MCHCJ series [Dust Cover]

PARALLEL GRIPPER (2-Finger)

Model selection

Technical data

Caution for safety
(Read before installing)



Features

- Integral linear guide used for high rigidity and high precision.
- The material of finger is martensitic stainless steel.
- The dust cover is made of food-grade silicone rubber.
- Body thickness tolerance ±0.05mm.
- Bottom pin holes for accurate re-locating.
- Grooves on the body for sensor switch to be inserted into.
- Magnetic as standard.

Specification

Model		MCHCJ	
Acting type		Double acting	Single acting
Tube I.D. (mm)		16	
Opening / Closing stroke (mm)		6	
Port size		M5×0.8	
Medium		Air	
Operating pressure range (MPa)		0.1~0.7	0.25~0.7
Ambient temperature		-10~+60°C (No freezing)	
Repeatability		± 0.01 mm	
Max. operating frequency (c.p.m)		180	
Lubricator		Not required	
Volume (cm^3)	A port inlet	1.1	
	B port inlet	1.1	N.O.: 1.1 N.C.: 0.9
Sensor switch		RDC(V), RQC(V), RDFE(V)	
Weight (g)		135	

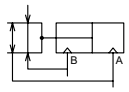
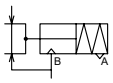
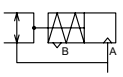
Order example

MCHCJ — 16 — □

MODEL

TUBE I.D.
16

STYLE

Blank: Double acting	**S**: Single acting / Normally open	**C**: Single acting / Normally closed
		

Order example of dust cover

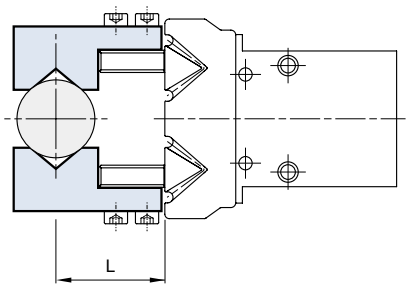
JD — MCHCJ — 16

DUST COVER

MODEL

TUBE I.D.

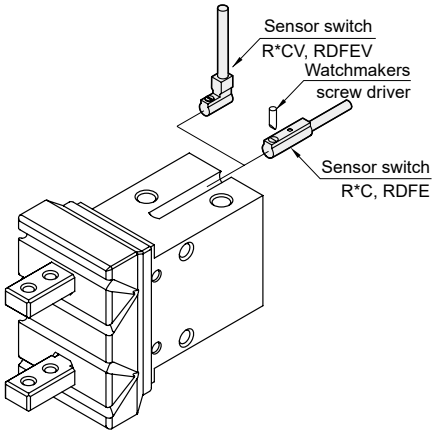
Gripping force

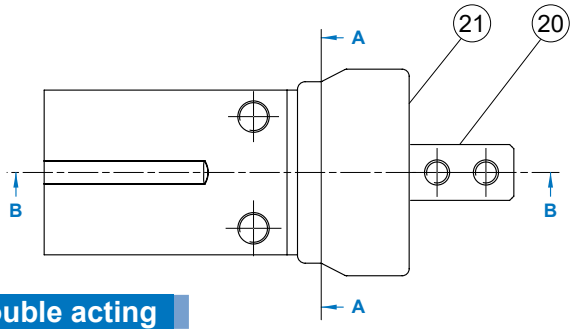


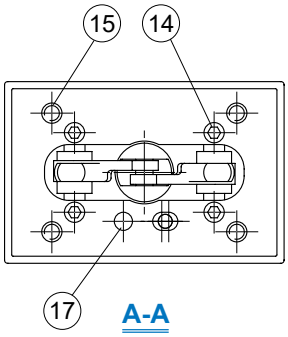
Tube I.D. (mm)		16
Double acting	External	30 (3.1)
	Internal	40 (4.1)
Single acting / Normally open	External	24 (2.5)
Single acting / Normally closed	Internal	31 (3.2)

* Operation pressure 0.5 MPa, gripping length 20mm, the effective gripping force for each finger is *** N(kgf).

