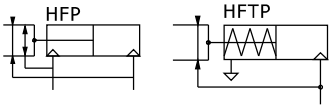
Mechanical parallel style



Ordering code

HFP 20 □

1 2 3

① Model

HFP: Air finger(Double acting)
(mechanical parallel style)

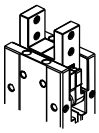
HFTP: Air finger
(Single acting and normally opened)
(mechanical parallel style)

② Bore size

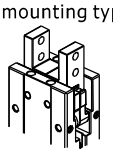
10 16 20 25 32

③ Finger type

Blank: Standard



N: Thru.hole mounting type



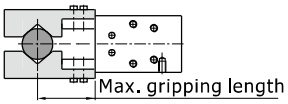
HFP series are all attached with magnet.

Specification

Bore size (mm)			10	16	20	25	32
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)				
Proof pressure			150psi(1.05MPa)				
Temperature			-20~70℃				
Lubrication			Cylinder: Not required; Gripper jaws: Lubricate grease				
Max. gripping length [Note1] mm			30	40	60	70	90
Max. frequency			180(c.p.m)				60(c.p.m)
Sensor switches [Note2]				CMSG\DMSG\EMSG			
Port size			M3×0.5	M5×0.8			

[Note1] Refer to right graph for the definition of max. gripping length.

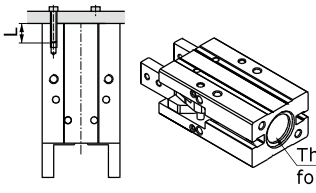
[Note2] Refer to P535 for detail of sensor.



Installation and application

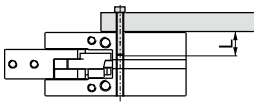
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external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

Tail installation type



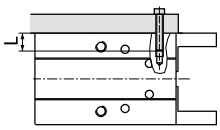
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	1.0N.m	6mm	Φ11mm $^{+0.05}_{0}$	1.0mm
16	M4×0.7	2.0N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.2mm
20	M5×0.8	4.5N.m	10mm	Φ21mm $^{+0.05}_{0}$	1.2mm
25	M6×1.0	7.0N.m	12mm	Φ26mm $^{+0.05}_{0}$	1.5mm
32	M6×1.0	7.0N.m	12mm	Φ34mm $^{+0.05}_{0}$	1.5mm

The installation of the front threaded hole



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.7	5
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	12

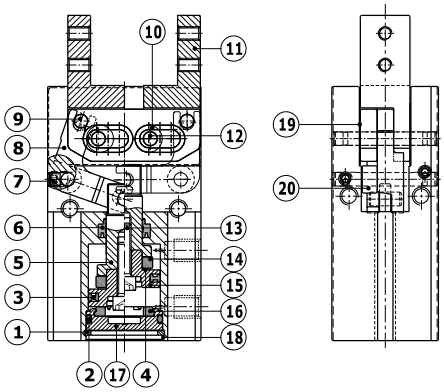
Surface installation type



Bore size	The bolts type		
10	M3×0.5	1.0	6
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	12

6. Other contents of installation and operation are the same with those of HFK. Refer to the "Installation and Operation" instruction of HFK.

Inner structure



NO.	Item	NO.	Item
1	C clip	11	Gripping jaws
2	O-ring	12	Pin
3	Piston seal	13	Screw
4	Magnet washer	14	Magnet
5	Piston rod	15	Piston
6	Rod packing	16	Bumper
7	Countersink screw	17	Back cover
8	Curved bar	18	Body
9	Pin	19	Retaining ring
10	Guide sleeve	20	Stopper sleeve

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.

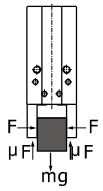
How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force → **②the confirmation of the gripping point** → **③the confirmation of the external force put on the gripping jaw**

1. The selection of the gripping force

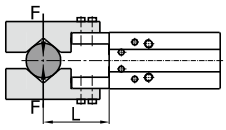
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	The work-pieces as shown in the left :		μ=0.2	μ=0.1
	F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: 2×μF>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 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

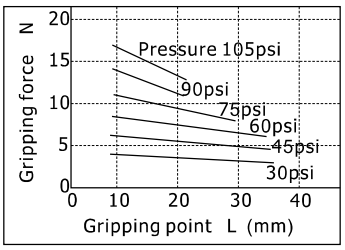
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

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

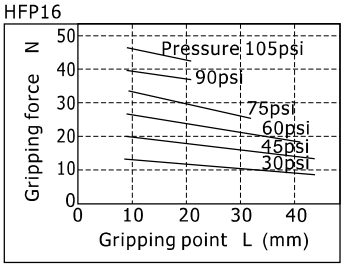
Double acting type closed gripping force



