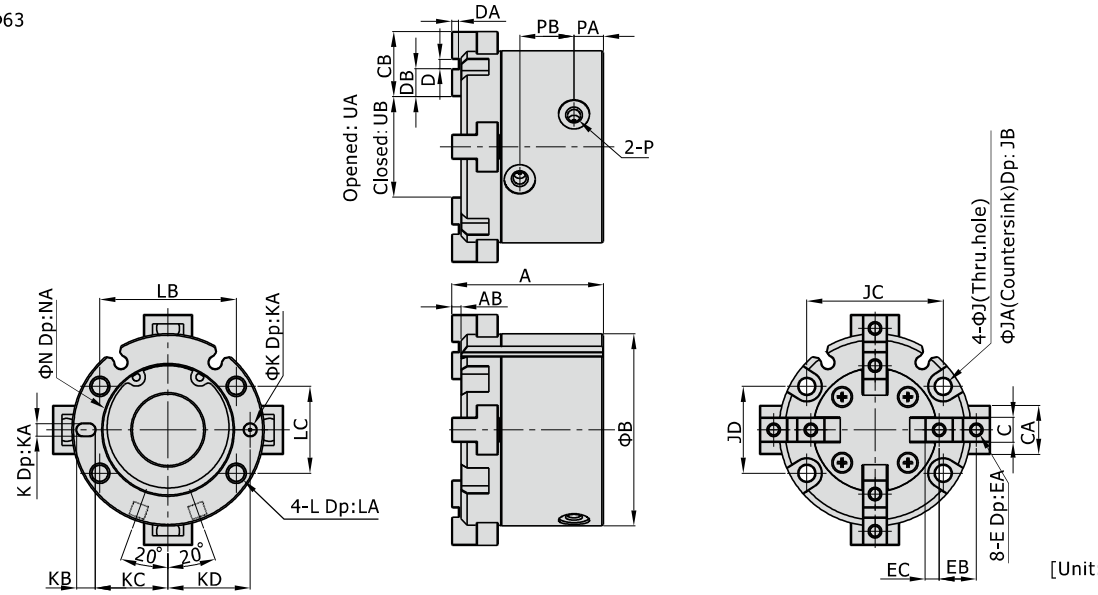


[Unit: mm]

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

Φ32~Φ63



[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