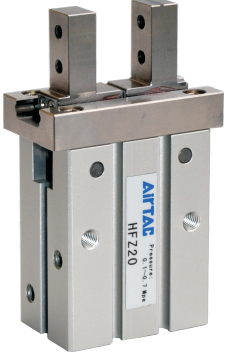





# Air gripper—HFZ, HFY Series

## Product series

Series name	Acting type	Bore size	Collocation of sensor switch				
			CS1-G	DS1-G	DS1-H		
<b>HFZ Series</b> 	Double acting	6			●		
	Single acting	10	●	●			
		16	●	●	●		
		20	●	●	●		
		25	●	●	●		
		32	●	●	●		
		40	●	●	●		
		<b>HFY Series</b> 	Double acting	6			●
			Single acting	10	●	●	
				16	●	●	●
20	●			●	●		
25	●			●	●		
32	●			●	●		
Page	374			380	403		

## Installation and application

1. Dirty substances in the pipe must be eliminated before air gripper is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40 μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the air gripper is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.



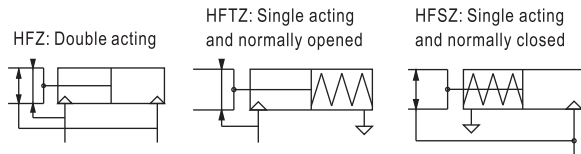
# Air gripper(parallel style)



## HFZ Series

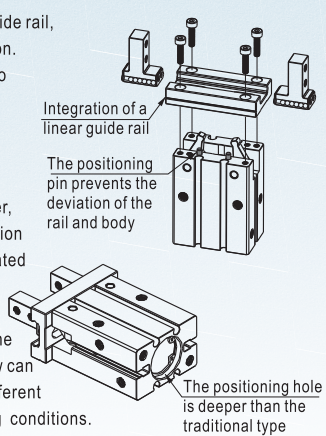


### Symbol



### Product feature

1. Integrated design of linear guide rail, high rigidity and high precision.
2. A positioning pin is attached to the bottom of the linear guide rail, which can prevent the deviation of the positioning rail and body.
3. The hole of the body is deeper, which can improve the precision and the consistency of repeated dismounting and positioning.
4. According to the actual using requirements of customers, the initial position of clamping jaw can be customized to meet the different needs under different working conditions.

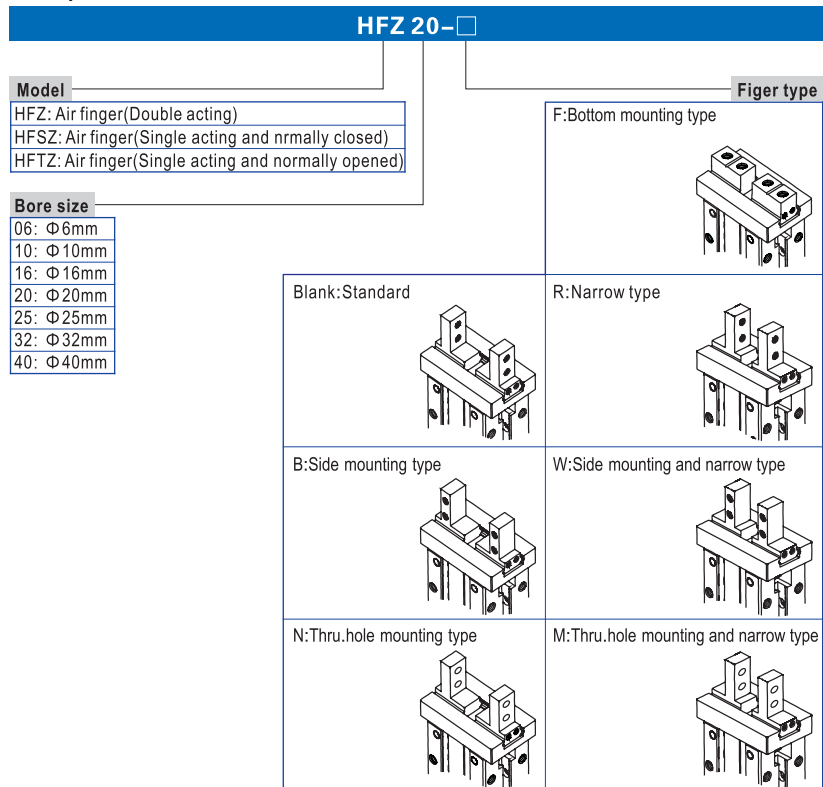


### Specification

Bore size (mm)		6	10	16	20	25	32	40
Acting type		Double acting			Single acting			
Fluid		Air(to be filtered by 40 μ m filter element)						
Operating pressure	Double acting	Φ6, Φ10	0.2~0.7MPa(28~100psi)(2.0~7.0bar)					
	Others	Φ6, Φ10	0.1~0.7MPa(15~100psi)(1.0~7.0bar)					
	Single acting	Φ6, Φ10	0.35~0.7MPa(50~100psi)(3.5~7.0bar)					
Others	Others	0.25~0.7MPa(36~100psi)(2.5~7.0bar)						
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 ①		DS1-H	CS1-G DS1-G	CS1-G, DS1-G, DS1-H				
Port size		M3 × 0.5			M5 × 0.8			

① Sensor switch should be ordered additionally, please refer to P403~426 for detail of sensor switch.

### Explain of model



① Φ6, Φ32, Φ40 bore size don't R, W, M type. Add) HFZ series are all attached with magnet.



HFZ

### Ordering code

Model can to be changed Ordering code. Example:  
 Production type: HFZ  
 Bore size: 20mm  
 Finger type: Narrow type  
**Model: HFZ20-R**

**Ordering code: HFZ 20 R**

Model	Finger type
Bore size	Blank: Standard
06: Φ6mm	B: Side mounting type
10: Φ10mm	N: Thru.hole mounting type
16: Φ16mm	R: Narrow type
20: Φ20mm	W: Side mounting and narrow type
25: Φ25mm	M: Thru.hole mounting and narrow type
32: Φ32mm	F: Bottom mounting type
40: Φ40mm	

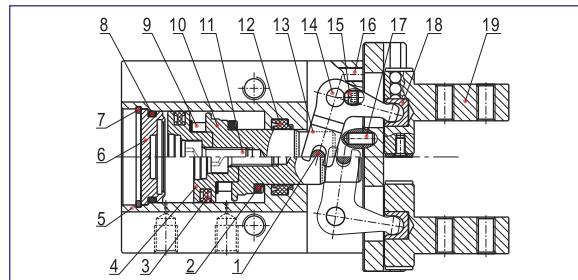


# Air gripper(parallel style)



## HFZ Series

### Inner structure and material of major parts



NO.	Item	Material
1	Pin	Stainless steel
2	Bumper	TPU
3	Piston seal	NBR
4	Piston	Aluminum alloy/Stainless steel
5	Body	Aluminum alloy
6	Back cover	Aluminum alloy
7	C clip	Spring steel
8	O-ring	NBR
9	Magnet	Sintered metal(Neodymium-iron-boron)
10	Piston rod	Aluminum alloy/Stainless steel
11	Screw	Carbon steel
12	Rod packing	NBR
13	Curved bar	Stainless steel
14	Pin	Stainless steel
15	Countersink screw	Carbon steel
16	Hexagon screw	Carbon steel
17	Pin	Stainless steel
18	Guide sleeve	Stainless steel
19	Assembly of clamping jaw and guide rail	Stainless steel