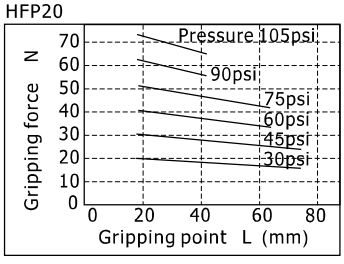
HFP10



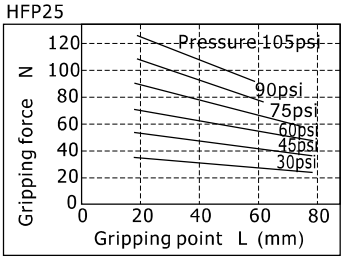
HFP16



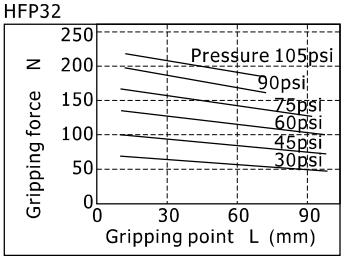
HFP20



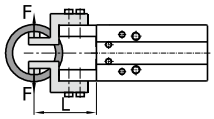
HFP25

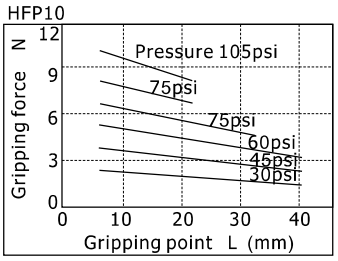


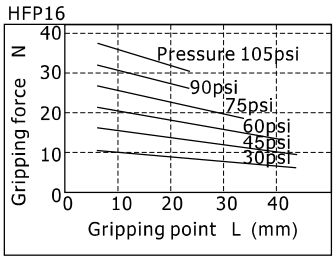
HFP32

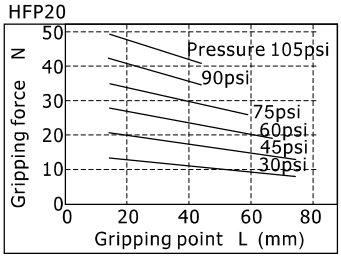


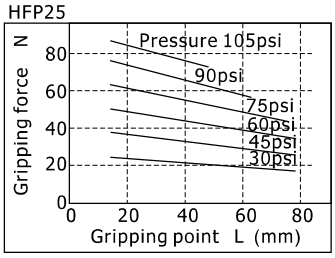
Double acting type opened gripping force

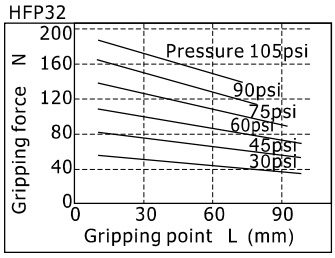






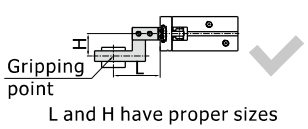




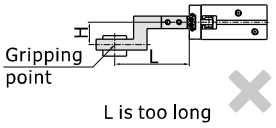


2. The selection of the gripping point

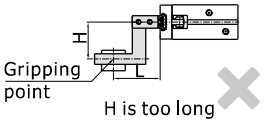
2.1) Select the gripping point within the maximum gripping length range. Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



L and H have proper sizes



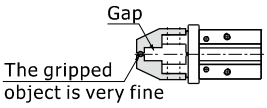
L is too long

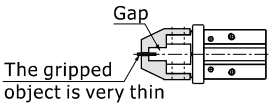


H is too long

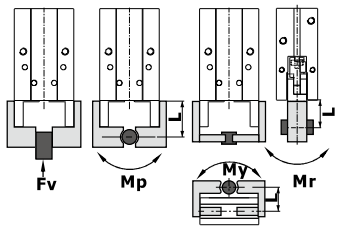
2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

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.



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

Bore size	The allowed vertical loads Fv(N)	Max. permissible torque(Nm)		
		Mp	My	Mr
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

The calculation of allowable forces when moment loads work

$$\text{Allowable load(N)} = \frac{\text{M(Maximum permissible moment)(N.m)}}{L \times \underbrace{10^{-3}}_{\text{Unit conversion constant}}}$$

Examples of calculation

In the guide rail of HFP16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N,

