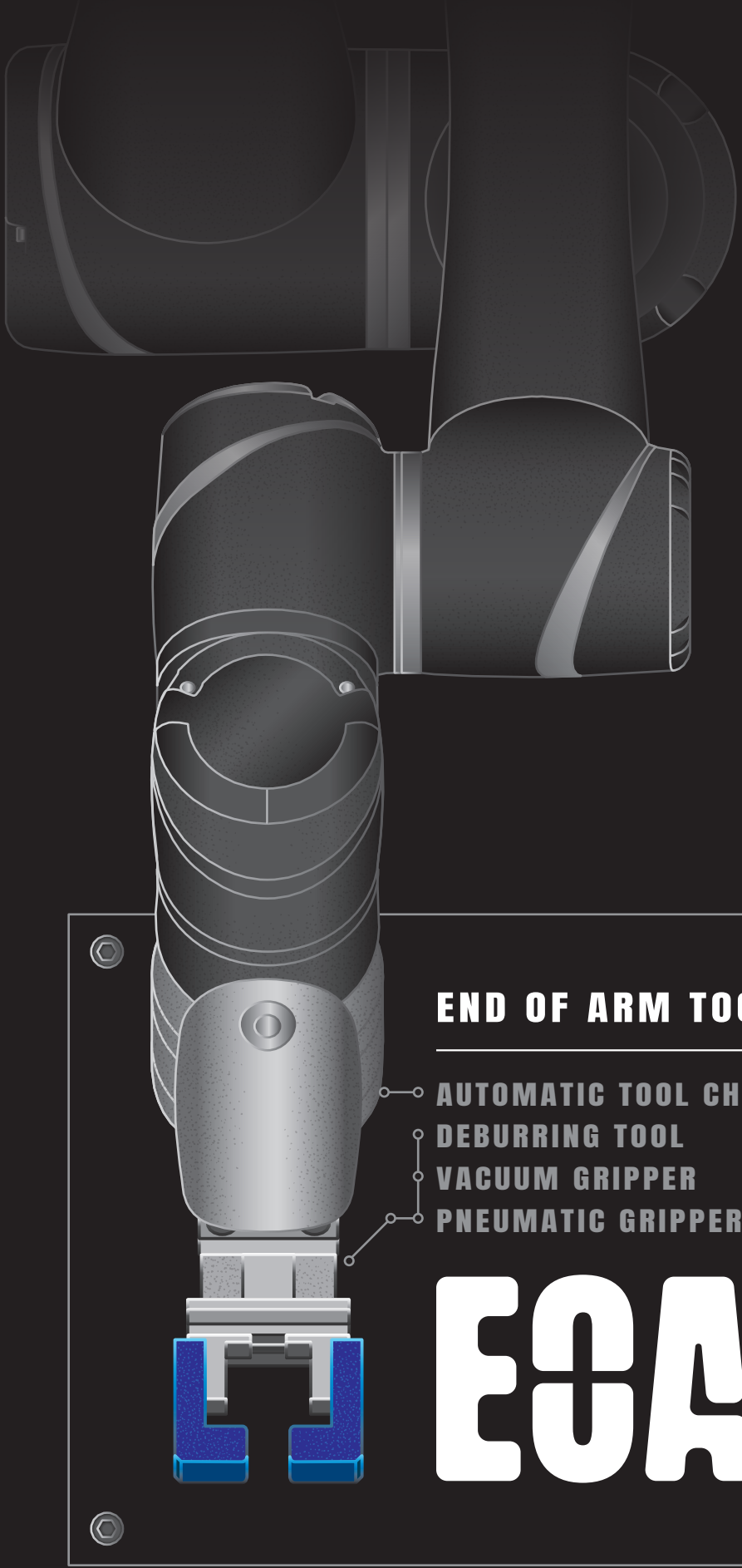


END OF ARM TOOLING

- AUTOMATIC TOOL CHANGER
- DEBURRING TOOL
- VACUUM GRIPPER
- PNEUMATIC GRIPPER

EOAT

mindman

About **MINDMAN**.

QUALITY POLICY
Quality advancement & Exceeding customers' demands

600 PEOPLE
EMPLOYEES

97 COUNTRIES
SALES NETWORK

Core Business: Manufacture and sale for varieties of high quality automation components.

1979
FOUNDED

No.1
Quantity supplied of pneumatic components in Taiwan.

HEADQUARTERS IN
TAIPEI
CITY, TAIWAN

CHING-CHENG HUANG
PRESIDENT

CAPITAL
USD 12,558,000

MANUFACTURE BASE IN
TAINAN
CITY, TAIWAN

90,000 m^2
Plant Size

ISO 9001
Quality

ISO 14001
Environmental Friendly

ISO 45001
Health and Safety

Mindman Industrial Co., Ltd. was established in 1979 with a destination to provide high quality automation components for a wide variety of industries.

During the past 40 years, Mindman has devoted to the expansion of our product range. Thanks to our R&D department, we are proud to possess the diversified product lineup includes solenoid valves, air treatment units, pneumatic cylinders, electric actuators and all different types of fluid power accessories.

We always believe that fast delivery of automation components is the key of success in the market. Through the complete vertical integration of all manufacturing processes and automated warehouse, we are confident to achieve on time delivery.

To keep quality high during the whole production process, we implement the strict quality control standard.

We thoroughly control the process via standard operation procedure (SOP), statistical process control system (SPC) and total productive management (TPM). Most important of all, Mindman commits to providing the products with 100% inspection after assembly.

Currently, Mindman products are exported to more than 90 countries around the world. We devoted ourselves to building the relationship with customers worldwide and provide them with the strong support, such as online 3D drawing, inventory check and promotional program. In the vast automation market, Mindman will spare no effort in establishing a brand – a world-class premium automation components supplier.

RoHS CE MIT

Connect with

ROBOT

Connect gripper and robotic arm to achieve
various workpiece gripping applications.

PARALLEL GRIPPER

2-FINGER

All max. holding force is based on the conditions below.

- Operation Pressure 0.5 MPa.
- Gripping Length 20 mm.
- External gripping.

* MCHS, MCHJ series: Under the condition of clamping length 40mm and operation pressure 0.6 MPa.

MCH* series
Model selection
P. 8

- Gripper selection.
- Selection suggestions.
- Selection example.

MCHC series
2-finger
P. 9

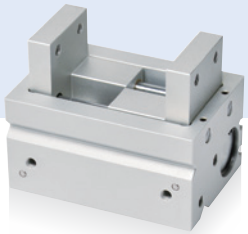
- Using linear ball bearing.
- Excellent repeatability.
- 7 kinds of mounting jaw available.
- Max. holding force 254N.

MCHCJ series **Dust Cover**
2-finger
P. 27

- Using linear ball bearing.
- Dust cover for food-grade silicone rubber.
- Max. holding force 30N.

mindman

2-FINGER



MCHU series
2-finger

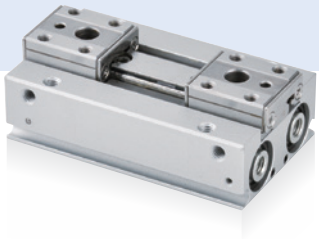
P. 32

- Using mechanism to achieve parallel gripping.
- Designed for long soft-jaws installation.
- Max. holding force 60N.

MCHB series
2-finger

P. 36

- Using mechanism to achieve parallel gripping.
- Economic type.
- Max. holding force 175N.

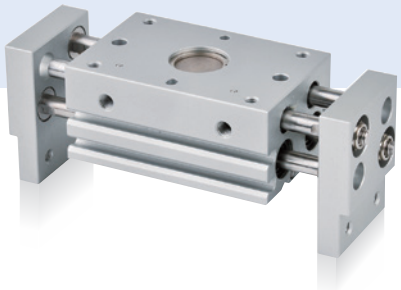


MCHD series
2-finger

P. 42

- Using linear ball bearing.
- Excellent repeatability.
- Flat profile.
- Max. holding force 140N.

2-FINGER



MCHX series
2-finger

P. 52

- Using rack and pinions to achieve parallel gripping.
- Long gripping stroke.
- High rigidity.
- Max. holding force 410N.

MCHH series
2-finger

P. 58

- Using rack and pinions to achieve parallel gripping.
- High rigidity.
- Max. holding force 125N.

MCHS / MCHS-OS series
2-finger

P. 63 / 73

- Using transmission cam to achieve parallel gripping.
- Clamping safety device.
- High rigidity.
- Max. holding force 3283N.
  (Gripping length 40 mm)

PARALLEL GRIPPER

3-FINGER

MCHG2 series
3-finger
P. 79

- Using transmission cam to achieve centering gripping.
- High rigidity.
- Max. holding force 1270N.
  (Operation pressure 0.5 MPa, Gripping length 50 mm)

MCHJ series
3-finger
P. 86

- Using transmission cam to achieve centering gripping.
- High rigidity.
- Max. holding force 1756N.
  (Operation pressure 0.6 MPa, Gripping length 40 mm)

SENSOR SWITCH

RDE series
P. 148

- Non-contact
- NPN, PNP

RDFE series
P. 149

- Non-contact
- NPN, PNP

RDGV series
P. 150

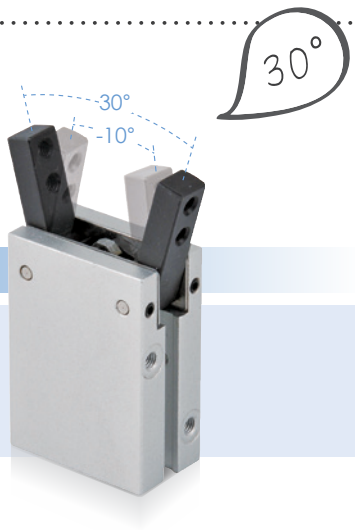
- Non-contact
- NPN, PNP

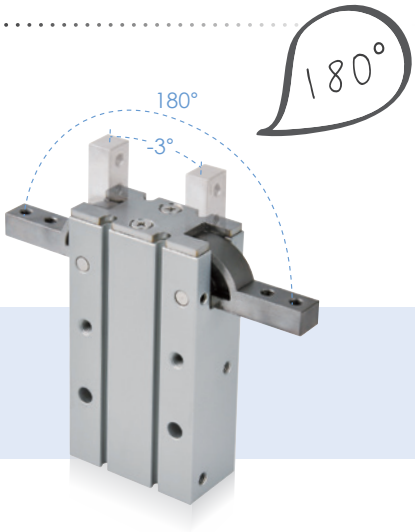
RLG series
P. 151

- 3 point positioning
- NPN, PNP

ANGULAR GRIPPER

2-FINGER



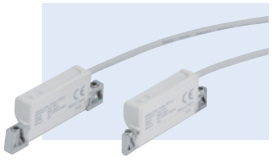


MCHA series
2-finger
P. 94

- Simple structure with high stability.
- Economic type.
- Max. holding force 145N.
  (Operation pressure 0.5 MPa, Gripping length 20 mm)

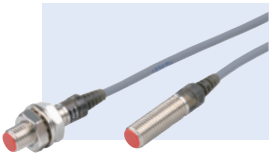
MCHY series
2-finger
P. 99

- Using cams to achieve angular gripping.
- Max. effective gripping moment: 2.28 N.m



RLZ series
P. 152

- Freely set measuring range



RJY series
P. 155

- M5, M8
- NPN, PNP

ALL-IN-ONE
PNEUMATIC GRIPPER

3-FINGER

MCTA-J66 series

P. 104

- Plug and play.
- High rigidity.
- Max. holding force 177N
  (Operation pressure 0.6 MPa, Gripping length 40 mm)

2-FINGER

MCTA-S80 series

P. 104

- Plug and play.
- High rigidity.
- Max. holding force 225N
  (Operation pressure 0.6 MPa, Gripping length 40 mm)

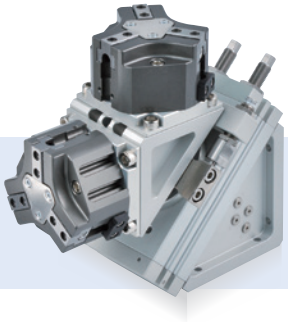
AUTOMATIC
TOOL CHANGER

MCTC series

P. 108

- ISO flange for easy-mounting on most of the robot arms.
- Locking force 2300N, 4500N.

180°
ROTATION GRIPPER



MCRT series

P. 123

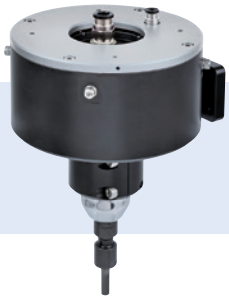
- Hose-free direct connection.
- High rigidity.
- Max. holding force 527N
  (Operation pressure 0.6 MPa, Gripping length 40 mm)

DEBURRING TOOL

FOR ROBOT (RADIAL / ANGULAR) P. 130

TRG20 series P. 131

- Radial
- Curved edge
- Milling cutter



TRG30 series P. 132

- Radial
- Curved edge
- Milling cutter

TRF20 series P. 133

- Radial
- Curved edge
- Round file

TAF20 series P. 134

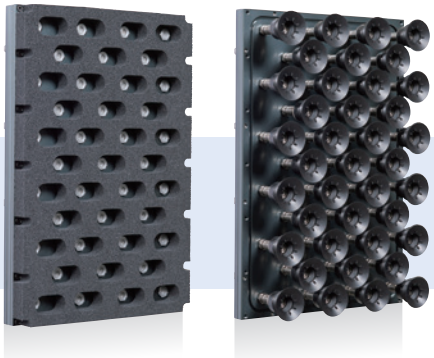
- Angular
- Straight edge
- File

VACUUM GRIPPER

PISCO VACUUM PAD P. 135

VRG series P. 137

- Foam rubber pad
- P.C.D. 31.5, 40, 56, 80, 100.



VMG series P. 140

- Sealing foam pad, Bellows pads
- P.C.D. 31.5, 40, 56, 80, 100.

VLG series P. 144

- Sealing foam pad, Bellows pads
- P.C.D. 31.5

Gripper selection

- Depends on the coefficient of friction and the gripping conditions between soft fingers and work piece.

When gripping a workpiece as in the figure as shown above:

F: Gripping force of single finger (N)
n: Number of finger
μ: Coefficient of friction between the attachments and the workpiece
m: Workpiece mass (kg)
g : Gravitational acceleration (=9.8m/s^2)
a : Safe factor

the conditions under which the workpiece will not drop are,

$$n \times \mu F > m \times g$$

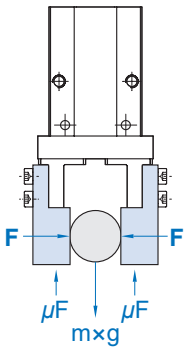
Therefore,

$$F \geq \frac{m \times g}{n \times \mu}$$

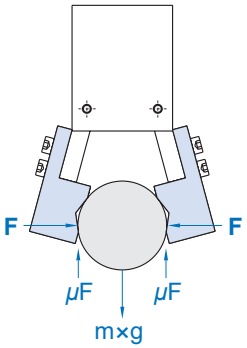
With "a" representing the extra margin, "F" is determined by the following formula:

$$F \geq \frac{m \times g}{n \times \mu} \times a$$

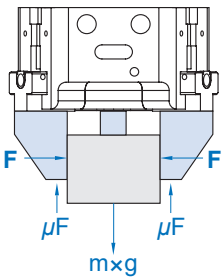
Parallel gripper (2-Finger)



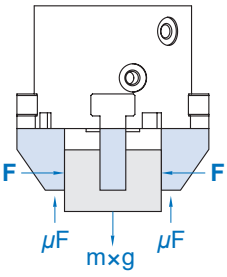
Angular gripper



Parallel gripper (3-Finger)



Parallel gripper (4-Finger)

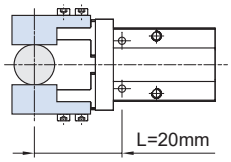


Model selection suggestions

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.

Model selection example

In the motion process did not produce high acceleration, deceleration or impact forces, Workpiece mass: 0.3kg , Gripping method: External gripping, Operating pressure: 0.5 MPa, Coefficient of friction (*μ*): 0.1, Holding position: L=20mm (no overhang)

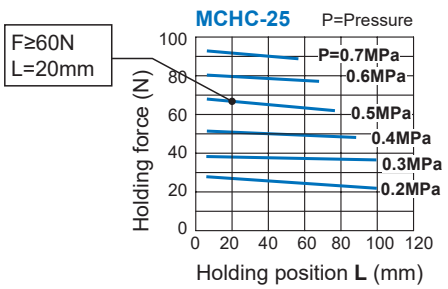


1. Based on the above formula, the required gripping force can be derived:

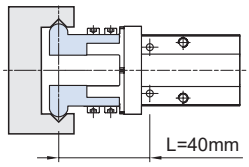
$$F \geq \frac{0.3 \times 9.8}{2 \times 0.1} \times 4$$

$$\geq 60(N)$$

2. From Effective Gripping Force Fig, Operating pressure: 0.5 MPa; Holding position: 20 mm Effective gripping force is greater than 60 (N) So selected **MCHC-25** grippers.



In the motion process did not produce high acceleration, deceleration or impact forces, Workpiece mass: 0.05kg , Gripping method : External gripping, Operating pressure: 0.3 MPa, Coefficient of friction (*μ*): 0.1, Holding position: L=40mm (no overhang)

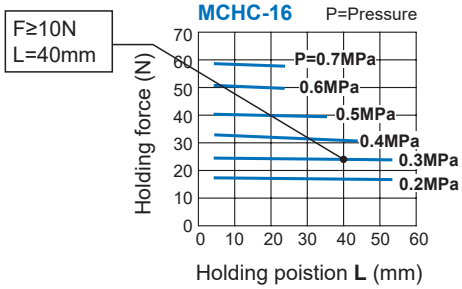


1. Based on the above formula, the required gripping force can be derived:

$$F \geq \frac{0.05 \times 9.8}{2 \times 0.1} \times 4$$

$$\geq 10(N)$$

2. From Effective Gripping Force Fig, Operating pressure: 0.3 MPa; Holding position: 40 mm Effective gripping force is greater than 10 (N) So selected **MCHC-16** grippers.



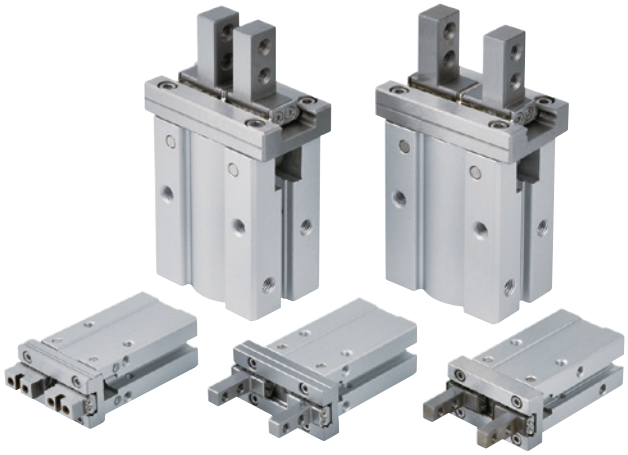
Connect with

AIR CYLINDER

Connect gripper with cylinder to achieve regular workpiece gripping.

MCHC series

PARALLEL GRIPPER (2-Finger)



Features

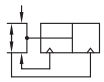
- Integral linear guide used for high rigidity and high precision.
- The material of finger is martensitic stainless steel.
- Body thickness tolerance ±0.05mm.
- Bottom pin holes for accurate re-locating.
- Grooves on the body for sensor switch to be inserted into.
- The gripping stroke of long-stroke type is approximately double compare with standard type.
- Magnetic as standard.

Order example

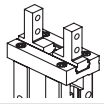
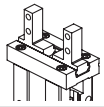
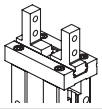
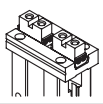
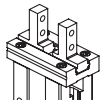
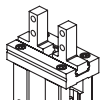
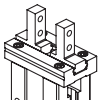
MCHC □ — 20 — □ N

Model	Tube ID.	Style (*1)	Type (*2)
MCHC (Standard stroke)	**6**	Blank: Double acting	Blank: Standard **1**: Standard (Side tapped) **2**: Standard (Through hole)
	10 **16** **20** **25**	Blank: Double acting **S**: Single acting / Normally open **C**: Single acting / Normally closed	Blank: Standard **1**: Standard (Side tapped) **2**: Standard (Through hole) **3**: Flat **N**: Narrow **N1**: Narrow (Side tapped) **N2**: Narrow (Through hole)
	32 **40**	Blank: Double acting	Blank: Standard **1**: Standard (Side tapped) **2**: Standard (Through hole) **3**: Flat
MCHCL (Long stroke)	**10** **16** **20** **25**	Blank: Double acting	Blank: Standard **1**: Standard (Side tapped) **2**: Standard (Through hole)

*1. STYLE

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

*2. TYPE

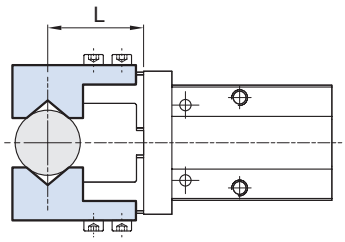
Blank: Standard	**1**: Standard (Side tapped)	**2**: Standard (Through hole)	**3**: Flat
			
N: Narrow	**N1**: Narrow (Side tapped)	**N2**: Narrow (Through hole)	
			

Specification

Model		MCHC						
Acting type		Double acting / Single acting						
Tube I.D. (mm)		6	10	16	20	25	32	40
Opening / Closing stroke (mm)		4	4(8)	6(12)	10(18)	14(22)	22	30
Port size		M3×0.5		M5×0.8				
Medium		Air						
Operating pressure range (MPa)	Double acting	0.15~0.7	0.2~0.7	0.1~0.7				
	Single acting	–	0.35~0.7	0.25~0.7			–	
Ambient temperature		-10~+60°C (No freezing)						
Repeatability (mm)		± 0.01					± 0.02	
Max. operating frequency (c.p.m)		180 (120)					60	
Lubricator		Not required						
Sensor switch (*2)		*1	RDE, RDE-D: Non-contact					
Weight (g)	Double acting Standard	27	55	124	250	461	732	1298
	Double acting Long stroke	–	56	125	252	463	–	–
	Double acting Flat type	–	53	124	244	450	760	1344
	Single acting	–	70	145	270	490	–	–

*1. Tube I.D. ø6 use RDFE(V) sensor switch.
2. RDE, RDFE(V) specification, please refer to page 148, 149.
*3. ( ) value for long stroke.

Gripping force



Tube I.D.		6	10	16	20	25	32	40
Double acting	External	3.3(0.3)	11(1.1)	34(3.5)	42(4.3)	65(6.6)	158(15.8)	254(25.4)
	Internal	6.1(0.6)	17(1.7)	45(4.6)	66(6.7)	104(10.6)	193(19.3)	318(31.8)
Single acting / Normally open	External	–	7.1(0.7)	27(2.8)	33(3.4)	45(4.6)	–	–
Single acting / Normally closed	Internal	–	13(1.3)	38(3.9)	57(5.8)	83(8.5)	–	–

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

7 kinds of mounting jaw available

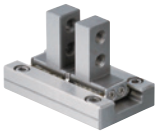
Linear ball bearing guide for high rigidity and precision

Whole gripping set made with martensitic stainless steel

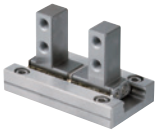
VARIOUS FINGER TYPES

- Standard

- Narrow

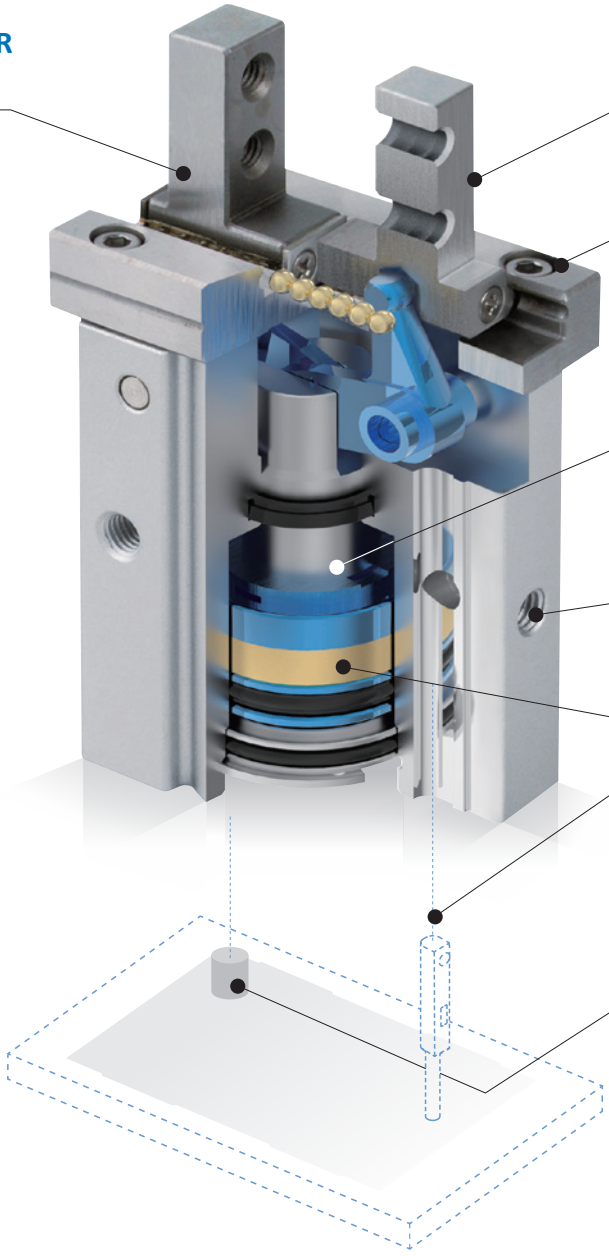


- Side tapped mounting



- Through hole

- Flat



REPEATABILITY

±0.01 mm

STROKE

Standard and long stroke.

The long stroke type is approximately double compare with standard type.

ACTING

Single / Double acting
N.C. / N.O. (optional)

MOUNTING POSITION

Bottom / Side / Front

SENSOR SWITCH

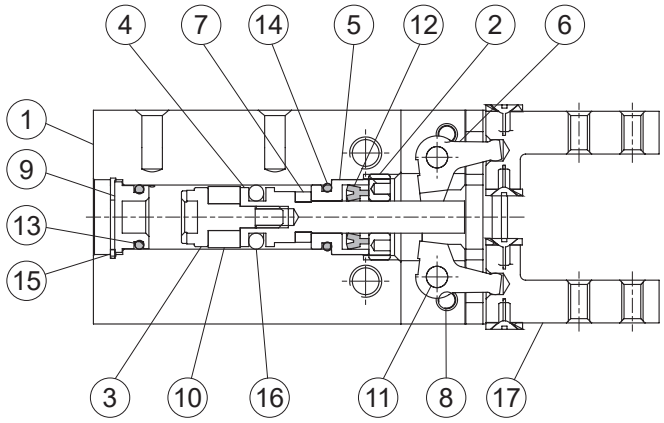
RDE, RNE, RPE series

Standard with magnet
Embedded sensor design

POSITIONING HOLES

With positioning holes for fast positioning when changing grippers.

Double acting



Material

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

* Bearing steel balls as standard.

Order example of repair kits

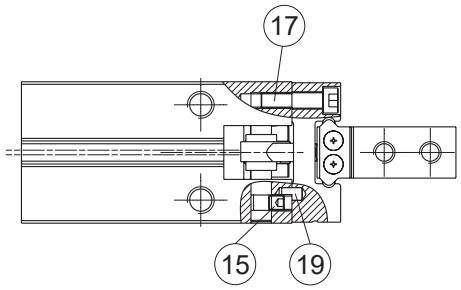
Tube I.D.	Repair kits
ø6	**PS-MCHC-6**

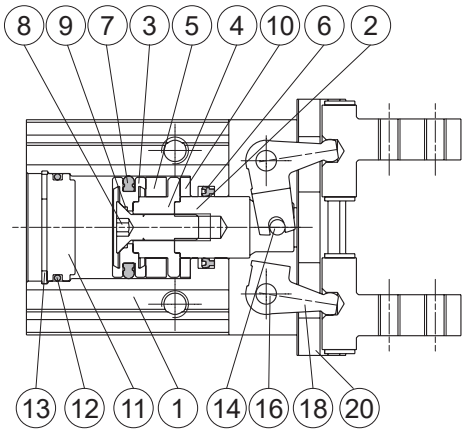
MCHC Inside structure & Parts list ø10~ø40

PARALLEL GRIPPER (2-Finger)

mindman

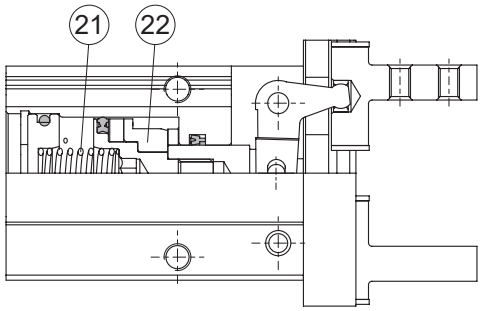
Double acting





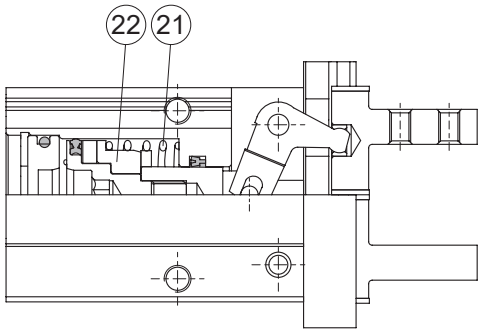
Single acting

Normally open



Single acting

Normally closed



Material

No.	Tube I.D. / Part name	10	16	20	25	32	40	Q'y	Repair kits (inclusion) Double	Single
1	Body	Aluminum alloy						1		
2	Piston rod	Stainless steel						1		
3	Piston	Aluminum alloy *1						1		
4	Magnet holder	*2	Aluminum alloy					1		
5	Magnet ring	Magnet material						1		
6	Rod packing	NBR						1	●	●
7	Piston packing	NBR						1	●	●
8	Screw	—	Stainless steel					1		
9	O-ring	—	NBR					1	●	
10	Cushion pad	PU						1	●	●
11	End cover	Aluminum alloy						1		
12	Cover ring	NBR						1	●	●
13	Snap ring	*3	Stainless steel					1		
14	Spindle river	Carbon steel						1		
15	Screw	*2	Alloy steel					4		
16	Grip rivet	Bearing steel						2		
17	Bolt	Stainless steel						4		
18	Lever	Stainless steel						2		

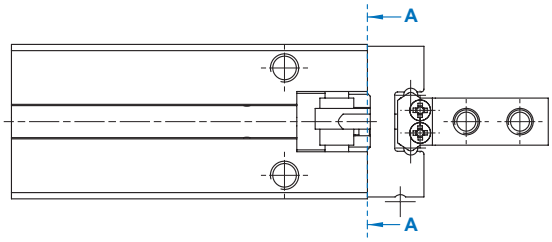
No.	Tube I.D. / Part name	10	16	20	25	32	40	Q'y	Repair kits (inclusion) Double	Single
19	Pin	Bearing steel						2		
20	Gripping set	Stainless steel *4						1		
21	Spring	Stainless steel						1		
22	Spring holder	Stainless steel						1		

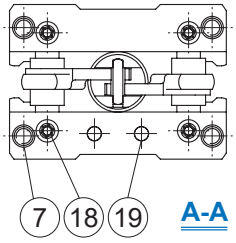
*1. Single acting: Stainless steel
*2. Stainless steel
*3. Carbon steel
*4. Bearing steel balls as standard.

