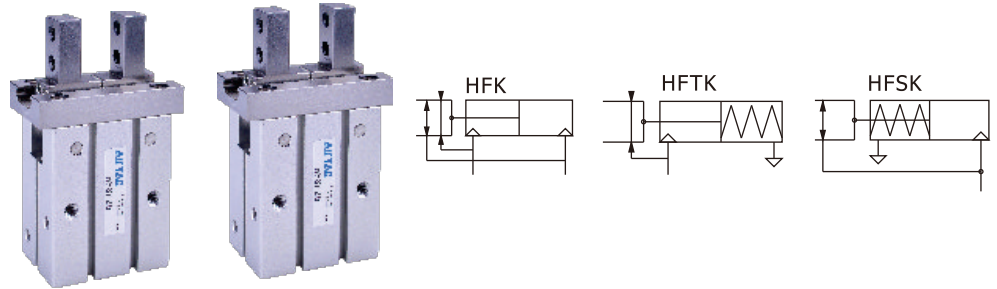




Air gripper—HFK Series

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.

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	

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℃					
Lubrication		Not required					
Repeatability mm		±0.01				±0.02	
Max. frequency		180(c.p.m)				60(c.p.m)	
Sensor switches		DMSH(S), CMSH		CMSG, DMSG(S), DMSH(S), CMSH			
Port size		M3×0.5			M5×0.8		



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 386 for the definition of "L".



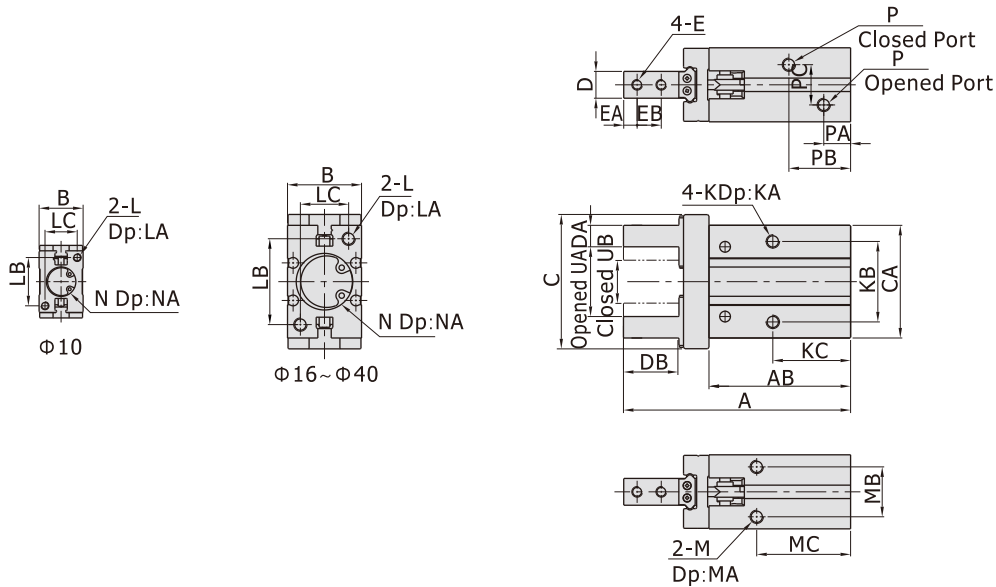
Air gripper(parallel style—roller bearing)

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	$5_{-0.05}^0$	$4_{-0.05}^0$	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23
HFK16	67.5	42.5	23.5	39	30.5	$8_{-0.05}^0$	$5_{-0.05}^0$	15	M3×0.5	4	7	M4×0.7	7	24	24.5
HFK20	85	53	27.5	53	42	$10_{-0.05}^0$	$8_{-0.05}^0$	20	M4×0.7	5	9	M5×0.8	8	30	29
HFK25	103	64	33.5	71	52	$12_{-0.05}^0$	$10_{-0.05}^0$	25	M5×0.8	6	12	M6×1.0	10	36	30
HFK32	113(122)	67(76)	40	106	60	$15_{-0.05}^0$	$12_{-0.05}^0$	29	M6×1.0	7	14	M6×1.0	10	46	40(49)
HFK40	139(152)	83(96)	48	132	72	$18_{-0.05}^0$	$14_{-0.05}^0$	36	M8×1.25	9	17	M8×1.25	12	56	49(62)