Allowable load $F=\frac{0.68}{30\times10^{-3}}$

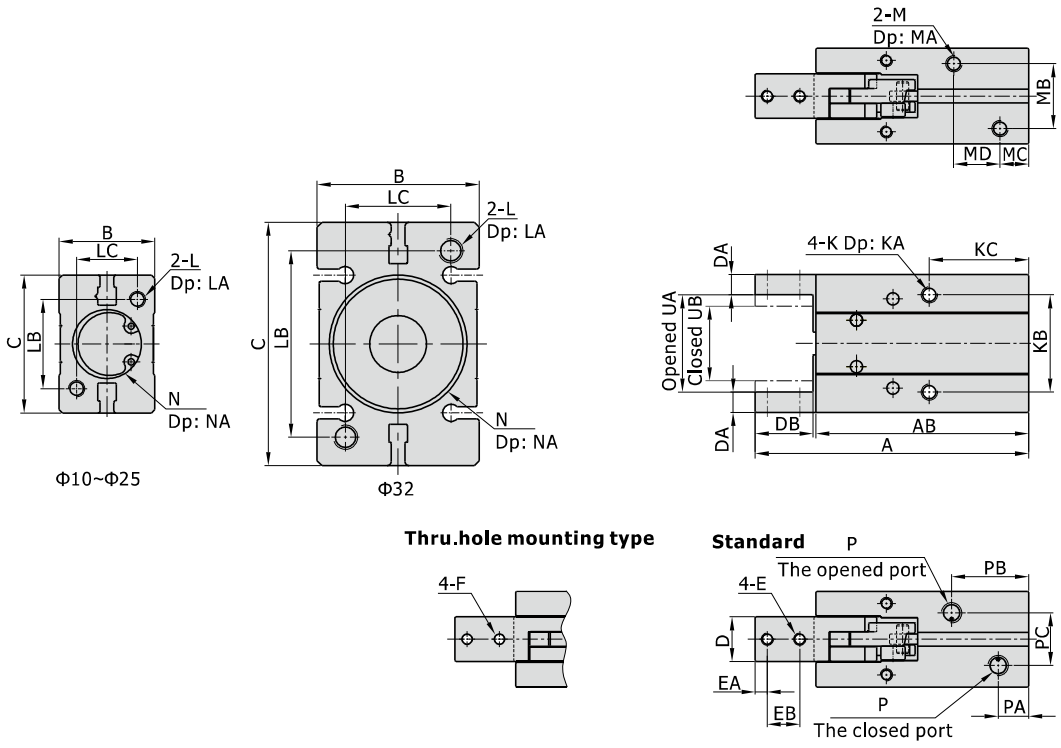
$= 22.7(N)$

Actual load f=10(N)

<22.7(N)

To meet the using requirements

Dimensions



[Unit: mm]

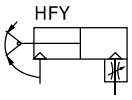
Model\Item	A	AB	B	C	D	DA	DB	E	EA	EB	F	K	KA	KB
HFP10	57(62)	44.5(49.5)	16	23	7	4	12	M2.5×0.45	3	5.5	Φ2.8	M3×0.5	5	16
HFP16	72(77)	56.5(61.5)	23.5	34	11	5	15	M3×0.5	4	7	Φ3.3	M4×0.7	8	24
HFP20	89.5(94.5)	69(74)	27.5	45	12	6	20	M4×0.7	5	9	Φ4.5	M5×0.8	10	30
HFP25	104.5(109.5)	78.5(83.5)	33.5	52	14	8	25	M5×0.8	6	12	Φ5.5	M6×1.0	12	36
HFP32	118(126)	88(96)	40	60	18	9	29	M6×1.0	7	14	Φ6.5	M6×1.0	12	46

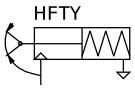
Model\Item	KC	L	LA	LB	LC	M	MA	MB	MC	MD	N	NA	P
HFP10	23(28)	M3×0.5	6	18	12	M3×0.5	6	10	6(11)	10	$\Phi11\ ^{+0.05}_{0}$	1	M3×0.5
HFP16	29(34)	M4×0.7	8	22	15	M4×0.7	8	16	6(11)	16	$\Phi17\ ^{+0.05}_{0}$	1.2	M5×0.8
HFP20	34(39)	M5×0.8	10	32	18	M5×0.8	10	18	8(13)	16	$\Phi21\ ^{+0.05}_{0}$	1.2	M5×0.8
HFP25	31.5(36.5)	M6×1.0	12	40	22	M6×1.0	12	24	8(13)	16	$\Phi26\ ^{+0.05}_{0}$	1.5	M5×0.8
HFP32	37.5(45.5)	M6×1.0	12	46	26	M6×1.0	12	30	8(16)	20	$\Phi34\ ^{+0.05}_{0}$	1.5	M5×0.8

Model\Item	PA	PB	PC	UA(Opened)	UB(Closed)
HFP10	6	16.5(23)	10	$14.5\ ^{+1.5}_{0}$	$10.5\ ^{0}_{-1}$
HFP16	7.5	20(25)	13	$23.5\ ^{+1.5}_{0}$	$15.5\ ^{0}_{-1}$
HFP20	7.5	24(29)	15	$32.5\ ^{+1.5}_{0}$	$20.5\ ^{0}_{-1}$
HFP25	8	22(29)	20	$35.5\ ^{+1.5}_{0}$	$21.5\ ^{0}_{-1}$
HFP32	9.5	26(37)	22	$42\ ^{+1.5}_{0}$	$26.5\ ^{0}_{-1}$

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

Angular style





Ordering code

HFY 20

① ②

① Model
HFY: Air finger(Angle style, Double acting)
HFTY: Air finger(Angle style, Single acting and normally opened)

② Bore size
6 10 16 20 25 32

[Note] HFY series are all attached with magnet.

Specification

Bore size (mm)			6	10	16	20	25	32
Acting type			Double acting Single acting					
Fluid			Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	Φ6/10	29~100psi(0.2~0.7MPa)					
		Φ16~Φ32	22~100psi(0.15~0.7MPa)					
	Single acting	Φ6	45~100psi(0.3~0.7MPa)					
		Φ10~Φ32	36~100psi(0.25~0.7MPa)					
Temperature			-20~70℃					
Lubrication			Cylinder: Not required;Gripper jaws: Lubricate grease					
Cushion type			Bumper					
Max. frequency			180(c.p.m)					
Sensor switches [Note1]			CMSG/DMSG/EMSG					
Port size			M3×0.5		M5×0.8			

[Note1] Refer to P535 for detail of sensor.