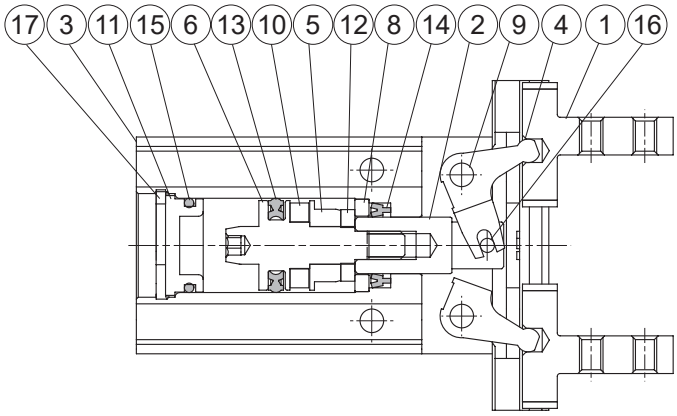
Order example of repair kits

Tube I.D.	Repair kits	
	Double acting	Single acting N.O. / N.C.
ø10	**PS-MCHC-10**	**PS-MCHC-10-S**
ø16	**PS-MCHC-16**	**PS-MCHC-16-S**
ø20	**PS-MCHC-20**	**PS-MCHC-20-S**
ø25	**PS-MCHC-25**	**PS-MCHC-25-S**
ø32	**PS-MCHC-32**	–
ø40	**PS-MCHC-40**	–

Double acting







Material

No.	Tube I.D. / Part name	10	16	20	25	Q'y	Repair kits (inclusion)
1	Gripping set	Stainless steel *1				1	
2	Piston rod	Stainless steel				1	
3	Body	Aluminum alloy				1	
4	Lever	Stainless steel				2	
5	Spring holder	Stainless steel				1	
6	Piston	Stainless steel				1	
7	Bolt	Stainless steel				4	
8	Stop ring	*2	–			1	
9	Grip rivet	Carbon steel				2	
10	Magnet ring	Magnet material				1	
11	End cover	Aluminum alloy				1	
12	Gasket	NBR				1	●
13	Piston packing	NBR				1	●
14	Rod packing	NBR				1	●
15	O-ring	NBR				1	●
16	Spindle river	Carbon steel				1	
17	Snap ring	*3	Stainless steel			1	
18	Hexagon screw	*2		Alloy steel		4	
19	Pin	Carbon steel				2	

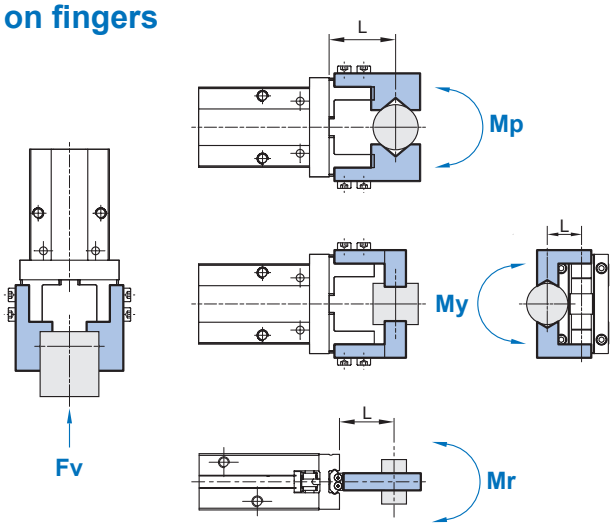
*1. Bearing steel balls as standard.
2. Stainless steel 3.Carbon steel

Order example of repair kits

* ø10 use the same repair kits with standard stroke single acting type.

Tube I.D.	Repair kits
ø10	PS-MCHC-10-S
ø16	PS-MCHCL-16
ø20	PS-MCHCL-20
ø25	PS-MCHCL-25

Confirmation of external force on fingers



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)
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

* 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 **MCHC-16** guide.

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

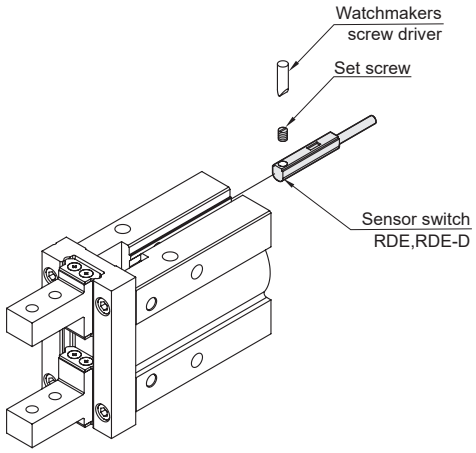
$$= 27.2\ (N)$$

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.

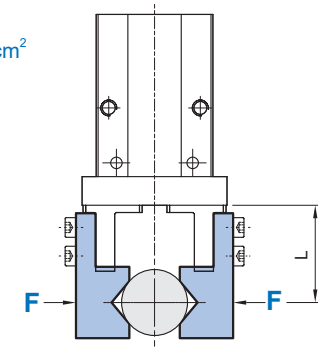
Installation of sensor switch



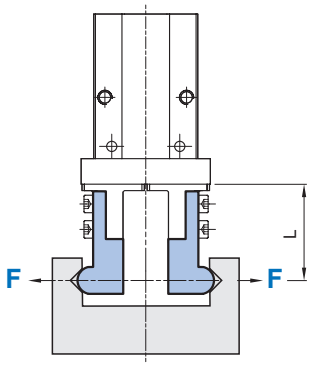
Effective gripping force (Double acting)

Indication of effective force.
The effective gripping force shown in the graphs to the right 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.

1N=0.102 kgf
1MPa=10.2 kgf/cm^2

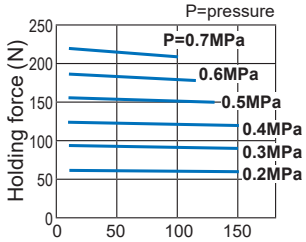


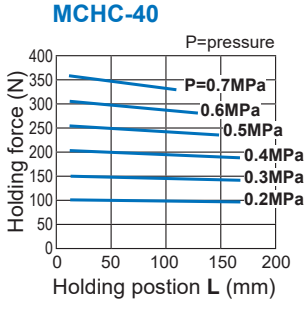
External grip



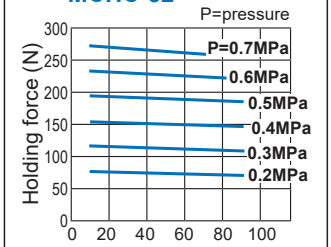
Internal grip

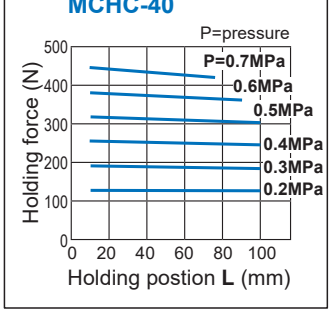
External gripping force



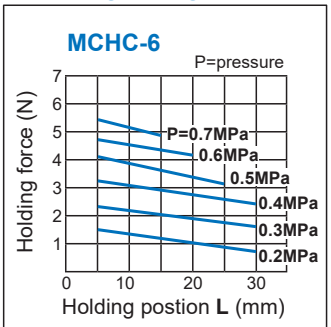


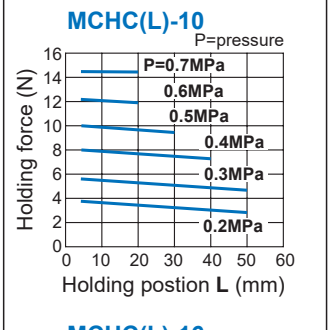
Internal gripping force

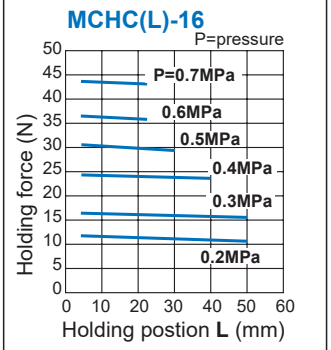


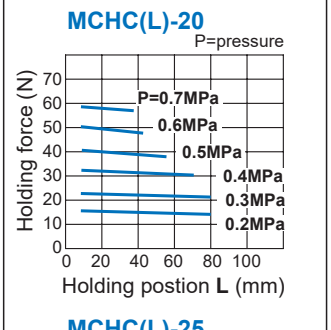


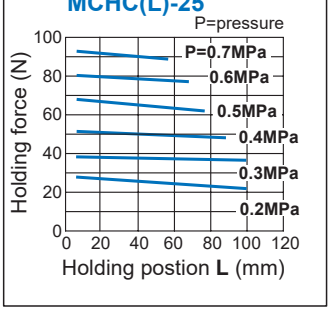
External gripping force



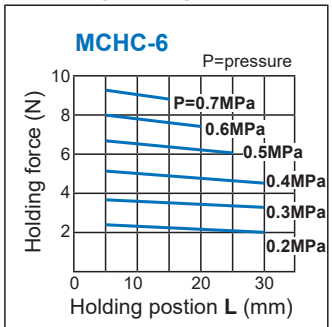


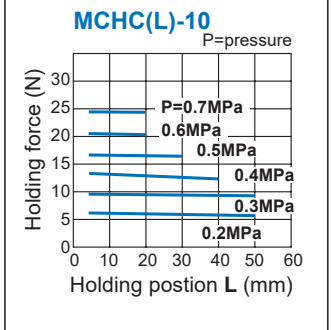


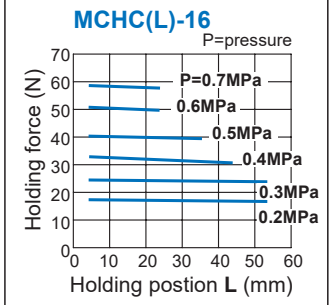


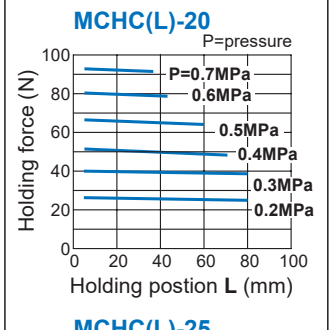


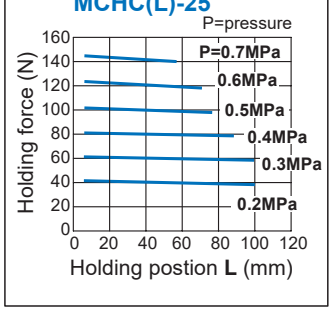
Internal gripping force











Effective gripping force (Single acting)

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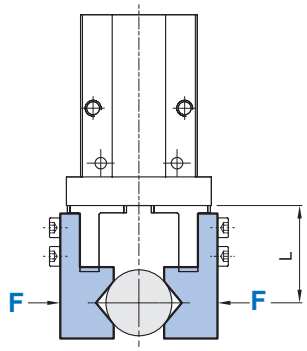
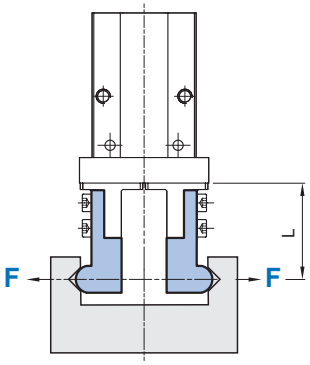
1MPa=10.2 kgf/cm^2



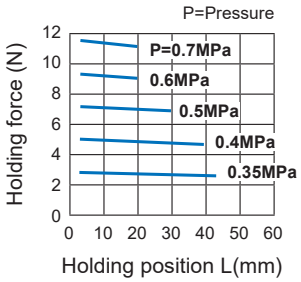
External grip
(Single acting / Normally open)



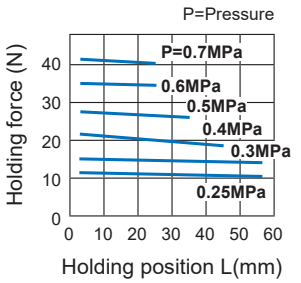
Internal grip
(Single acting / Normally closed)

External gripping force
Single acting / N.O.

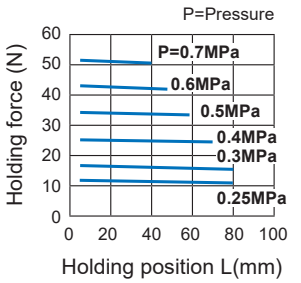
MCHC-10-S



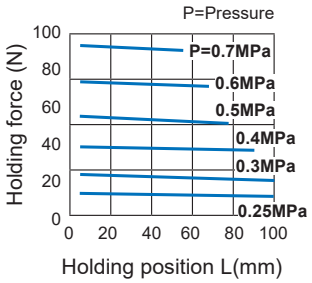
MCHC-16-S



MCHC-20-S

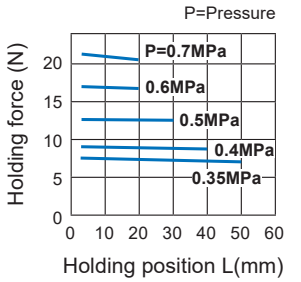


MCHC-25-S

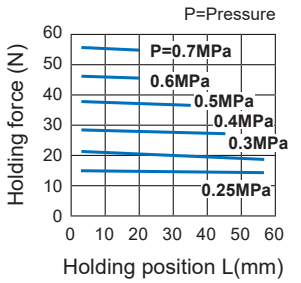


Internal gripping force
Single acting / N.C.

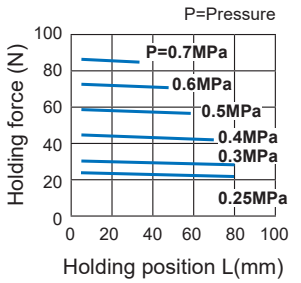
MCHC-10-C



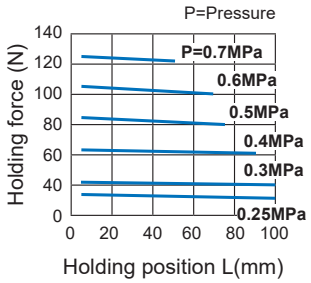
MCHC-16-C



MCHC-20-C

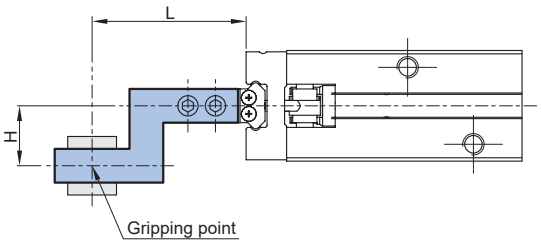


MCHC-25-C

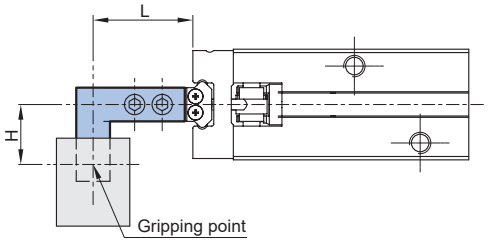


Confirmation of gripping point

- 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.



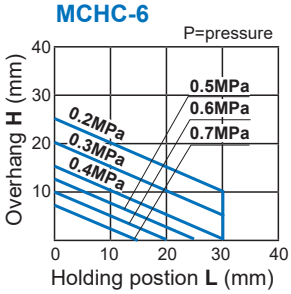
External grip



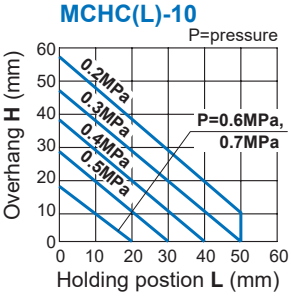
Internal grip

External gripping

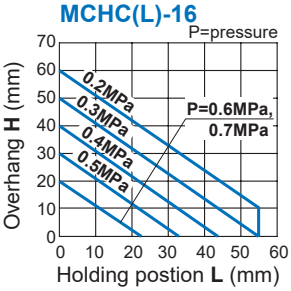
MCHC-6



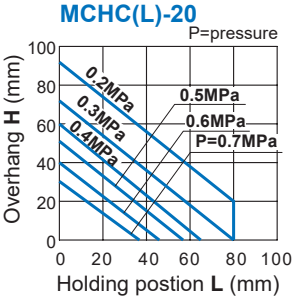
MCHC(L)-10



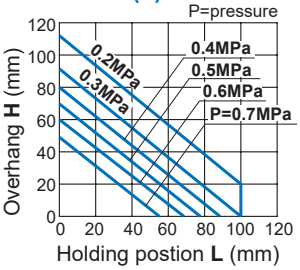
MCHC(L)-16



MCHC(L)-20

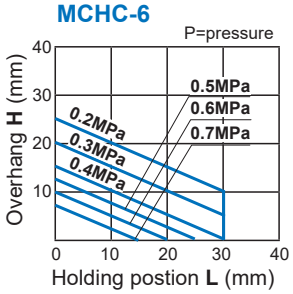


MCHC(L)-25

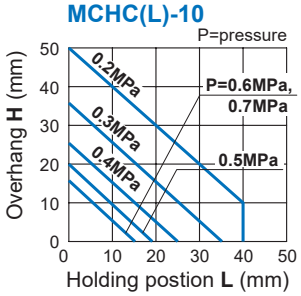


Internal gripping

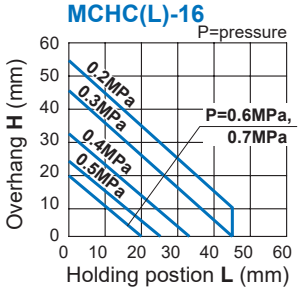
MCHC-6



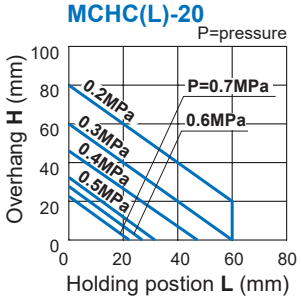
MCHC(L)-10



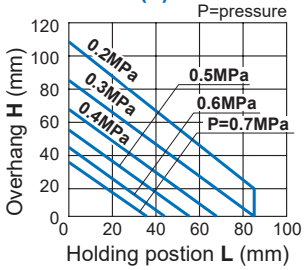
MCHC(L)-16



MCHC(L)-20

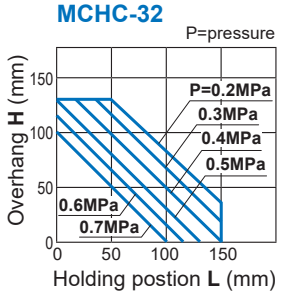


MCHC(L)-25

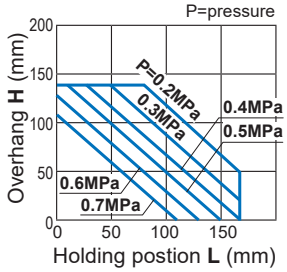


External gripping

MCHC-32

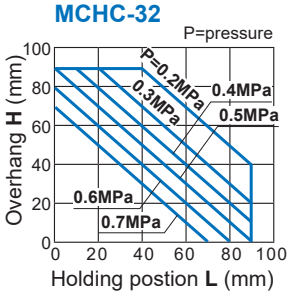


MCHC-40

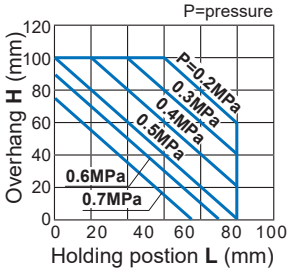


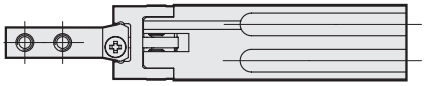
Internal gripping

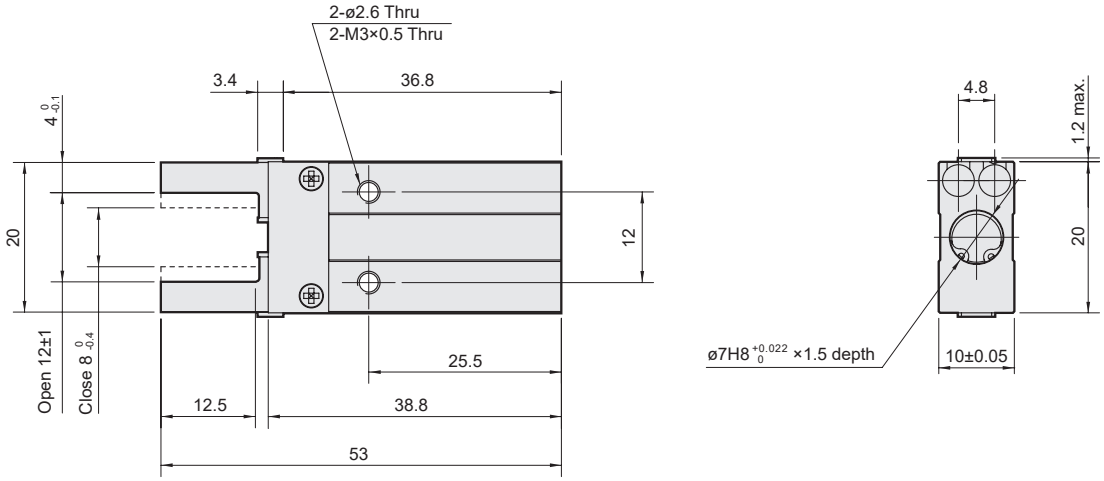
MCHC-32

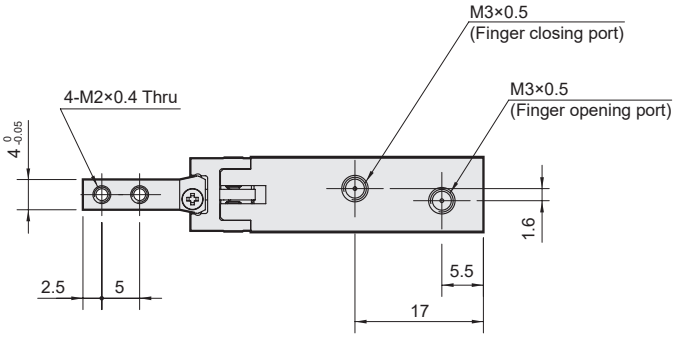


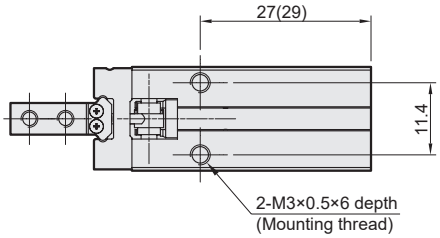
MCHC-40

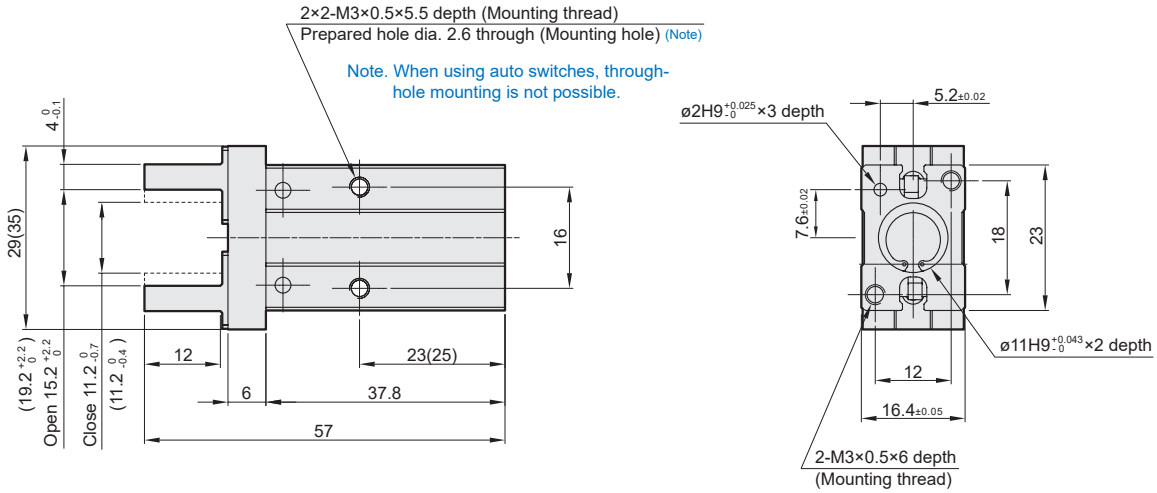


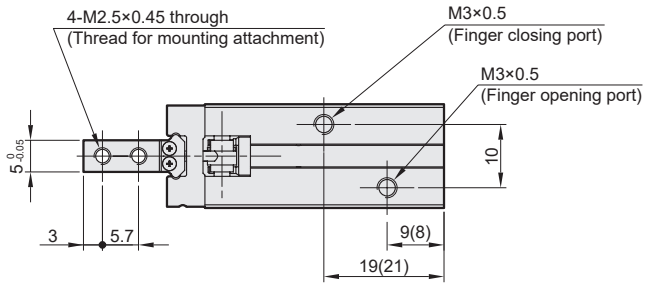



2-ø2.6 Thru
2-M3×0.5 Thru
3.4
36.8
4 0 -0.1
20
12
Open 12±1
Close 8 0 -0.4
25.5
12.5
38.8
53
4.8
1.2 max.
20
ø7H8 +0.022 0 ×1.5 depth
10±0.05


M3×0.5
(Finger closing port)
M3×0.5
(Finger opening port)
4-M2×0.4 Thru
4 0 -0.05
1.6
5.5
17
2.5
5



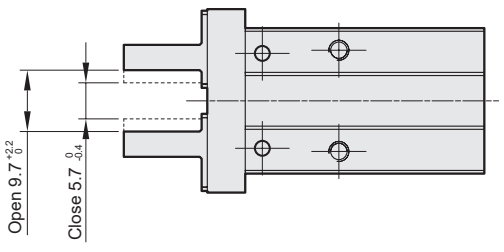


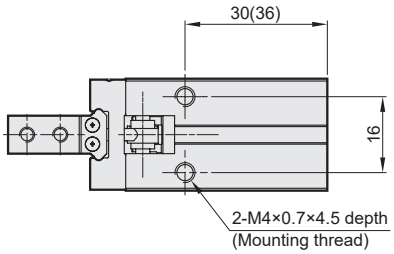


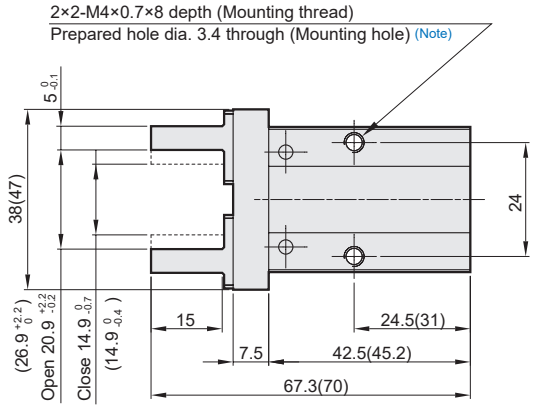
*( ) for long stroke value.

Finger position – Narrow

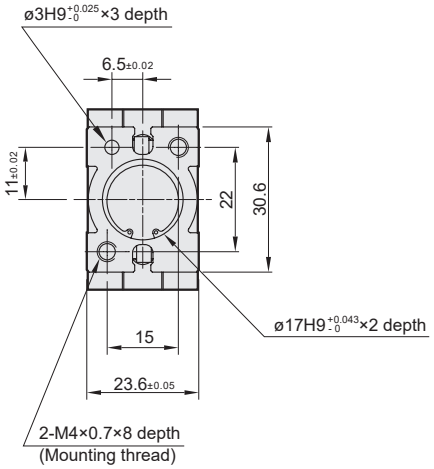
MCHC(L)-10-N

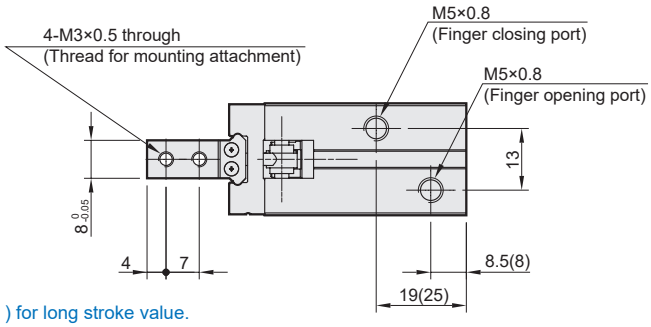






Note. Through-hole mounting is not possible when using the auto switch at the square groove.

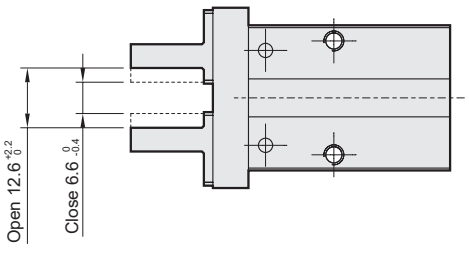


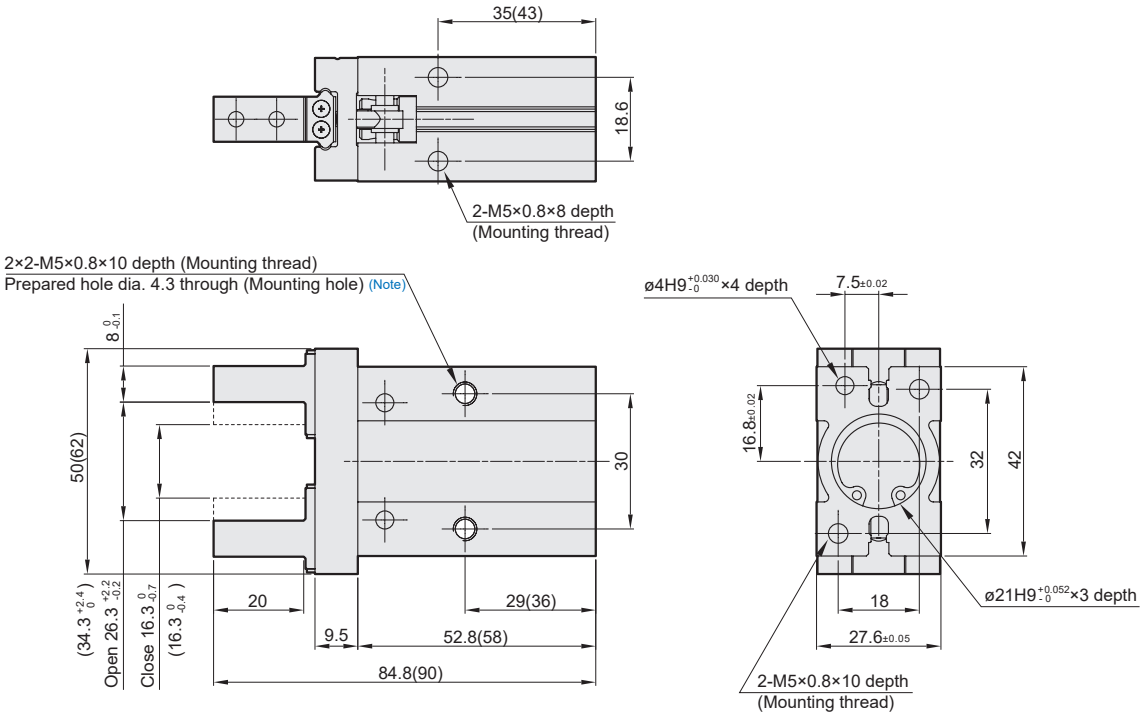


*( ) for long stroke value.