Installation of sensor switch

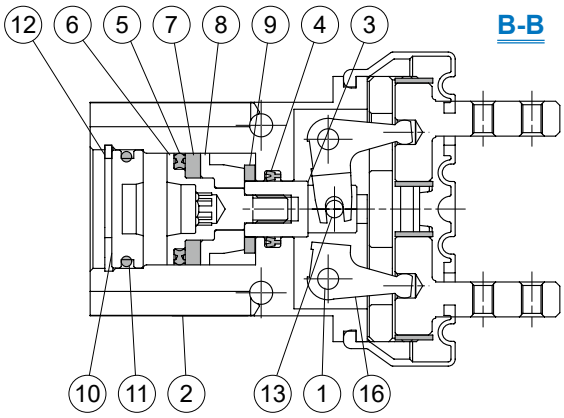






A-A

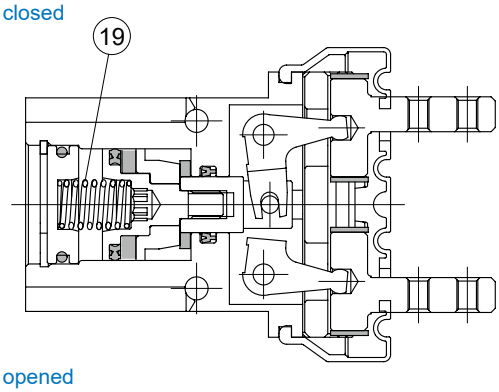
Double acting



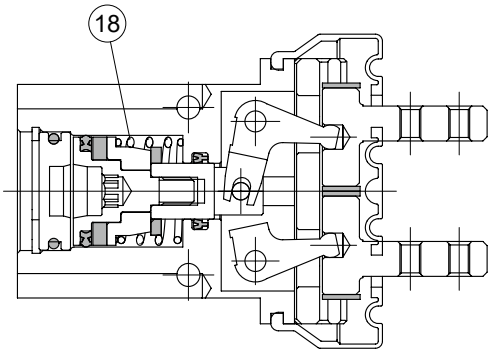
B-B

Single acting

Normally closed



Normally opened



Material

No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Grip rivet	Carbon steel	2	
2	Body	Aluminum alloy	1	
3	Piston rod	Stainless steel	1	
4	Rod packing	NBR	1	●
5	Piston packing	NBR	1	●
6	Piston	Stainless steel	1	
7	Magnet ring	Magnet material	1	
8	Spring holder	Stainless steel	1	
9	Cushion pad	PU	1	●
10	End cover	Aluminum alloy	1	
11	O-ring	NBR	1	●
12	Snap ring	Stainless steel	1	
13	Pin	Bearing steel	1	
14	Screw	Stainless steel	4	
15	Bolt	Stainless steel	4	
16	Lever	Stainless steel	2	
17	Locating pin	Bearing steel	2	
18	Spring	Stainless steel	1	
19	Spring	Stainless steel	1	
20	Gripping set	Stainless steel (*)	1	
21	Dust cover	Silicone rubber	1	

* Bearing steel balls as standard.

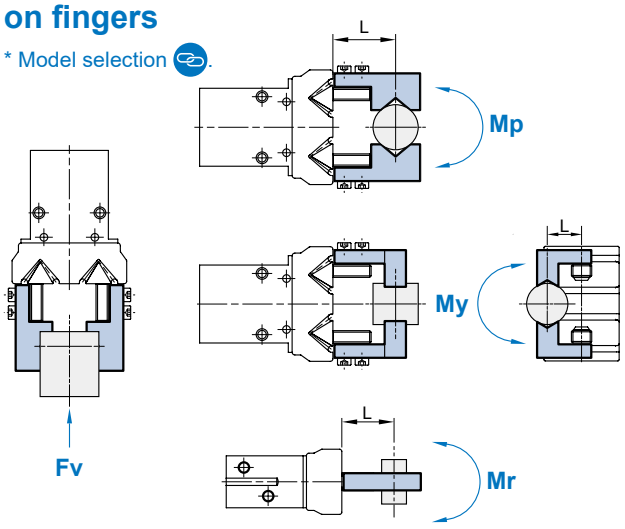
Order example of repair kits

* Use the same repair kits with MCHC.

Tube I.D.	Repair kits
ø16	**PS-MCHC-16-S**

Confirmation of external force on fingers

* Model selection .



L: distance to the point at which the load is applied (mm)

Tube I.D. (mm)	Allowable vertical load Fv (N)	Maximum allowable moment		
		Pitch moment Mp (N-m)	Yaw moment My (N-m)	Roll moment Mr (N-m)
16	98	0.68	0.68	1.36

* Values for load and moment in the table indicate static values.