Gripping force and stroke

Acting type		Double acting(HFY)						Single acting Normally opened(HFTY)					
Bore size		6	10	16	20	25	32	6	10	16	20	25	32
Theoretical gripping torque (N·cm)	Closed	7.4×P	17.6×P	90×P	152×P	304×P	637×P	5.7×P	11.8×P	71.2×P	122.4×P	252×P	589×P
	Opened	10.6×P	29.4×P	129×P	252×P	473×P	904×P	-	-	-	-	-	-
Max. length of griping point (L)(mm)		30	30	40	60	70	85	30	30	40	60	70	85
Opening angle (°)		30^{+3}_{0}											
Closing angle (°)		-10^{0}_{-3}											

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

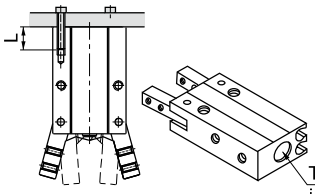
HFY Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32

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.

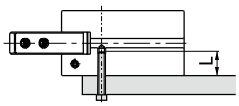
Tail installation type



The bore of the tail is used for mounting and positioning

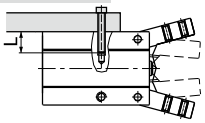
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
6	-	-	-	Φ7mm $^{+0.04}_{+0.01}$	1.5mm
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.04}_{+0.01}$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	1.5mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_{0}$	1.5mm
32	M6×1.0	7.3N.m	12mm	Φ34mm $^{+0.05}_{0}$	2.0mm

The installation of the front threaded hole



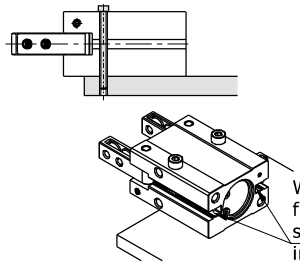
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.69	5
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.3	10

Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	-	-	-
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

The installation of the front through hole

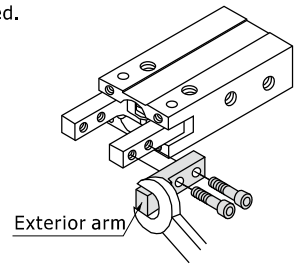


When installedfrom front through holes, sensors can not be installed in the sensor groovesthat are interferedby screws.

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	7
20	M4×0.7	2.1	8
25	M5×0.8	4.3	10
32	M5×0.8	4.3	10

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

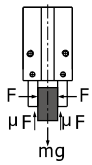
Bore size	The bolts type	Max. locking moment(Nm)
6	M2×0.4	0.15
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9



7. 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.
8. 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.
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.

How to select product

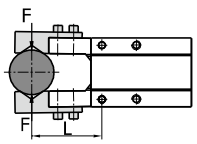
1. The selection of the gripping force
   The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	The work-pieces as shown in the left :		μ=0.2	μ=0.1
	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: 2×μF>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 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

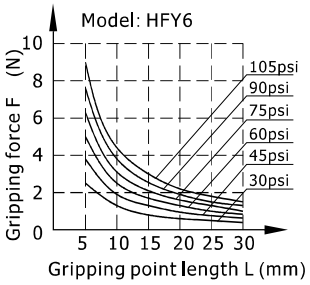
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

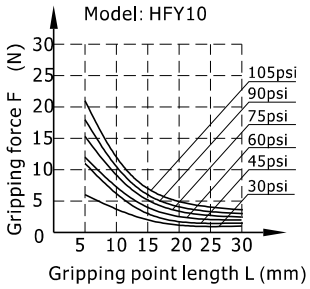
2. The selection of the gripping point
   When the gripping force is determined, select the gripping point according to the limitation ranges shown in the below chart. If the gripping point is over the limit, the gripping jaw will be subjected to excessive moment load, and lead to short life of air gripper.

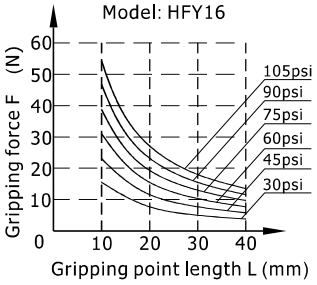
Double acting type closed gripping force

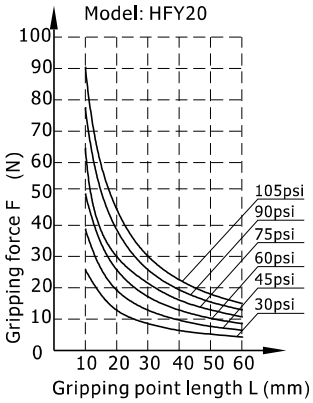


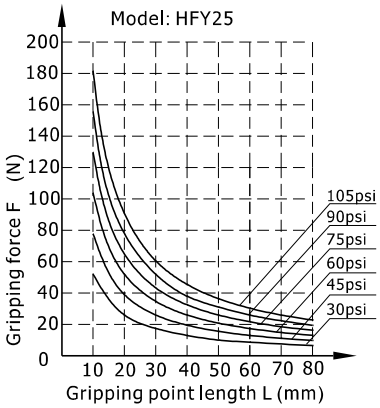
Gripping point length (mm)