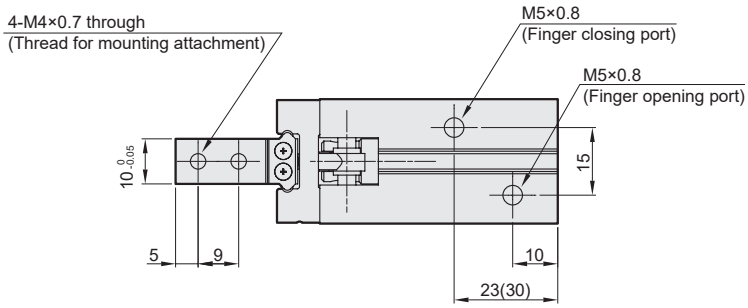
Finger position – Narrow

MCHC(L)-16-N





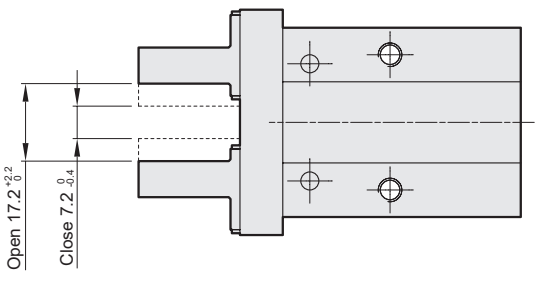
Note. Through-hole mounting is not possible when using the auto switch at the square groove.

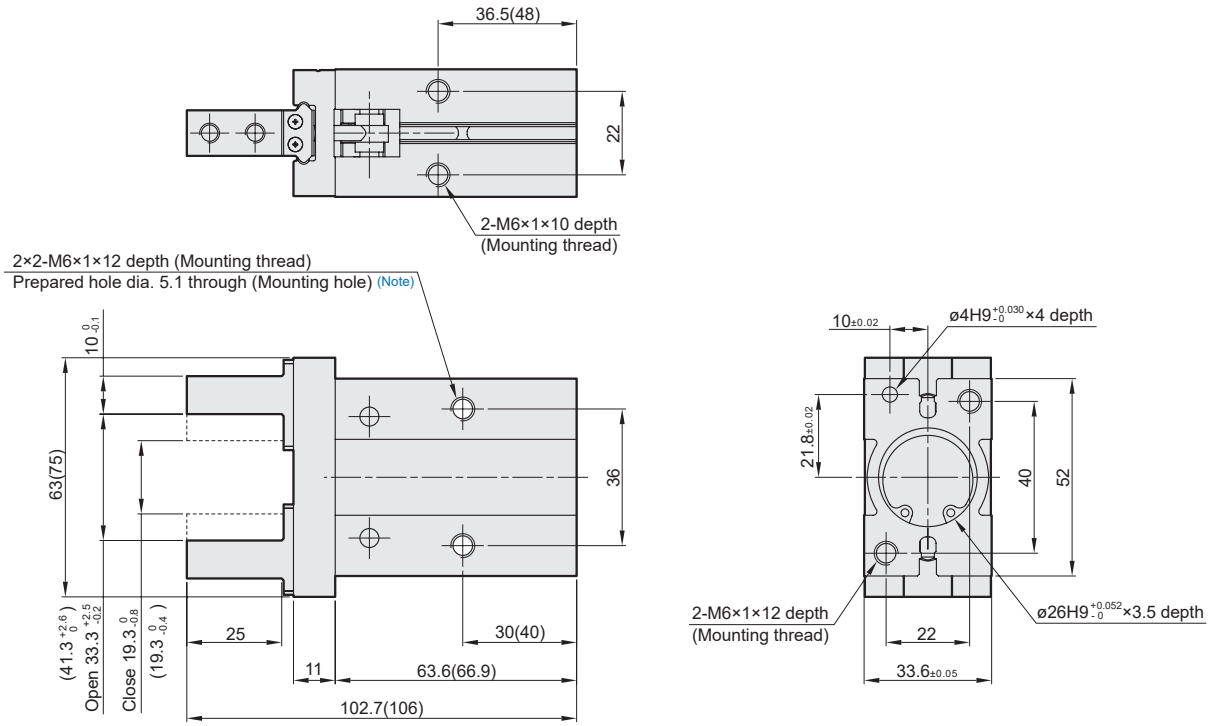


*( ) for long stroke value.

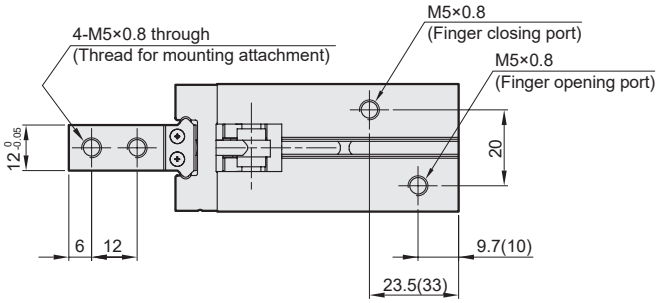
Finger position – Narrow

MCHC(L)-20-N





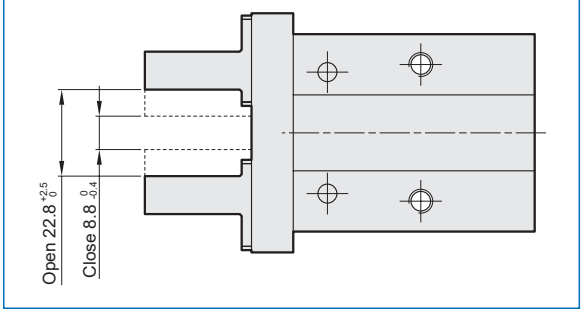
Note. Through-hole mounting is not possible when using the auto switch at the square groove.

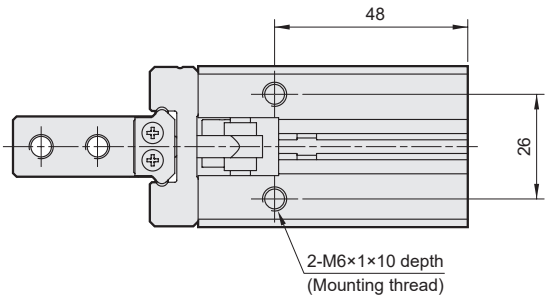


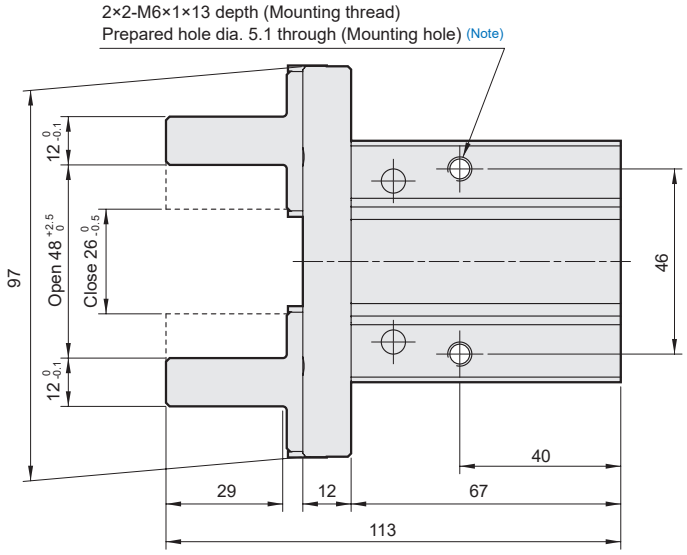
*( ) for long stroke value.

Finger position – Narrow

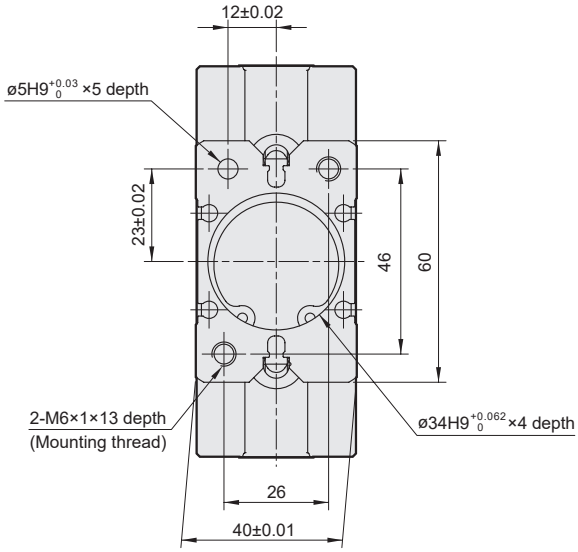
MCHC(L)-25-N

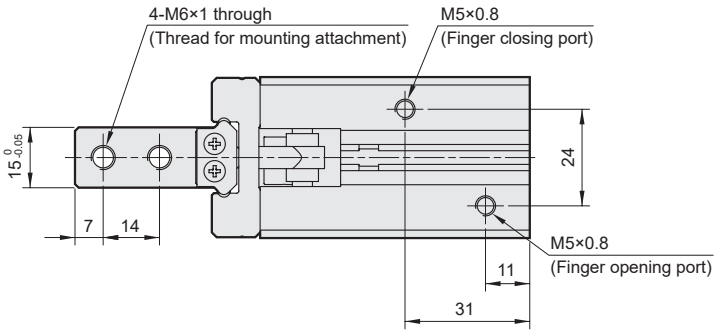


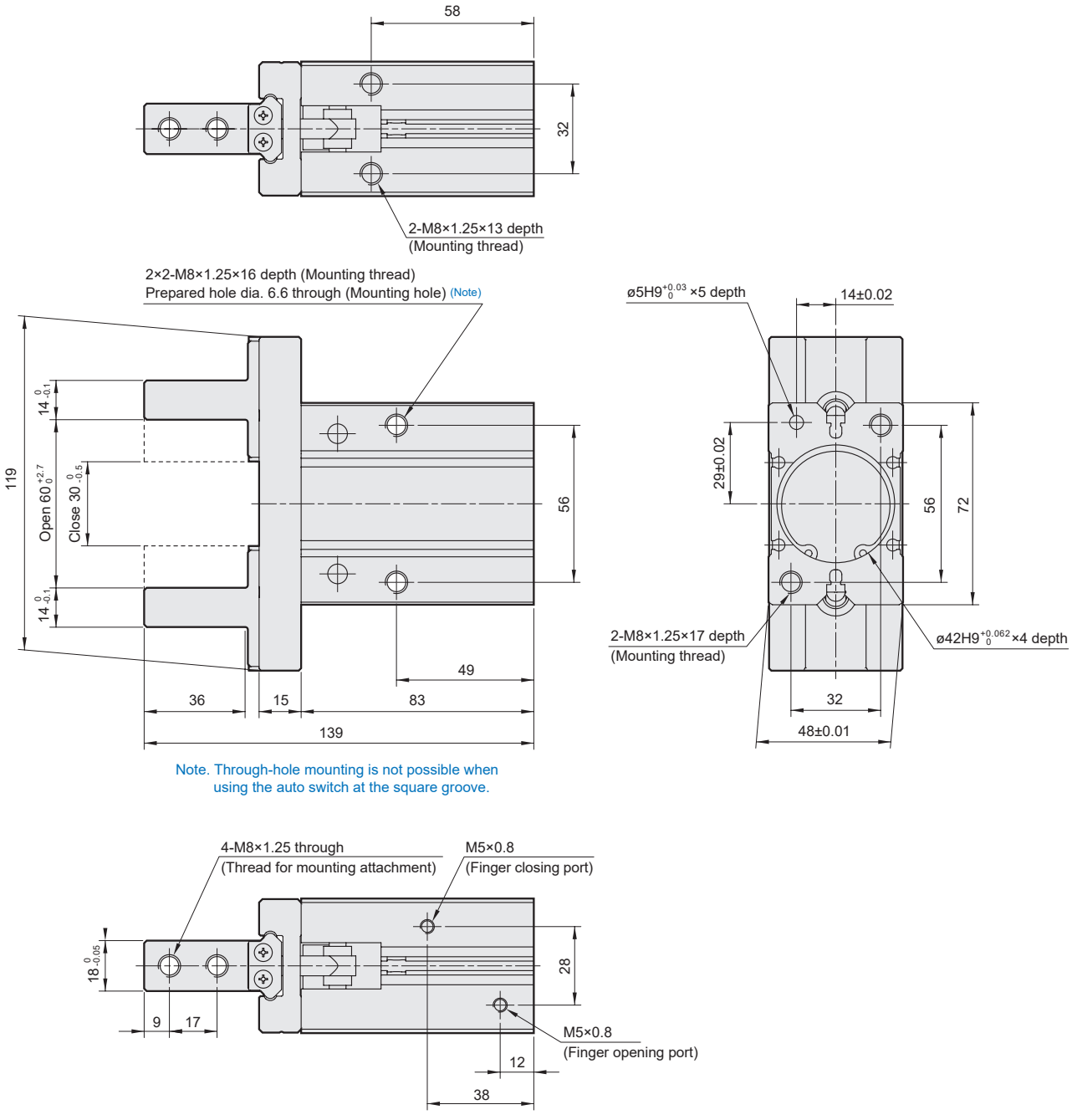




Note. Through-hole mounting is not possible when using the auto switch at the square groove.

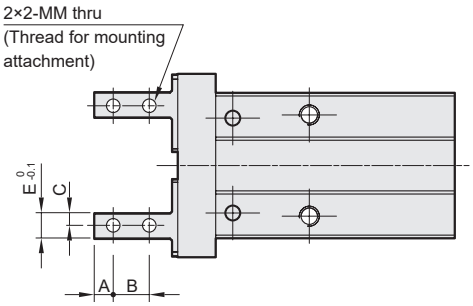






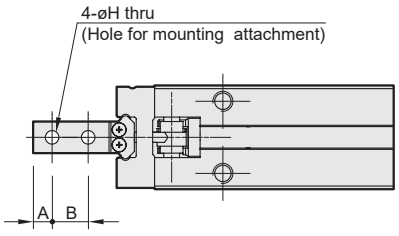
Note. Through-hole mounting is not possible when using the auto switch at the square groove.

MCHC*-1, N1 Side tapped



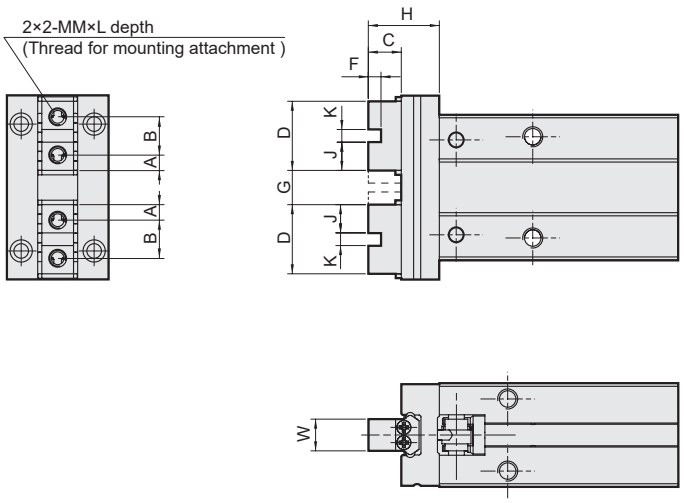
Code / Tube I.D.	A	B	C	E	MM
6	2.5	5	2	4	M2×0.4
10	3	5.7	2	4	M2.5×0.45
16	4	7	2.5	5	M3×0.5
20	5	9	4	8	M4×0.7
25	6	12	5	10	M5×0.8
32	7	14	6	12	M6×1.0
40	9	17	7	14	M8×1.25

MCHC*-2, N2 Through hole



Code / Tube I.D.	A	B	H
6	2.5	5	ø2.4
10	3	5.7	ø2.9
16	4	7	ø3.4
20	5	9	ø4.5
25	6	12	ø5.5
32	7	14	ø6.6
40	9	17	ø9

MCHC*-3 Flat



Code / Tube I.D.	A	B	C	D	F	G Open	G Closed	H	J	K	MM	L	W
10	2.45	6	5.2	10.9	2	5.4 +2.2 0	1.4 0 -0.2	11.2	4.45	2H9 +0.025 0	M2.5×0.45	5	5 0 -0.05
16	3.05	8	8.3	14.1	2.5	7.4 +2.2 0	1.4 0 -0.2	15.8	5.8	2.5H9 +0.025 0	M3×0.5	6	8 0 -0.05
20	3.95	10	10.5	17.9	3	11.6 +2.3 0	1.6 0 -0.2	20	7.45	3H9 +0.025 0	M4×0.7	8	10 0 -0.05
25	4.90	12	13.1	21.8	4	16 +2.5 0	2 0 -0.2	24.1	8.9	4H9 +0.03 0	M5×0.8	10	12 0 -0.05
32	7.30	20	18	34.6	5	25 +2.7 0	3 0 -0.2	30	14.8	5H9 +0.03 0	M6×1.0	12	15 0 -0.05
40	8.70	24	22	41.4	6	33 +2.9 0	3 0 -0.2	37	17.7	6H9 +0.03 0	M8×1.25	16	18 0 -0.05

MCHCJ series [Dust Cover]

PARALLEL GRIPPER (2-Finger)

mindman

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	
Sensor switch	RDFE(V) (Refer to page 149)	
Weight (g)	135	

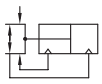
Order example

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

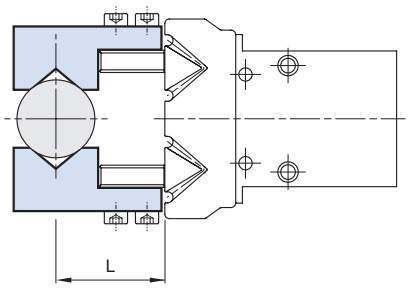
JD — MCHCJ — 16

DUST COVER

MODEL

TUBE I.D.

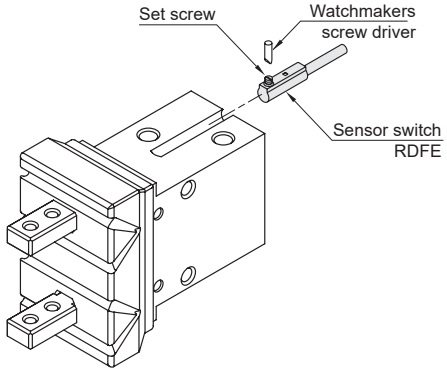
Gripping force

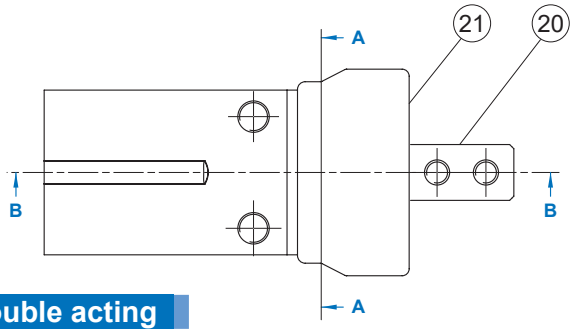


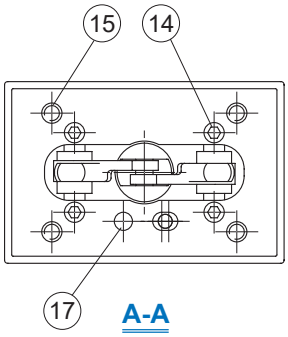
Tube I.D. (mm)		16
Double acting	External	30 (3.1)
	Internal	40 (4.1)
Single acting / Normally open	External	24 (2.5)
Single acting / Normally closed	Internal	31 (3.2)

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

Installation of sensor switch

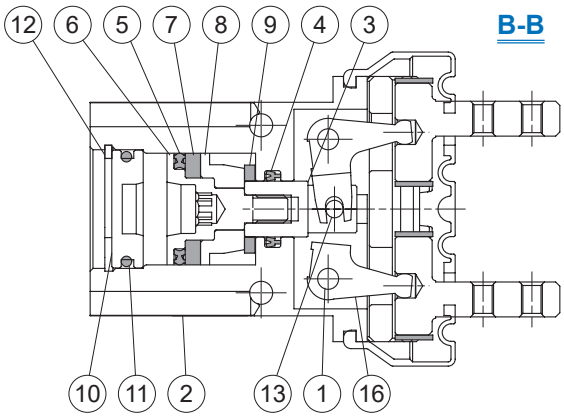






A-A

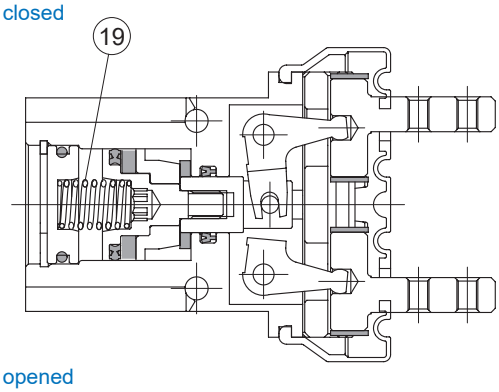
Double acting



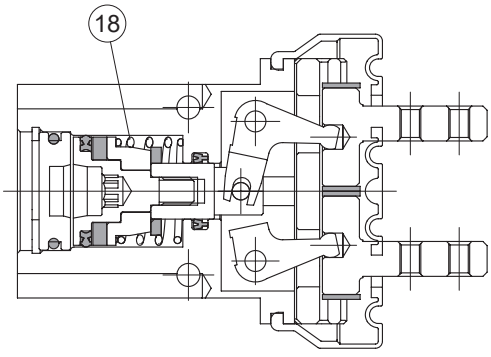
B-B

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	

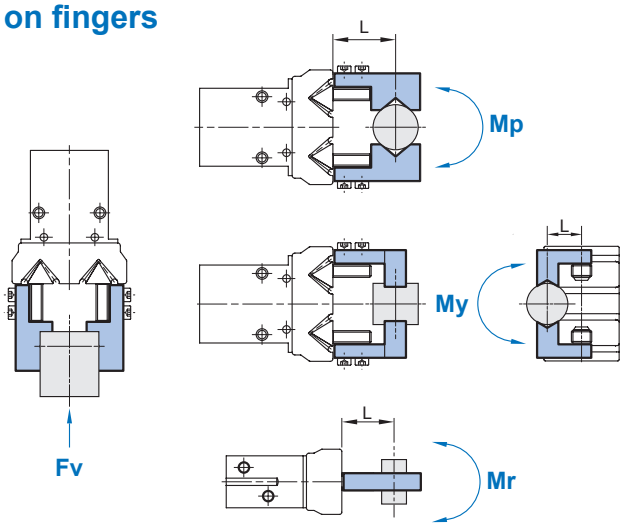
* Bearing steel balls as standard.

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



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.

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

$$= 27.2\ (N)$$

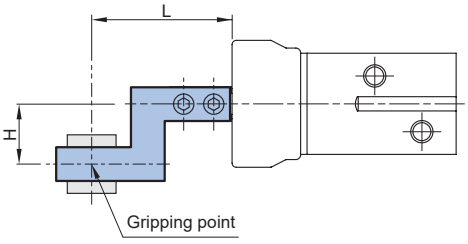
Load f=20 (N) < 27.2 (N), so can be used.

Model selection suggestions

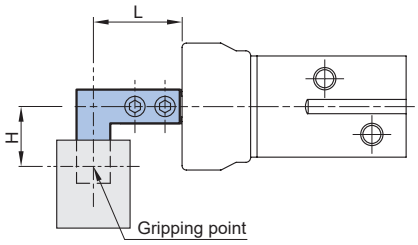
1. For normal gripping and carrying usage, the recommended safe factor (a) is 4.
2. The value of gripping force of single finger can be found at the gripping force table.
3. The safe factor (a) have to be higher if the gripper is using with a great accelerated velocity or impaction condition.

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.

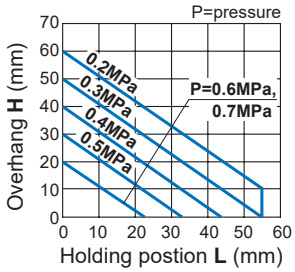


External grip

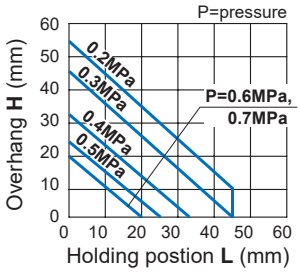


Internal grip

External gripping

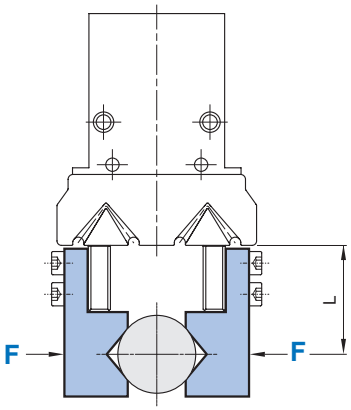


Internal gripping

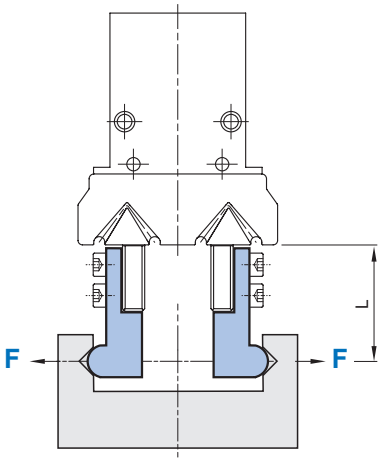


Effective gripping force

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.

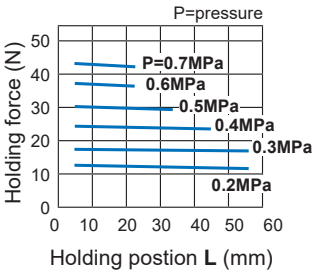


External grip
(Double acting,
Single acting / Normally open)

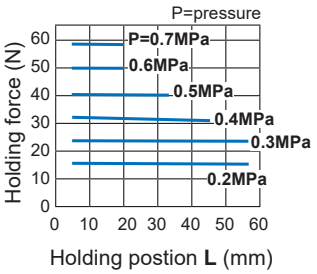


Internal grip
(Double acting,
Single acting / Normally closed)

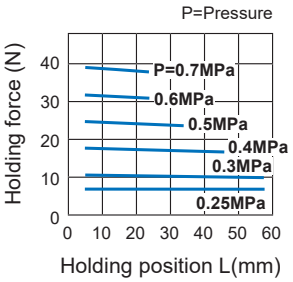
External gripping force



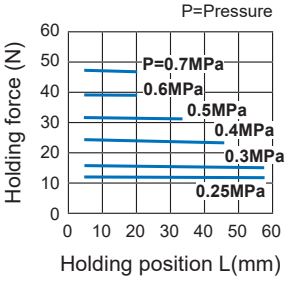
Internal gripping force

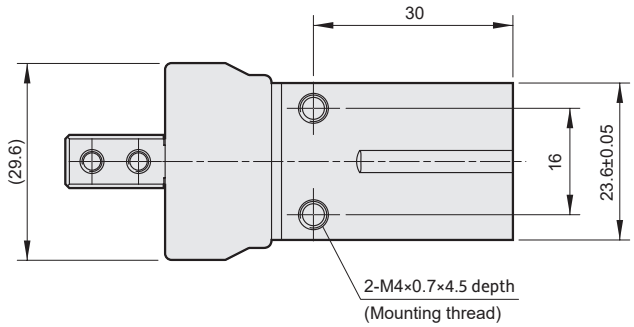


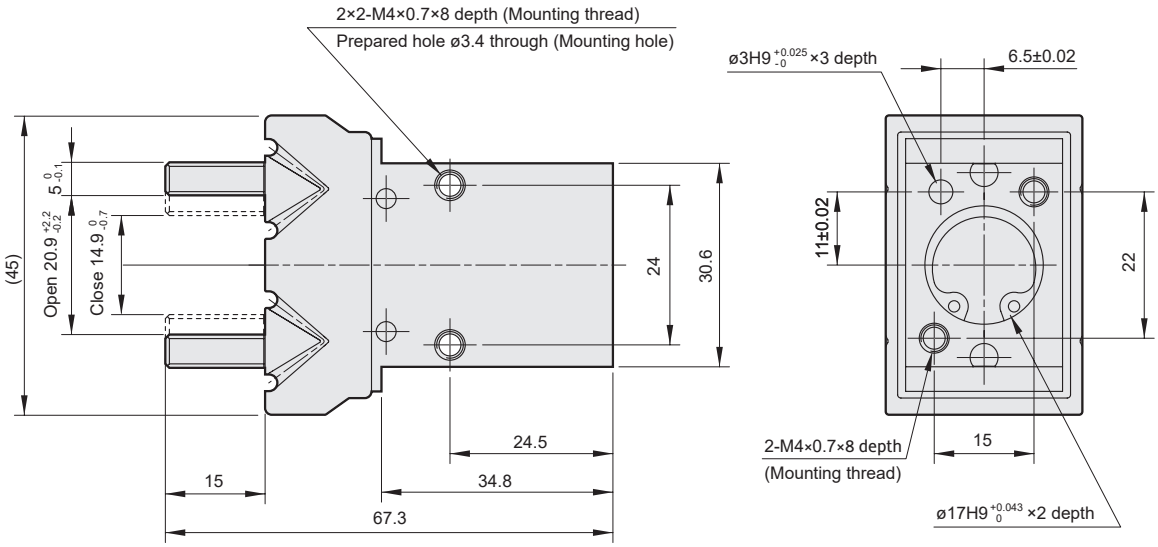
External gripping force
Single acting / N.O.

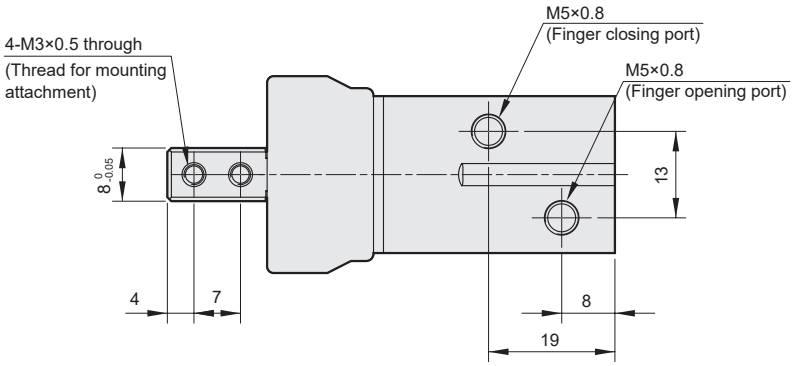


Internal gripping force
Single acting / N.C.




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

Connect with

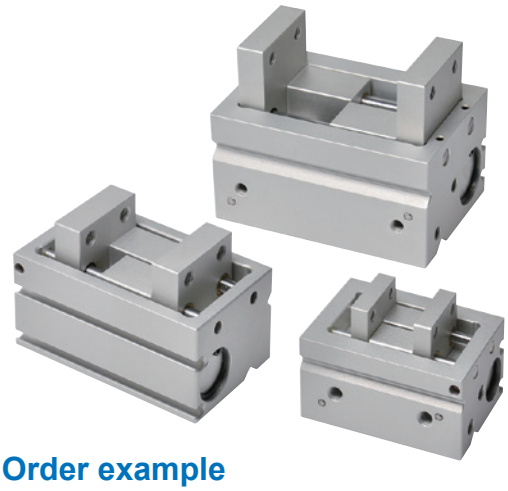
AUTOMATIC ASSEMBLY MACHINE

Connect gripper with cylinder to achieve regular workpiece gripping.

MCHU series

PARALLEL GRIPPER (2-Finger)

mindman



Features

- Compact design, light weight with rugged construction.
- Jaws mounted to wear resistant bush guides.
- Magnetic as standard.

Order example

MCHU — 12 M

MODEL	TUBE I.D.	
	12	**M**: Magnet
	16	* Magnetic as standard.
	20	

Specification

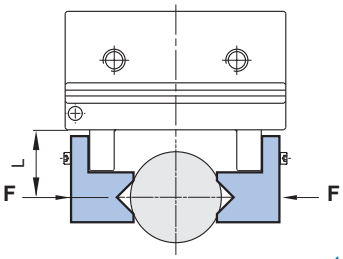
Model	MCHU		
Acting type	Double acting		
Tube I.D. (mm)	12	16	20
Stroke	15	20	25
Fluid	Air		
Operating pressure range	0.2~0.7 MPa		
Ambient temperature	-10~+60°C (No freezing)		
Lubrication (*1)	Not required		
Repeatability	±0.03 mm		
Sensor switch (*2) 2 wire	**RDFE(V)**: Non-contact		
Sensor switch (*2) 3 wire	**RNFE(V)**: NPN, **RPFE(V)**: PNP		
Weight (kg)	0.16	0.29	0.58

*1. Sliding area of jaws need scheduled relubrication.
*2. R*FE(V) specification, please refer to page 149.