### Gripping force and stroke

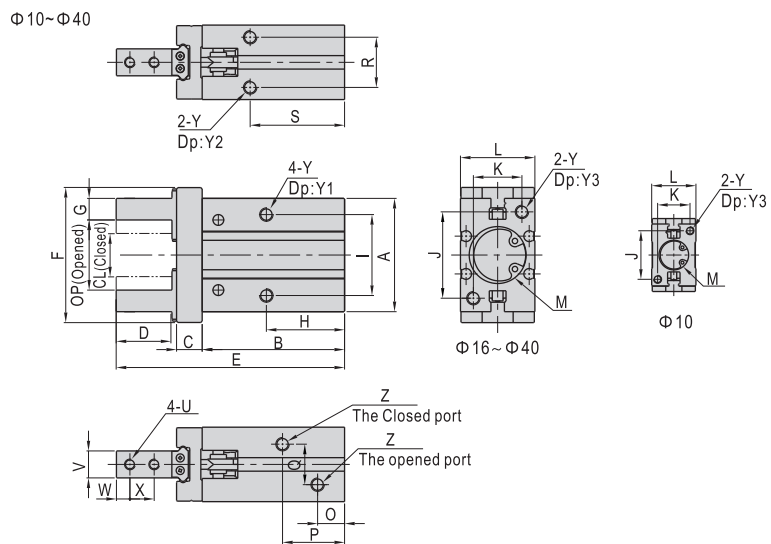
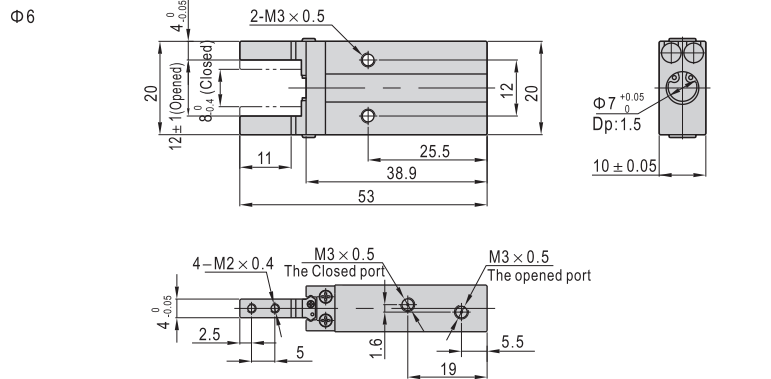
Acting	Model	Gripping force per finger Effective valve(N)		Opening/Closing stroke (Both sides)(mm)	Weight (g)		
		External	Internal		F Type	Others	
Double acting	HFZ6	3.3	6.1	4	24	25	
	HFZ10	11	17	4	56	56	
	HFZ16	34	45	6	124	124	
	HFZ20	45	68	10	236	236	
	HFZ25	69	102	14	418	428	
	HFZ32	160	195	22	750	729	
Single acting	HFZ40	255	320	30	1340	1268	
	Normally opened	HFTZ6	1.9	-	4	25	26
		HFTZ10	7	-	4	57	57
		HFTZ16	27	-	6	125	125
		HFTZ20	35	-	10	238	238
		HFTZ25	55	-	14	420	430
		HFTZ32	133	-	22	799	778
	Normally closed	HFTZ40	220	-	30	1437	1365
		HFSZ6	-	3.7	4	25	26
		HFSZ11	-	13	4	57	57
		HFSZ16	-	38	6	125	125
		HFSZ20	-	59	10	238	238
HFSZ25		-	87	14	420	430	
HFSZ32	-	163	22	799	778		
HFSZ40	-	270	30	1437	1365		

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

Add) Please refer to page 377 for the definition of "L".

### Dimensions

#### Standard type



Model\Item	A	B	C	D	E	F	G	H	I	J
HFZ10	23	37.6	6	12	57	29	4 <sup>0</sup> <sub>-0.05</sub>	23	16	18
HFZ16	30.6	42.5	7.5	15	67.3	38	5 <sup>0</sup> <sub>-0.05</sub>	24.5	24	22
HFZ20	42	52.8	9.5	20	84.7	50	8 <sup>0</sup> <sub>-0.05</sub>	29	30	32
HFZ25	52	63.6	11	25	102.7	63	10 <sup>0</sup> <sub>-0.05</sub>	30	36	40
HFZ32	60	67(76)	12	29	113(122)	97	12 <sup>0</sup> <sub>-0.05</sub>	40(49)	46	46
HFZ40	72	83(96)	15	36	139(152)	119	14 <sup>0</sup> <sub>-0.05</sub>	49(62)	56	56

Model\Item	K	L	M	O	P	Q	R	S	U	W	
HFZ10	12	16.4	Φ11 <sup>+0.05</sup>	Dp:2	7.5	19	10	11.4	27	M2.5×0.45	3
HFZ16	15	23.6	Φ17 <sup>+0.05</sup>	Dp:2	7.5	19	13	16	30	M3×0.5	4
HFZ20	18	27.6	Φ21 <sup>+0.05</sup>	Dp:3	9.7	23	15	18.6	35	M4×0.7	5
HFZ25	22	33.6	Φ26 <sup>+0.05</sup>	Dp:3.5	10	23.8	20	22	36.5	M5×0.8	6
HFZ32	26	40	Φ34 <sup>+0.05</sup>	Dp:4	11	31(40)	24	26	48(57)	M6×1.0	7
HFZ40	32	48	Φ42 <sup>+0.05</sup>	Dp:4	12	38(50)	28	32	58(71)	M8×1.25	9

Model\Item	V	X	Y	Y1	Y2	Y3	Z	OP	CL
HFZ10	5 <sup>0</sup> <sub>-0.05</sub>	5.7	M3×0.5	5.5	6	6	M3×0.5	15.2 <sup>+2</sup> <sub>0</sub>	11.2 <sup>0</sup> <sub>-0.7</sub>
HFZ16	8 <sup>0</sup> <sub>-0.05</sub>	7	M4×0.7	8	4.5	8	M5×0.8	20.9 <sup>+2</sup> <sub>0</sub>	14.9 <sup>0</sup> <sub>-0.7</sub>
HFZ20	10 <sup>0</sup> <sub>-0.05</sub>	9	M5×0.8	10	8	10	M5×0.8	26.3 <sup>+2</sup> <sub>0</sub>	16.3 <sup>0</sup> <sub>-0.7</sub>
HFZ25	12 <sup>0</sup> <sub>-0.05</sub>	12	M6×1.0	12	10	12	M5×0.8	33.3 <sup>+2.5</sup> <sub>0</sub>	19.3 <sup>0</sup> <sub>-0.8</sub>
HFZ32	15 <sup>0</sup> <sub>-0.05</sub>	14	M6×1.0	13	10	13	M5×0.8	48 <sup>+2.5</sup> <sub>0</sub>	26 <sup>0</sup> <sub>-0.5</sub>
HFZ40	18 <sup>0</sup> <sub>-0.05</sub>	17	M8×1.25	16	13	17	M5×0.8	60 <sup>+2.5</sup> <sub>0</sub>	30 <sup>0</sup> <sub>-0.5</sub>

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



HFZ



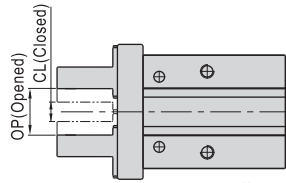
# Air gripper(parallel style)