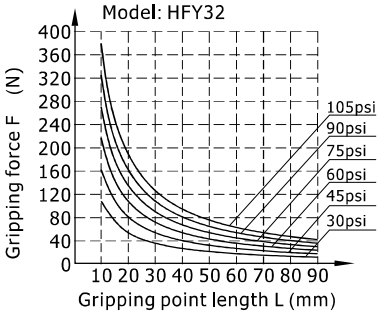








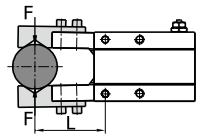




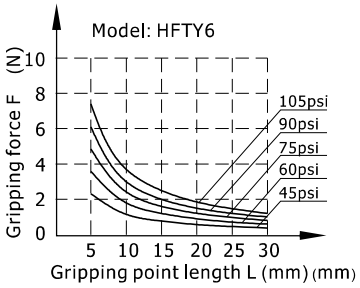
HFY Series

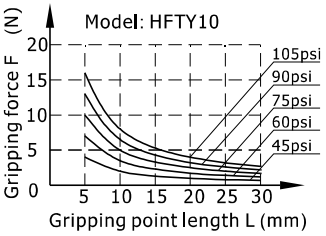
Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32

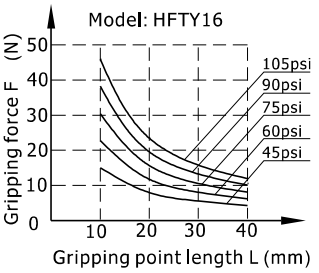
Single acting closed gripping force

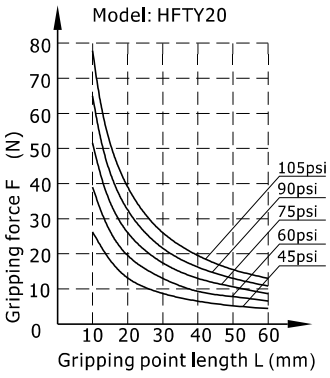


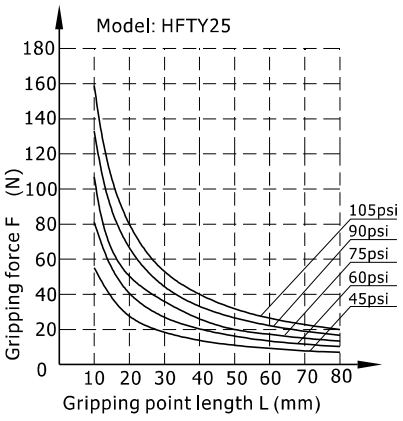
Gripping point length (mm)