Model selection suggestions

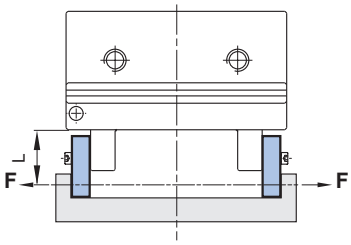
* Finger selection please refer to page 8.

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 at high acceleration or impact condition.



External grip

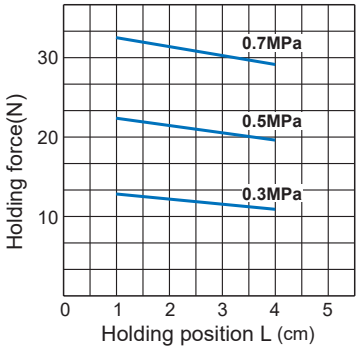
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



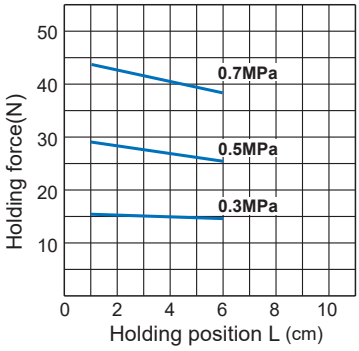
Internal grip

Capacity

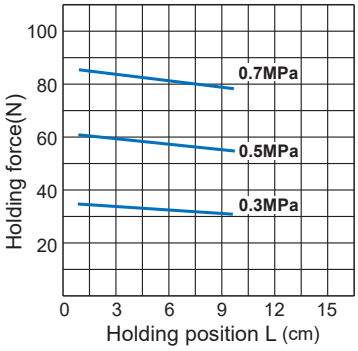
MCHU-12

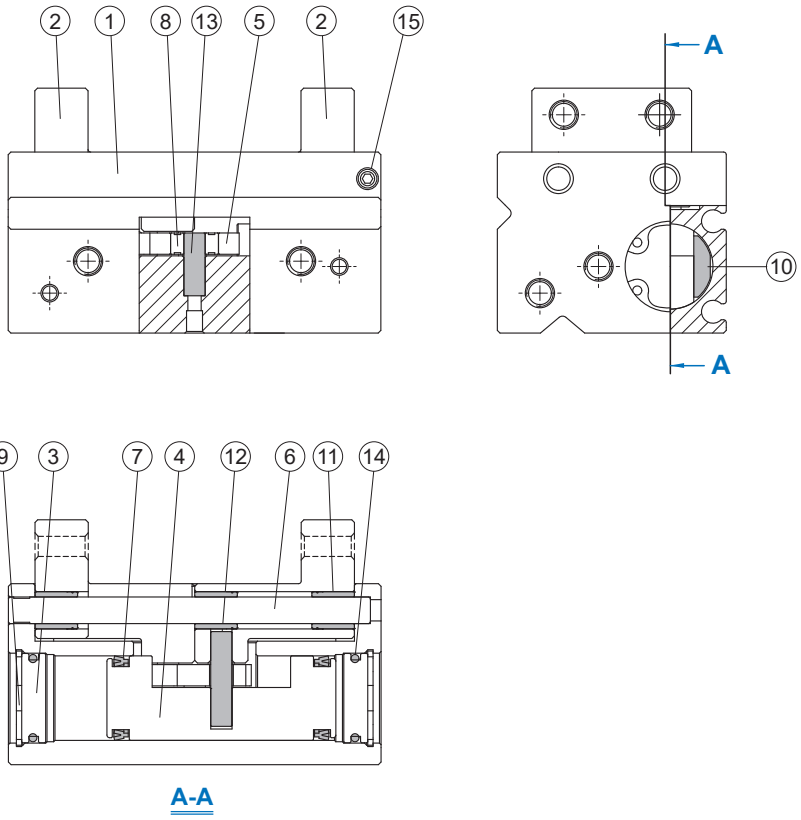


MCHU-16



MCHU-20





Material

No.	Tube I.D. / Part name	12	16	20	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy			1	
2	Finger	Aluminum alloy			2	
3	Cover	Aluminum alloy			2	
4	Piston	Stainless steel			1	
5	Cam	SCM			1	
6	Guide rod	SUS	Carbon steel		2	
7	Piston packing	NBR			2	●
8	Bearing	Bearing steel			1	
9	Snap ring	Spring steel			2	
10	Magnet	Magnet material			1	
11	Bush	Carbon steel			6	
12	Pin	Carbon steel			2	
13	Pin	Carbon steel			1	
14	O-ring	NBR			2	●
15	Screw	Carbon steel			2	

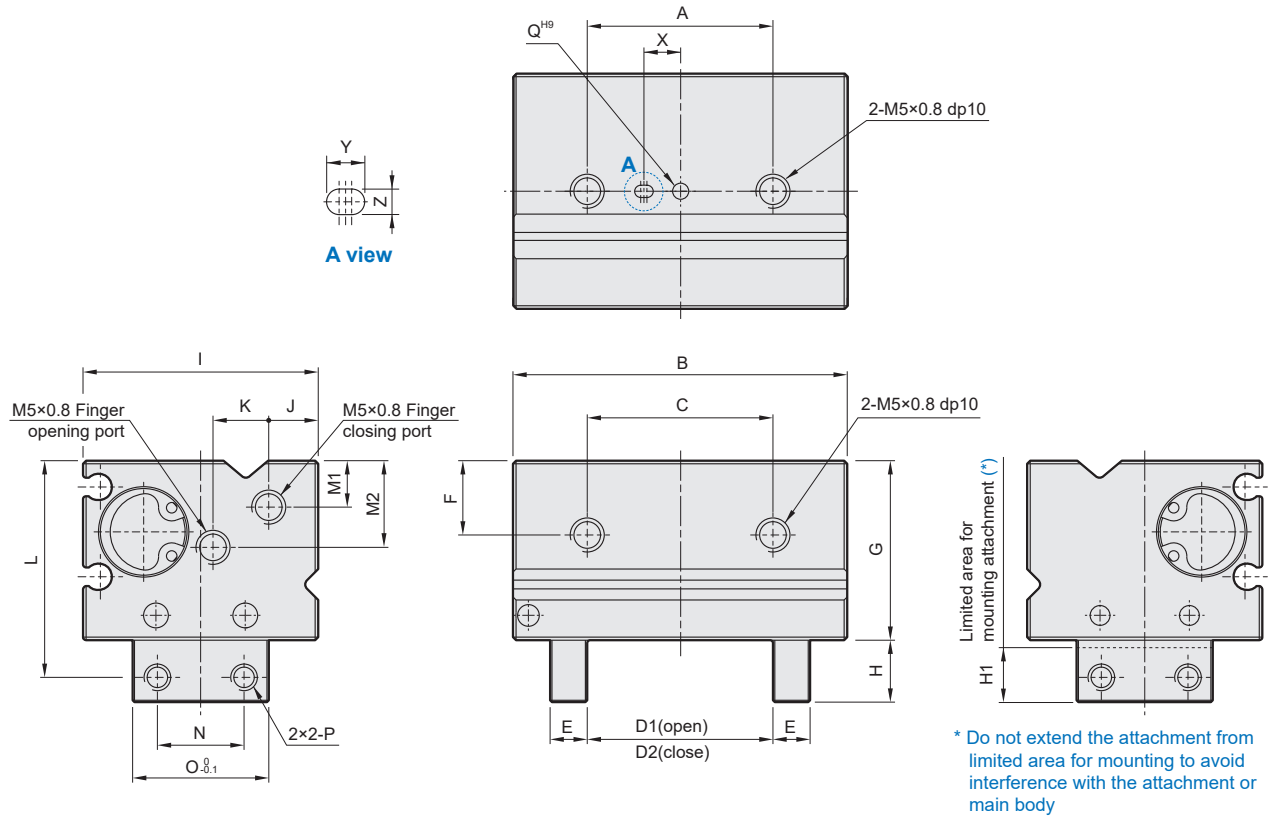
Order example

Repair kits

Tube I.D.	Repair kits
ø12	**PS-MCHU-12**
ø16	**PS-MCHU-16**
ø20	**PS-MCHU-20**

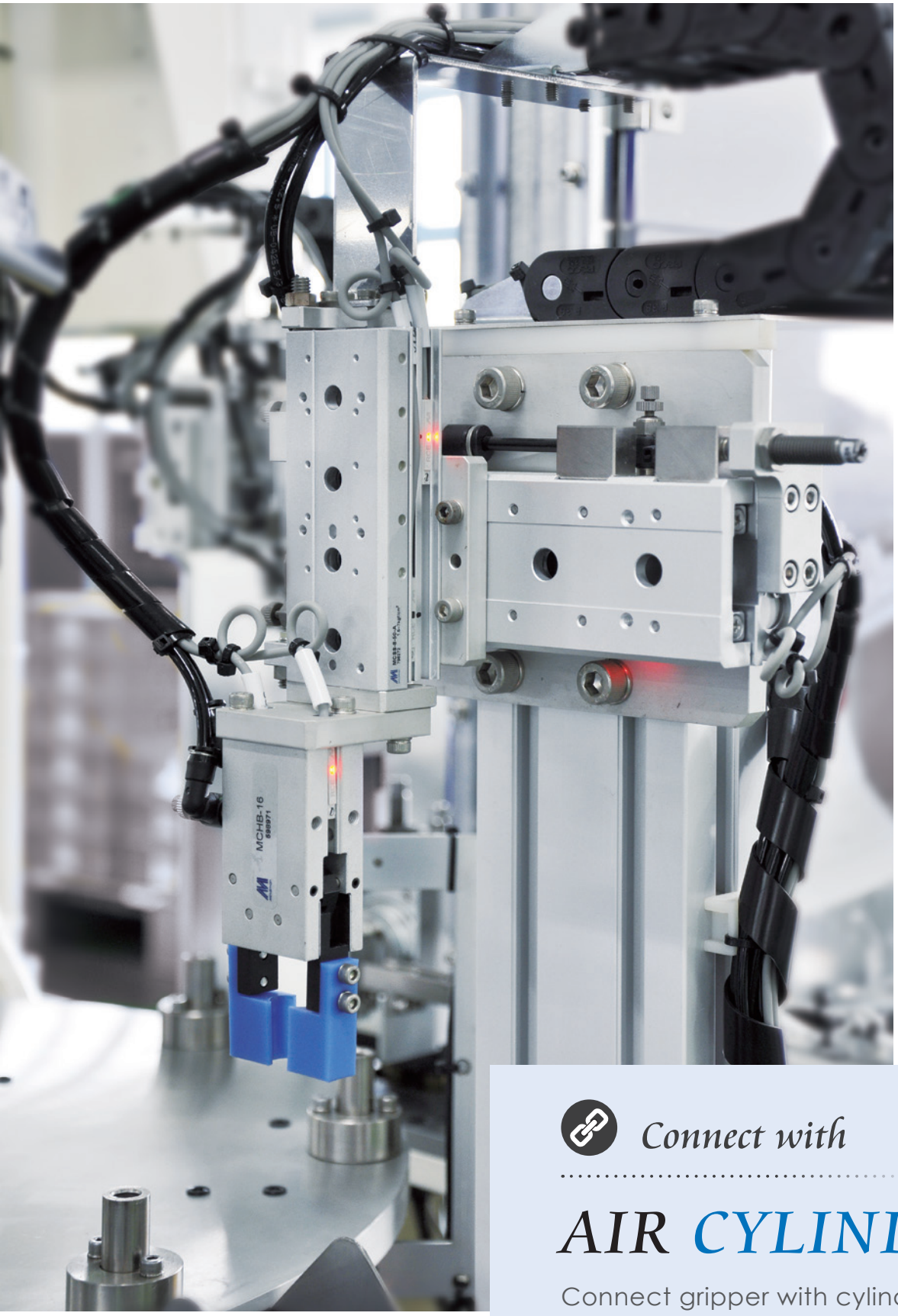
MCHU Dimensions ø12~ø20

PARALLEL GRIPPER (2-Finger)



* Do not extend the attachment from limited area for mounting to avoid interference with the attachment or main body

Code / Tube I.D.	A	B	C	D1	D2	E	F	G	H	H1	I	J	K	L	M1	M2	N	O	P	Q H9	X	Y	Z H9
12	30	54	30	30	15	6	12	29	10	9	38	8	9	35	7.5	14	14	22	M4×0.7	ø2 +0.025 0 ×2dp	6	3	2 +0.025 0 ×2dp
16	40	70	40	40	20	10	13.5	34	12	11	43	8	11	41	7.5	12.5	18	30	M5×0.8	ø3 +0.025 0 ×4dp	10	4	3 +0.025 0 ×4dp
20	60	82	60	50	25	10	15	43	22	21	56	10	15	59	9	20	20	35	M5×0.8	ø3 +0.025 0 ×6dp	15	4	3 +0.025 0 ×6dp



Connect with

AIR CYLINDER

Connect gripper with cylinder to achieve regular workpiece gripping.

MCHB series

PARALLEL GRIPPER (2-Finger)

Features

- Available with comprehensive range of Tube I.D. 12~32 mm.
- Highly accurate air driven device for holding work-piece.
- Magnetic as standard.

Specification

Model		MCHB				
Acting Type		Double / Single acting				
Tube I.D. (mm)		12	16	20	25	32
Port size		M3×0.5	M5×0.8			
Medium		Air				
Operating pressure range	Double acting	0.15~0.7 MPa				
	Single acting	0.2~0.7 MPa				
Ambient temperature		-5~+60°C (No freezing)				
Max. operating frequency (c.p.m)		180				
Lubrication	Cylinder	Not required				
	Lever	Grease (Actuation at)				
Max. arm length (L) (mm)		30	40	60	70	85
Lever open / close stroke		6	8	12	14	16
Sensor switch (*)		RDE, RDE-D: Non-contact				
Weight (g)	Double acting	66	144	255	419	719
	Single acting	66.5	145	257	422	722

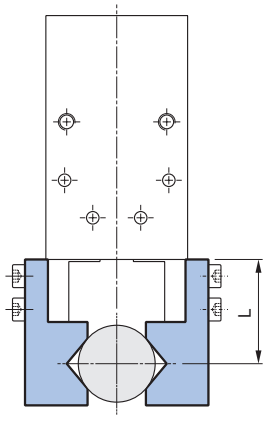
* RDE, RDE-D specification, please refer to page 148.

Order example

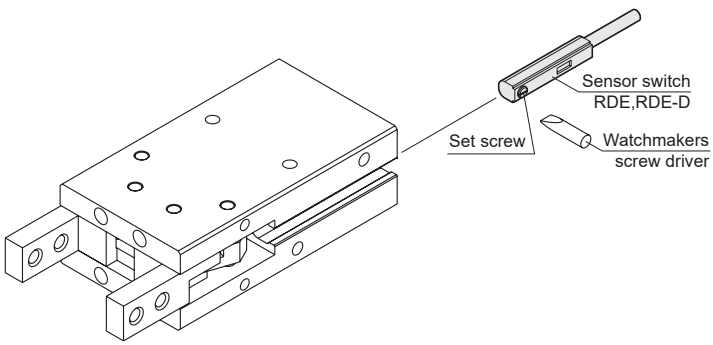
MCHB — 16 — S

- MODEL
- TUBE I.D.
  - **12**
  - **16**
  - **20**
  - **25**
  - **32**
- ACTING
  - Blank: Dougle acting
  - **S**: Single acting (Normally open)

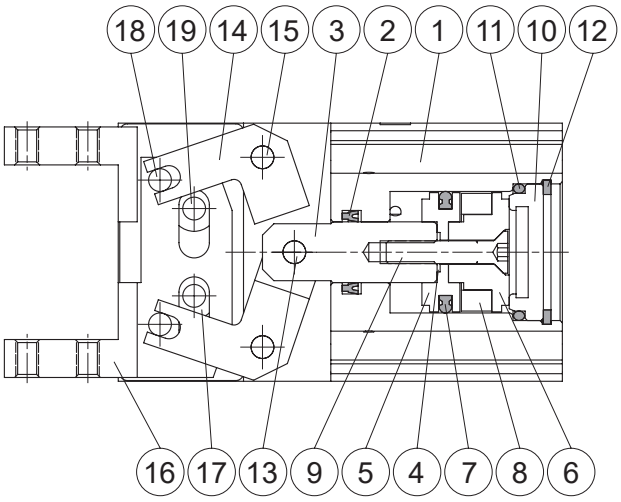
Length of gripping point



Installation of sensor switch

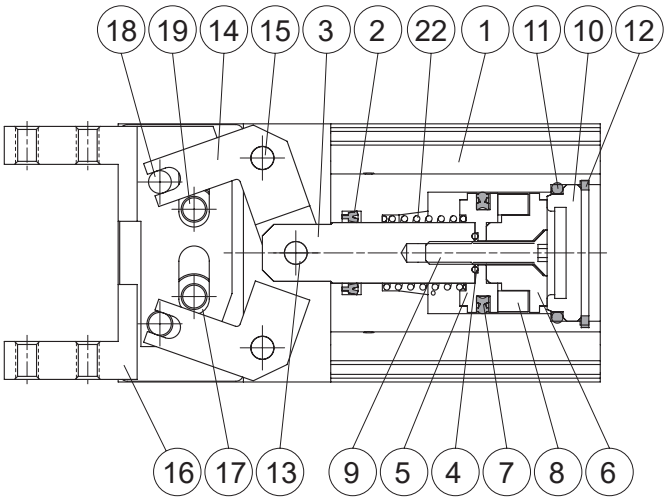


Double acting



Single acting

Normally open



Material

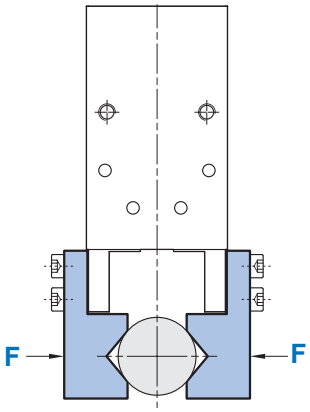
No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy	1	
2	Rod packing	NBR	1	●
3	Piston rod	Stainless steel	1	
4	Gasket	NBR	1	●
5	Piston-R	Aluminum alloy	1	
6	Piston-H	Aluminum alloy	1	
7	Piston packing	NBR	1	●
8	Magnet ring	Magnet material	1	
9	Screw	Stainless steel	1	
10	Head cover	Carbon steel	1	
11	Cover ring	NBR	1	●
12	Stop ring	Spring steel	1	
13	Spindle river	Bearing steel	1	
14	Grip per	Carbon steel	2	
15	Grip rivet	Carbon steel	2	
16	Grip per	Carbon steel	2	
17	Bush	Stainless steel	4	
18	Grip rivet	Bearing steel	2	
19	Grip rivet	Carbon steel	2	
20	Screw	SCM	4	
21	Screw	SCM	4	
22	Spring	Spring steel	1	

Order example of repair kits

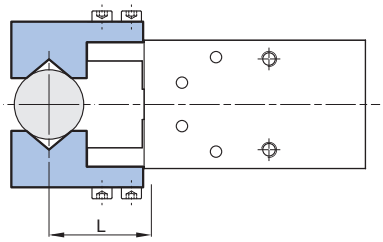
Tube I.D.	Repair kits
ø12	**PS-MCHB-12**
ø16	**PS-MCHB-16**
ø20	**PS-MCHB-20**
ø25	**PS-MCHB-25**
ø32	**PS-MCHB-32**

Effective gripping force (Double acting)

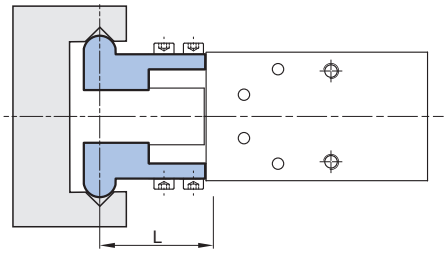
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



1N=0.102 kgf
1MPa=10.2 kgf/cm^2

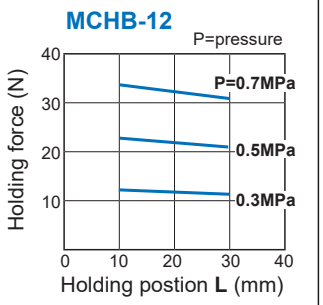


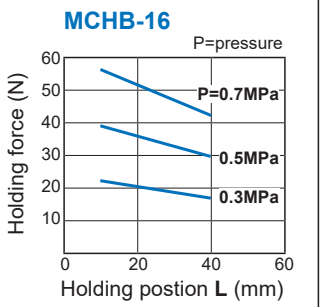
External grip

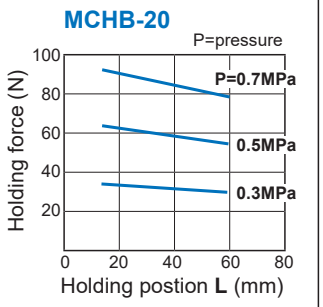


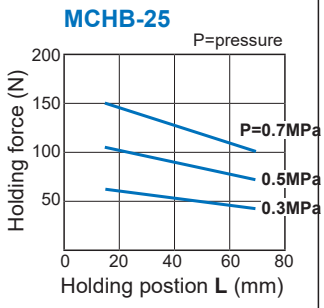
Internal grip

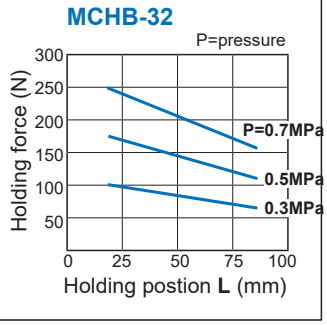
External gripping force
Double acting



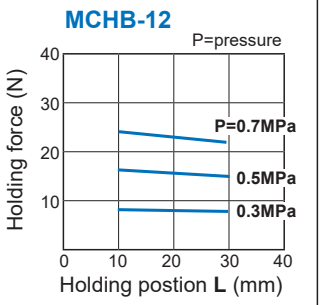


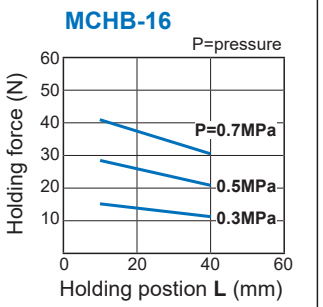


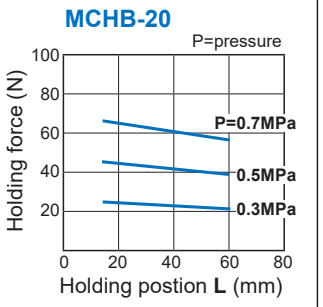


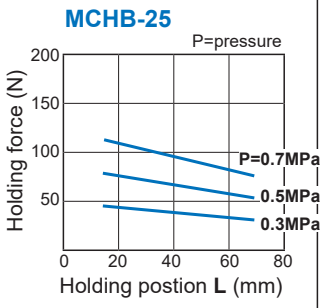


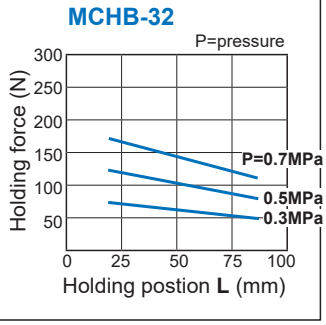
Internal gripping force
Double acting







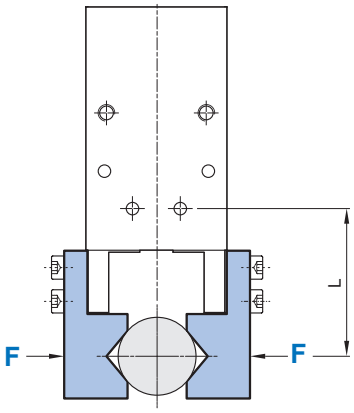




Effective gripping force (Single acting)

Indication of effective force.
The effective gripping force shown in the graphs to the right 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.

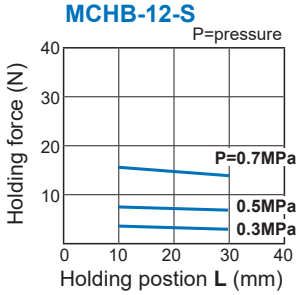
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



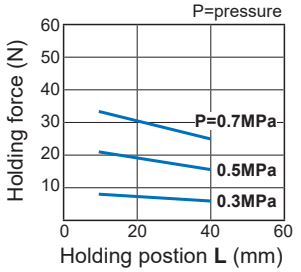
External grip
(Single acting / Normally open)

External gripping force
Single acting / N.O.

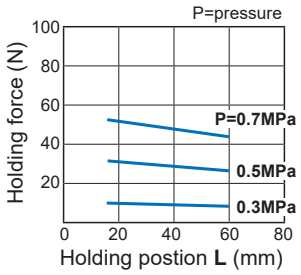
MCHB-12-S



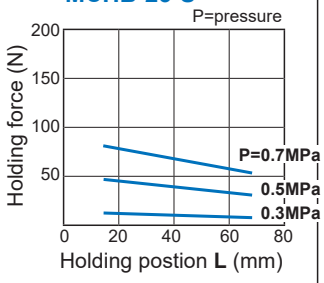
MCHB-16-S



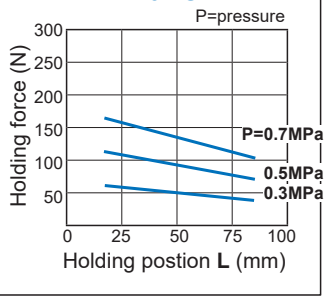
MCHB-20-S



MCHB-25-S

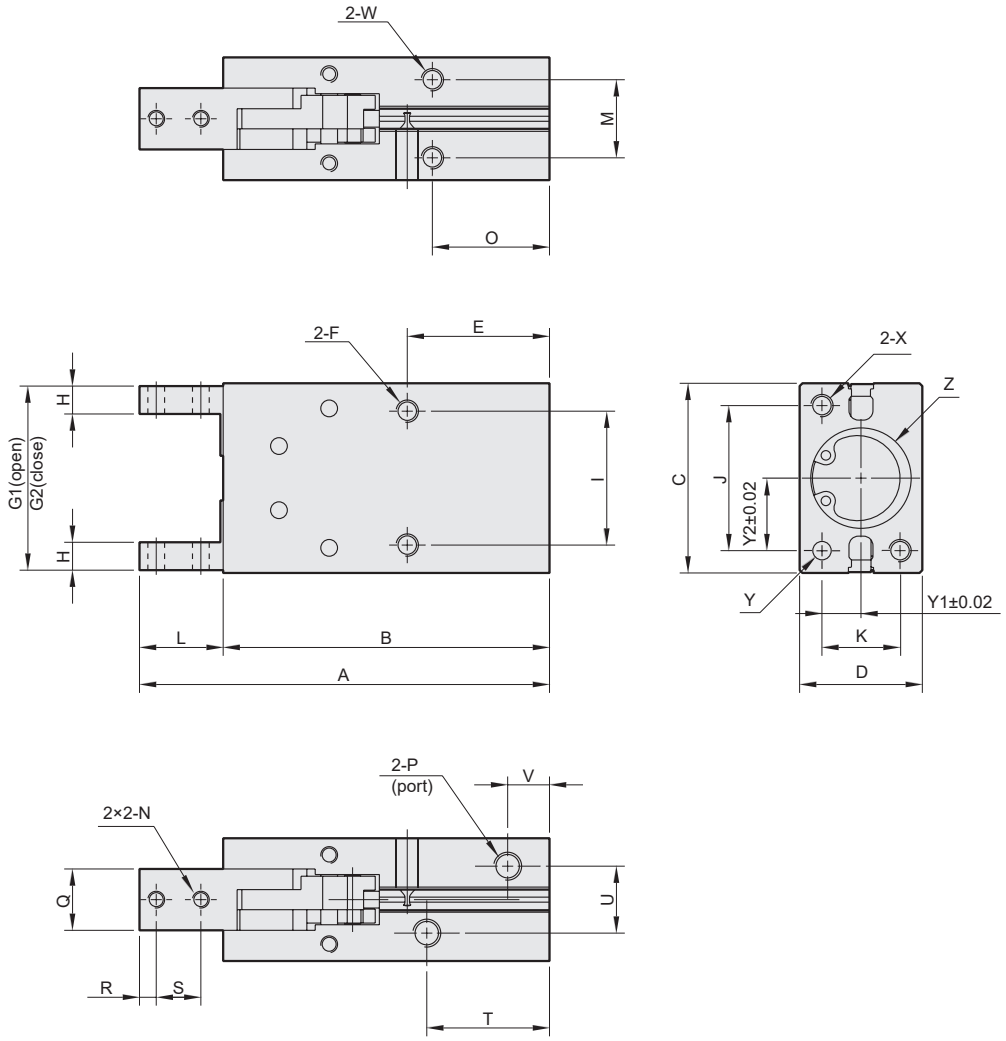


MCHB-32-S



MCHB Dimensions ø12~ø32

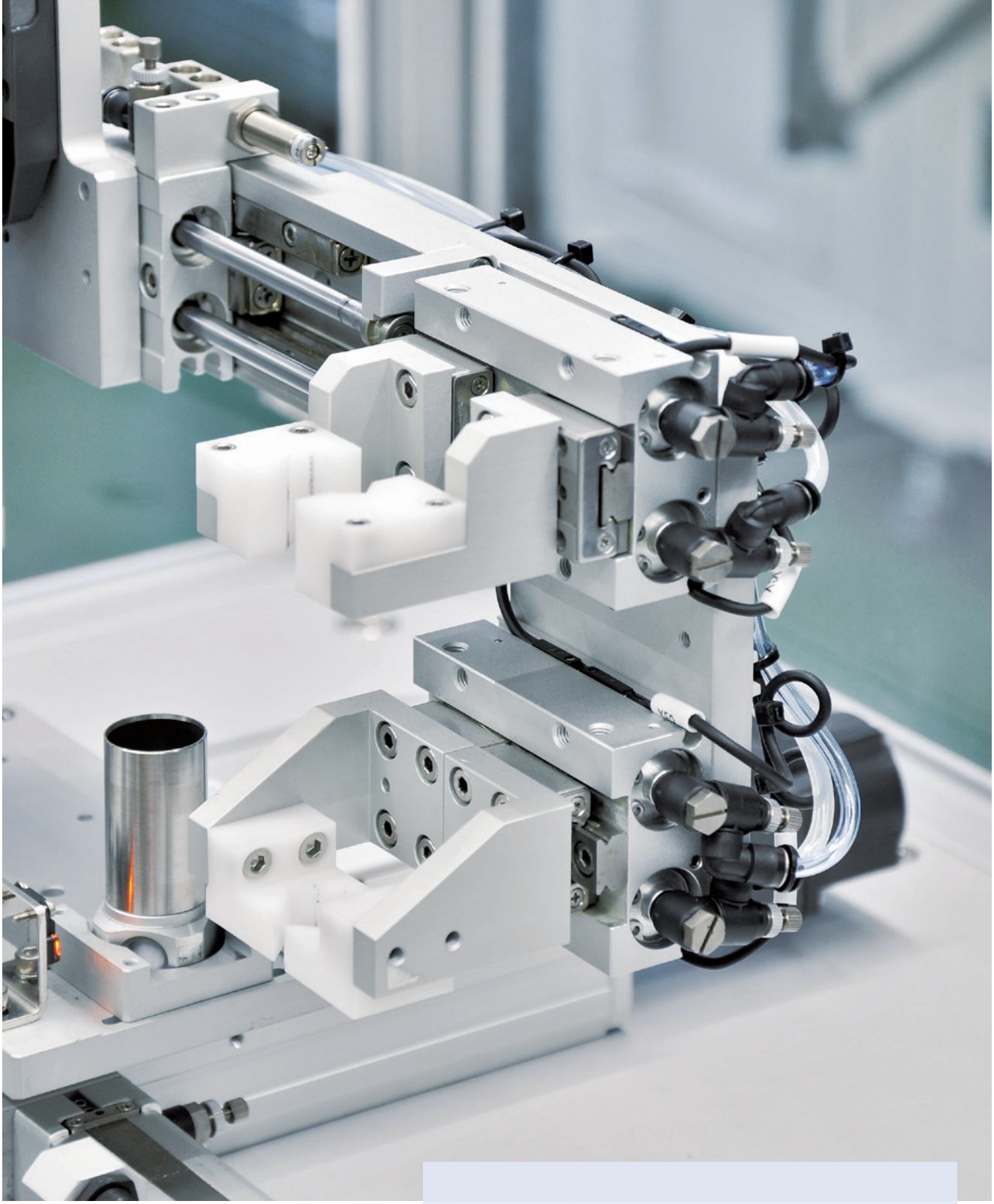
PARALLEL GRIPPER (2-Finger)



Code / Tube I.D.	A	B	C	D	E	F	G1	G2	H	I	J	K	L	M	N	O
12	63.5 (68.5)	50.5 (55.5)	28	16	20 (25)	M3×0.5×5 depth	27	21	4	18	17	10	13	10	M3×0.5	16 (21)
16	73.5 (78.5)	58.5 (63.5)	34	22	25.5 (30.5)	M4×0.7×11 depth	33	25	5	24	26	14	15	14	M3×0.5	21 (26)
20	88.5 (93.5)	69.5 (74.5)	45	26	25 (30)	M5×0.8×8 depth	44	32	6	30	35	16	19	16	M4×0.7	19 (24)
25	102.5 (107.5)	78.5 (83.5)	52	32	28 (33)	M6×1.0×10 depth	51	37	8	36	40	20	24	20	M5×0.8	22 (27)
32	120.5 (125.5)	90.5 (95.5)	60	40	34 (39)	M6×1.0×10 depth	59	43	10	44	46	24	30	26	M6×1.0	26 (31)

Code / Tube I.D.	P	Q	R	S	T	U	V	W	X	Y	Y1	Y2	Z
12	M3×0.5×5 depth	7	3	6	23	10.2	7.5	M3×0.5×5 depth	M3×0.5×5 depth	ø2H9$^{+0.025}_{0}$×3 depth	5	8.5	ø14H9$^{+0.043}_{0}$×1.5 depth
16	M5×0.8×5 depth	11	3	8	22	12	7.5	M4×0.7×7 depth	M4×0.7×7 depth	ø3H9$^{+0.025}_{0}$×3 depth	7	13	ø18H9$^{+0.043}_{0}$×1.5 depth
20	M5×0.8×5 depth	12	4	10	26	13	8.0	M5×0.8×8 depth	M5×0.8×8 depth	ø4H9$^{+0.03}_{0}$×4 depth	8	17.5	ø22H9$^{+0.052}_{0}$×1.5 depth
25	M5×0.8×5 depth	14	5	12	29	18	8.5	M6×1.0×10 depth	M6×1.0×10 depth	ø4H9$^{+0.03}_{0}$×4 depth	10	20	ø27H9$^{+0.052}_{0}$×2 depth
32	M5×0.8×5 depth	20	7	15	35	24	10.5	M6×1.0×10 depth	M6×1.0×10 depth	ø5H9$^{+0.03}_{0}$×5 depth	12	23	ø34H9$^{+0.062}_{0}$×2.5 depth

* Values in ( ) are for single acting.