## HFZ Series

### Narrow type(R type)

Φ10~Φ25

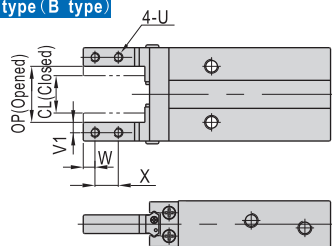


Model\Item	OP	CL
HFZ10-R	9.7 <sup>+2</sup> <sub>0</sub>	5.7 <sup>0</sup> <sub>-0.4</sub>
HFZ16-R	12.6 <sup>+2</sup> <sub>0</sub>	6.6 <sup>0</sup> <sub>-0.4</sub>
HFZ20-R	17.2 <sup>+2</sup> <sub>0</sub>	7.2 <sup>0</sup> <sub>-0.4</sub>
HFZ25-R	22.8 <sup>+2.5</sup> <sub>0</sub>	8.8 <sup>0</sup> <sub>-0.4</sub>

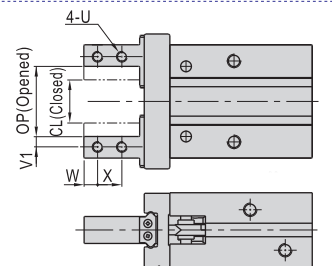
Note) The other dimensions are the same as standard type.

### Side mounting type (B type)

Φ6



Φ10~Φ40

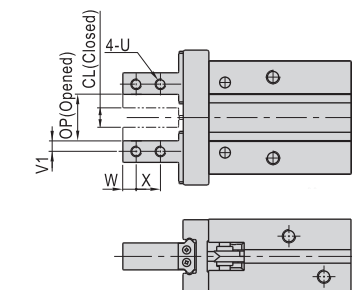


Model\Item	U	V1	W	X	OP	CL
HFZ6-B	M2 × 0.4	2	2.5	5	12 ± 1	8 <sup>0</sup> <sub>-0.4</sub>
HFZ10-B	M2.5 × 0.45	2	3	5.7	15.2 <sup>+2</sup> <sub>0</sub>	11.2 <sup>0</sup> <sub>-0.7</sub>
HFZ16-B	M3 × 0.5	2.5	4	7	20.9 <sup>+2</sup> <sub>0</sub>	14.9 <sup>0</sup> <sub>-0.7</sub>
HFZ20-B	M4 × 0.7	4	5	9	26.3 <sup>+2</sup> <sub>0</sub>	16.3 <sup>0</sup> <sub>-0.7</sub>
HFZ25-B	M5 × 0.8	5	6	12	33.3 <sup>+2.5</sup> <sub>0</sub>	19.3 <sup>0</sup> <sub>-0.8</sub>
HFZ32-B	M6 × 1.0	6	7	14	48 <sup>+2.5</sup> <sub>0</sub>	26 <sup>0</sup> <sub>-0.5</sub>
HFZ40-B	M8 × 1.25	7	9	17	60 <sup>+2.5</sup> <sub>0</sub>	30 <sup>0</sup> <sub>-0.5</sub>

Note) The other dimensions are the same as standard type.

### Side mounting and narrow type (W type)

Φ10~Φ25

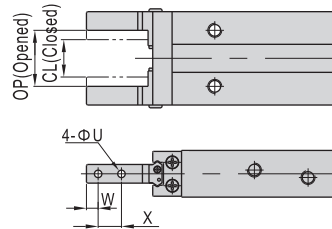


Model\Item	U	V1	W	X	OP	CL
HFZ10-W	M2.5 × 0.45	2	3	5.7	9.7 <sup>+2</sup> <sub>0</sub>	5.7 <sup>0</sup> <sub>-0.4</sub>
HFZ16-W	M3 × 0.5	2.5	4	7	12.6 <sup>+2</sup> <sub>0</sub>	6.6 <sup>0</sup> <sub>-0.4</sub>
HFZ20-W	M4 × 0.7	4	5	9	17.2 <sup>+2</sup> <sub>0</sub>	7.2 <sup>0</sup> <sub>-0.4</sub>
HFZ25-W	M5 × 0.8	5	6	12	22.8 <sup>+2.5</sup> <sub>0</sub>	8.8 <sup>0</sup> <sub>-0.4</sub>

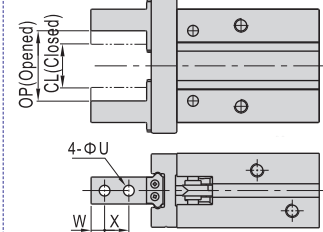
Note) The other dimensions are the same as standard type.

### Thru. hole mounting type(N type)

Φ6



Φ10~Φ40



Model\Item	U	W	X	OP	CL
HFZ6-N	2.4	2.5	5	12 ± 1	8 <sup>0</sup> <sub>-0.4</sub>
HFZ10-N	2.9	3	5.7	15.2 <sup>+2</sup> <sub>0</sub>	11.2 <sup>0</sup> <sub>-0.7</sub>
HFZ16-N	3.3	4	7	20.9 <sup>+2</sup> <sub>0</sub>	14.9 <sup>0</sup> <sub>-0.7</sub>
HFZ20-N	4.5	5	9	26.3 <sup>+2</sup> <sub>0</sub>	16.3 <sup>0</sup> <sub>-0.7</sub>
HFZ25-N	5.5	6	12	33.3 <sup>+2.5</sup> <sub>0</sub>	19.3 <sup>0</sup> <sub>-0.8</sub>
HFZ32-N	6.6	7	14	48 <sup>+2.5</sup> <sub>0</sub>	26 <sup>0</sup> <sub>-0.5</sub>
HFZ40-N	9	9	17	60 <sup>+2.5</sup> <sub>0</sub>	30 <sup>0</sup> <sub>-0.5</sub>

Note) The other dimensions are the same as standard type.

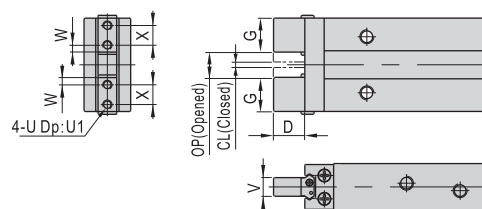
### Thru. hole mounting and narrow type(M type)

Model\Item	U	W	X	OP	CL
HFZ10-M	2.9	3	5.7	9.7 <sup>+2</sup> <sub>0</sub>	5.7 <sup>0</sup> <sub>-0.4</sub>
HFZ16-M	3.3	4	7	12.6 <sup>+2</sup> <sub>0</sub>	6.6 <sup>0</sup> <sub>-0.4</sub>
HFZ20-M	4.5	5	9	17.2 <sup>+2</sup> <sub>0</sub>	7.2 <sup>0</sup> <sub>-0.4</sub>
HFZ25-M	5.5	6	12	22.8 <sup>+2.5</sup> <sub>0</sub>	8.8 <sup>0</sup> <sub>-0.4</sub>

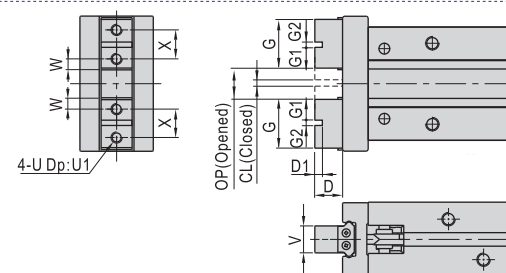
Note) The other dimensions are the same as standard type.