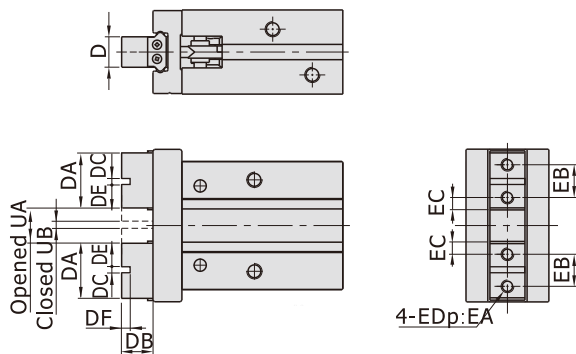
Model\Item	L	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFK10	M3×0.5	6	18	12	M3×0.5	6	11.5	27	$\Phi 11_{+0.05}^0$	1.5	M3×0.5	7	19	10	15.5_{+0}^{+2}	11.5_{-1}^0
HFK16	M4×0.7	8	22	15	M4×0.7	4.5	16	30	$\Phi 17_{+0.05}^0$	1.5	M5×0.8	7.5	19	13	21_{+0}^{+2}	15_{-1}^0
HFK20	M5×0.8	10	32	18	M5×0.8	8	18.5	35	$\Phi 21_{+0.05}^0$	2	M5×0.8	9.5	23	15	26.5_{+0}^{+2}	16.5_{-1}^0
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_{+0}^{+2}	19.5_{-1}^0
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	$48_{+2.5}^{+2.5}$	26_{-1}^0
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	$60_{+2.5}^{+2.5}$	30_{-1}^0

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

Bottom mounting type(F type)

$\Phi 10 \sim \Phi 40$

[Unit: mm]



Model\Item	D	DA	DB	DC	DE	E
HFK10-F	$5_{-0.05}^0$	11	5	$2_{+0.01}^{+0.04}$	4.5	M2.5×0.45
HFK16-F	$8_{-0.05}^0$	14	8	$2.5_{+0.01}^{+0.04}$	5.8	M3×0.5
HFK20-F	$10_{-0.05}^0$	18	10.5	$3_{+0.01}^{+0.04}$	7.5	M4×0.7
HFK25-F	$12_{-0.05}^0$	22	13	$4_{+0.01}^{+0.04}$	9	M5×0.8
HFK32-F	$15_{-0.05}^0$	34.5	18	$5_{+0.01}^{+0.04}$	14.8	M6×1.0
HFK40-F	$18_{-0.05}^0$	41.5	22	$6_{+0.01}^{+0.04}$	17.7	M8×1.25

Model\Item	DF	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-F	2	4	6	2.45	5.5_{+0}^{+2}	$1.8_{-0.5}^0$
HFK16-F	2.5	6	8	3.05	7.5_{+0}^{+2}	$1.8_{-0.5}^0$
HFK20-F	3	8	10	3.95	11.5_{+0}^{+2}	$1.8_{-0.5}^0$
HFK25-F	4	10	12	4.9	$16_{+0}^{+2.5}$	$2.4_{-0.5}^0$
HFK32-F	5	12	20	7.3	$25_{+0}^{+2.5}$	$3.4_{-0.5}^0$
HFK40-F	6	16	24	8.7	33_{+0}^{+3}	$3.4_{-0.5}^0$

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

Air gripper(parallel style—roller bearing)

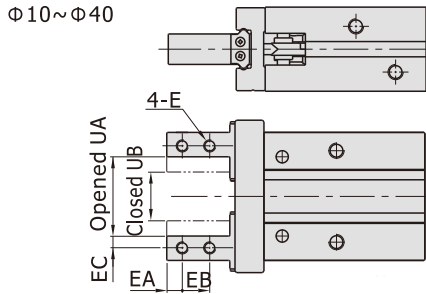
AIRTAC

HFK Series

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

Side mounting type(B type)

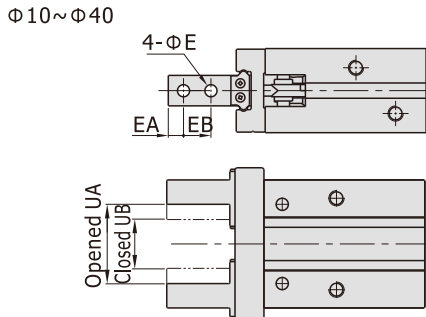
[Unit: mm]



Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-B	M2.5×0.45	3	5.7	2	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16-B	M3×0.5	4	7	2.5	21 ⁺² ₀	15 ⁰ ₋₁
HFK20-B	M4×0.7	5	9	4	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25-B	M5×0.8	6	12	5	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32-B	M6×1.0	7	14	6	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40-B	M8×1.25	9	17	7	60 ^{+2.5} ₀	30 ⁰ ₋₁