Allowable load calculation

$$\text{Allowable load } F(N) = \frac{M(\text{maximum allowable moment})(N\cdot m)}{L(m)}$$

Example

When a static load of f=20N is operating,which applies pitch moment to point L=25mm from the **MCHCJ-16** guide.

$$\text{Allowable load } F(N) = \frac{0.68\ (N\cdot m)}{25\times10^{-3}(m)}$$

$$= 27.2\ (N)$$

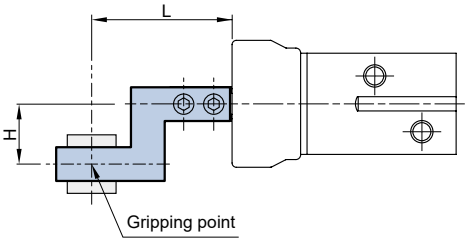
Load f=20 (N) < 27.2 (N), so can be used.

Model selection suggestions

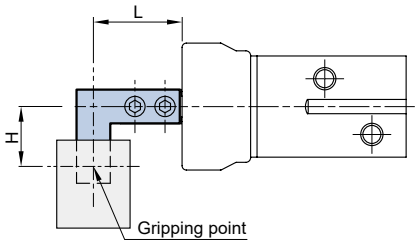
1. For normal gripping and carrying usage, the recommended safe factor (a) is 4.
2. The value of gripping force of single finger can be found at the gripping force table.
3. The safe factor (a) have to be higher if the gripper is using with a great accelerated velocity or impaction condition.

Confirmation of gripping point

- The air gripper should be operated so that the workpiece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs to the right.
- If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the life the air gripper.

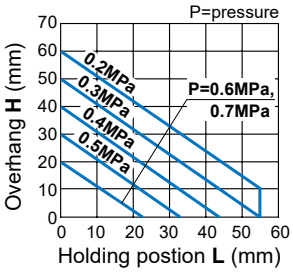


External grip

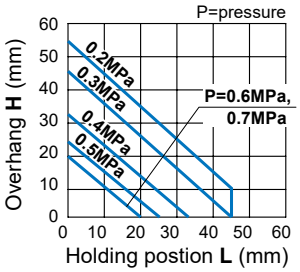


Internal grip

External gripping

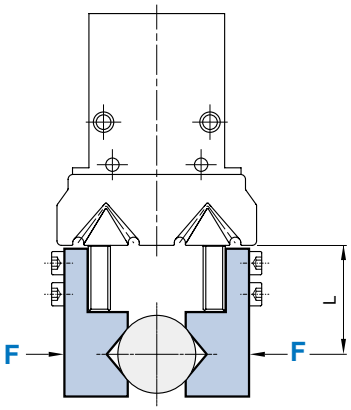


Internal gripping

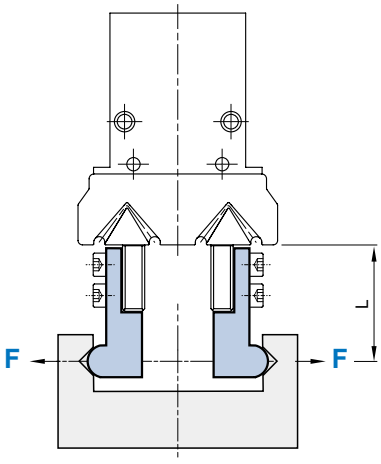


Effective gripping force

Indication of effective force.
The effective gripping force shown in the graphs to the below is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.

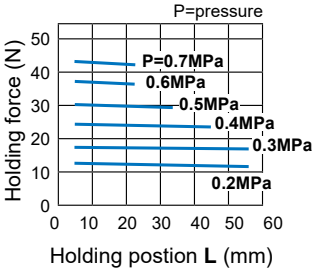


External grip
(Double acting,
Single acting / Normally open)

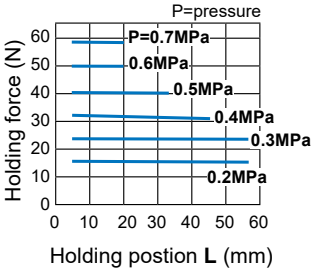


Internal grip
(Double acting,
Single acting / Normally closed)