### Bottom mounting type(F type)

Φ6



Φ10~Φ40



Model\Item	D	D1	G	G1	G2	U	U1
HFZ6-F	7.2	-	7.5	-	-	M2 × 0.4	3
HFZ10-F	5.2	2	10.9	4.45	2H9 <sup>+0.025</sup> <sub>0</sub>	M2.5 × 0.45	4
HFZ16-F	8.3	2.5	14.1	5.8	2.5H9 <sup>+0.025</sup> <sub>0</sub>	M3 × 0.5	6
HFZ20-F	10.5	3	17.9	7.45	3H9 <sup>+0.025</sup> <sub>0</sub>	M4 × 0.7	8
HFZ25-F	13.1	4	21.8	8.9	4H9 <sup>+0.030</sup> <sub>0</sub>	M5 × 0.8	10
HFZ32-F	18	5	34.6	14.8	5H9 <sup>+0.030</sup> <sub>0</sub>	M6 × 1.0	12
HFZ40-F	22	6	41.4	17.7	6H9 <sup>+0.030</sup> <sub>0</sub>	M8 × 1.25	16

Model\Item	OP	CL	V	W	X
HFZ6-F	5 <sup>+1.2</sup> <sub>-0.8</sub>	1 <sup>+0.2</sup> <sub>0</sub>	4 <sup>0</sup> <sub>-0.05</sub>	2	3.5
HFZ10-F	5.4 <sup>+2.2</sup> <sub>0</sub>	1.4 <sup>0</sup> <sub>-0.2</sub>	5 <sup>0</sup> <sub>-0.05</sub>	2.45	6
HFZ16-F	7.4 <sup>+2.2</sup> <sub>0</sub>	1.4 <sup>0</sup> <sub>-0.2</sub>	8 <sup>0</sup> <sub>-0.05</sub>	3.05	8
HFZ20-F	11.6 <sup>+2.3</sup> <sub>0</sub>	1.4 <sup>0</sup> <sub>-0.2</sub>	10 <sup>0</sup> <sub>-0.05</sub>	3.95	10
HFZ25-F	16 <sup>+2.5</sup> <sub>0</sub>	1.8 <sup>0</sup> <sub>-0.2</sub>	12 <sup>0</sup> <sub>-0.05</sub>	4.9	12
HFZ32-F	25 <sup>+2.7</sup> <sub>0</sub>	3 <sup>-0.2</sup> <sub>0</sub>	15 <sup>0</sup> <sub>-0.05</sub>	7.3	20
HFZ40-F	33 <sup>+2.9</sup> <sub>0</sub>	3 <sup>0</sup> <sub>-0.2</sub>	18 <sup>0</sup> <sub>-0.05</sub>	8.7	24

Note) The other dimensions are the same as standard type.



HFZ



# Air gripper(parallel style)

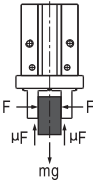


## HFZ Series

### How to select product

Please select pneumatic finger according to the following steps:  
The selection of the effective gripping force → the confirmation of the gripping point  
→ the confirmation of the external force put on the gripping jaw.

#### 1. The selection of the gripping force



The work-pieces as shown in the left:  
F: Gripping force (N)  
 $\mu$ : 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:  $2 \times \mu F > mg$

$$\text{so: } F > \frac{mg}{2 \times \mu}$$

Safety coefficient is a, so F is:

$$F = \frac{mg}{2 \times \mu} \times a$$

The gripping work-pieces shown above, 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.

$\mu = 0.2$ $F = \frac{mg}{2 \times 0.2} \times 4$ $= 10 \times mg$	$\mu = 0.1$ $F = \frac{mg}{2 \times 0.1} \times 4$ $= 20 \times mg$
---	---

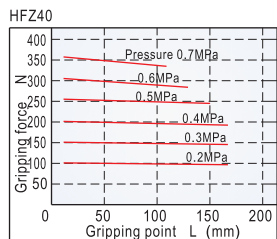
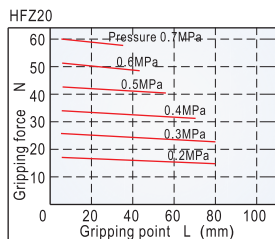
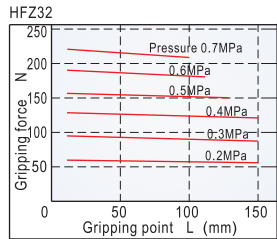
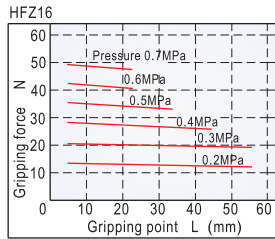
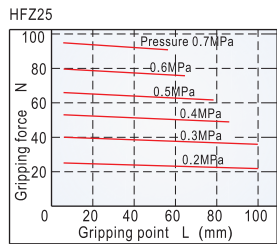
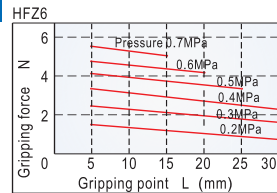
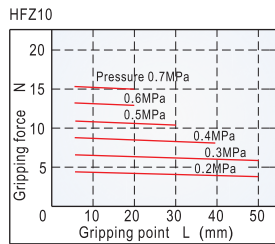
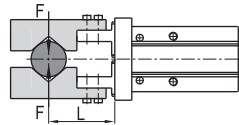
10 times of the mass of the gripped objects

20 times of the mass of the gripped objects

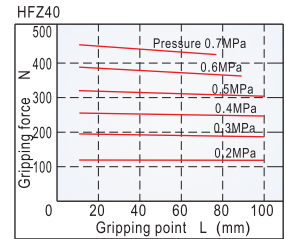
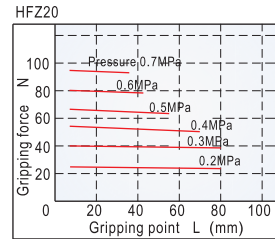
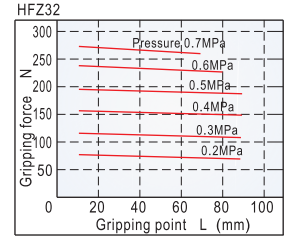
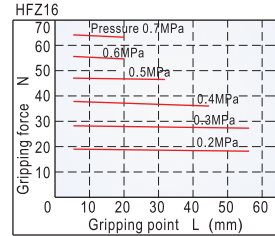
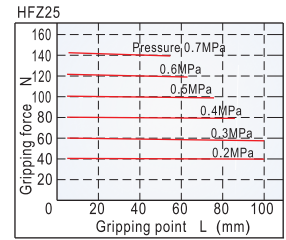
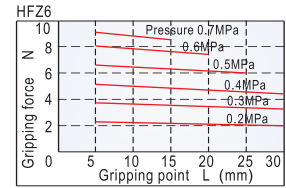
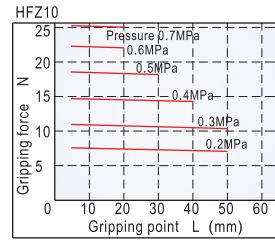
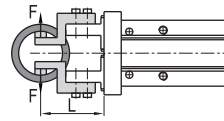
Note) If the friction coefficient  $\mu > 0.2$ , for safety, please also select clamping force according to the principle of 10-20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