Thru-hole mounting type(N type)

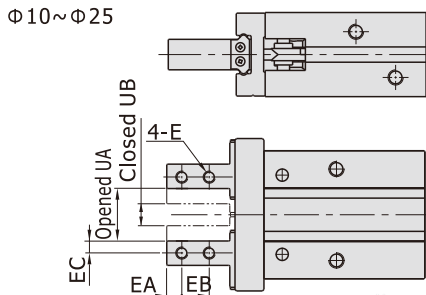
[Unit: mm]



Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10-N	2.8	3	5.7	15.5 ⁺² ₀	11.5 ⁰ ₋₁
HFK16-N	3.3	4	7	21 ⁺² ₀	15 ⁰ ₋₁
HFK20-N	4.5	5	9	26.5 ⁺² ₀	16.5 ⁰ ₋₁
HFK25-N	5.5	6	12	33.5 ⁺² ₀	19.5 ⁰ ₋₁
HFK32-N	6.5	7	14	48 ^{+2.5} ₀	26 ⁰ ₋₁
HFK40-N	9	9	17	60 ^{+2.5} ₀	30 ⁰ ₋₁

Side mounting and narrow type(W type)

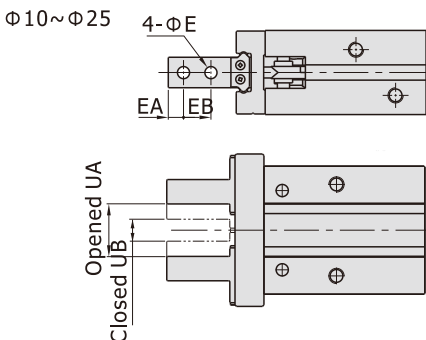
[Unit: mm]



Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-W	M2.5×0.45	3	5.7	2	10 ⁺² ₀	6 ⁰ ₋₁
HFK16-W	M3×0.5	4	7	2.5	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20-W	M4×0.7	5	9	4	17 ⁺² ₀	7 ⁰ ₋₁
HFK25-W	M5×0.8	6	12	5	23 ^{+2.5} ₀	9 ⁰ ₋₁

Thru-hole mounting and narrow type(M type)

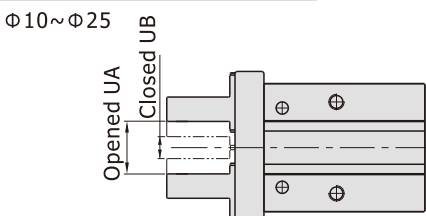
[Unit: mm]



Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10-M	2.8	3	5.7	10 ⁺² ₀	6 ⁰ ₋₁
HFK16-M	3.3	4	7	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20-M	4.5	5	9	17 ⁺² ₀	7 ⁰ ₋₁
HFK25-M	5.5	6	12	23 ^{+2.5} ₀	9 ⁰ ₋₁

Narrow type(R type)

[Unit: mm]



Model\Item	UA(Opened)	UB(Closed)
HFK10-R	10 ⁺² ₀	6 ⁰ ₋₁
HFK16-R	12.5 ⁺² ₀	6.5 ⁰ ₋₁
HFK20-R	17 ⁺² ₀	7 ⁰ ₋₁
HFK25-R	23 ^{+2.5} ₀	9 ⁰ ₋₁

Air gripper(parallel style)

HFZ,HFK,HFKL Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

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>	<p>The condition that the work-pieces won't drop is: $2 \times \mu F > mg$</p> <p>so: $F > \frac{mg}{2 \times \mu}$</p> <p>Safety coefficient is a, so F is:</p> $F = \frac{mg}{2 \times \mu} \times a$	$F = \frac{mg}{2 \times 0.2} \times 4 = 10 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 4 = 20 \times mg$
			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.