Connect with

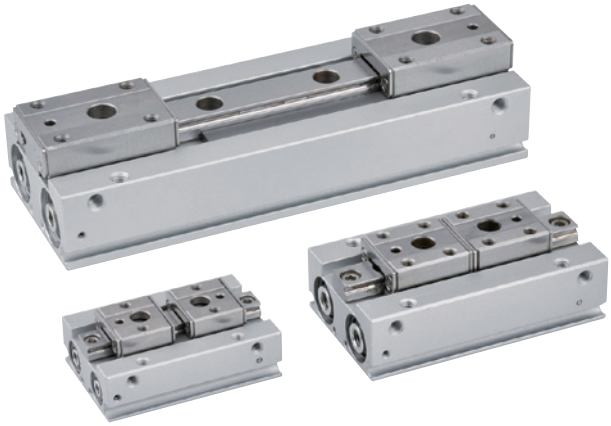
AIR CYLINDER

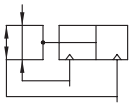
Connect gripper with cylinder to achieve regular workpiece gripping.

MCHD series

PARALLEL GRIPPER (2-Finger)

mindman





Features

- Low profile design saves space and reduces bending moments, improved accuracy with smooth operation.
- Improved mounting repeatability, easy positioning for mounting.
- Double piston construction achieves compact design with strong gripping force.
- High rigidity and high precision with martensitic stainless steel.
- Grooves on the body for sensor switch to be inserted into.
- Magnetic as standard.

Specification

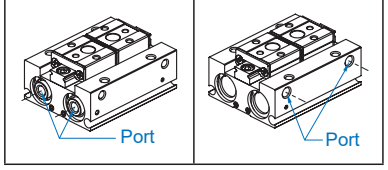
Model		MCHD			
Acting type		Double acting			
Tube I.D. (mm)		8	12	16	20
Port size		M3×0.5	M5×0.8		
Medium		Air			
Operating pressure range		0.15~0.7	0.1~0.7 MPa		
Ambient temperature		-10~+60°C (No freezing)			
Repeatability		± 0.05 mm (*1)			
Max. operating frequency (c.p.m)	Short	120			
	Medium	120			
	Long	60			
Lubricator		Not required			
Sensor switch (*2)	2 wire	**RDFE(V)**: Non-contact			
	3 wire	**RNFE(V)**: NPN, **RPFE(V)**: PNP			
Attached bolt		2 pcs	—		

* 1. This is the value when no offset load is applied to the finger. When an offset load is applied to the finger, the maximum value is ±0.15mm due to the influence of backlash of the rack and pinion.
* 2. R*FE(V) specification, please refer to page 149.

Order example

MCHD — 20R — □

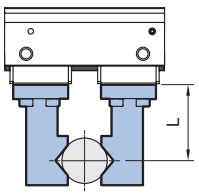
- MODEL
- TUBE I.D. **8, 12, 16, 20**
- PIPING TYPE
  - Blank: Axial piping
  - **R**: Side piping
- STROKE *
  - Blank: Short
  - **1**: Medium
  - **2**: Long



* Stroke selection

Tube I.D. / Stroke (mm)	8	12	16	20
Short stroke	8	12	16	20
Medium stroke	16	24	32	40
Long stroke	32	48	64	80

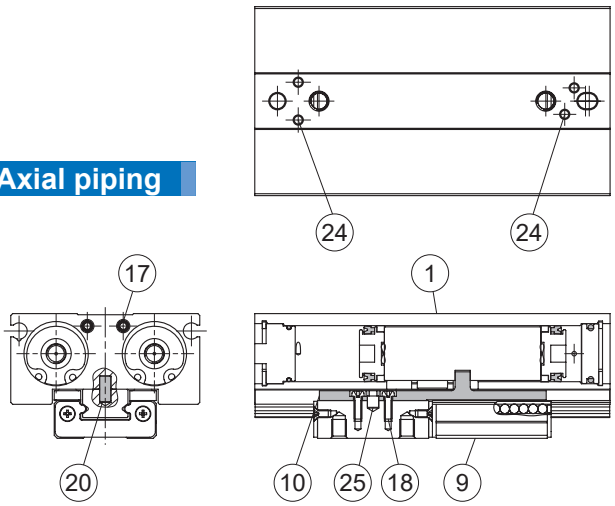
Gripping force



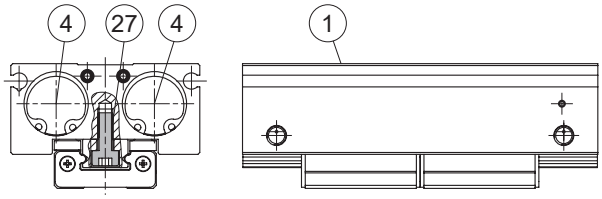
Model	Gripping force per finger effective value (N) (*)	Weight (g)
MCHD-8	19	65
MCHD-8-1		79.1
MCHD-8-2		113.3
MCHD-12	48	150
MCHD-12-1		191.3
MCHD-12-2		291.2
MCHD-16	90	350
MCHD-16-1		454.2
MCHD-16-2		678.3
MCHD-20	141	660
MCHD-20-1		869
MCHD-20-2		1310.6

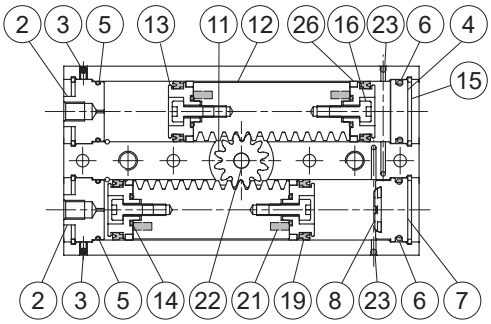
* Values based on pressure of 0.5 MPa, gripping point L=20mm, at center of stroke.

Axial piping



Side piping





Order example of repair kits

Tube I.D.	Repair kits
ø8	**PS-MCHD-8**
	PS-MCHD-8R
ø12	**PS-MCHD-12**
	PS-MCHD-12R

Tube I.D.	Repair kits
ø16	**PS-MCHD-16**
	PS-MCHD-16R
ø20	**PS-MCHD-20**
	PS-MCHD-20R

Material

No.	Tube I.D. / Part name	Material 8	12	16	20	Q'y Axial	Side	Repair kits (inclusion)
1	Body	Aluminum alloy				1	1	
2	Cover A	Aluminum alloy				2	0	
3	Hexgon screw	Stainless steel				2	0	
4	Cover B	Aluminum alloy				1	3	
5	O-ring	NBR				2	0	●
6	O-ring	NBR				2	4	●
7	Cover C	Aluminum alloy				1	1	
8	Cushion pad	TPU				1	1	●
9	Guide set	Stainless steel				1	1	
10	Lever	Stainless steel				2	2	
11	Pinion	Alloy steel				1	1	
12	Pinion piston	Stainless steel				2	2	
13	Piston	*1	Aluminum alloy			4	2	
14	O-ring	NBR				4	4	●
15	Snap ring	Stainless steel				4	4	
16	Bolt	–	Stainless steel			4	4	
17	Screw	Alloy steel	Stainless steel			4	4	
18	Screw	Stainless steel	*2	*1		4	4	

No.	Tube I.D. / Part name	Material 8	12	16	20	Q'y Axial	Side	Repair kits (inclusion)
19	Piston packing	NBR				4	4	●
20	Pin	Stainless steel				2	2	
21	Magnet	Magnet material				4	4	
22	Needle	Stainless steel				1	1	
23	Ball	Stainless steel				2	2	
24	Ball	Stainless steel				4	4	
25	Needle	Stainless steel				2	2	
26	Wear ring *3	Resin				4	4	
27	Bolt *4	Stainless steel				**K**	**K**	

*1. Stainless steel
*2. Alloy steel
*3. Model MCHD-8(R)(-1), MCHD-12(R)(-1) without wear ring.
*4. Bolt Q'y

Model	K
MCHD-8	2
MCHD-8-1	2
MCHD-8-2	4
MCHD-12	2
MCHD-12-1	4
MCHD-12-2	4

Model	K
MCHD-16	2
MCHD-16-1	4
MCHD-16-2	4
MCHD-20	2
MCHD-20-1	4
MCHD-20-2	4

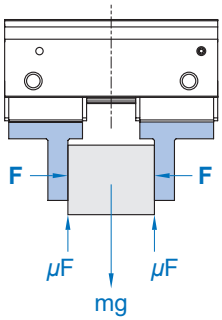
Model selection

Please select your model according to the weight of workpiece

- Although conditions differ according to the work piece shape and the coefficient of friction between the attachments and the workpiece, select a model that can provide a gripping force of 10 to 20 times the workpiece weight, or more.
- If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

When gripping a workpiece as in the figure as shown above:

F: Gripping force (N)
μ: Coefficient of friction between the attachments and the workpiece
m: Workpiece mass (kg)
g : Gravitational acceleration (=9.8m/s^2)
mg : Workpiece weight (N)
the conditions under which the workpiece will not drop are,



$$2\times\mu F > mg$$

Number of fingers

Therefore,

$$F > \frac{mg}{2\times\mu}$$

With"a"representing the extra margin, "F" is determined by the following formula:

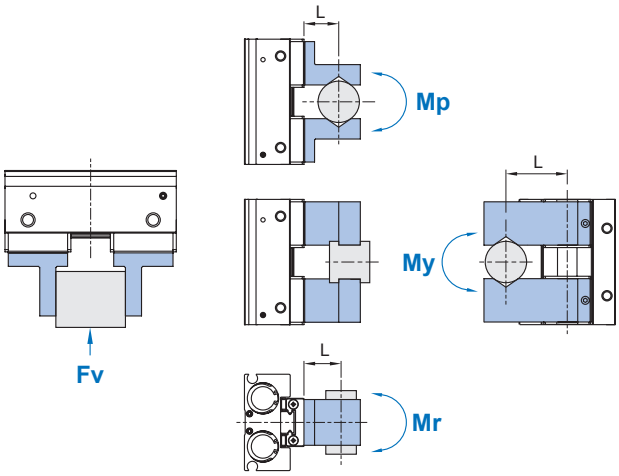
$$F = \frac{mg}{2\times\mu} \times a$$

The "10 to 20 times or more of the workpiece weight" is calculated with a safety margin of a=4, which allows for impacts that occur during normal transportation, etc.

μ=0.2	μ=0.1
$F = \frac{mg}{2\times0.2} \times 4$ = 10×mg	$F = \frac{mg}{2\times0.1} \times 4$ = 20×mg
↓	↓
10×workpiece weight	20×workpiece weight

* 1. Even in cases where the coefficient of friction is greater than μ=0.2, for reasons of safety, please select a gripping force which is at least 10 to 20 times greater than the workpiece weight.
* 2. If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

Confirmation of external force on fingers



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)
8	58	0.26	0.26	0.53
12	98	0.68	0.68	1.4
16	176	1.4	1.4	2.8
20	294	2	2	4

* 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 **MCHD-16** guide.

$$\text{Allowable load } F(N) = \frac{1.4\ (N\cdot m)}{25\times10^{-3}(m)}$$

$$= 56\ (N)$$

Load f=20 (N) < 56 (N), so can be used.

Model selection example

In the motion process did not produce high acceleration, deceleration or impact forces,
Workpiece mass: 300g , Gripping method: External gripping,
Operating pressure: 0.5 MPa, Coefficient of friction (μ): 0.1,
Holding position: 20mm (no overhang)

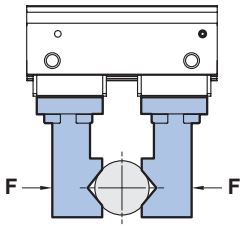
1. The conditions under which the workpiece will not drop are,

$$F = \frac{0.3}{2\times0.1} \times 4 = 6\ (kgf) \approx 60\ (N)$$

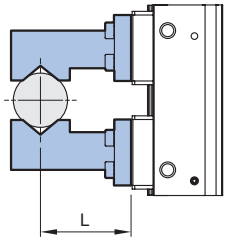
2. From Effective Gripping Force Fig,
Operating pressure: 0.5 MPa; Holding position: 20 mm
Effective gripping force is greater than 60 (N)
So selected **MCHD-16** grippers.

Effective gripping force (Double acting)

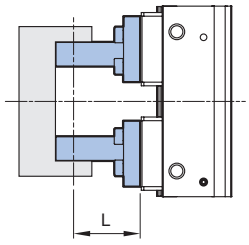
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



1N=0.102 kgf
1MPa=10.2 kgf/cm^2

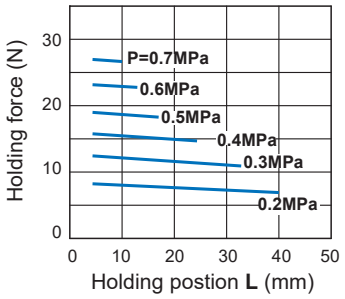


External grip

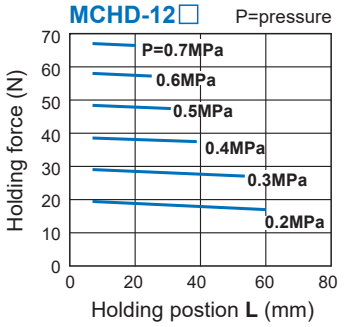


Internal grip

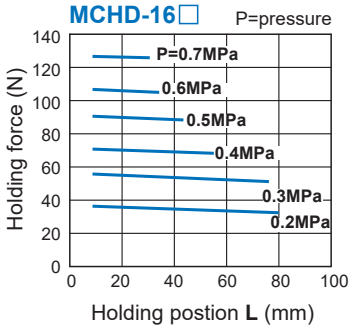
MCHD-8□ P=pressure



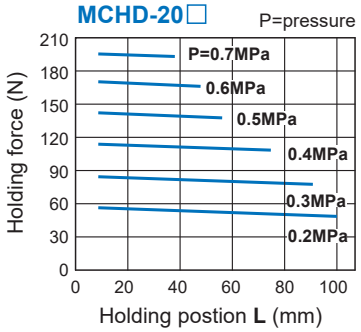
MCHD-12□ P=pressure



MCHD-16□ P=pressure

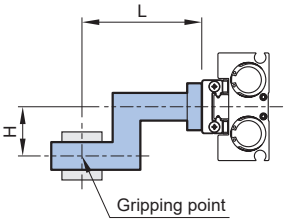


MCHD-20□ P=pressure

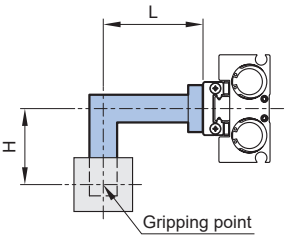


Confirmation of gripping point

- 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.
- If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the life the air gripper.

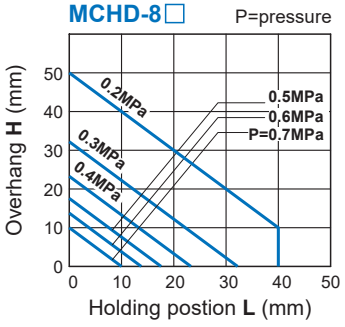


External grip

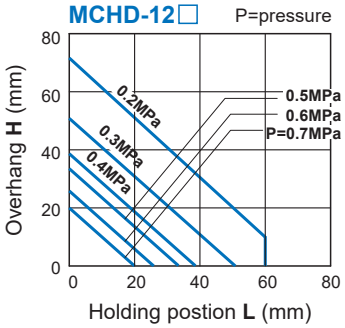


Internal grip

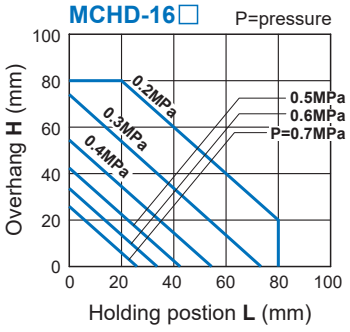
MCHD-8□ P=pressure



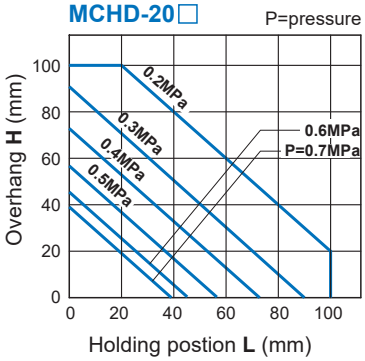
MCHD-12□ P=pressure



MCHD-16□ P=pressure



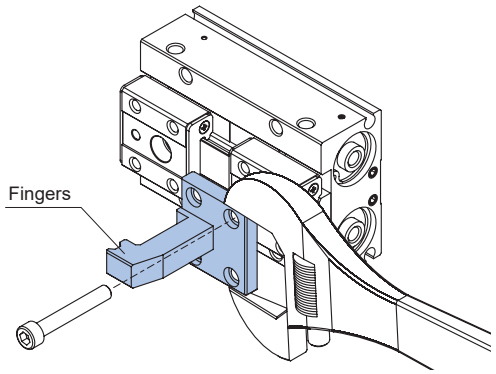
MCHD-20□ P=pressure



Product precautions

Before mount the fingers, sure be refer the tightening torque values in the table below.

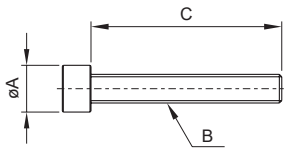
Tube I.D. (mm)	Bolt	Max. tightening torque (N.m)
8	M2.5×0.45	0.36
12	M3×0.5	0.63
16	M4×0.7	1.5
20	M4×0.7	1.5



Order example of attached bolt

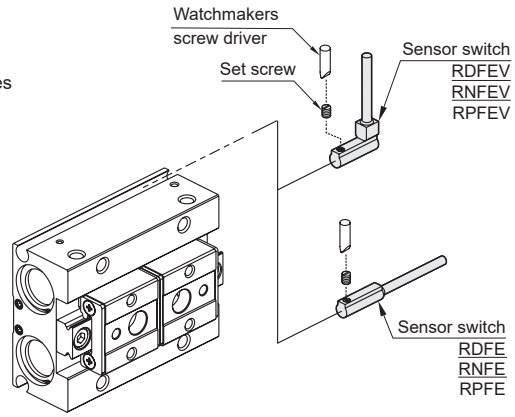
BOLT — MCHD — 8 — 1

- BOLT — ATTACHED BOLT
- MCHD — 8 — TUBE I.D. **8** **12**
- 1 — APPLICABLE STROKE
  - **-1:** Short and medium strokes
  - **-2:** Long strokes



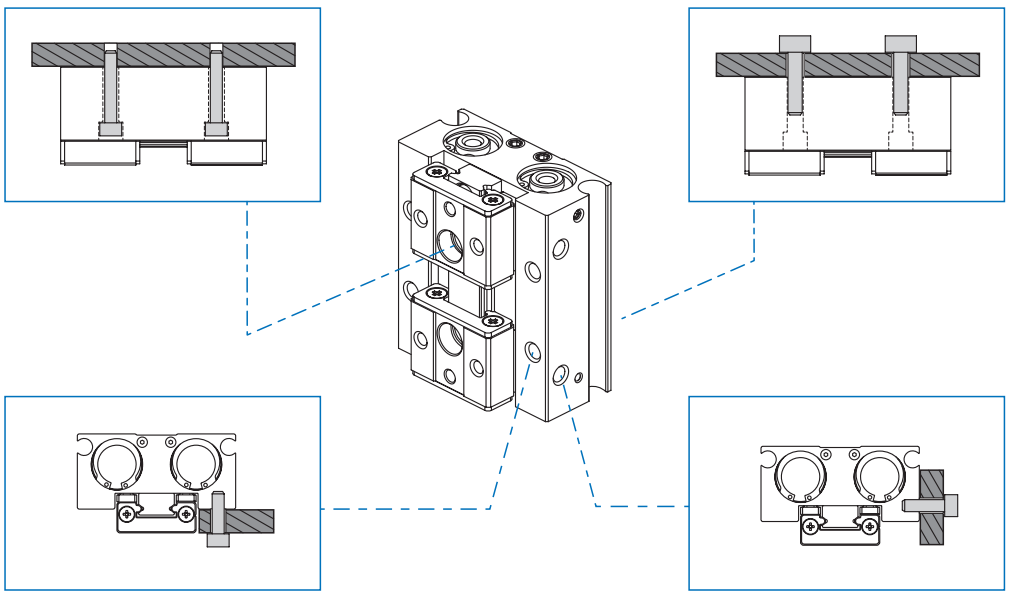
Code / Specification	A	B	C	Quantity
8-1 / 8-2	3.8	M2.5×0.45	15	2 / 4
12-1 / 12-2	4.9	M3×0.5	20	2 / 4

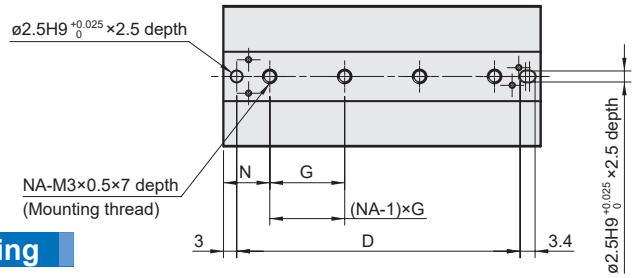
Installation of sensor switch

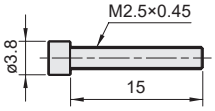


High degree of mounting flexibility

* Use the attached bolt for mounting in tube I.D. ø8, ø12.

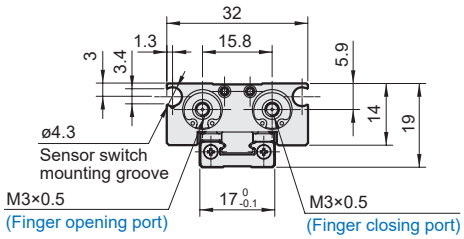


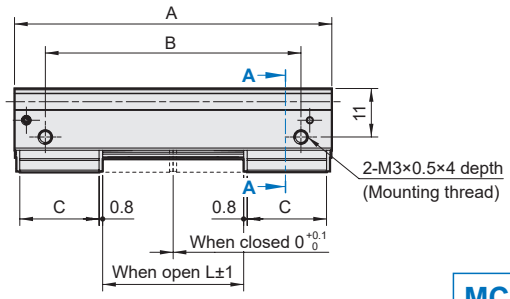


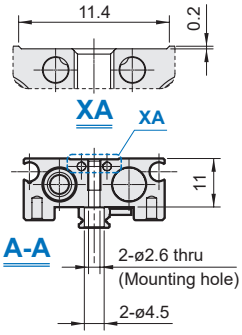


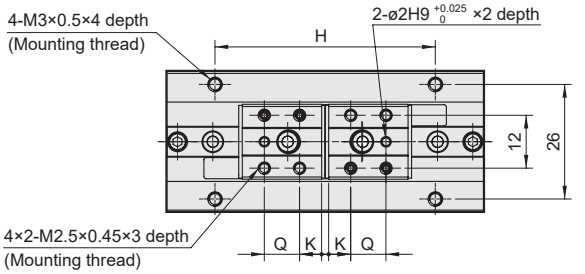
* Use the attached hex socket bolt while using the mounting hole.

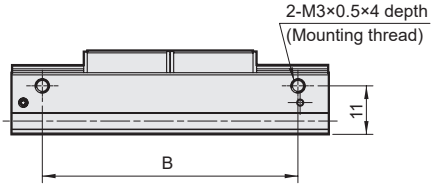
Axial piping



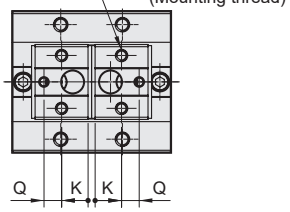




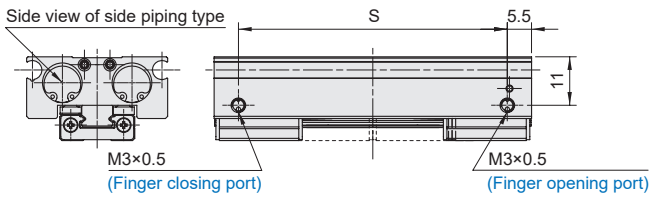




MCHD-8(R)
MCHD-8(R)-1



Side piping

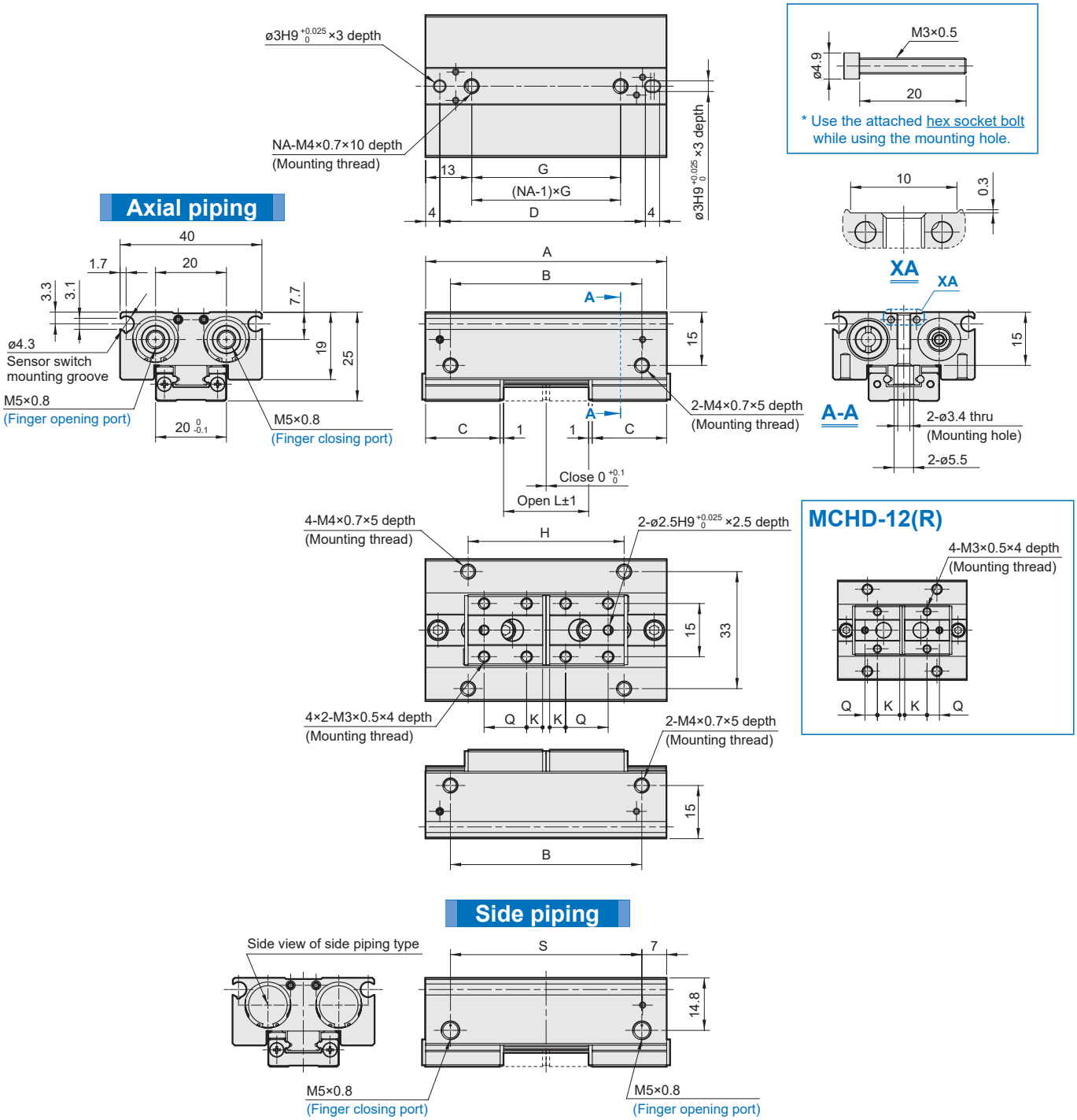


Unit: mm

Code / Model	A	B	C	D	G	H	K	L	N	NA	Q	S
MCHD-8(R)	36	22	12	28.3	16	14	6	8	10	2	4	25
MCHD-8(R)-1	48	34	14	40.3	28	26	7	16	10	2	4	37
MCHD-8(R)-2	72	58	18	64.3	17	50	5	32	10.5	4	8	61