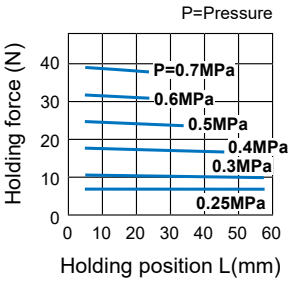
External gripping force



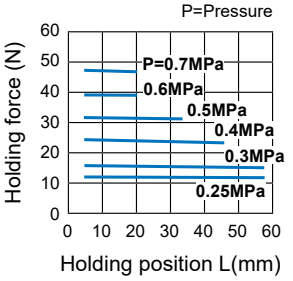
Internal gripping force

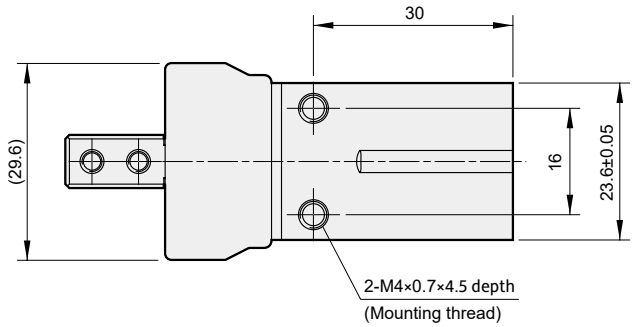


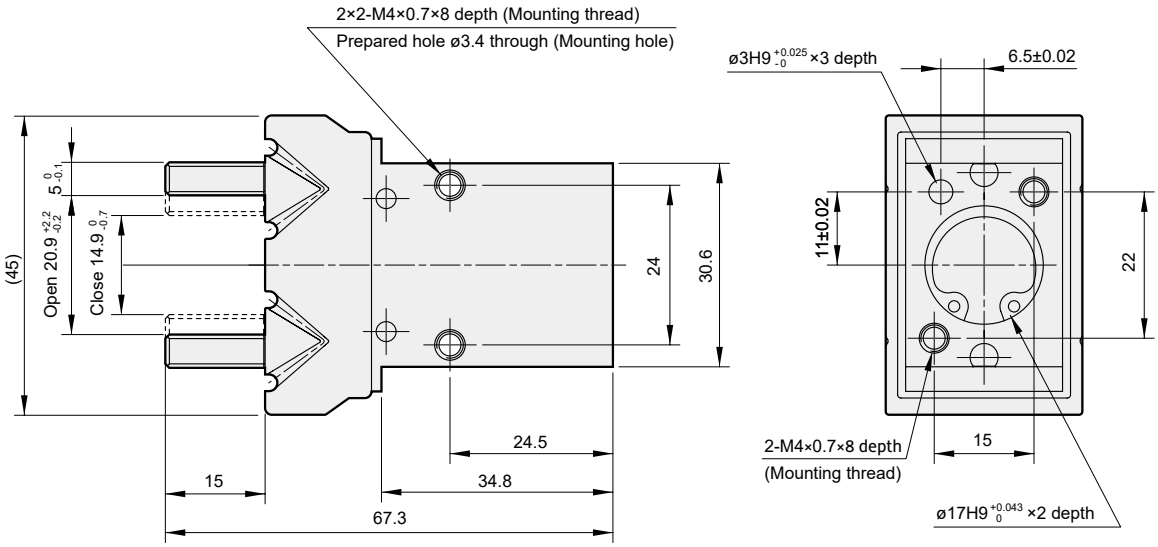
External gripping force
Single acting / N.O.

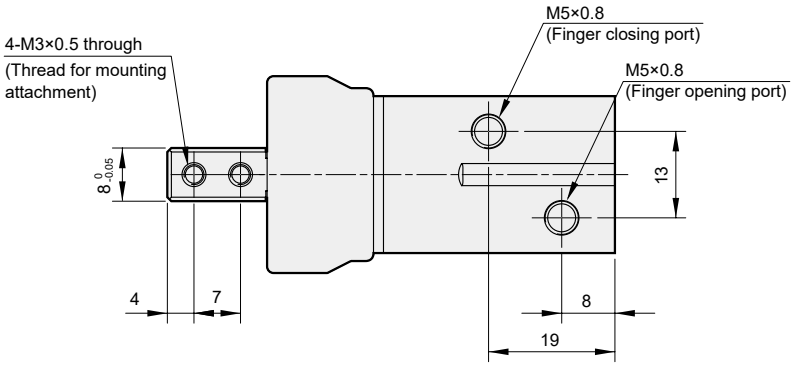


Internal gripping force
Single acting / N.C.




30
(29.6)
16
23.6±0.05
2-M4×0.7×4.5 depth
(Mounting thread)


2×2-M4×0.7×8 depth (Mounting thread)
Prepared hole ø3.4 through (Mounting hole)
ø3H9 +0.025 0 ×3 depth
6.5±0.02
(45)
Open 20.9 +2.2 -0.2
Close 14.9 0 -0.7
5 0 -0.1
24
30.6
11±0.02
22
24.5
15
34.8
67.3
2-M4×0.7×8 depth
(Mounting thread)
15
ø17H9 +0.043 0 ×2 depth


4-M3×0.5 through
(Thread for mounting
attachment)
M5×0.8
(Finger closing port)
M5×0.8
(Finger opening port)
8 0 -0.05
13
4
7
8
19