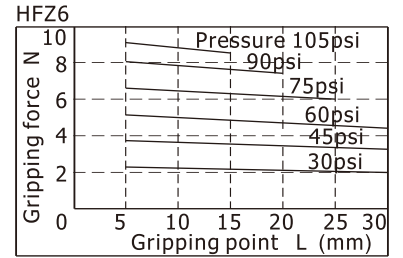
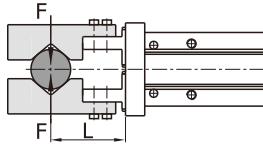
1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Air gripper(parallel style)

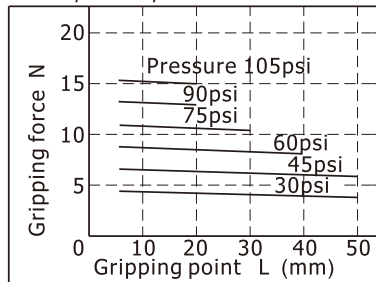
HFZ,HFK,HFKL Series

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

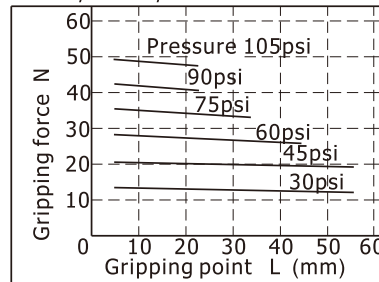
Double acting type closed gripping force



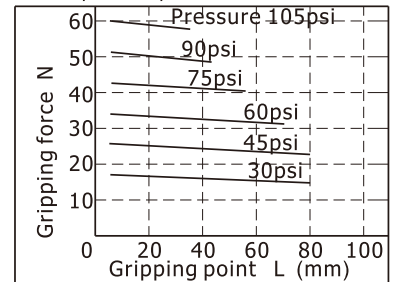
HFZ10/HFK10/HFKL10



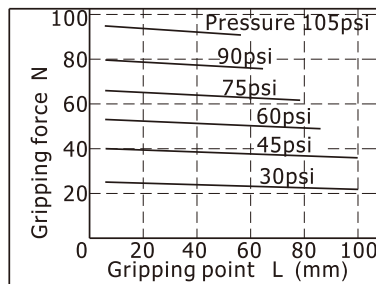
HFZ16/HFK16/HFKL16



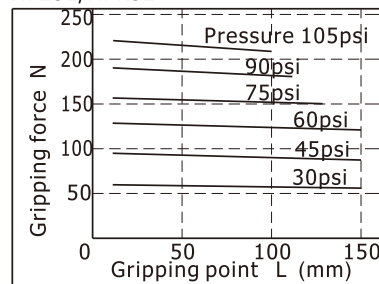
HFZ20/HFK20/HFKL20



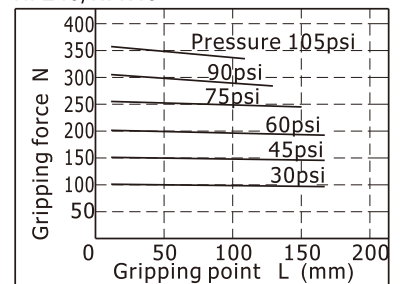
HFZ25/HFK25/HFKL25



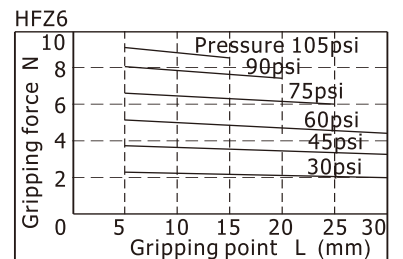
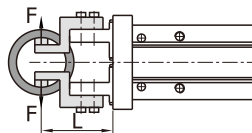
HFZ32/HFK32



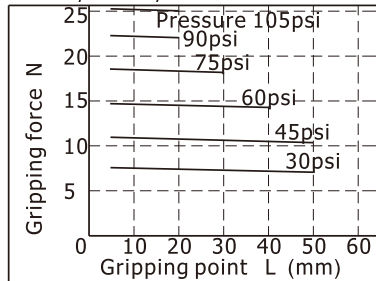
HFZ40/HFK40



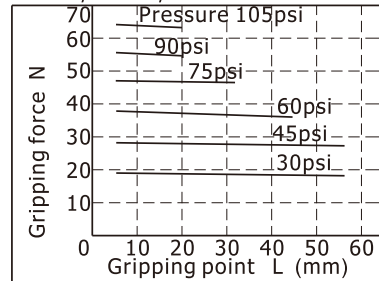
Double acting type opened gripping force