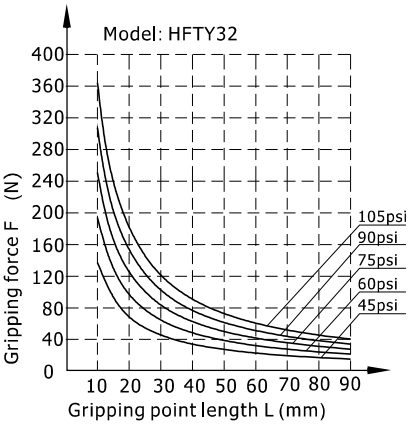








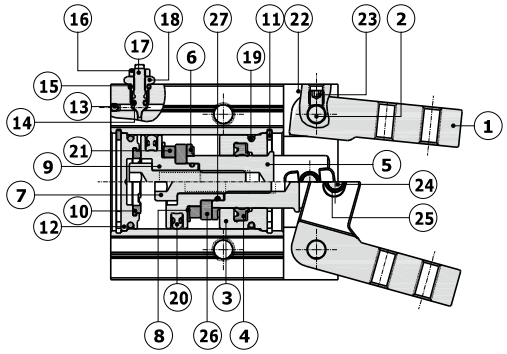




HFY Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32

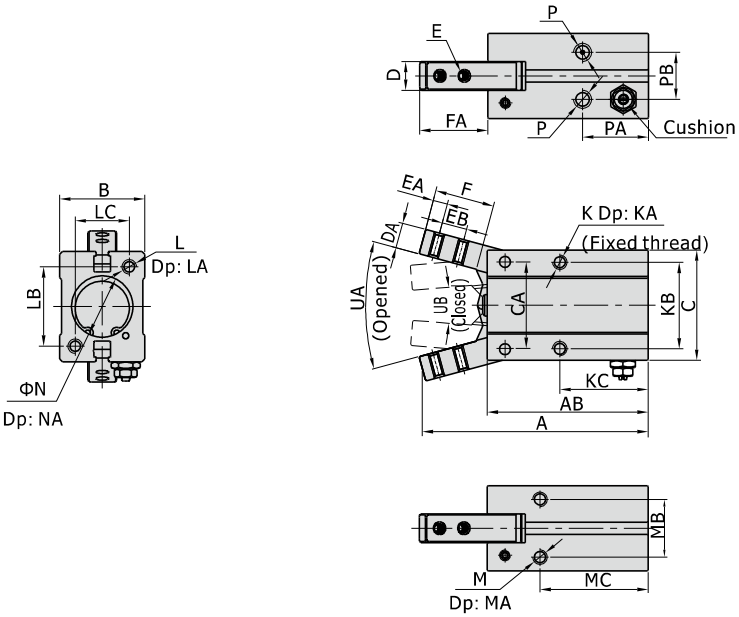
Inner structure



NO.	Item	NO.	Item
1	Gripping jaws	15	O-ring
2	Pin	16	Screw cap
3	Front cover	17	Adjustable nut
4	Rod packing	18	Fixed nut
5	Piston rod	19	O-ring
6	Bumper	20	Piston seal
7	Countersink screw	21	Magnet
8	Magnet washer	22	Body
9	Piston	23	Countersink screw
10	Bumper	24	Pin
11	C clip	25	Pin sheath
12	Back cover	26	Magnet fixed flake
13	Steel ball	27	O-ring
14	O-ring		

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.

Dimensions

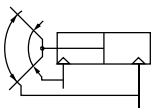


[Unit: mm]

Bore size\Item	A	AB	B	C	CA	D	DA	E	EA	EB	F	FA	K	KA	KB	KC	L
6	47.5	36	10.5	20	14	4	4	M2×0.4	2.5	5	11	12	M3×0.5	Thru. thread	12	26	-
10	52.5	38.5	16.5	23	14	6.4	4	M2.5×0.45	3	5.7	12	14.5	M3×0.5	5	16	23	M3×0.5
16	62.5	44.5	23.5	30.5	24	8	7	M3×0.5	4	7	16	19	M4×0.7	7	24	24.5	M4×0.7
20	78	55	27.5	42	30	10	8	M4×0.7	5	9	20	23.5	M5×0.8	8	30	29	M5×0.8
25	92	60.5	33.5	52	36	12	10	M5×0.8	8	12	27	33	M6×1.0	10	36	30	M6×1.0
32	96.5	68	40	60	42	18	10	M6×1.0	6	14	27	29.5	M6×1.0	10	44	37.5	M6×1.0

Bore size\Item	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	UA(Opened)	UB(Closed)
6	-	-	-	-	-	-	-	$7^{+0.05}_{0}$	1.5	M3×0.5	19	1.5	30°	10°
10	6	18	12	M3×0.5	6	11.5	27	$11^{+0.05}_{0}$	1.5	M3×0.5	19	10	30°	10°
16	8	22	15	M4×0.7	8	16	30	$17^{+0.05}_{0}$	1.5	M5×0.8	18.5	13	30°	10°
20	10	32	18	M5×0.8	10	18.5	35	$21^{+0.05}_{0}$	1.5	M5×0.8	22	15	30°	10°
25	12	40	22	M6×1.0	10	22	36.5	$26^{+0.05}_{0}$	1.5	M5×0.8	23.5	20	30°	10°
32	12	46	26	M6×1.0	10	26	30	$34^{+0.05}_{0}$	2	M5×0.8	31	24	30°	10°

180°open/close style



Ordering code

HFR 20 □

1 2 3

① Model

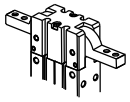
HFR: 180°open/close air gripper

② Bore size

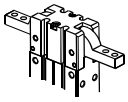
10 16 20 25 32

③ Mounting type

Blank: Mounting through tapped holes



N: Mounting through holes



HFR series are all attached with magnet.

Specification

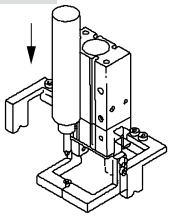
Bore size (mm)		10	16	20	25	32
Acting type		Double acting				
Fluid		Air(to be filtered by 40μm filter element)				
Operating pressure	Φ10	29~100psi(0.2~0.7MPa)				
	Φ16~32	22~100psi(0.15~0.7MPa)				
Temperature		-20~70℃				
Lubrication		Cylinder: Not required; Gripper jaws:Lubricate grease				
Cushion type		Bumper				
Max. frequency		60(c.p.m)				
Repeatability		±0.2mm				
Gripping force [Note1]		0.16N.m	0.55N.m	1.10N.m	2.30N.m	5.00N.m
Open or close angle		Close: -2°~ -5° Open: 180° ± 2°				
Port size		M5×0.8				
Sensor switches [Note2]		CMSH\DMSH\EMSH				

[Note1] The gripping force is the value when the operating pressure is 75psi.

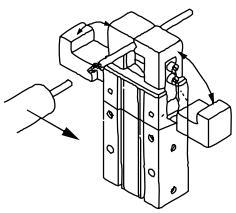
[Note2] Refer to P535 for detail of sensor.