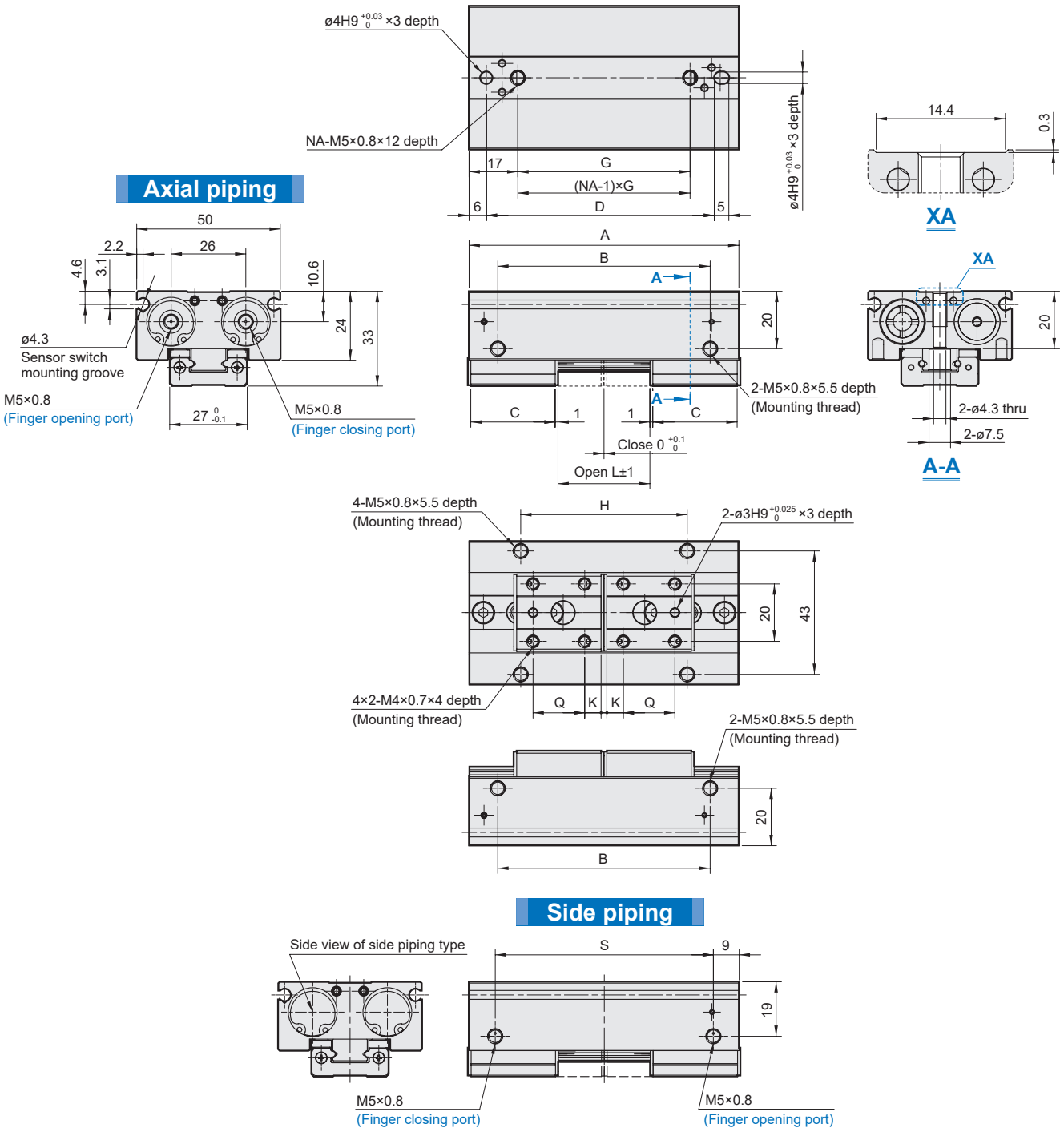
MCHD Dimensions ø12

PARALLEL GRIPPER (2-Finger)



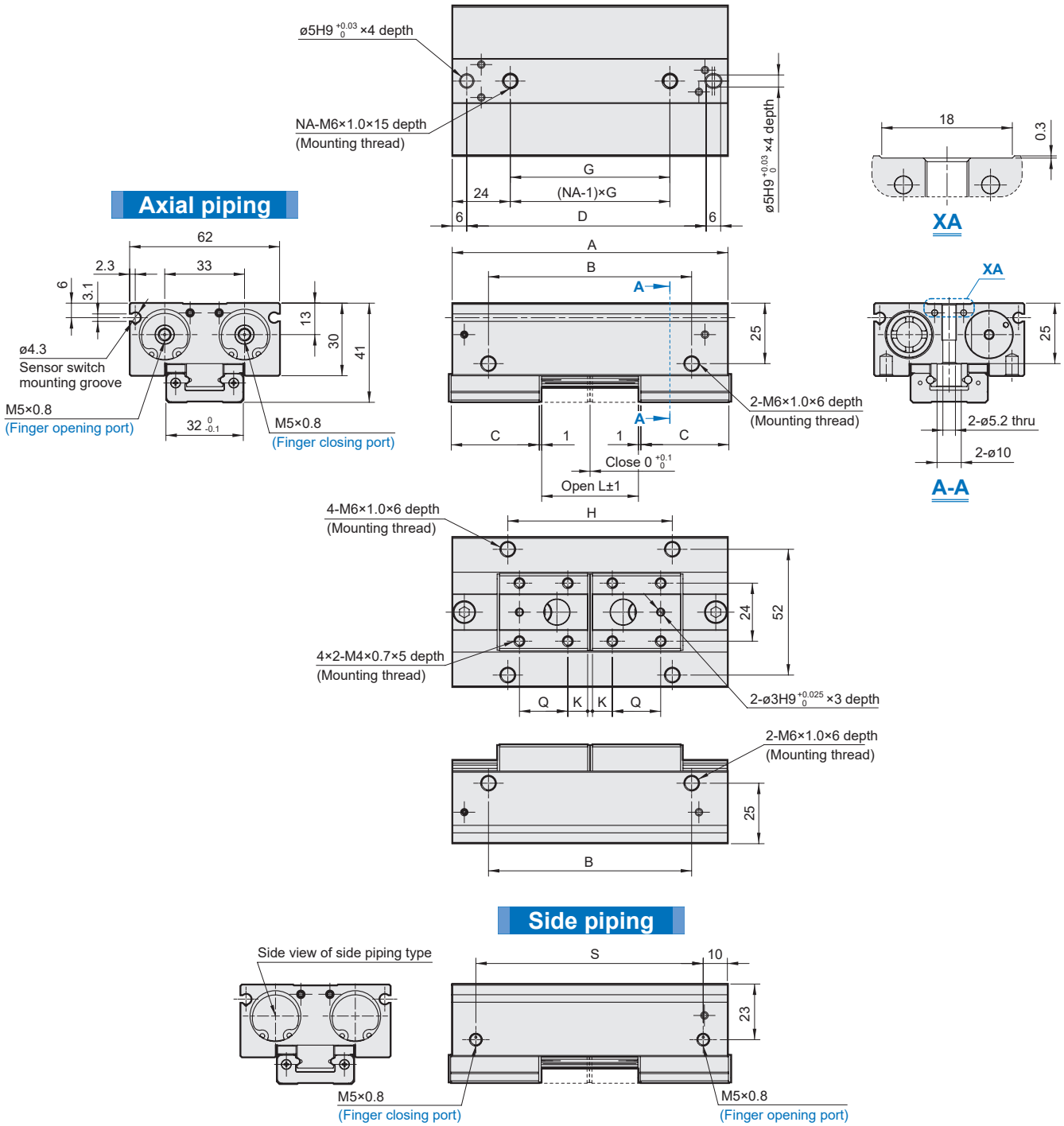
Unit: mm

Code / Model	A	B	C	D	G	H	K	L	NA	Q	S
MCHD-12(R)	52	38	18	42	26	28	9	12	2	5	38
MCHD-12(R)-1	68	54	21	58	42	44	4.5	24	2	12	54
MCHD-12(R)-2	104	90	27	94	26	80	4.5	48	4	18	90



Unit: mm

Code / Model	A	B	C	D	G	H	K	L	NA	Q	S
MCHD-16(R)	72	52	25.4	57.5	38	36	5.2	16	2	15	54
MCHD-16(R)-1	94	74	29.4	79.5	60	58	5.7	32	2	18	76
MCHD-16(R)-2	142	122	37.4	127.5	36	106	5.7	64	4	26	124



Unit: mm

Code / Model	A	B	C	D	G	H	K	L	NA	Q	S
MCHD-20(R)	86	56	31.4	71	38	40	7.7	20	2	16	66
MCHD-20(R)-1	114	84	36.4	99	66	68	8.2	40	2	20	94
MCHD-20(R)-2	174	144	46.4	159	42	128	8.2	80	4	30	154

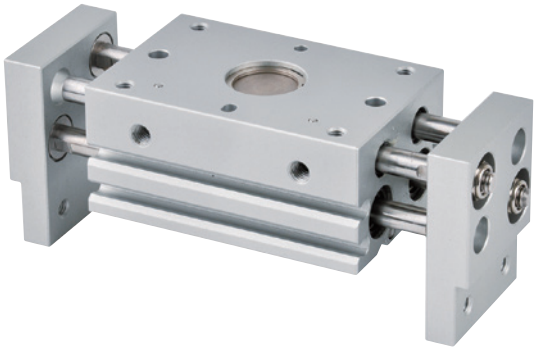
Connect with

REVERSING GRIPPING

Connect gripper with rotary actuator to achieve workpiece exchange.

MCHX series

PARALLEL GRIPPER



Features

- Rack and pinion construction enable synchronisation of both jaws enabling smooth and consistent gripping force.
- Wide range of strokes available.
- Dust seals protect all internal parts from ingress of dirt.
- Proximity and reed switches can be used with this unit.
- Proximity and reed switches can be used with this unit.
- Magnetic as standard.

Specification

Model	MCHX					
Acting type	Double acting					
Tube I.D. (mm)	10	16	20	25	32	40
Medium	Air					
Operating pressure range	0.2~0.6 MPa					
Ambient temperature	-5~+60°C (No freezing)					
Lubrication	Not required					
Repeatability	±0.1 mm					
Sensor switch (*) 2 wire	**RDFE(V)**: Non-contact					
Sensor switch (*) 3 wire	**RNFE(V)**: NPN, **RPFE(V)**: PNP					

* R*FE(V) specification, please refer to page 149.

Order example

MCHX — 16 — 30 M

MODEL

TUBE I.D.	STROKE
10	20, 40, 60
16	30, 60, 80
20	40, 80, 100
25	50, 100, 120
32	70, 120, 160
40	100, 160, 200

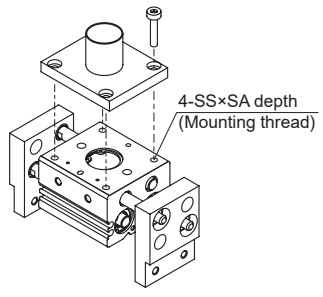
M: Magnet
* Magnetic as standard.

Weight

Model	MCHX-10			MCHX-16			MCHX-20			MCHX-25			MCHX-32			MCHX-40		
Stroke (mm)	20	40	60	30	60	80	40	80	100	50	100	120	70	120	160	100	160	200
Max. operating frequency (c.p.m)	60	40	40	60	40	40	60	40	40	60	40	40	30	20	20	30	20	20
Weight (kg)	0.28	0.35	0.44	0.56	0.8	0.94	1.0	1.5	1.68	1.69	2.8	3.0	3.15	4.36	5.02	5.3	6.8	8.6

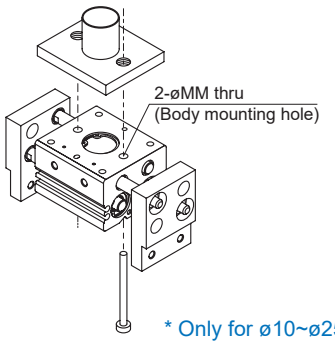
Mounting

Axial mounting



Tube I.D.	SA	SS	Max. tightening torque (N.m)
10	8	M4×0.7	2.1
16	10	M5×0.8	4.3
20	12	M6×1.0	7.3
25	16	M8×1.25	17.7
32	16	M8×1.25	18
40	20	M10×1.5	36

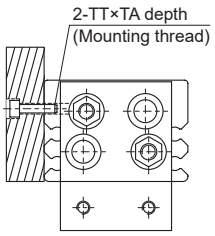
Axial mounting



* Only for ø10~ø25.

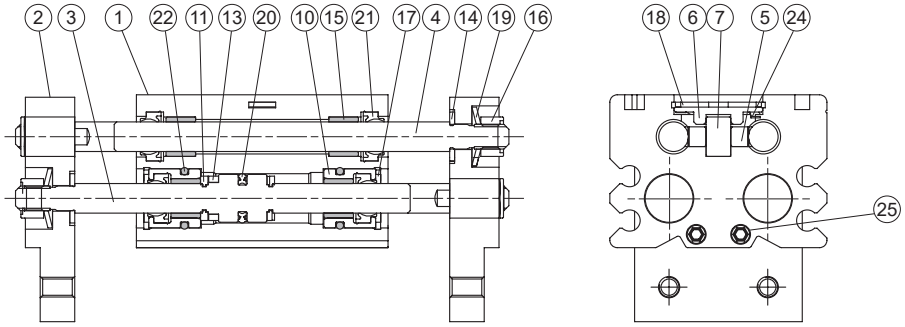
Tube I.D.	MM	Bolt	Max. tightening torque (N.m)
10	4.5	M4×0.7	2.1
16	5.5	M5×0.8	4.3
20	6.6	M6×1.0	7.3
25	9	M8×1.25	17.7
32	–	–	–
40	–	–	–

Lateral mounting

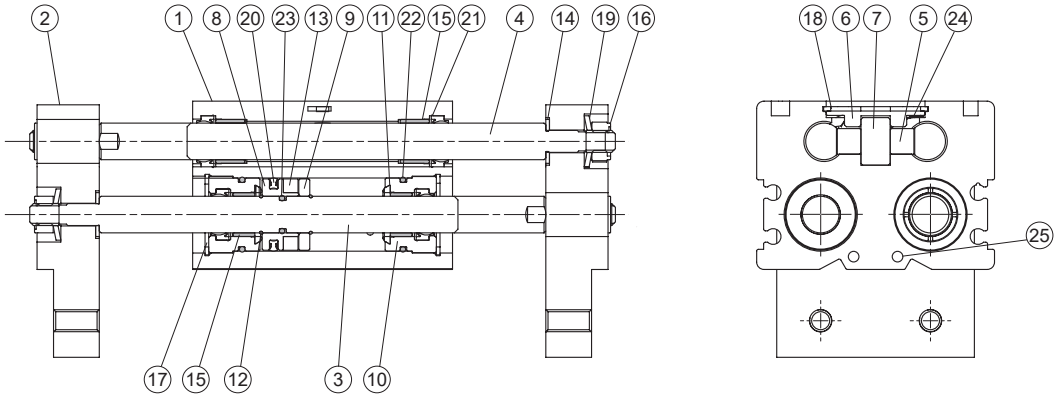


Tube I.D.	TA	TT	Max. tightening torque (N.m)
10	5	M4×0.7	1.4
16	7	M5×0.8	2.8
20	7	M6×1.0	4.8
25	7	M8×1.25	12
32	11	M8×1.25	12
40	12	M10×1.5	24

ø10



ø16~ø40



Material

No.	Tube I.D. / Part name	10	16	20	25	32	40	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy						1	
2	Finger	Aluminum alloy						2	
3	Piston rod	Stainless steel						2	
4	Rack	Stainless steel						2	
5	Pinion	Carbon steel						1	
6	Pinion cover	Carbon steel						1	
7	Pinion axis	Stainless steel						1	
8	Piston	–	Brass					2	
9	Magnet holder	–	Brass					2	
10	Rod cover	Aluminum alloy						4	
11	Damper	NBR	PU	NBR				4	●
12	Stop ring	–	Spring steel					4	
13	Magnet	Magnet material						2	
14	Washer	Stainless steel		Carbon steel				4	
15	Bearing	Oil containing polyacetal with back metal						8	
16	U nut	Carbon steel						4	
17	R-shape snap ring	*1	*2	Carbon steel			*2	4	
18	C-shape snap ring	Carbon steel						1	
19	Conical spring washer	Stainless steel *3						4	
20	Piston packing	NBR						2	●
21	Rod packing	NBR						8	●
22	O-ring	NBR						4	●
23	O-ring	–	NBR					2	
24	Wave washer	Carbon steel						1	
25	Screw	*1	–	Carbon steel				4	
	Ball	–	SUS	–				4	

Order example of repair kits

Tube I.D.	Repair kits
ø10	**PS-MCHX-10**
ø16	**PS-MCHX-16**
ø20	**PS-MCHX-20**
ø25	**PS-MCHX-25**
ø32	**PS-MCHX-32**
ø40	**PS-MCHX-40**

*1. Carbon steel
*2. Stainless steel
*3. ø40: Stainless steel 2 pcs + Carbon steel 2 pcs

Model selection example

* Finger selection please refer to page 8.

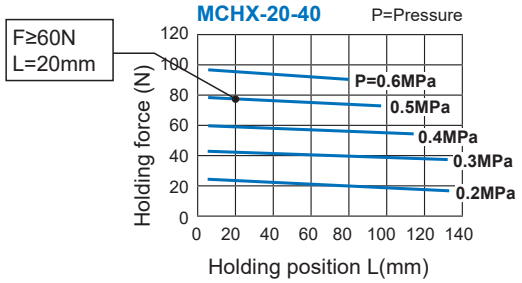
In the motion process did not produce high acceleration, deceleration or impact forces, Workpiece mass: 0.3kg , Gripping method: External gripping, Operating pressure: 0.5 MPa, Coefficient of friction (μ): 0.1, Holding position: L=20mm (no overhang)

1. Based on the above formula, the required gripping force can be derived:

$$F \geq \frac{0.3\times9.8}{2\times0.1} \times 4$$

$$\geq 60(N)$$

2. From Effective Gripping Force Fig, Operating pressure: 0.5 MPa; Holding position: 20 mm Effective gripping force is greater than 60 (N) So selected **MCHX-20-40** grippers.

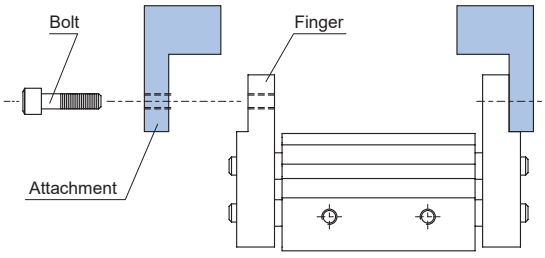


Model selection suggestions

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.

Mounting precautions

1. To prevent bending the piston rod, please mount the attachment when finger is closing.
2. Do not scratch or dent the sliding portion of the piston rod, or it may cause air leaks or faulty operation.
3. Refer to the table below for the proper tightening torque on the bolt used for securing the attachment to the finger.



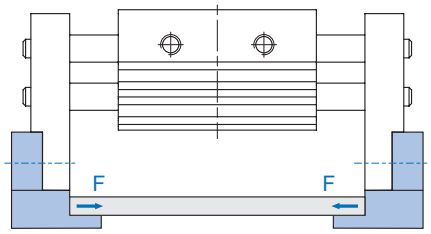
Tube I.D.	Bolt	Max. tightening torque (N.m)
10	M4×0.7	1.4
16	M5×0.8	2.8
20	M6×1.0	4.8
25	M8×1.25	12
32	M10×1.5	24
40	M12×1.75	42.2

Applications

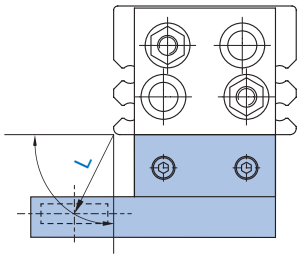
Connect with rotary actuator to roate workpiece in a automatic manufacture line.

Effective gripping force

Indication of effective force.
The effective gripping force shown in the graphs to the right 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.

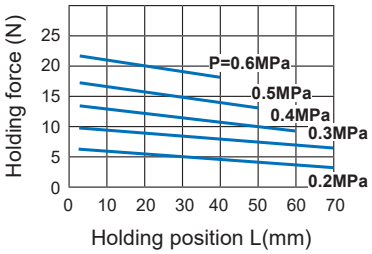


1N=0.102 kgf
1MPa=10.2 kgf/cm^2

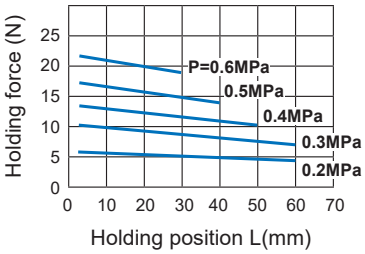


L: Holder position (mm)

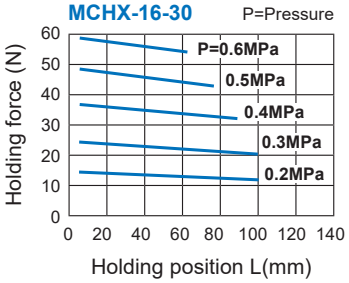
MCHX-10-20 P=Pressure



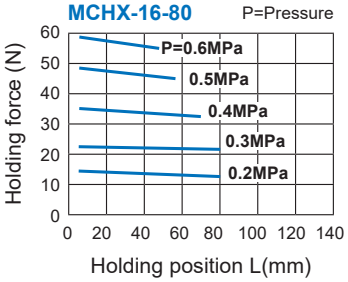
MCHX-10-40
MCHX-10-60 P=Pressure



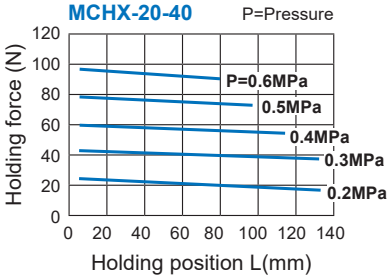
MCHX-16-30 P=Pressure



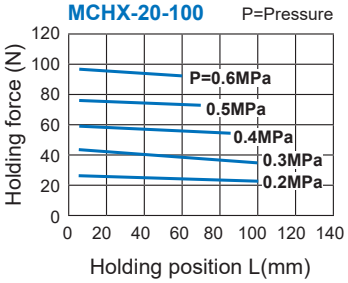
MCHX-16-60
MCHX-16-80 P=Pressure



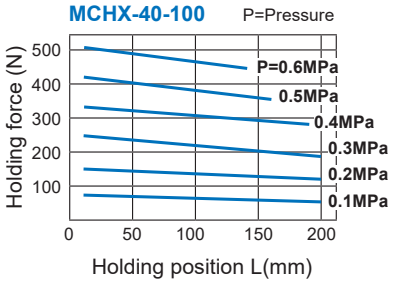
MCHX-20-40 P=Pressure



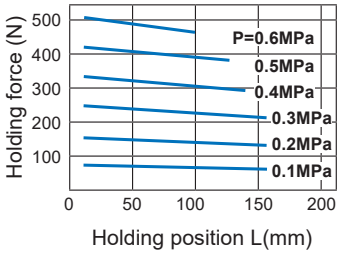
MCHX-20-80
MCHX-20-100 P=Pressure



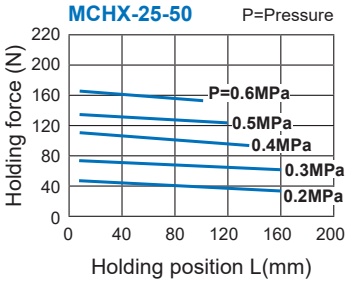
MCHX-40-100 P=Pressure



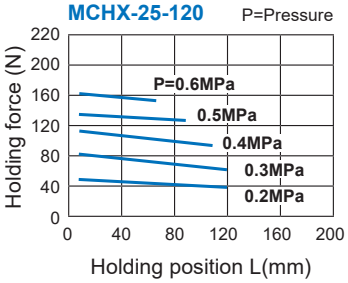
MCHX-40-160
MCHX-40-200 P=Pressure



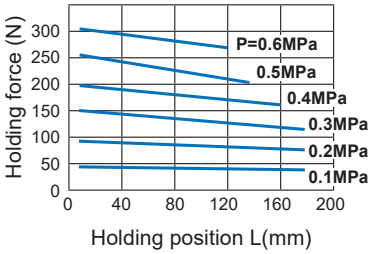
MCHX-25-50 P=Pressure



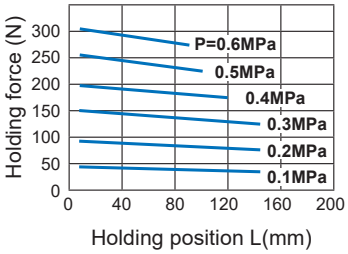
MCHX-25-100
MCHX-25-120 P=Pressure



MCHX-32-70 P=Pressure

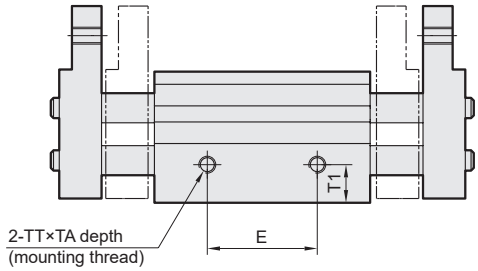


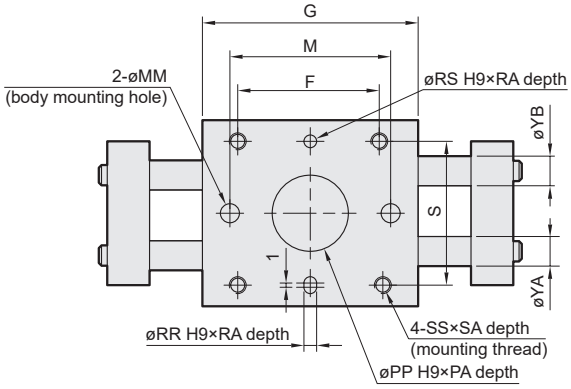
MCHX-32-120
MCHX-32-160 P=Pressure



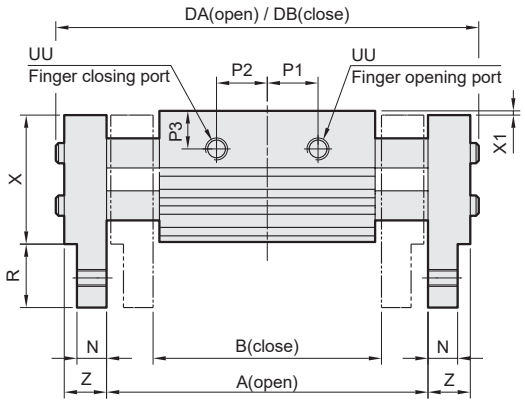
MCHX Dimensions

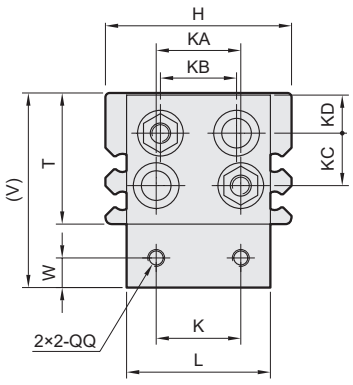
WIDE TYPE **PARALLEL GRIPPER** (2-Finger)





Code / Tube I.D.	Stroke	A	B	DA	DB	E	F	G	M	P1	P2
10	20	76	56	100	80	26	36	51	38	11.5	11.5
	40	118	78	142	108	42	52	67	54	19.5	19.5
	60	156	96	180	146	60	70	85	72	28.5	28.5
16	30	98	68	128	98	28	45	60	40	13	13
	60	170	110	200	152	58	75	90	70	25	25
	80	210	130	240	192	78	95	110	90	35	35
20	40	122	82	160	120	38	58	71	54	16	16
	80	222	142	260	194	80	100	113	96	34	34
	100	262	162	300	234	100	120	133	116	44	44
25	50	150	100	196	146	48	70	88	66	19	19
	100	282	182	328	244	102	124	142	120	43	43
	120	320	200	366	282	120	142	160	138	52	52
32	70	220	150	272	202	60	86	110	–	28	28
	120	318	198	370	282	108	134	158	–	52	52
	160	402	242	454	366	152	178	202	–	74	74
40	100	288	188	348	252	80	116	148	–	36	36
	160	406	246	466	370	138	174	206	–	65	65
	200	486	286	546	450	178	214	246	–	85	85





Code / Tube I.D.	H	K	KA	KB	KC	KD	L	N	MM	PA	PP	P3	QQ	R	RA	RR	RS	S	SA	SS
10	44	20	20	18.2	12.5	8	34	7	4.5	1.5	18	9	M4×0.7	15	3	3	3	34	8	M4×0.7
16	55	25	25	22.6	16.5	9	43	9	5.5	1.5	23	10	M5×0.8	19	3	3	3	42	10	M5×0.8
20	65	30	30	28.2	20	10	54	12.5	6.6	1.5	24	11	M6×1.0	24	4	4	4	52	12	M6×1.0
25	76	40	38	33.2	23.5	11.5	64	14	9	1.5	32	16	M8×1.25	29	4.5	4	4	62	16	M8×1.25
32	82	50	40	32.2	30	14.5	70	15	–	2.5	35	16	M10×1.5	32	8	6	6	64	16	M8×1.25
40	98	60	48	40.2	37	16	86	18	–	2.5	40	18	M12×1.75	38	8	6	6	76	20	M10×1.5

Code / Tube I.D.	T	T1	TA	TT	UU	V	W	X	X1	YA	YB	Z
10	31	9	5	M4×0.7	M5×0.8	46	7	30.5	0.5	6	6	10
16	39	10	7	M5×0.8	M5×0.8	58	8	38.5	0.5	8	8	13
20	46	11	7	M6×1.0	M5×0.8	70	10	45	1	10	10	17
25	52	12.5	7	M8×1.25	M5×0.8	81	12	51	1	12	12	21
32	68	22	11	M8×1.25	Rc1/8	100	15	67	1	14	16	24
40	79	28	12	M10×1.5	Rc1/8	117	18	78	1	16	20	28

Connect with

AUTOMATIC ASSEMBLY MACHINE

Connect gripper with cylinder to achieve regular workpiece gripping.

Features

- With the same tube I.D., the griping stroke is longer compare with other grippers.
- The plain bearing parts are hardened for longer effective life time.
- Three mounting directions are available.
- Magnetic as standard.

Specification

Model		MCHH		
Acting type		Double acting		
Tube I.D. (mm)		20	25	40
Stroke per-jaw (mm)		8	13	21
Medium		Air		
Operating pressure range		0.3~0.7 MPa		
Ambient temperature		–10~+60°C (No freezing)		
Lubrication (*1)		Not required		
Repeatability		± 0.03 mm		
Max. operating frequency		60 c.p.m		
Sensor switch (*2)	2 wire	**RDFE(V)**: Non-contact		
	3 wire	**RNFE(V)**: NPN, **RPFE(V)**: PNP		
Weight (kg)		0.27	0.59	1.46

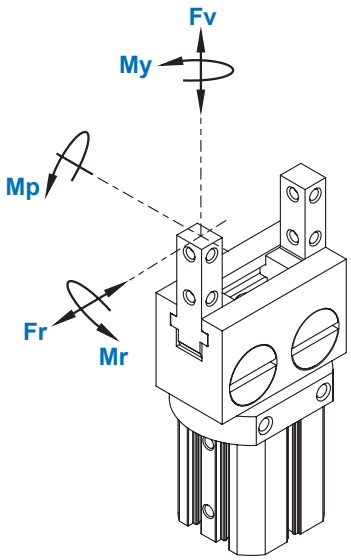
*1. Sliding area of jaws need scheduled relubrication.
*2. R*FE(V) specification, please refer to page 149.