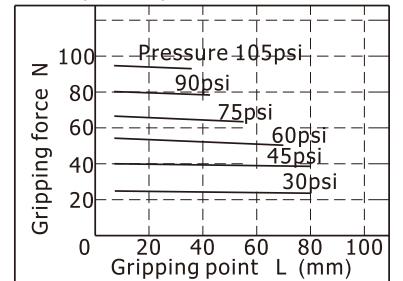
HFZ10/HFK10/HFKL10



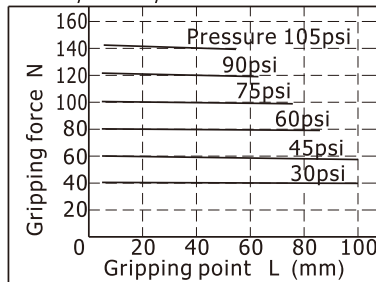
HFZ16/HFK16/HFKL16



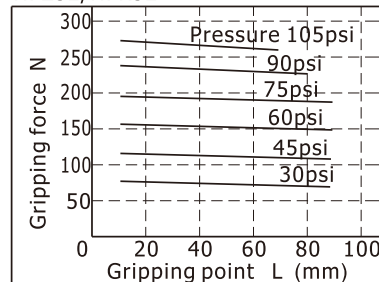
HFZ20/HFK20/HFKL20



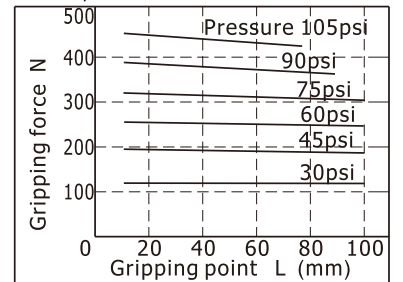
HFZ25/HFK25/HFKL25



HFZ32/HFK32



HFZ40/HFK40



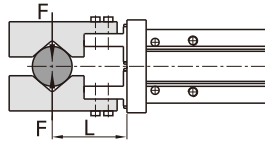
Air gripper(parallel style)



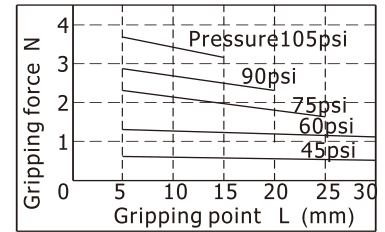
HFZ,HFK,HFKL Series

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

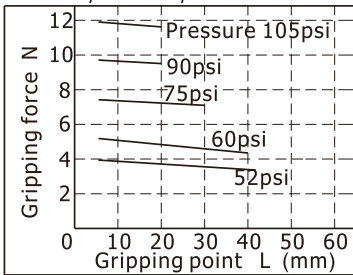
Single acting normally opened gripping force