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

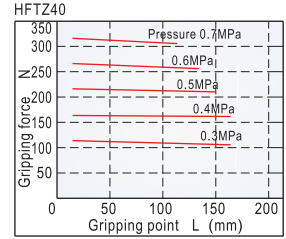
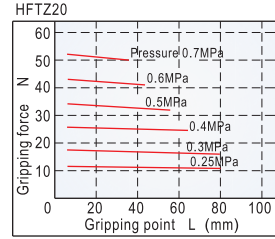
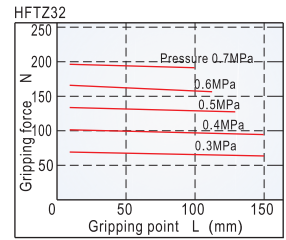
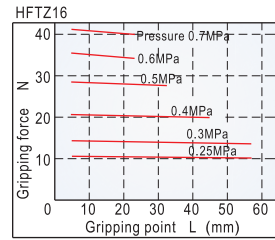
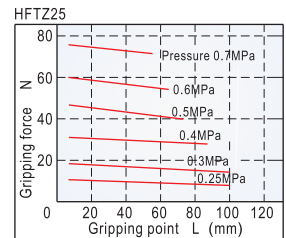
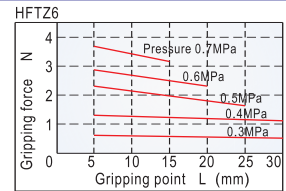
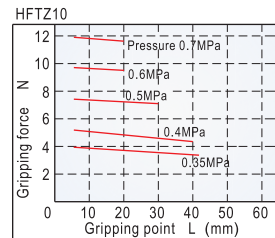
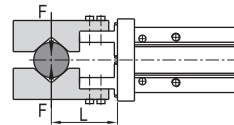
#### Double acting type closed gripping force



#### Double acting type opened gripping force



#### Single acting normally opened gripping force



HFZ

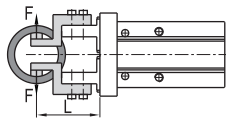


# Air gripper(parallel style)

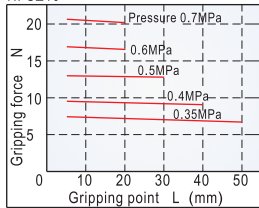


## HFZ Series

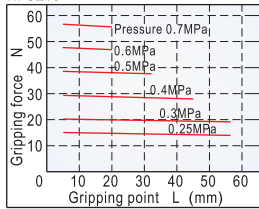
### Single acting normally closed clamping force



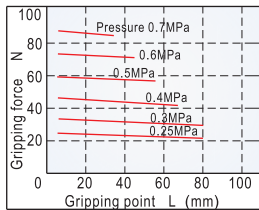
HFZ10



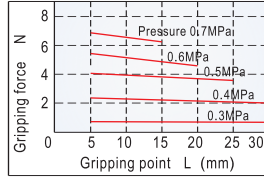
HFZ16



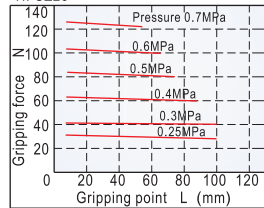
HFZ20



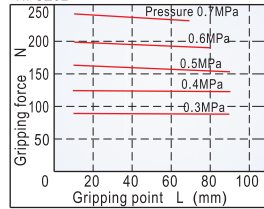
HFZ6



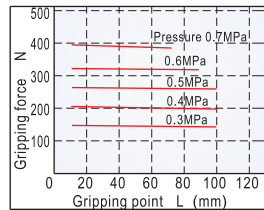
HFZ25



HFZ32



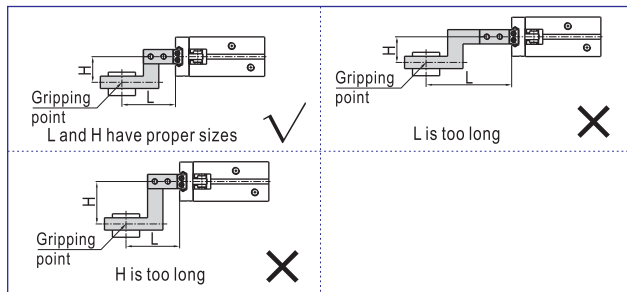
HFZ40



### 2. The selection of the gripping point

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

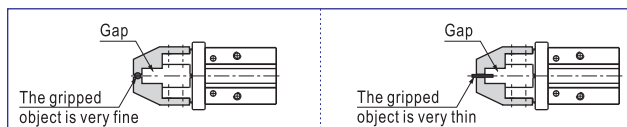
Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



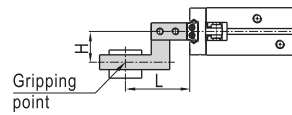
### HFZ

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.

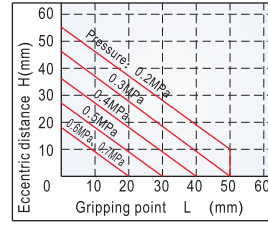
2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.



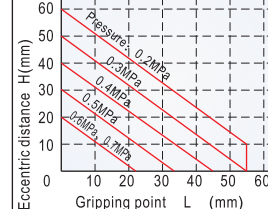
### The range of the closed gripping points



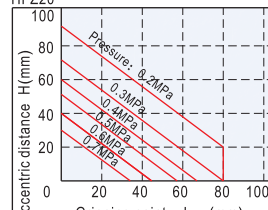
HFZ10



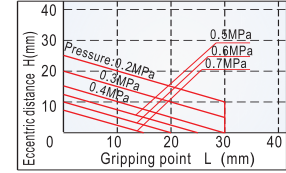
HFZ16



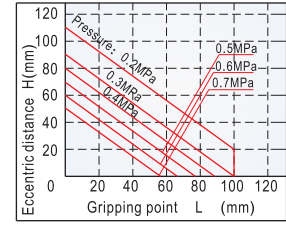
HFZ20



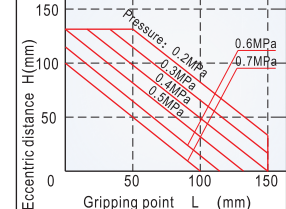
HFZ6



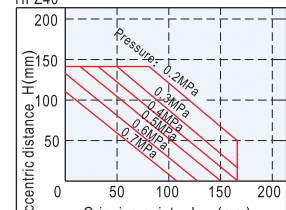
HFZ25



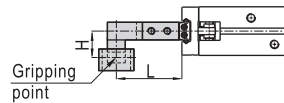
HFZ32



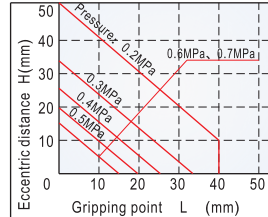
HFZ40



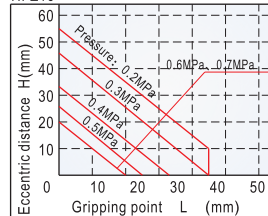
### The range of the opened clamping point



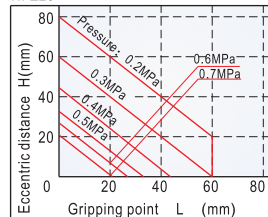
HFZ10



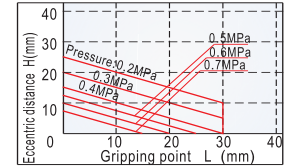
HFZ16



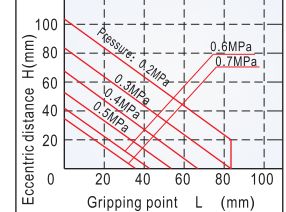
HFZ20



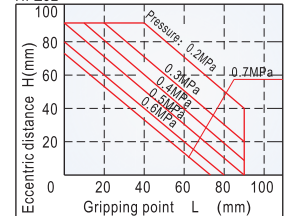
HFZ6



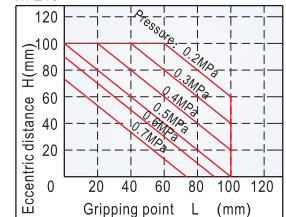
HFZ25



HFZ32



HFZ40



# Air gripper(parallel style)



## HFZ Series

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

Bore size	The allowed vertical loads Fv(N)	Max. permissible torque (Nm)		
		Mp	My	Mr
6	10	0.04	0.04	0.08
10	58	0.26	0.26	0.53
16	98	0.68	0.68	1.36
20	147	1.32	1.32	2.65
25	255	1.94	1.94	3.88
32	343	3	3	6
40	490	4.5	4.5	9

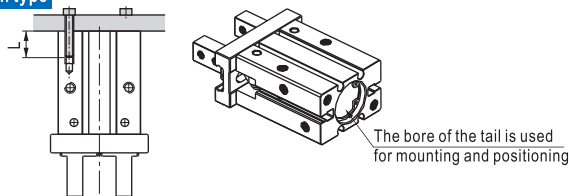
Note) The loads and torque values of said are all static values.