Example

Screw down



Clamping cable



How to select product

1. Confirmation of effective gripping force

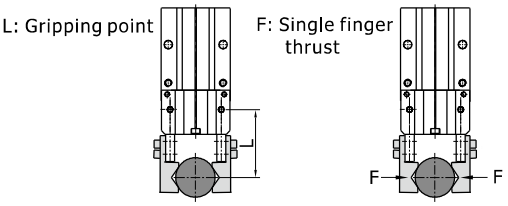
1.1) Though the coefficient of friction between the attachments and the workpiece is different, select a gripping force which is 10 to 20 times greater than the workpiece weight.

1.2) If high acceleration or impact forces are encountered during motion, a further margin of safety should be considered.

Example: When the workpiece weight is 0.05 and the gripping point distance L is 30mm, the operating pressure will be 5kgf/cm^2.

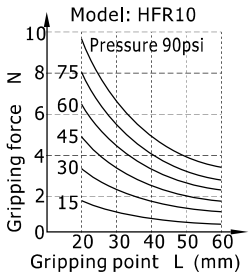
Effective gripping force=0.05kg×20 times×9.8m/s^2=more than 10N

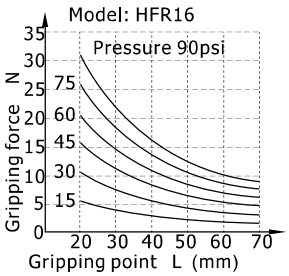
Model selection: HFR16 is recommended. The effective gripping force is 17N, which is 20 times greater than the set value of gripping force.

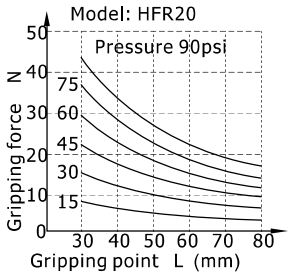


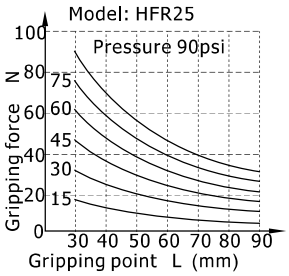
1.3) The finger thrust is expressed as F, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.

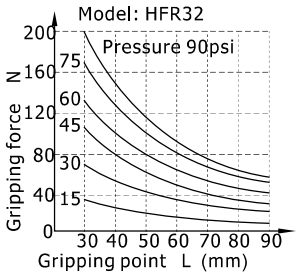
2. Connection between gripping force and gripping point distance







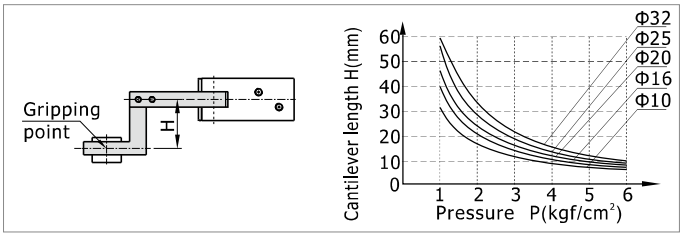




3. The selection of the gripping point

3.1) Please select the gripping point within the limited field shown left.Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.

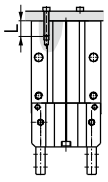
3.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

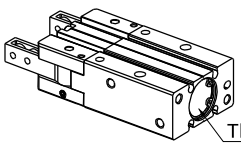


Installation and application

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

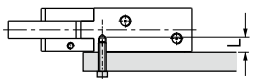




The bore of the tail is used for mounting and positioning

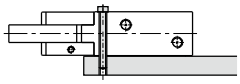
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	1.0N.m	6mm	Φ11mmH9	1.5mm
16	M4×0.7	2.0N.m	8mm	Φ17mmH9	1.5mm
20	M5×0.8	4.5N.m	10mm	Φ21mmH9	1.5mm
25	M6×1.0	7.0N.m	12mm	Φ26mmH9	1.5mm
32	M6×1.0	7.0N.m	14mm	Φ34mmH9	2.0mm

The installation of the front threaded hole



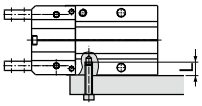
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	1.0	6
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	14

The installation of the front through hole



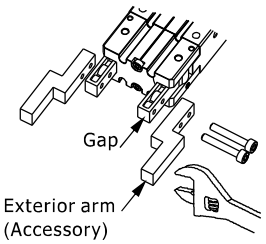
Bore size	The bolts type	Max. locking moment(Nm)
10	M3×0.5	1.0
16	M4×0.7	2.0
20	M5×0.8	4.5
25	M6×1.0	7.0
32	M6×1.0	7.0

Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.6	4
16	M4×0.7	1.5	5
20	M5×0.8	3.5	8
25	M6×1.0	6.0	10
32	M6×1.0	6.0	12

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.
7. Other contents of installation and operation are the same with those of HFY. Refer to the "Installation and Operation" instruction of HFY.