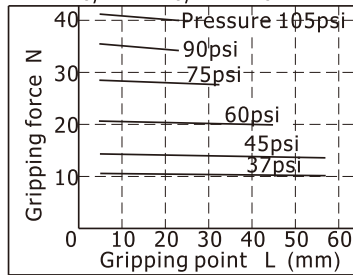
HFTZ6



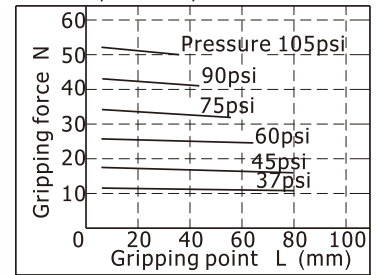
HFTZ10/HFTK10/HFKL10



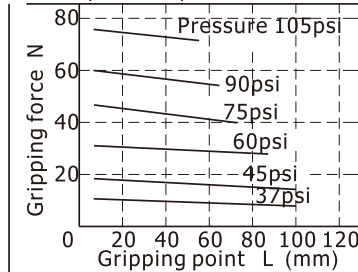
HFTZ16/HFTK16/HFKL16



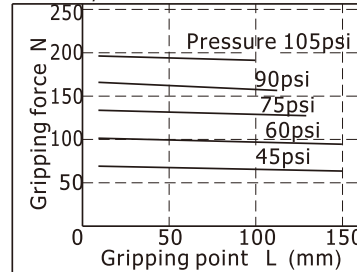
HFTZ20/HFTK20/HFKL20



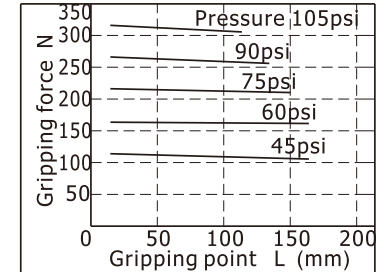
HFTZ25/HFTK25/HFKL25



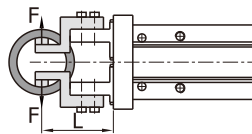
HFTZ32/HFTK32



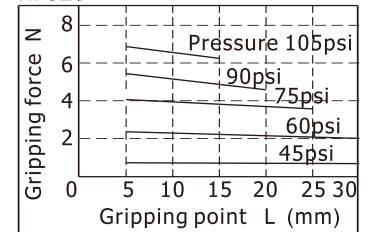
HFTZ40/HFTK40



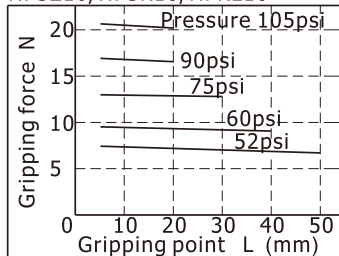
Single acting normally closed clamping force



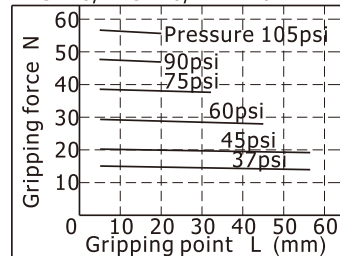
HFSZ6



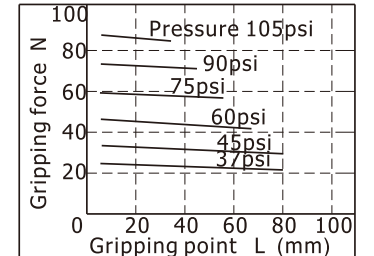
HFSZ10/HFSK10/HFKL10



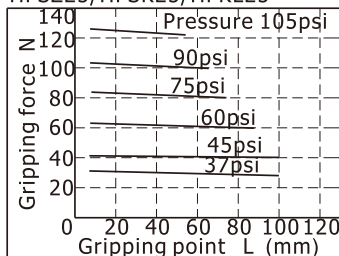
HFSZ16/HFSK16/HFKL16



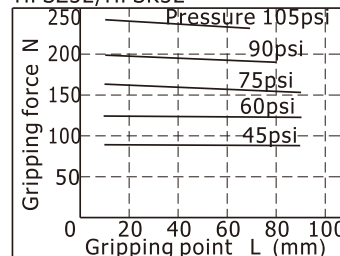
HFSZ20/HFSK20/HFKL20



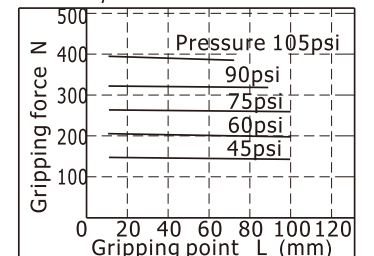
HFSZ25/HFSK25/HFKL25



HFSZ32/HFSK32



HFSZ40/HFSK40



Air gripper(parallel style)

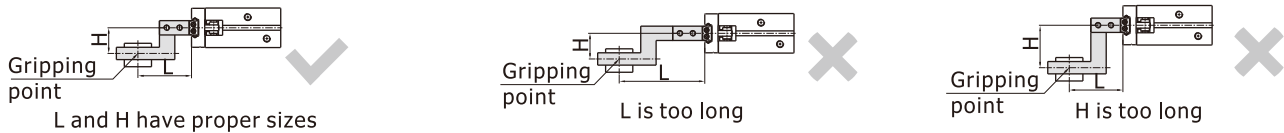
HFZ,HFK,HFKL Series

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

2. The selection of the gripping point

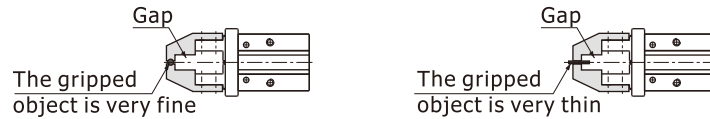
2.1) Please select the gripping point within the limited field shown below.

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, $\frac{0.68}{30 \times 10^{-3}}$ Allowable load F = $\frac{0.68}{30 \times 10^{-3}}$ = 22.7(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		

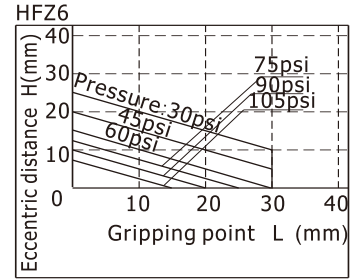
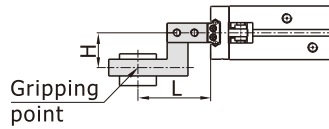
[Note] The loads and torque values of said are all static values.