Order example

MCHH — 25 M

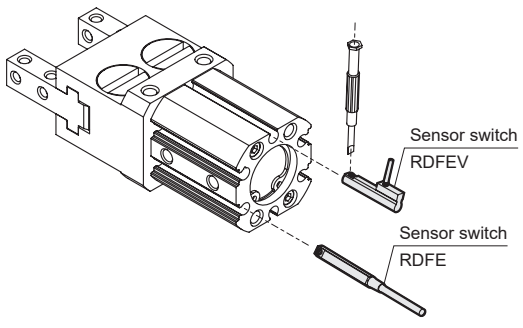
- MODEL
- TUBE I.D.: **20**, **25**, **40**
- **M**: Magnet
  * Magnetic as standard.

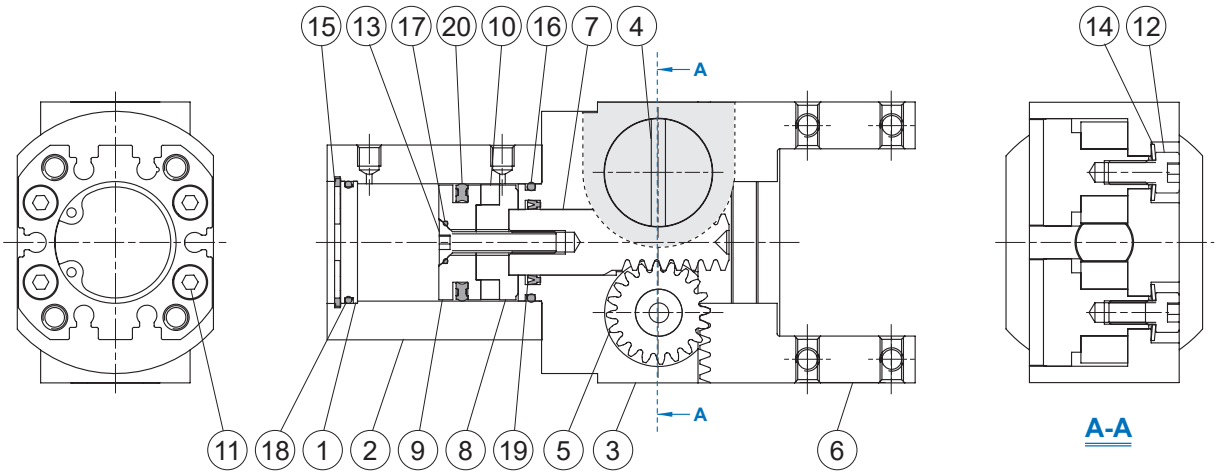
Load limit



Code / Tube I.D.	**Mr** max. (Nm)	**Mp** max. (Nm)	**My** max. (Nm)	**Fv** max. (N)	**Fr** max. (N)
20	0.83	0.41	0.41	56.55	37.70
25	1.56	0.78	0.78	80.86	53.91
40	9.17	4.58	4.58	371.56	247.71

Installation of sensor switch





Material

No.	Part name	Material	Q'y	Repair kits (inclusion)
1	End cover	Aluminum alloy	1	
2	Body	Aluminum alloy	1	
3	Finger rail	Aluminum alloy	1	
4	Pinion holder	Carbon steel	2	
5	Pinion	Alloy steel	2	
6	Finger	Alloy steel	2	
7	Piston rod	Alloy steel	1	
8	Magnet holder	Aluminum alloy	1	
9	Piston	Aluminum alloy	1	
10	Magnet ring	Magnet material	1	
11	Hexgon bolt (*)	Steel	2 or 4	
12	Hexgon bolt	Steel	2	
13	Countersink bolt	Steel	1	
14	Washer	Spring steel	2	
15	Snap ring	Spring steel	1	
16	O-ring	NBR	1	●
17	O-ring	NBR	1	●
18	O-ring	NBR	1	●
19	Rod packing	NBR	1	●
20	Piston packing	NBR	1	●

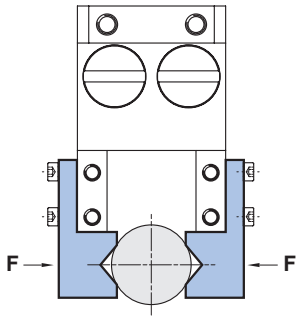
* ø20 Q'y: 2 pcs, ø25 & ø40 Q'y: 4 pcs

Order example of repair kits

Tube I.D.	Repair kits
ø20	**PS-MCHH-20**
ø25	**PS-MCHH-25**
ø40	**PS-MCHH-40**

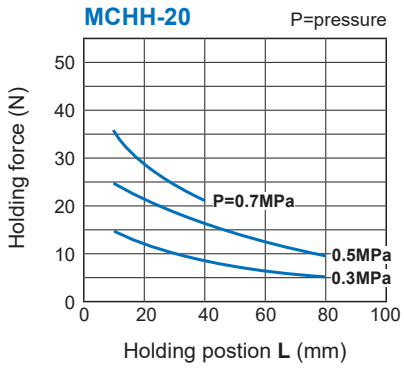
Effective gripping force

Indication of effective force.
The effective gripping force shown in the graphs to the right 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.

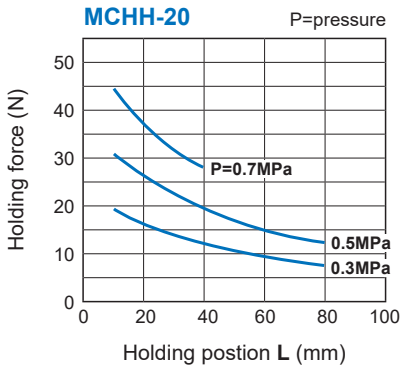


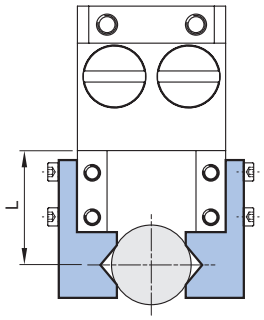
1N=0.102 kgf
1MPa=10.2 kgf/cm^2

External grip

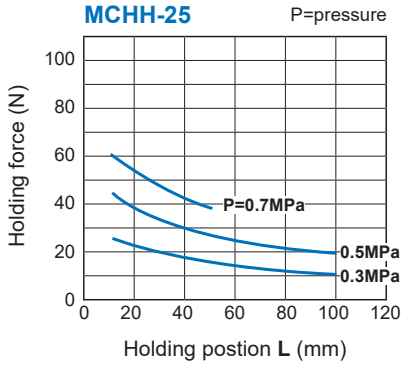


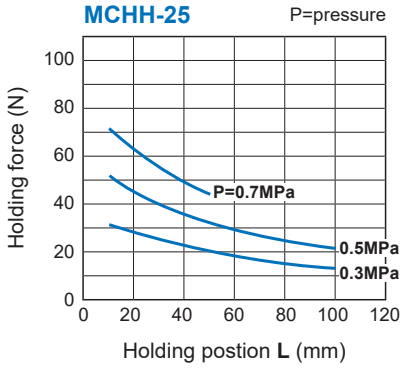
Internal grip

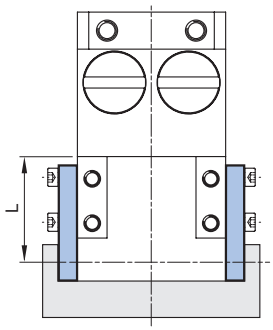




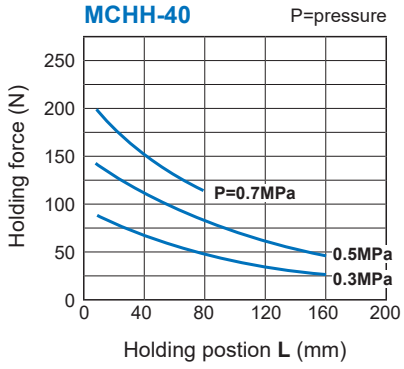
External grip

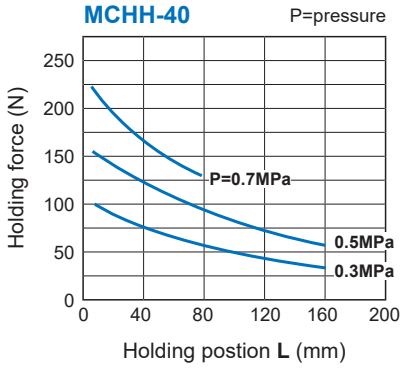




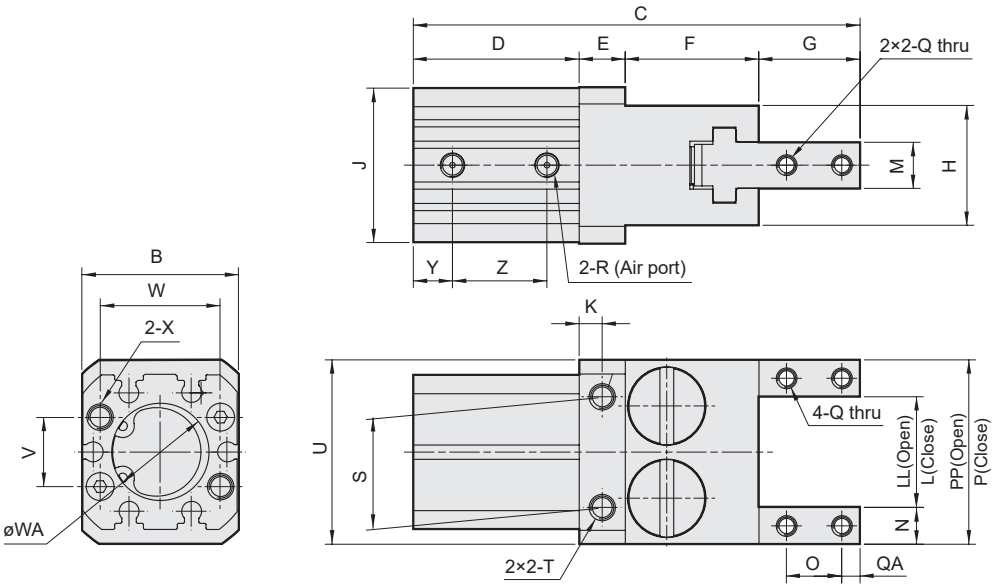


Internal grip

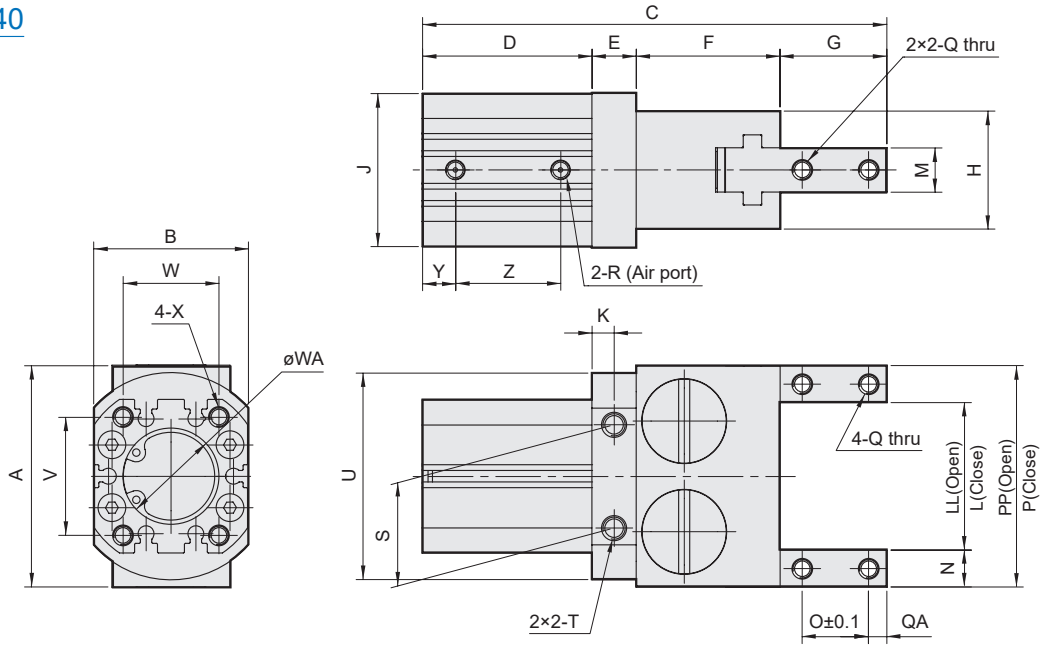




ø20



ø25, ø40



Code / Model	A	B	C	D	E	F	G	H	J	K	L	LL	M	N	O	P	PP	Q	QA	R	S	T	U
MCHH-20	–	34	97	36	10	29	22	26	33.5	5	8	24	$10^{-0.01}_{-0.06}$	8	12	24	40	M4×0.7	4	M5×0.8	24	M5×0.8×12 dp	40
MCHH-25	60	42	126	46	12	39	29	32	41.5	6	14	40	$12^{-0.01}_{-0.06}$	10	18	34	60	M5×0.8	5	M5×0.8	28	M6×1.0×14 dp	ø56
MCHH-40	92	60	167	57	15	58	37	38	58	8	26	68	$14^{-0.01}_{-0.06}$	12	20	50	92	M6×1.0	7	Rc1/8	42	M8×1.25×14 dp	ø82

Code / Model	V	W	WA	X	Y	Z
MCHH-20	15	26	ø$22^{+0.05}_{0}$×1.5 dp	M5×0.8×10 dp	8.5	20.5
MCHH-25	32	26	ø$26^{+0.05}_{0}$×1.5 dp	M5×0.8×10 dp	9	28.5
MCHH-40	44	34	ø$42^{+0.05}_{0}$×2 dp	M6×1.0×12 dp	11	28.5

Connect with

ELECTRIC ACTUATOR

Connect gripper with electric actuator to achieve workpiece displacement.

Features

- Compact design to ensure minimum interference while operating; robust T rail design, ensure accurate gripping.
- Can reach maximum torque suitable for long jaws design.
- Oval piston-driven design ensure maximum gripping force.
- Hose-free direct connection: Air supply channel can connect directly without piping or through tread to assure the flexibility of supplying compressed air on any kind of automation system.
- Assembling with a dust-proof module can prevent foreign matters (>0.5mm) entering the gripper.
- Magnetic as standard.

Specification

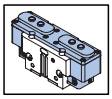
Model		MCHS							
Acting type		Double acting							
Size		50	66	80	100	125	160	200	300
Stroke per-jaw(mm)		4	6	8	10	12	16	20	30
Effective external gripping force (N) (*1)		69	122	225	315	505	842	1417	3283
Close / Open time(s)		0.02	0.03	0.04	0.07	0.1	0.2	0.35	0.45
Medium		Air							
Operating pressure range		0.3~0.8 MPa							
Compressed air consumption(cm^3)		4.1	10.1	23.6	39.3	85	85	330	1000
Ambient temperature		+5°C~ +80°C							
Lubrication		Not required							
Sensor switch (*2)	2 wire	RDFE(V): Non-contact							
	3 wire	RNFE(V): NPN, RPFE(V): PNP							
Proximity sensor		–	RJY (Please refer to page 155)						
Accessories		Mounting block, Accessory kits							
Weight (kg)		0.14	0.27	0.495	0.85	1.6	3.0	5.7	14.2

*1. Under the condition of clamping length 40mm and operation pressure 0.6 MPa.
*2. R*FE(V) specification, please refer to page 149.
*3. Regularly relubricate the finger to increase the service life. Please contact us for grease info.

Order example

MCHS — 50 — SD

- MCHS: MODEL
- 50: SIZE — 50, 66, 80, 100, 125, 160, 200, 300
- SD: DUST-PROOF MODULE (*)



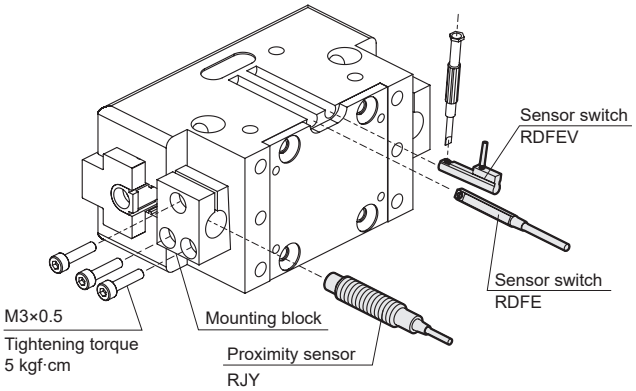
* When the size 50 is assembled with the dust-proof module, the proximity sensor cannot be used.

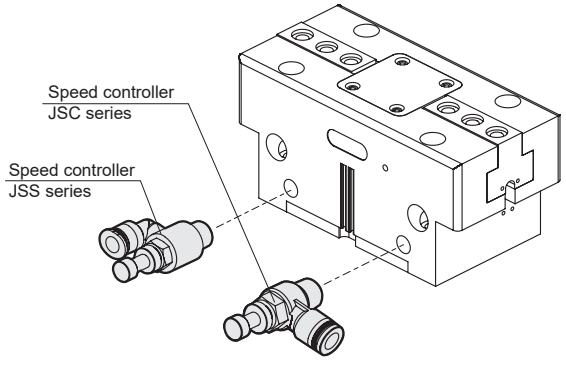
Dust-proof Module

SD — MCHS — 50

- SD: DUST-PROOF MODULE
- MCHS: MODEL
- 50: SIZE — 50 ~ 300

Installation of sensor switch & speed controller



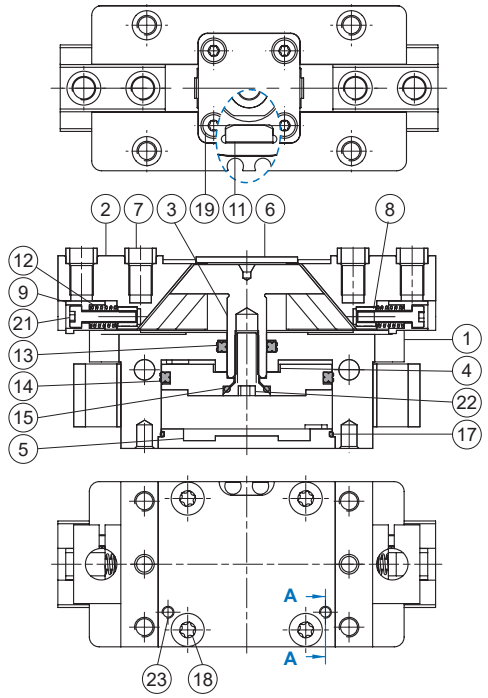


* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification, please refer to Mindman website.

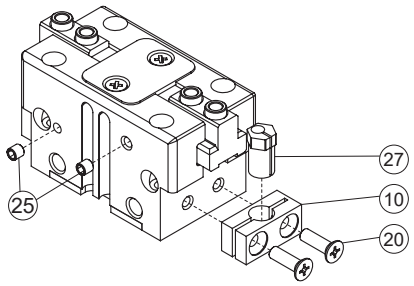
MCHS Inside structure & Parts list

PARALLEL GRIPPER (2-Finger)

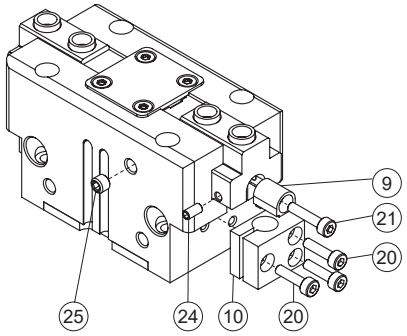
mindman

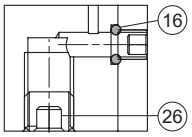


50



66~300





A-A

Material

No.	Part name	Material	Size & Q'y								Repair kits (inclusion)
			50	66	80	100	125	160	200	300	
1	Body	Aluminum alloy	1								
2	Finger	Carbon steel	2								
3	Rod	Carbon steel	1								
4	Piston	Aluminum alloy	1								
5	End cover	Aluminum alloy	1								
6	Plate cover	Stainless steel	1								
7	Centering sleeve	Stainless steel	*1								
8	Thread insert	Brass	–		2						
9	Sensor adj block	Aluminum alloy	–	2							
10	Sensor holder	Resin	2								
11	Magnet	Magnet material	1								
12	Spring	SWP	–	2							
13	Rod packing	NBR	1								●
14	Piston packing	NBR	1								●
15	O-ring	NBR	1								●
16	O-ring	NBR	3	4	2						●
17	O-ring	NBR	1								●
18 *2	Screw	Alloy steel	4								
19 *3	Screw	Alloy steel	2	4							
20	Bolt	Stainless steel	4	6							
21	Hex bolt	Stainless steel	–	2							
22 *4	Hex bolt	Stainless steel	1								
23	Hex screw	Stainless steel	2								
24	Hex screw	Alloy steel	4								
25	Hex screw	Stainless steel	2								
26	Hex screw	Stainless steel	2								
27	Adjust socket	Stainless steel	2	–							

*1. Included in accessory kits. *2. Cylinder size 80~300 is hexagonal socket bolt.
*3. Cylinder size 50 is cross flat head screw. *4. Cylinder size 80/100/160/200/300 is alloy steel.

Order example of repair kits

Model	Repair kits
MCHS-50	**PS-MCHS-50**
MCHS-66	**PS-MCHS-66**
MCHS-80	**PS-MCHS-80**
MCHS-100	**PS-MCHS-100**
MCHS-125	**PS-MCHS-125**
MCHS-160	**PS-MCHS-160**
MCHS-200	**PS-MCHS-200**
MCHS-300	**PS-MCHS-300**

Order example of accessory kits

Model	Accessory kits
MCHS-50	**AK-MCHS-50**
MCHS-66	**AK-MCHS-66**
MCHS-80	**AK-MCHS-80**
MCHS-100	**AK-MCHS-100**
MCHS-125	**AK-MCHS-125**
MCHS-160	**AK-MCHS-160**
MCHS-200	**AK-MCHS-200**
MCHS-300	**AK-MCHS-300**

O-ring (×2)
Material: NBR

Iron plug (×2)
Stainless steel + NBR

PIN (×2)*
Bearing steel

Centering sleeve (×4)
Stainless steel

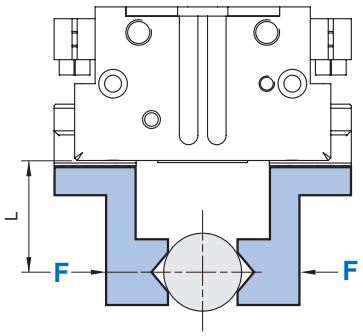
* Size 200 Q'y: 4 pcs

Effective gripping force

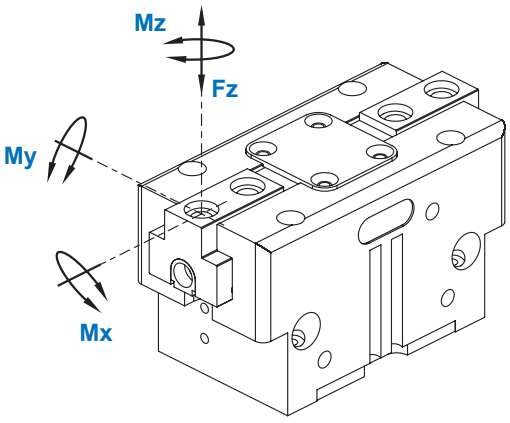
* Finger selection please refer to page 8.

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

1N=0.102 kgf
1MPa=10.2 kgf/cm^2



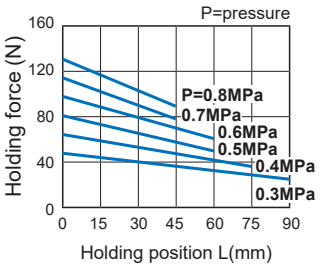
External grip



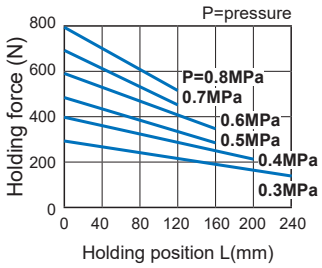
Code / Model	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)	Fz max. (N)
MCHS-50	15	15	8	700
MCHS-66	50	45	35	1200
MCHS-80	80	60	50	1800
MCHS-100	100	90	75	2500
MCHS-125	120	120	100	3200
MCHS-160	160	180	140	5000
MCHS-200	180	220	170	7000
MCHS-300	275	300	200	9000

External gripping force

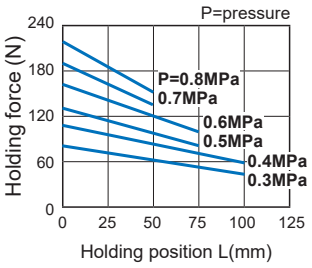
MCHS-50



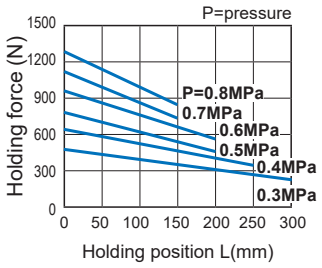
MCHS-125



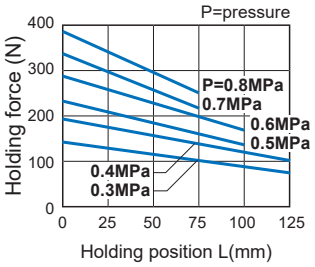
MCHS-66



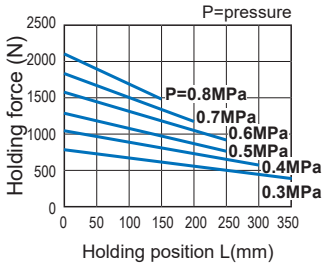
MCHS-160



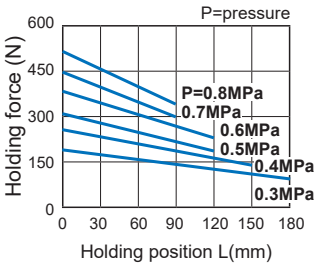
MCHS-80



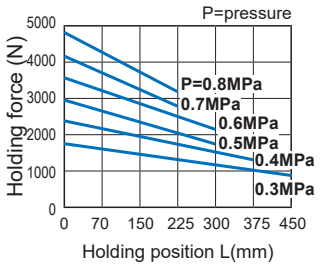
MCHS-200



MCHS-100



MCHS-300

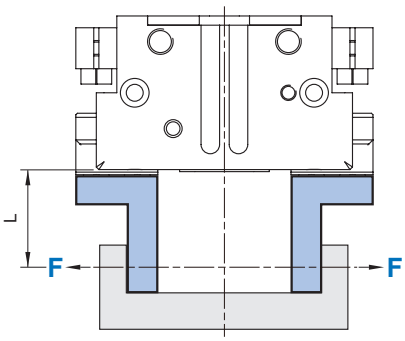


Effective gripping force

* Finger selection please refer to page 8.

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

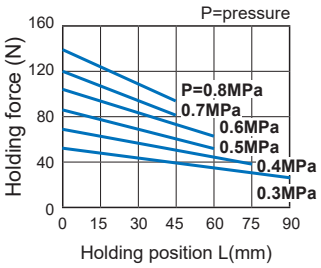
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



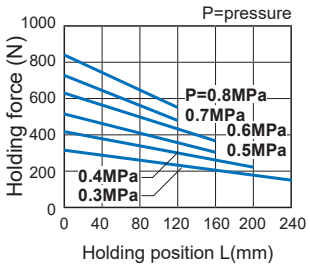
Internal grip

Internal gripping force

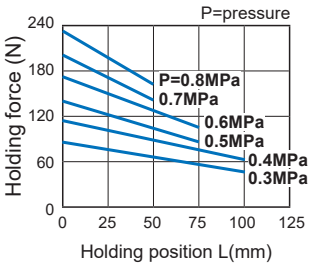
MCHS-50



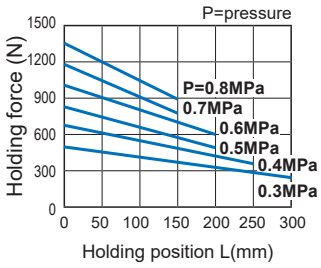
MCHS-125



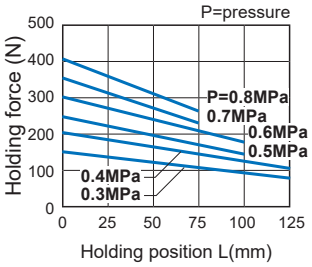
MCHS-66



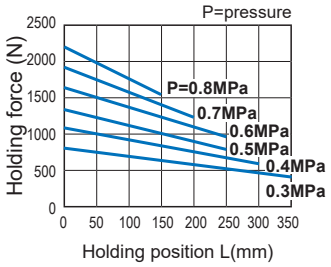
MCHS-160



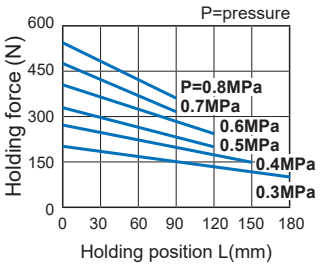
MCHS-80



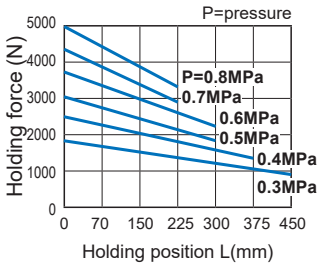
MCHS-200



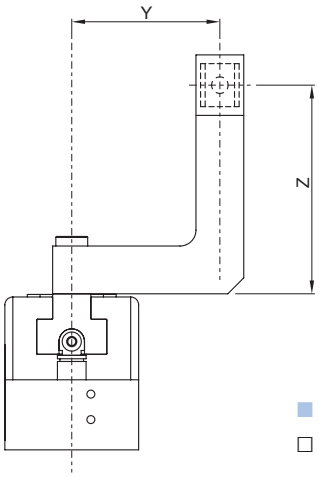
MCHS-100



MCHS-300

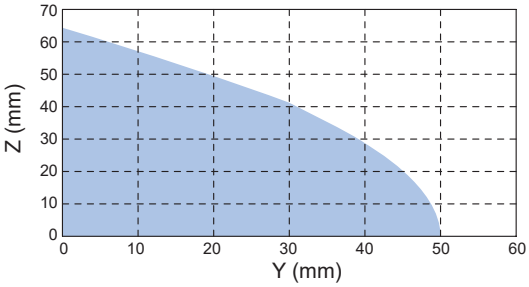


Max. feasible centrifugal degree

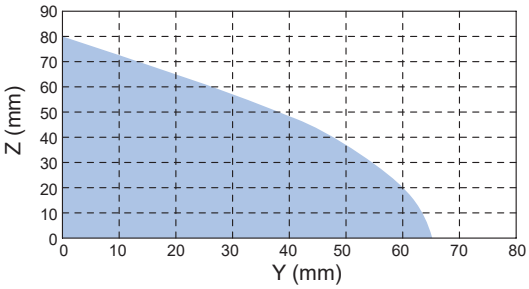


■ Feasible
□ Infeasible

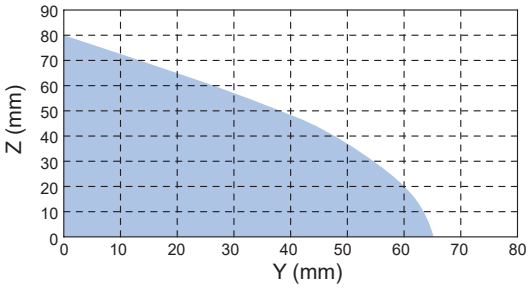
MCHS-50



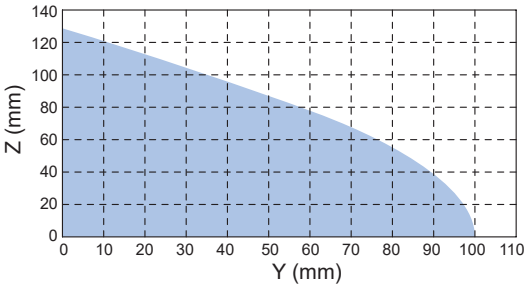
MCHS-66



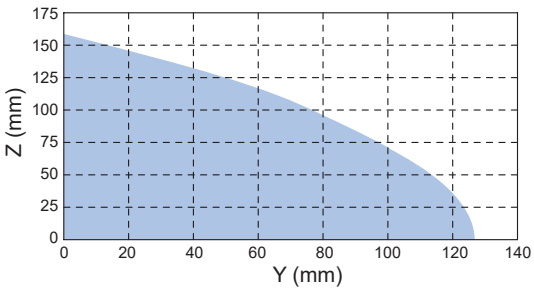
MCHS-80



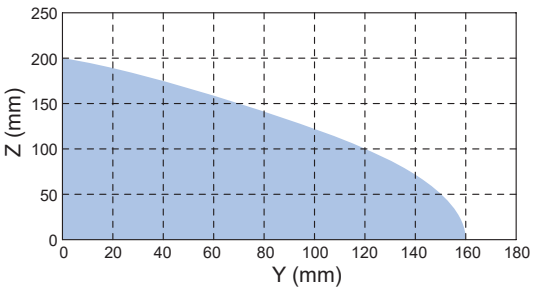
MCHS-100



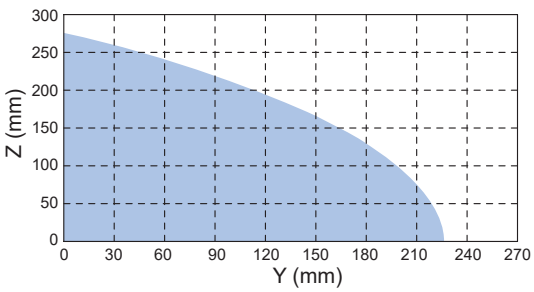
MCHS-125



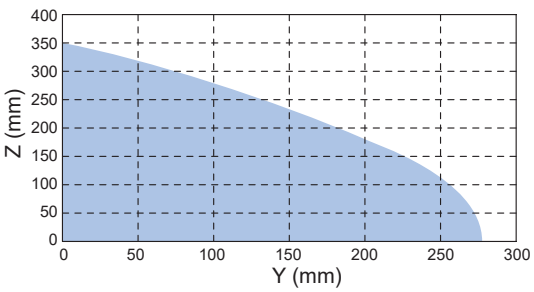
MCHS-160



MCHS-200

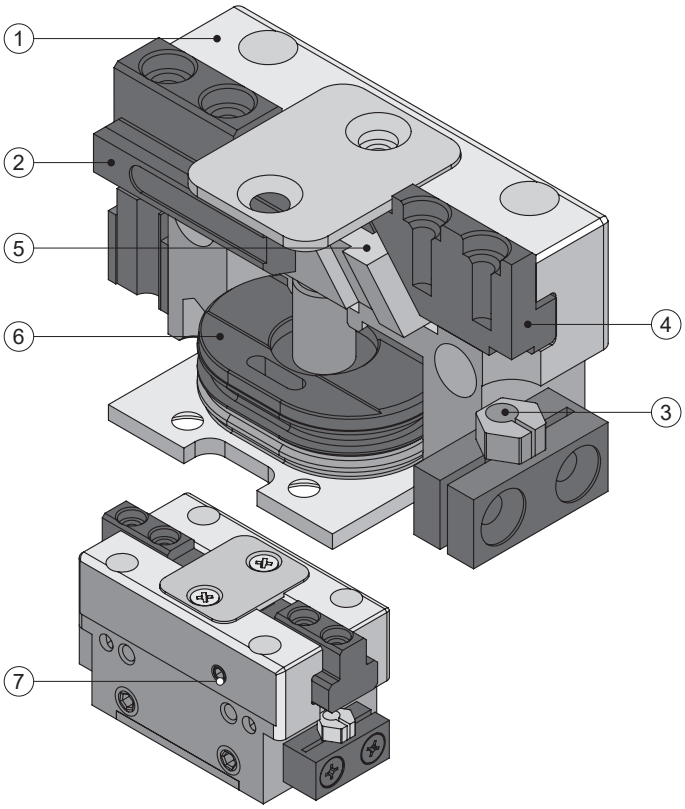


MCHS-300



Internal structure & Movement description

Compressed air will push or press the oval piston.
By tilting the working surface, the wedge hook will transfer the movement to side movement, and initiate the action of the two base jaws simultaneously.