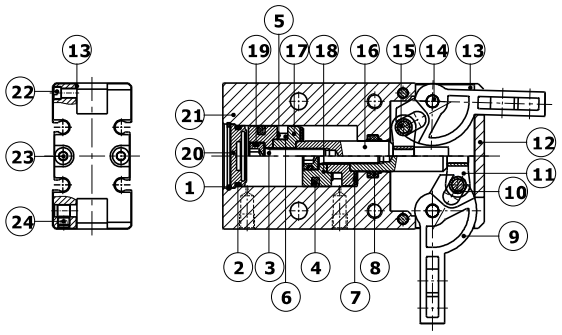
Bore size	The bolts type	Max. locking moment(Nm)
10	M3×0.5	0.6
16	M3×0.5	0.6
20	M4×0.7	0.8
25	M5×0.8	1.5
32	M6×1.0	3.0

Air gripper(180°open/close style)

HFR Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32

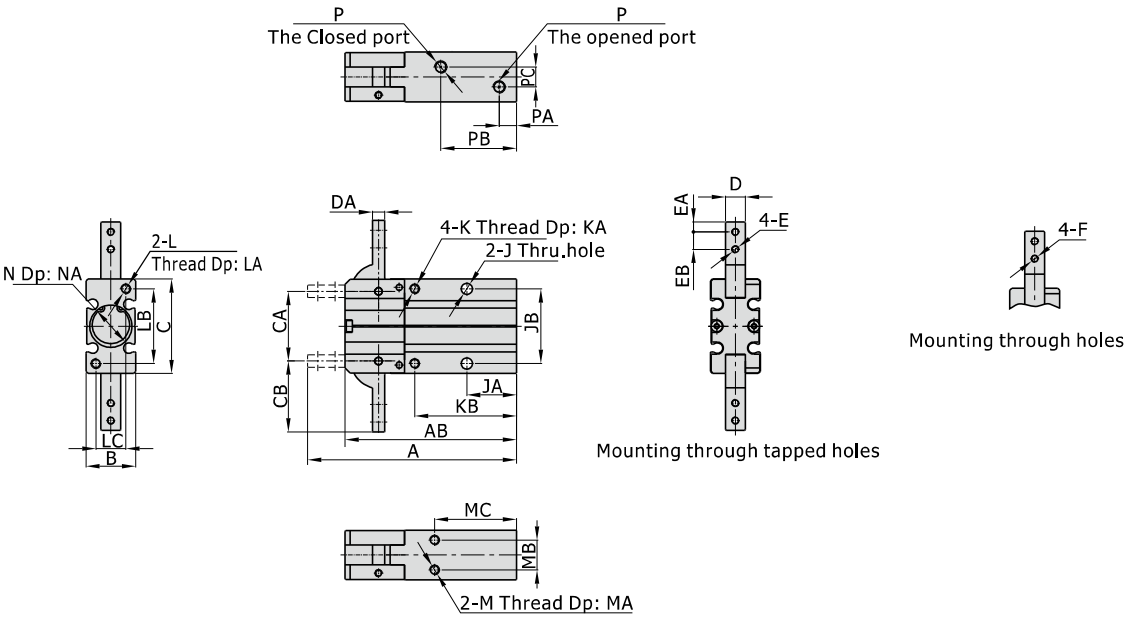
Inner structure



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.

NO.	Item	NO.	Item
1	C clip	13	Sheet metal
2	O-ring	14	Pin
3	Countersink screw	15	Pin
4	Piston seal	16	Piston rod
5	Magnet washer	17	Magnet holder
6	Magnet	18	Piston
7	Bumper	19	O-ring
8	Rod packing	20	Back cover
9	Gripping jaws	21	Body
10	Pin sheath	22	Pin
11	Push block	23	Countersink screw
12	Front cover	24	Countersink screw

Dimensions



[Unit: mm]

Bore size\Item	A	AB	B	C	CA	CB	D	DA	E	F	EA	EB	J	JA	JB	K	KA
10	71	58	15	30	22	23.5	6	4	M3×0.5	Φ3.3	3	6	Φ3.3	18	24	M3×0.5	6
16	84	69	20	38	28	28.5	8	5	M3×0.5	Φ3.3	4	7	Φ4.5	20	30	M4×0.7	8
20	106	86	26	48	36	37	10	8	M4×0.7	Φ4.5	5	9	Φ5.5	25	36	M5×0.8	10
25	131	107	30	58	45	45	12	10	M5×0.8	Φ5.5	6	12	Φ6.5	30	42	M6×1.0	12
32	158.5	122	40	72	55	62.5	14	12	M6×1.0	Φ6.5	9	16	Φ6.5	35	46	M6×1.0	12

Bore size\Item	KB	L	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC
10	35	M3×0.5	6	24	9	M3×0.5	4	9	30	$\Phi 11\ ^{+0.05}_{0}$	1.5	M5×0.8	7	28.5	3
16	41	M4×0.7	8	30	12	M4×0.7	5	12	33	$\Phi 17\ ^{+0.05}_{0}$	1.5	M5×0.8	7	30.5	8
20	50	M5×0.8	10	38	16	M5×0.8	8	14	42	$\Phi 21\ ^{+0.05}_{0}$	1.5	M5×0.8	8	38.5	12
25	60	M6×1.0	12	46	18	M6×1.0	10	16	50	$\Phi 26\ ^{+0.05}_{0}$	1.5	M5×0.8	8	48	14
32	64	M6×1.0	14	46	26	M6×1.0	12	26	59	$\Phi 34\ ^{+0.05}_{0}$	2	M5×0.8	9	56	18