Air gripper(parallel style)

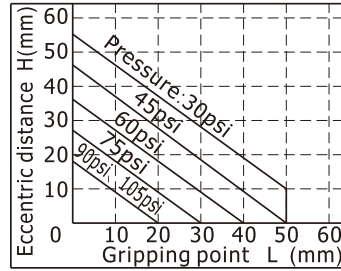
HFZ,HFK,HFKL Series

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

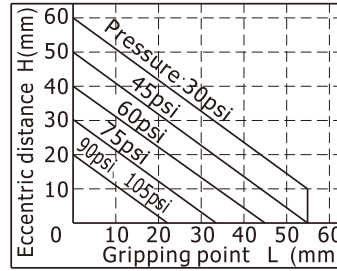
The range of the closed gripping points



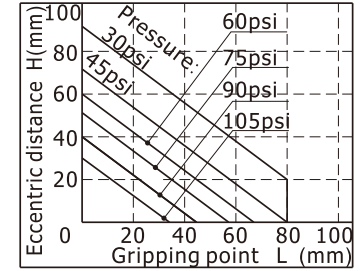
HFZ10/HFK10/HFKL10



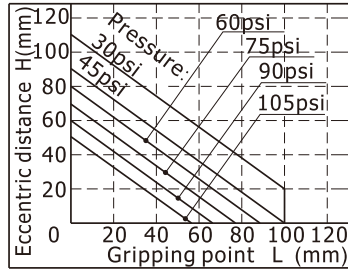
HFZ16/HFK16/HFKL16



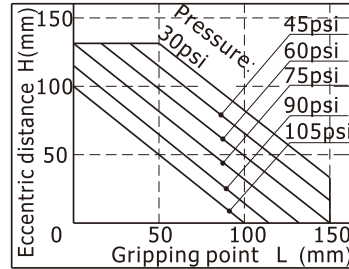
HFZ20/HFK20/HFKL20



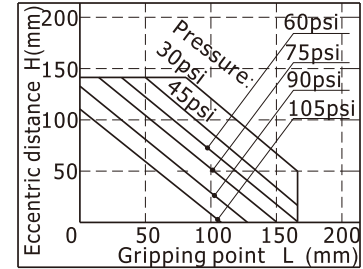
HFZ25/HFK25/HFKL25



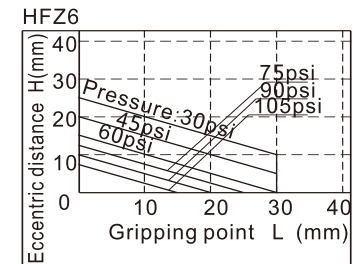
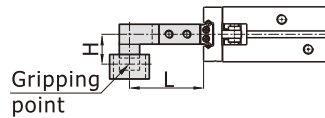
HFZ32/HFK32



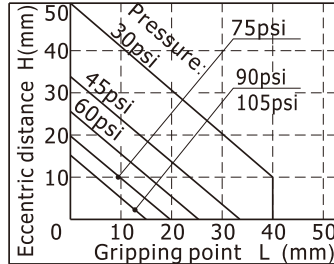
HFZ40/HFK40



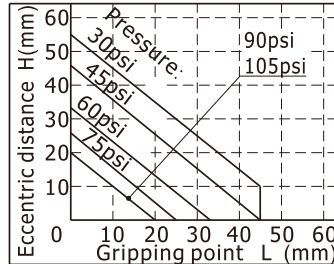
The range of the opened clamping point



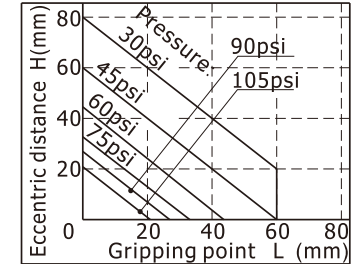
HFZ10/HFK10/HFKL10



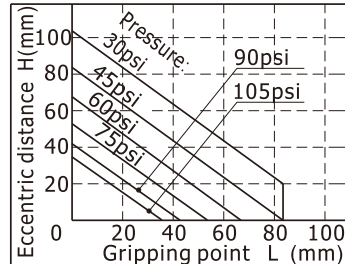
HFZ16/HFK16/HFKL16



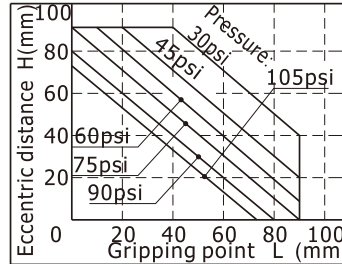
HFZ20/HFK20/HFKL20



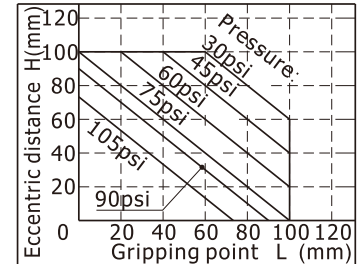
HFZ25/HFK25/HFKL25



HFZ32/HFK32



HFZ40/HFK40



Air gripper(parallel style)