The calculation of allowable forces when moment loads work	Examples of calculation
Allowable load(N) $= \frac{M(\text{Maximum permissible moment})(\text{N.m})}{L \times 10^{-3}}$ Unit conversion constant	In the guide rail of HFZ16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, $\text{Allowable load } F = \frac{0.68}{30 \times 10^{-3}} = 22.7(\text{N})$ Actual load f=10(N)<22.7(N) To meet the using requirements

### Installation and application

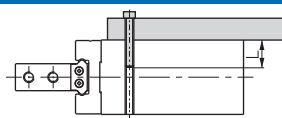
- Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
- Don't use the air gripper under strong external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

#### Tail installation type



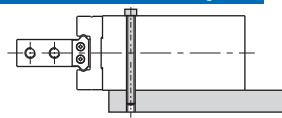
Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
10	M3 × 0.5	0.88	6	Φ 11 <sup>+0.05</sup> <sub>0</sub>	2
16	M4 × 0.7	2.1	8	Φ 17 <sup>+0.05</sup> <sub>0</sub>	2
20	M5 × 0.8	4.3	10	Φ 21 <sup>+0.05</sup> <sub>0</sub>	3
25	M6 × 1.0	7.3	12	Φ 26 <sup>+0.05</sup> <sub>0</sub>	3.5
32	M6 × 1.0	7.9	13	Φ 34 <sup>+0.05</sup> <sub>0</sub>	4
40	M8 × 1.25	17.7	17	Φ 42 <sup>+0.05</sup> <sub>0</sub>	4

#### The installation of the front threaded hole



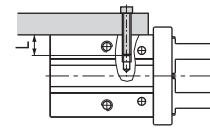
Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)
6	M3 × 0.5	0.88	10
10	M3 × 0.5	0.69	5
16	M4 × 0.7	2.1	8
20	M5 × 0.8	4.3	10
25	M6 × 1.0	7.3	12
32	M6 × 1.0	7.9	13
40	M8 × 1.25	17.7	16

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

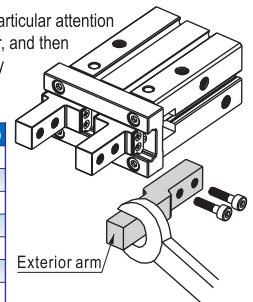
#### Surface installation type



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	13

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.

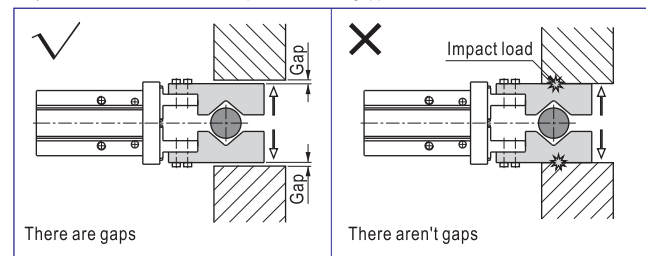


Bore size	The bolts type	Max. locking moment (Nm)
6	M2 × 0.4	0.15
10	M2.5 × 0.45	0.31
16	M3 × 0.5	0.59
20	M4 × 0.7	1.4
25	M5 × 0.8	2.8
32	M6 × 1.0	4.9
40	M8 × 1.25	11.8

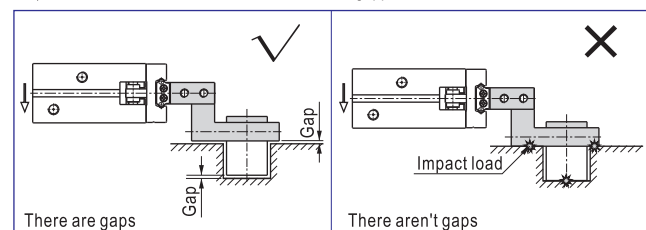
8. Confirm that there is no external forces exerted on the gripping jaw.

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

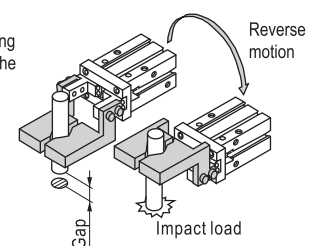


8.2) The end of stroke under the move state of air gripper

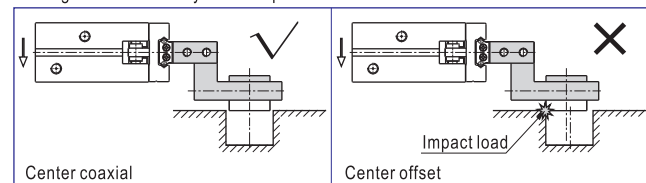


8.3) Reverse motion state

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.



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.



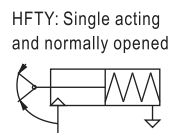
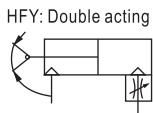
# Air gripper(angular style)



## HFY Series



### Symbol



### Product feature

- Using a single piston structure, large gripping torque.
- Integrated with variable flow valve, it is easy and convenient to adjust the speed of opening and closing of gripping jaw.
- Reasonable gripping angle, wide range of actual use.
- Precise positioning accuracy, it is more accurate and reliable when gripping work-piece.
- Various types of installation, it is convenient for the use in different occasions.
- All series are attached with magnet, so that it is easy to control.

### Ordering code

Model can to be changed Ordering code. Example:

Production type: HFY

Bore size: 20mm

Model: HFY20

Ordering code: HFY 20

Model	Bore size
	06: Φ6mm
	10: Φ10mm
	16: Φ16mm
	20: Φ20mm
	25: Φ25mm
	32: Φ32mm



HFY

### Specification

Bore size (mm)		6	10	16	20	25	32
Acting type		Double acting		Single acting			
Fluid		Air(to be filtered by 40 μ m filter element)					
Operating pressure	Double acting	Φ6	0.15~0.7MPa(22~100psi)(1.5~7.0bar)				
		Φ10~Φ32	0.1~0.7MPa(15~100psi)(1.0~7.0bar)				
	Single acting	Φ6	0.3~0.7MPa(45~100psi)(3.0~7.0bar)				
		Φ10~Φ32	0.25~0.7MPa(36~100psi)(2.5~7.0bar)				
Temperature °C		-20~70					
Lubrication		Cylinder: Not required;		Gripper jaws: Lubricate grease			
Cushion type		Bumper					
Max. frequency		180(c.p.m)					
Sensor switches ①		DS1-H			CS1-G, DS1-G		

① Sensor switch should be ordered additionally, please refer to P403~426 for detail of sensor switch.