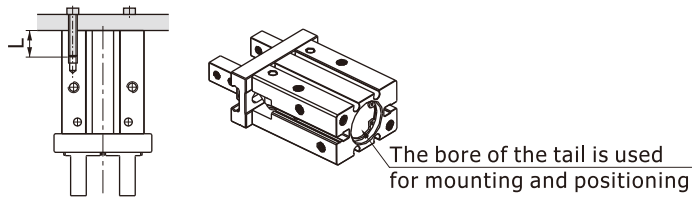
HFZ,HFK,HFKL Series

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

Installation and application

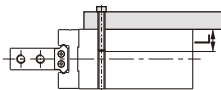
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



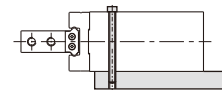
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	0.88N.m	6mm	$\Phi 11\text{mm} \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	1.5mm
16	M4×0.7	2.1N.m	8mm	$\Phi 17\text{mm} \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	1.5mm
20	M5×0.8	4.3N.m	10mm	$\Phi 21\text{mm} \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	2mm
25	M6×1.0	7.3N.m	12mm	$\Phi 26\text{mm} \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	2mm
32	M6×1.0	7.9N.m	12mm	$\Phi 34\text{mm} \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	2.5mm
40	M8×1.25	17.7N.m	16mm	$\Phi 42\text{mm} \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	2.5mm

The installation of the front threaded hole



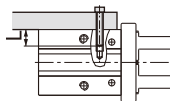
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.88	10
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	12
40	M8×1.25	17.7	12

The installation of the front through hole



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	M5×0.5	4.3	12
32	M5×0.8	4.3	13
40	M6×1.0	7.3	16

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

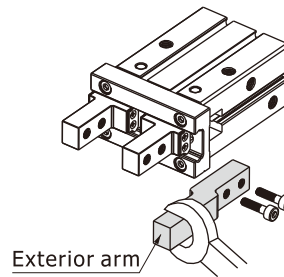
Air gripper(parallel style)

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.

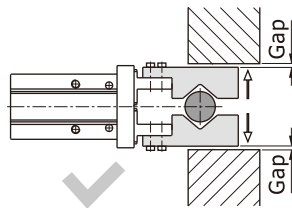
Bore size	The bolts type	Max. locking moment (Nm)
6	M2×0.4	0.15
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9
40	M8×1.25	11.8



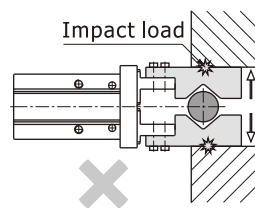
8. Confirm that there is no external forces exerted on the gripping jaw.

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

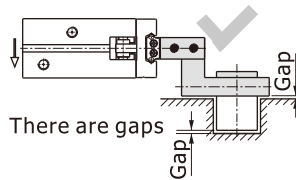


There are gaps

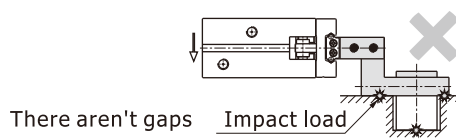


There aren't gaps

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



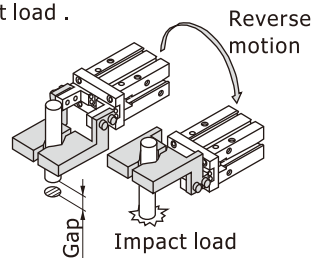
There are gaps



There aren't gaps Impact load

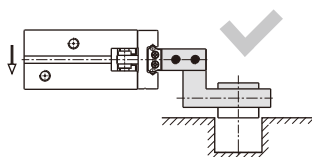
8.3) Reverse motion state

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 .

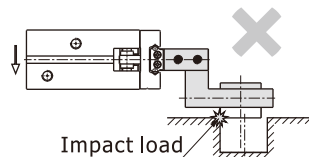


Reverse motion
Gap Impact load

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.