### Explain of model

HFY 20	
Model	Bore size
HFY: Air finger(Angle style, Double acting)	06: Φ6mm
HFTY: Air finger(Angle style, Single acting and normally opened)	10: Φ10mm
	16: Φ16mm
	20: Φ20mm
	25: Φ25mm
	32: Φ32mm

Add) HFY series are all attached with magnet.

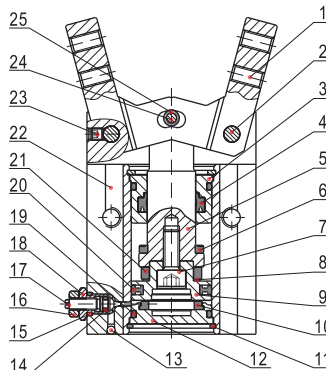
### Gripping force and stroke

Acting	Model	Theoretical gripping torque (N·cm)		Max. length of gripping point (L)(mm)	Opening angle	Closing angle
		Closed	Opened			
Double acting	HFY6	7.4 × P	10.6 × P	30	30 <sup>+3</sup> <sub>0</sub>	-10 <sub>0</sub>
	HFY10	17.6 × P	29.4 × P	30		
	HFY16	90 × P	129 × P	40		
	HFY20	152 × P	252 × P	60		
	HFY25	304 × P	473 × P	70		
	HFY32	637 × P	904 × P	85		
Single acting Normally opened	HFTY6	5.7 × P	-	30	30 <sup>+3</sup> <sub>0</sub>	-10 <sub>0</sub>
	HFTY10	11.8 × P	-	30		
	HFTY16	71.2 × P	-	40		
	HFTY20	122.4 × P	-	60		
	HFTY25	252 × P	-	70		
	HFTY32	589 × P	-	85		

Note) The P in the gripping torque shown in the above chart represents the actual use of air pressure.

### Inner structure and material of major parts

NO.	Item	Material
1	Gripping jaws	Carbon steel
2	Pin	Stainless steel
3	Front cover	Aluminum alloy
4	Rod packing	NBR
5	Piston rod	Aluminum alloy/Stainless steel
6	Bumper	TPU
7	Countersink screw	Carbon steel
8	Magnet washer	NBR
9	Piston	Aluminum alloy/Stainless steel
10	Bumper	TPU
11	C clip	Spring steel
12	Back cover	Aluminum alloy
13	Steel ball	Stainless steel
14	O-ring	NBR
15	O-ring	NBR
16	Screw cap	Carbon steel
17	Adjustable nut	Brass
18	Fixed nut	Brass
19	O-ring	NBR
20	Piston seal	NBR
21	Magnet	Sintered metal (Neodymium-iron-boron)
22	Body	Aluminum alloy
23	Countersink screw	Carbon steel
24	Pin	Stainless steel
25	Pin sheath	Stainless steel



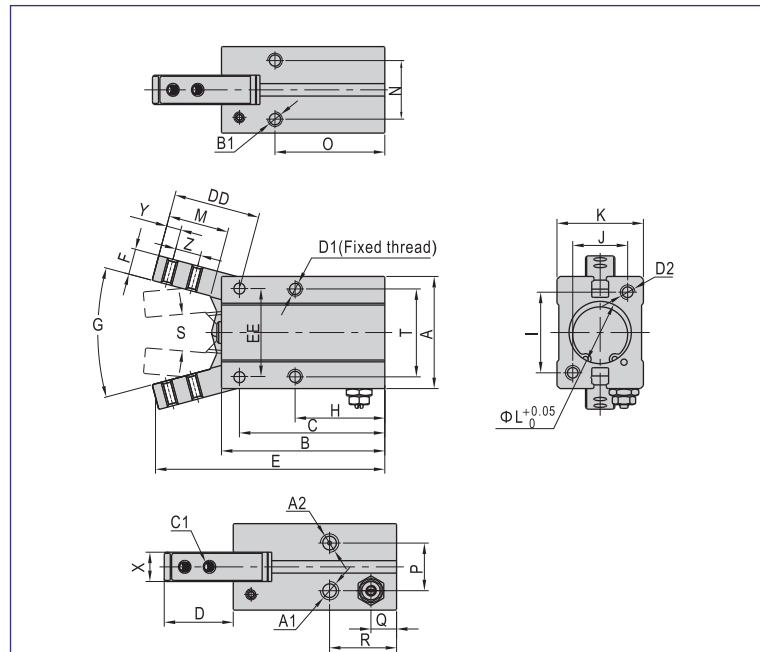


# Air gripper (angular style)



## HFY Series

### Dimensions



Bore size\Item	A	A1, A2	B	B1	C	C1	D	DD
6	20	M3 × 0.5	36	-	32	M2.5 × 0.4	11.9	16
10	23	M3 × 0.5	38.6	M3 × 0.5 Dp:6	35.8	M2.5 × 0.45	14.3	17.2
16	30.6	M5 × 0.8	44.6	M4 × 0.7 Dp:8	39.7	M3 × 0.5	18.8	23.6
20	42	M5 × 0.8	55.2	M5 × 0.8 Dp:10	49.7	M4 × 0.7	23.5	29
25	52	M5 × 0.8	60.4	M6 × 1.0 Dp:10	54.8	M5 × 0.8	32.8	38.5
32	60	M5 × 0.8	68	M6 × 1.0 Dp:10	58	M6 × 1.0	29.7	40

Bore size\Item	D1	D2	E	EE	F	G	H	I	J	K	L
6	M3 × 0.5	-	47.5	14	4	30°	26	-	-	10	7
10	M3 × 0.5 Dp:5	M3 × 0.5 Dp:6	52.4	14	4	30°	23	18	12	16.4	11
16	M4 × 0.7 Dp:8	M4 × 0.7 Dp:8	62.6	24	7	30°	24.5	22	15	23.6	17
20	M5 × 0.8 Dp:10	M5 × 0.8 Dp:10	77.7	30	8	30°	29	32	18	27.6	21
25	M6 × 1.0 Dp:12	M6 × 1.0 Dp:12	92	36	10	30°	30	40	22	33.6	26
32	M6 × 1.0 Dp:16	M6 × 1.0 Dp:12	96.5	42	10	30°	37.5	46	26	40	34

Bore size\Item	M	N	O	P	Q	R	S	T	X	Y	Z
6	11	-	-	1.6	7	19	10°	12	4	2.5	5
10	12	11.4	27	10.2	6.5	18.8	10°	16	6.4	3	5.7
16	16	16	30	13	7	18.3	10°	24	8	4	7
20	20	18.6	35	15	7.5	22.2	10°	30	10	5.2	9
25	27	22	36.5	20	7.7	23.5	10°	36	12	8	12
32	27	26	30	24	9.2	31	10°	44	18	6	14

### How to select product

- The selection of gripping force  
Please determine the gripping force according to the below methods.

The gripping work-pieces shown above, 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.

$\mu = 0.2$	$\mu = 0.1$
$F = \frac{mg}{2 \times 0.2} \times 4$	$F = \frac{mg}{2 \times 0.1} \times 4$
$= 10 \times mg$	$= 20 \times mg$

10 times of the mass of the gripped objects

20 times of the mass of the gripped objects

The work-pieces as shown in the left :  
 F: Gripping force (N)  
 μ : friction coefficient between fittings and work-pieces.  
 m: mass of work-pieces  
 g: acceleration of gravity (=9.8m/s<sup>2</sup>)

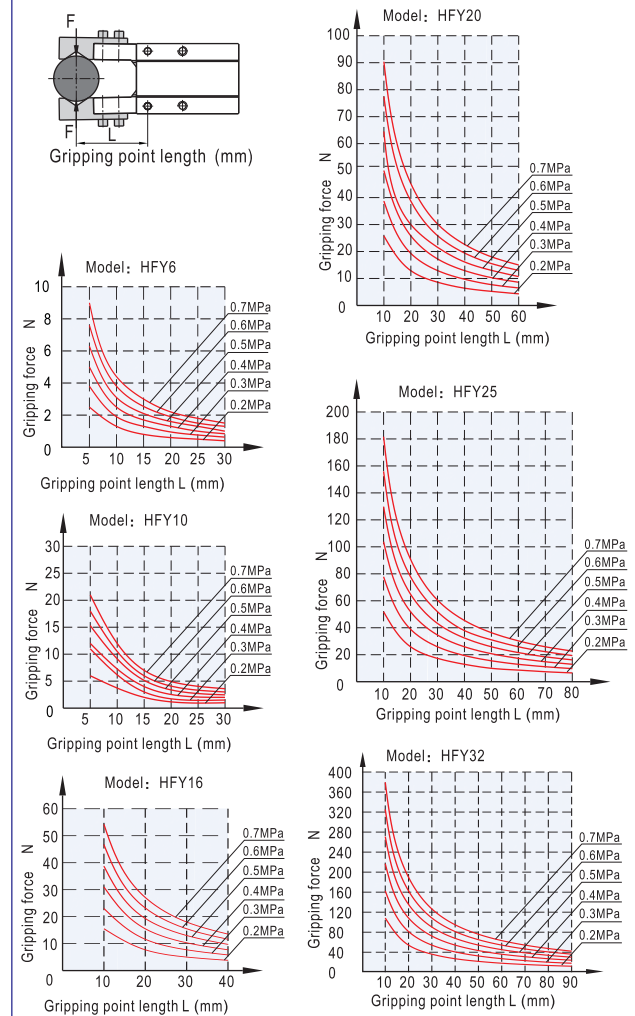
The condition that the work-pieces won't drop is:  $2 \times \mu F > mg$   
 so:  $F > \frac{mg}{2 \times \mu}$   
 Safety coefficient is a, so F is:  
 $F = \frac{mg}{2 \times \mu} \times a$

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.

- The selection of the gripping point

When the gripping force is determined, select the gripping point according to the limitation ranges shown in the below chart. If the gripping point is over the limit, the gripping jaw will be subjected to excessive moment load, and lead to short life of air gripper.

#### Double acting type closed gripping force

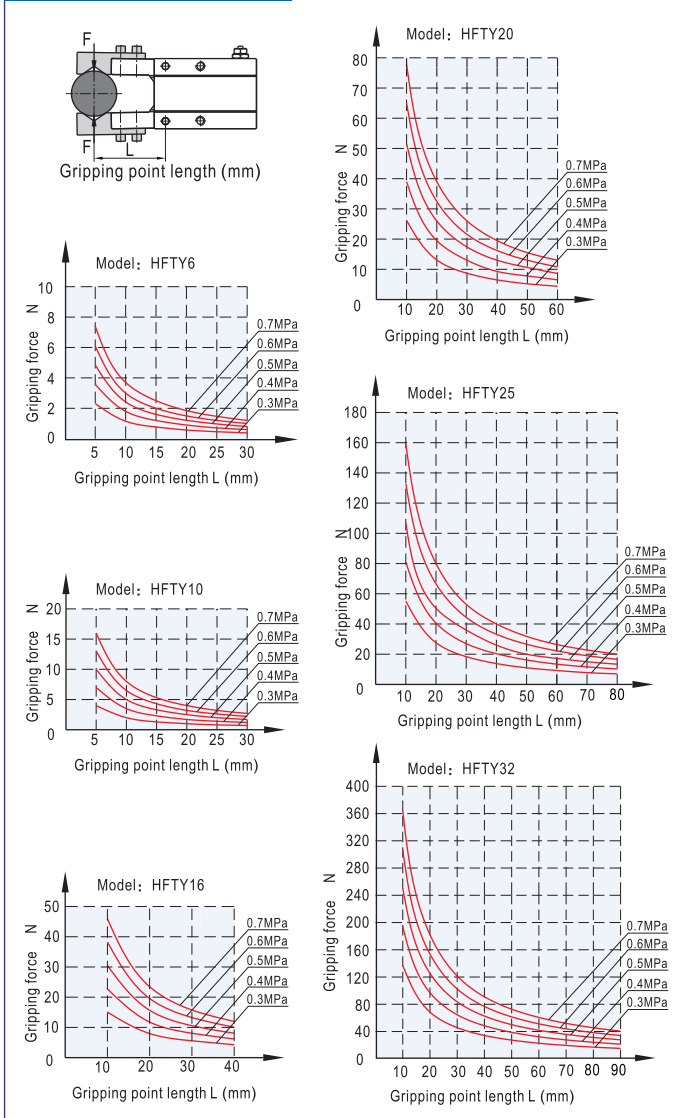


# Air gripper(angular style)



## HFY Series

### Single acting closed gripping force



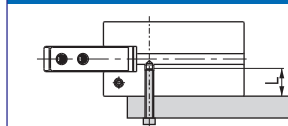
### Installation and application

1. Due to the abrupt changes, the 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 torque of fastening screw must be within the prescribed moment range shown in the below chart. If the locking moment is too large, it will cause the dysfunctional. If the locking moment is too small, it will cause the position deviation and fall.

#### Tail installation type

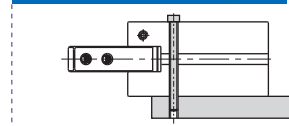
Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
6	-	-	-	Φ 7H9	1.5
10	M3 × 0.5	0.88	6	Φ 11H9	1.5
16	M4 × 0.7	2.1	8	Φ 17H9	1.5
20	M5 × 0.8	4.3	10	Φ 21H9	1.5
25	M6 × 1.0	7.3	12	Φ 26H9	1.5
32	M6 × 1.0	7.3	12	Φ 34H9	1.5

#### The installation of front threaded hole



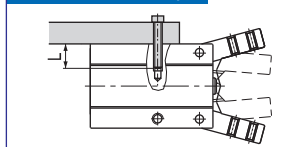
Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)
6	M3 × 0.5	0.69	5
10	M3 × 0.5	0.69	5
16	M4 × 0.7	2.1	8
20	M5 × 0.8	4.3	10
25	M6 × 1.0	7.3	12
32	M6 × 1.0	7.3	12

#### The installation of front through hole



Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)
6	M2.5 × 0.45	0.49	5
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	12

#### Surface installation type

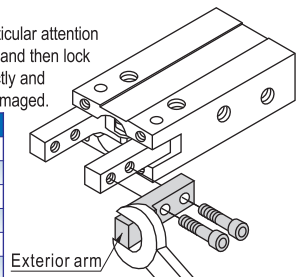


Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)
10	M3 × 0.5	0.88	6
16	M4 × 0.7	1.6	6.5
20	M5 × 0.8	3.3	8
25	M6 × 1.0	5.9	10
32	M6 × 1.0	5.9	10

#### 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



8. When gripping work-piece, the work-piece must be located in the center line of the two gripping jaws, and the two gripping jaws also need to touch the work-piece at the same time, otherwise they will be easily damaged.

9. Confirm that there is no additional external forces that are 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.

10. 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.

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

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

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



HFY