① Material
Anodized high rigid aluminum alloy to reduce weight.

② Rail
Bearing rails load the base jaw,which ensure the minimal vibration of long jaw.

③ Sensor system
Sensor switch or proximity sensor are available.

④ Base jaw
Jaws connected to work piece.

⑤ Wedge hook
High power transmission center jaws.

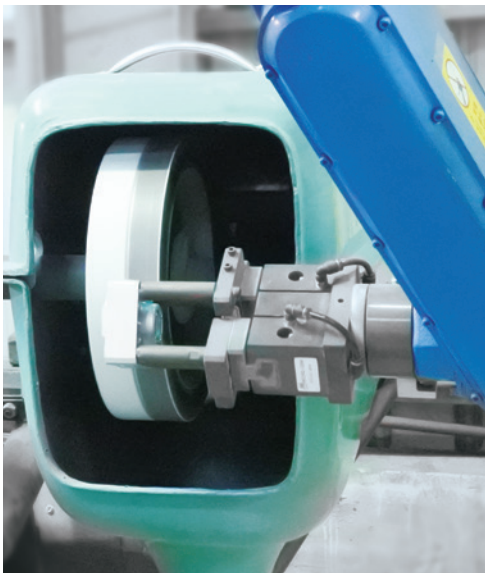
⑥ Large circular piston
Generate larger structural strength.

⑦ Air purge connection (External vents)
The air purge is used in order to make it more difficult for dirt and dust to penetrate into the product and the guiding areas.

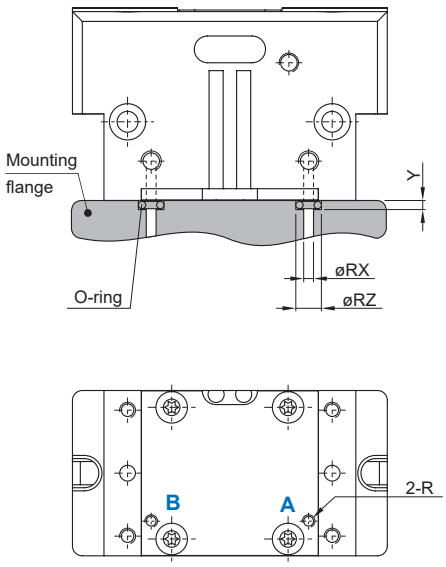
* The air purge is effective only when the gripper is opened.
* Install a valve to control the air purge.

Application examples

Connect gripper with robot to achieve burr removal.

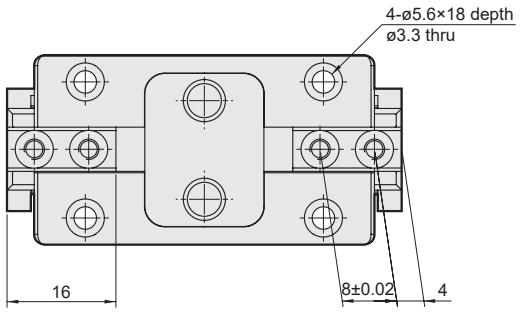


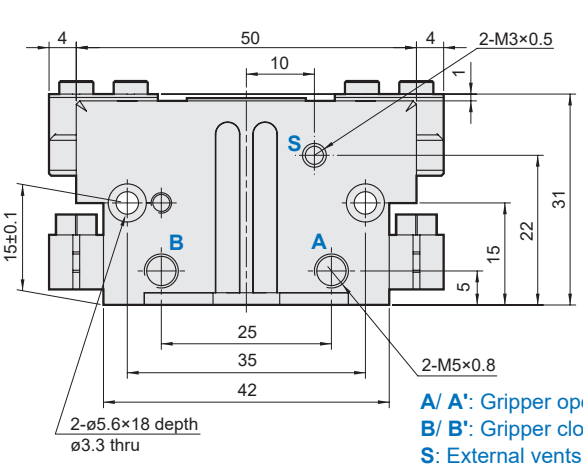
Hose-free direct connection



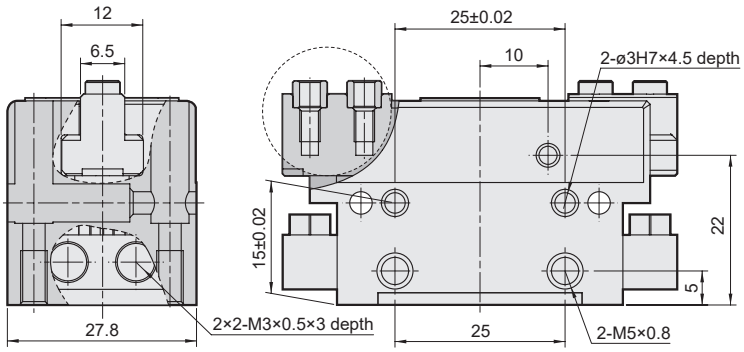
Code / Model	R	RX	RZ	Y
MCHS-50	M2	2	4	0.7
MCHS-66	M3	3	5	0.7
MCHS-80	M3	3	5	0.7
MCHS-100	M5	5	8	1.1
MCHS-125	M5	5	8	1.1
MCHS-160	M5	5	8	1.1
MCHS-200	M5	5	8	1.1
MCHS-300	M5	5	8	1.1

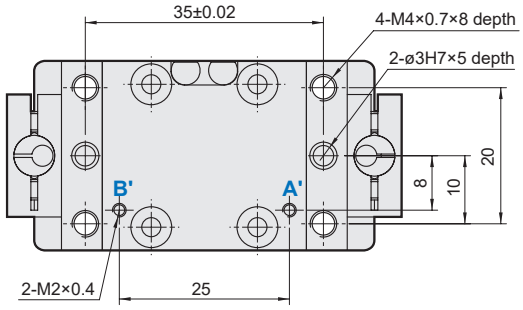
A : Gripper open
B : Gripper close



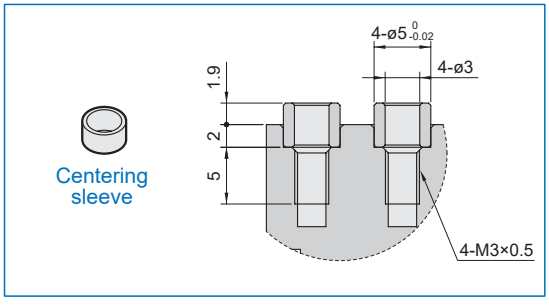


A/ A': Gripper open
B/ B': Gripper close
S: External vents





Centering sleeve



MCHS Dimensions 66~300

PARALLEL GRIPPER (2-Finger)

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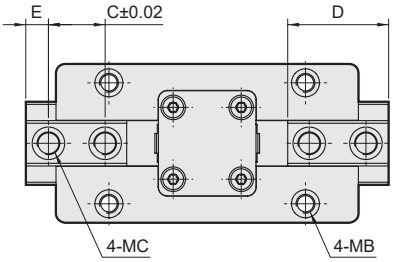
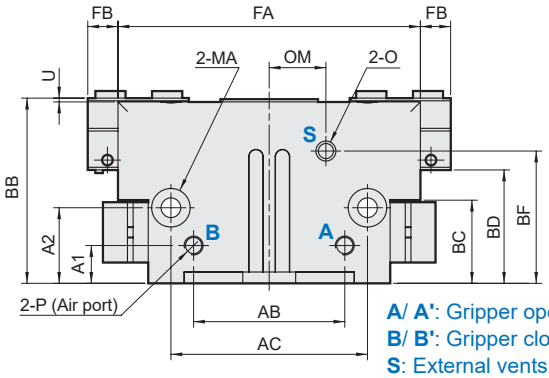
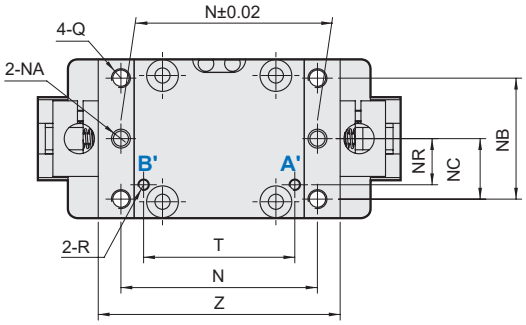
66~100

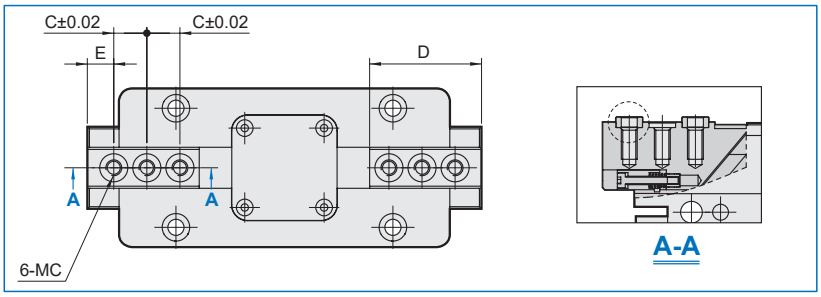


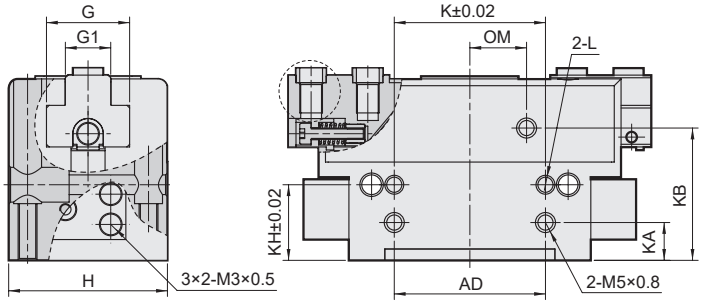


A/ A': Gripper open
B/ B': Gripper close
S: External vents

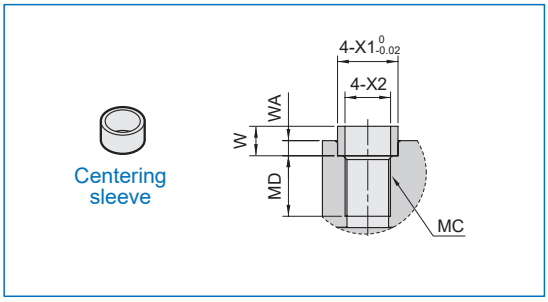


125~300





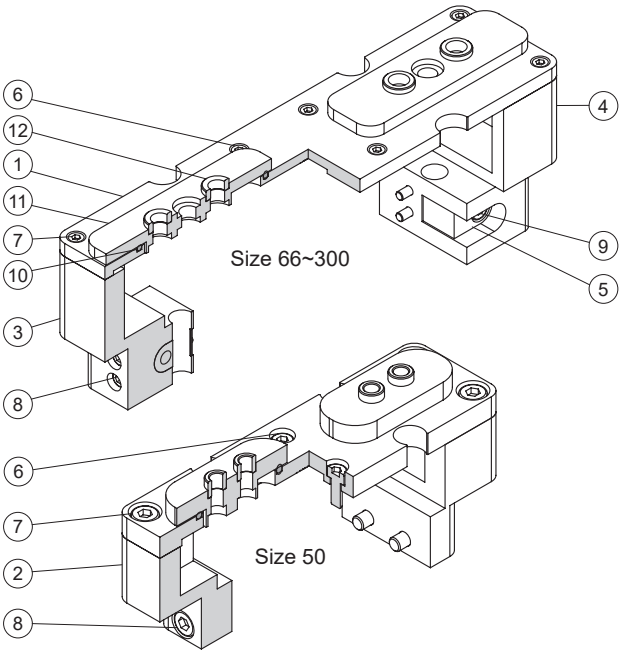
Centering sleeve



Code / Size	A1	A2	AB	AC	AD	BB	BC	BD	BF	C	D	E	FA	FB	G	G1	H	K	KA	KB	KH	L	MA
66	5	18	28	42	28	39	18.5	23	27.5	12	22	5	64	6	17	10	36	20	5	27.5	18	ø4H7×4dp	ø7.4×13dp, ø4.2 thru
80	10	20	40	52	40	49	22	30	35	15	26.7	6	80	8	22	12	42	40	10	35	20	ø4H7×6dp	ø9.2×16dp, ø5.2 thru
100	12	25	48	66	54	55	28	33	38	18	34.2	10	100	10	26	14	50	50	12	38	25	ø5H7×7dp	ø10.4×28dp, ø6.2 thru
125	13	30	62	82	65	64	32	38.5	45	12.5	42.3	10	125	12	31	15.5	60	60	13	45	30	ø6H7×8dp	ø13.5×34dp, ø8.4 thru
160	15.5	28	78	100	82	78	39	46	53	18	54.8	10	160	16	39	20	72	76	15.5	53	28	ø6H7×10dp	ø13.5×47dp, ø8.4 thru
200	19	44	102	128	108	97	48	58	69	22	67.5	12	200	20	42	22	95	100	19	69	44	ø8H7×8dp	ø18.5×55dp, ø12.2 thru
300	19	66	150	180	152	130	67	78	92	30	91	15	260	30	66	32	139	140	19	92	66	ø10H7×12dp	ø18.5×100dp, ø12.5 thru

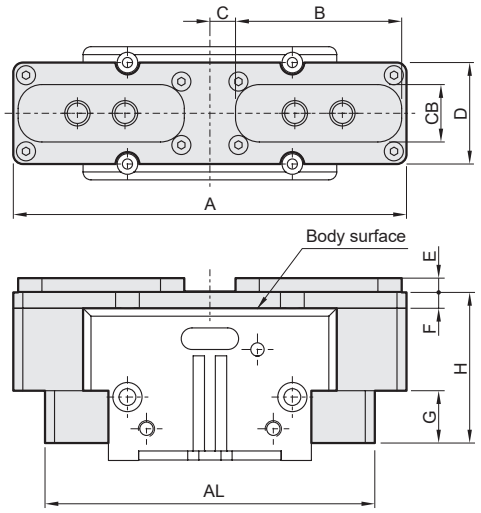
Code / Size	MB	MC	MD	N	NA	NB	NC	NR	O	OM	P	Q	R	T	U	W	WA	X1	X2	Z
66	ø7.4×24dp, ø4.3 thru	M4×0.7	6	42	ø4H7×6dp	27	13.5	11	M5×0.8	12	M5×0.8	M5×0.8×10dp	M3×0.5	28	1	3.9	2	ø6	ø4	52
80	ø7.4×33dp, ø4.3 thru	M6×1.0	8	52	ø4H7×6dp	32	16	12.2	M5×0.8	15	M5×0.8	M5×0.8×10dp	M3×0.5	40	1	3.9	2	ø8	ø6	64
100	ø9×21.5dp, ø5.1 thru	M6×1.0	10	66	ø5H7×8dp	38	19	16	M5×0.8	16	G1/8	M6×1.0×10dp	M5×0.8	48	1	3.9	2	ø10	ø6	80
125	ø10.4×40dp, ø6.8 thru	M6×1.0	12	82	ø6H7×8dp	45	22.5	18	M5×0.8	20	G1/8	M8×1.25×10dp	M5×0.8	60	1	3.9	2	ø10	ø6	100
160	ø10.4×37dp, ø6.8 thru	M8×1.25	12	100	ø6H7×8dp	56	28	22	M5×0.8	27	G1/8	M8×1.25×10dp	M5×0.8	76	1	3.9	2	ø12	ø8	125
200	ø16.5×61dp, ø10.3 thru	M10×1.5	17.5	128	ø10H7×12dp	68	34	24	M5×0.8	34.5	G1/4	M12×1.75×16dp	M5×0.8	100	1	4.9	2.5	ø14	ø10	160
300	ø16.5×72dp, ø10.3 thru	M12×1.5	18	180	ø10H7×12dp	100	50	24	M5×0.8	43	G1/4	M12×1.75×16dp	M5×0.8	150	2	4.9	2.5	ø18	ø12	220

Inside structure & Parts list



Dimensions

- When installing soft-jaws, the length of jaws are measured from the the body surface.



Material

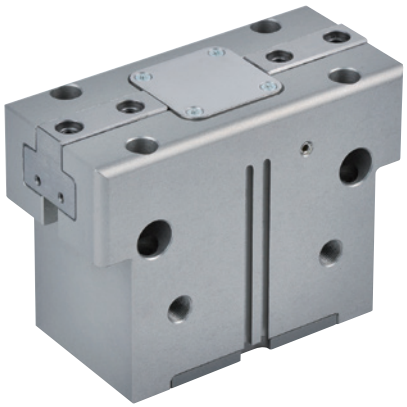
No.	Part name	Material	Q'y	
			50	66~300
1	Dust cover	Aluminum alloy	1	1
2	Mounting block	Aluminum alloy	2	0
3	Mounting block L	Aluminum alloy	0	1
4	Mounting block R	Aluminum alloy	0	1
5	Sensor mounting block	Aluminum alloy	0	2
6	Bolt	Alloy steel	2	4
7	Bolt	Alloy steel	4	4
8	Bolt	Alloy steel	4	4
9	Hexagon bolt	Alloy steel	0	2
10	O-ring	NBR	2	2
11	Slider	Carbon steel	2	2
12	Centering sleeve	Stainless steel	4	4

Code / Size	A	AL	B	C	CB	D	E	F	G	H	Weight (g)
50	81.2	58.6	30	6	13	24	4.5	5	12	32	85
66	104	92	41	6.5	16.2	30	4.5	5	16.5	41	169
80	124	104	52.4	8.3	18.1	32	4.5	5	16.5	47.5	220
100	144	124	61	10.5	22	38	4.5	5	16.5	49	296
125	177	157	72	16	22	45	4.5	5	23	59	441
160	231	182	93	21.5	25	56	4.5	6	18	62	688
200	292	247	118	27	30	68	6.3	6	18	72	1279
300	394	318	162	34	38	100	8.3	6	20	87	2900

MCHS-OS series

PARALLEL GRIPPER (2-Finger)

mindman



Features

- Clamping safety device: Gripping force safety device for O.D. gripping even with a drop pressure.
- Compact design to ensure minimum interference while operating; robust T rail design, ensure accurate gripping.
- Can reach maximum torque suitable for long jaws design.
- Oval piston-driven design ensure maximum gripping force.
- Hose-free direct connection: Air supply channel can connect directly without piping or through tread to assure the flexibility of supplying compressed air on any kind of automation system.
- Magnetic as standard.

Order example

MCHS — 100 — □ — OS

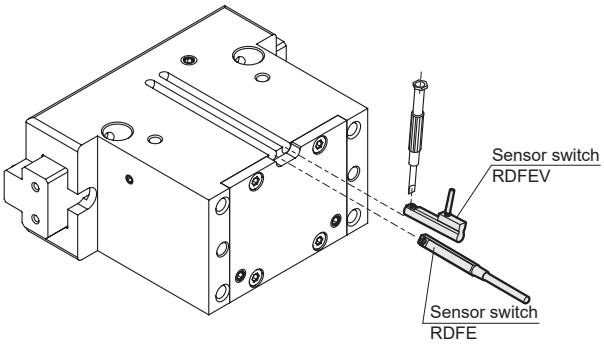
MODEL	SIZE	GRIPPING FORCE	CLAMPING SAFETY DEVICE
	80 **100** **125**	Blank: Standard **F**: High	

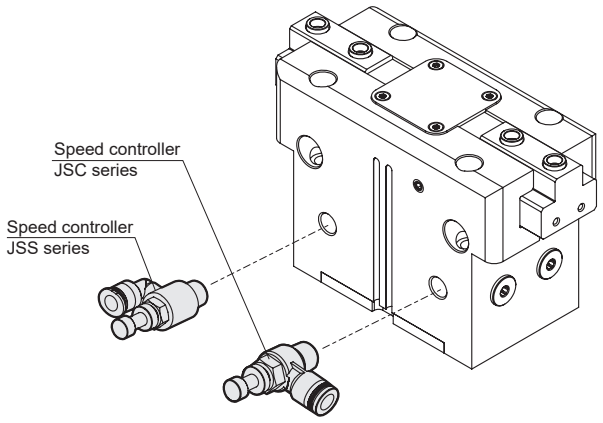
Specification

Model		MCHS-OS		
Acting type		Double acting		
Size		80	100	125
Stroke per-jaw (mm)	Standaerd	8	10	12
	High	4	5	6
Effective external gripping force (N) (*1)	Standaerd	314	372	684
	High	591	701	1287
Close / Open time(s)	Open	0.05	0.09	0.12
	Close	0.03	0.06	0.08
Medium		Air		
Operating pressure range		0.4~0.6 MPa		
Compressed air consumption(cm^3)		42	76.7	129
Ambient temperature		+5~+80°C		
Lubrication		Not required		
Sensor switch (*2)	2 wire	RDFE(V): Non-contact		
	3 wire	RNFE(V): NPN, RPFE(V): PNP		
Accessories		Accessory kits		
Weight (kg)		0.57	1	1.74

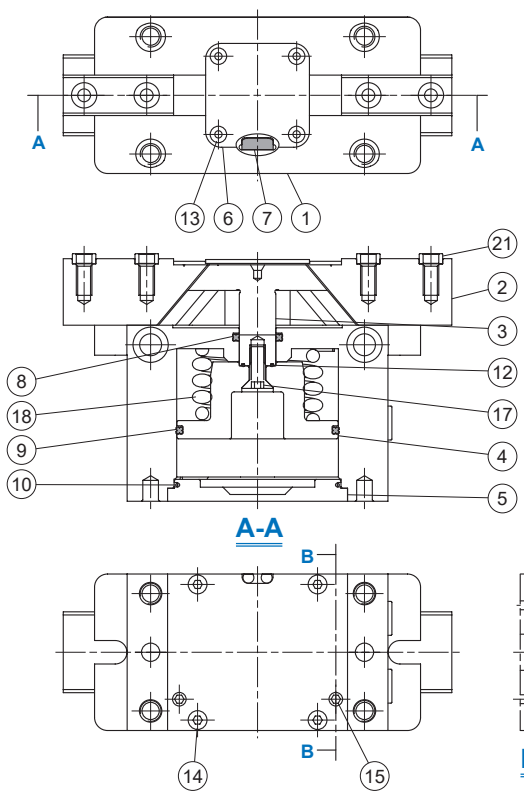
*1. Under the condition of clamping length 40mm and operation pressure 0.6 MPa.
*2. R*FE(V) specification, please refer to page 149.

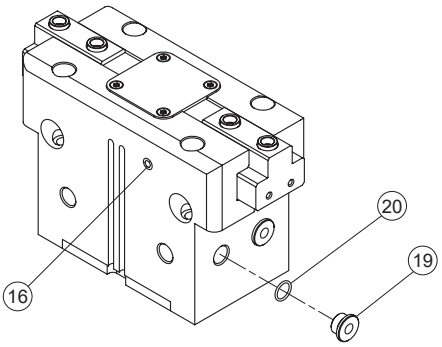
Installation of sensor switch & speed controller





* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification, please refer to Mindman website.





Material

No.	Part name	Material	Size & Q'y			Repair kits (inclusion)	Accessory kits (inclusion)
			80	100	125		
1	Body	Aluminum alloy	1				
2	Finger	Carbon steel	2				
3	Rod	Carbon steel	1				
4	Piston	Aluminum alloy	1				
5	End cover	Aluminum alloy	1				
6	Plate cover	Stainless steel	1				
7	Magnet	Magnet material	1				
8	Rod packing	NBR	1			●	
9	Piston packing	NBR	1			●	
10	O-ring	NBR	1			●	
11	O-ring	NBR	4		2	●	
12	O-ring	NBR	1			●	
13	Screw	Alloy steel	4				
14	Hex bolt	Alloy steel	4				
15	Screw	Alloy steel	2				
16	Screw	Alloy steel	2				
17	Hex bolt	Alloy steel	1				
18	Sprin	Spring steel	1				
19	Iron plug	Stainless steel	2				
20	O-ring	NBR	2				
21	O-ring	NBR	–		2	●	
22	Centering sleeve	Stainless steel	4				●
23	Pin	Bearing steel	2				●
24	Iron plug	Stainless steel	2				●
25	O-ring	NBR	2				●
26	O-ring	NBR	2				●

Order example of repair kits

Model	Repair kits
MCHS-80	**PS-MCHS-80**
MCHS-100	**PS-MCHS-100**
MCHS-125	**PS-MCHS-125**

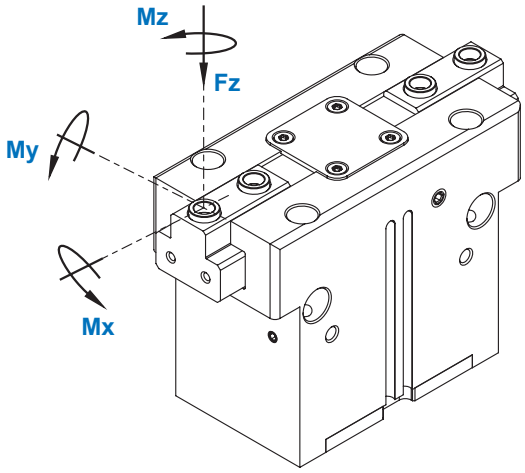
Order example of accessory kits

Model	Accessory kits
MCHS-80	**AK-MCHS-80-OS**
MCHS-100	**AK-MCHS-100-OS**
MCHS-125	**AK-MCHS-125-OS**

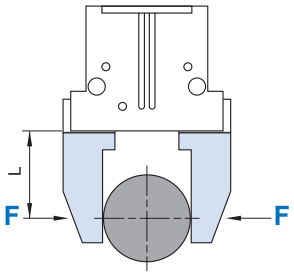
	
O-ring (×2) No.25	Iron plug (×2) No.24, 26
	
Pin (×2) No.23	Centering sleeve (×4) No.22

MCHS-OS Capacity 80~125

PARALLEL GRIPPER (2-Finger)



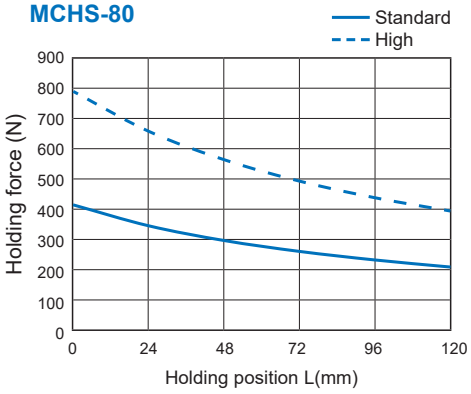
Code / Size	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)	Fz max. (N)
80	80	60	50	1800
100	100	90	75	2500
125	120	120	100	3200



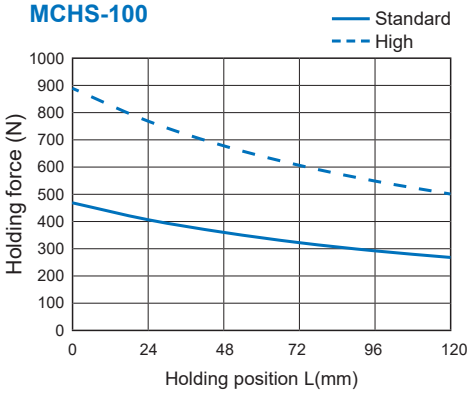
* Working pressure is 0.6 MPa.
* Clamping force = pneumatic clamping force + spring holding force

External gripping force

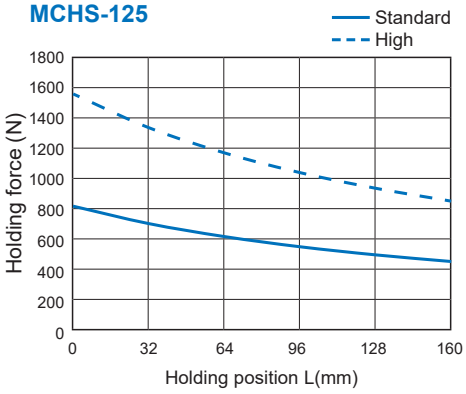
MCHS-80



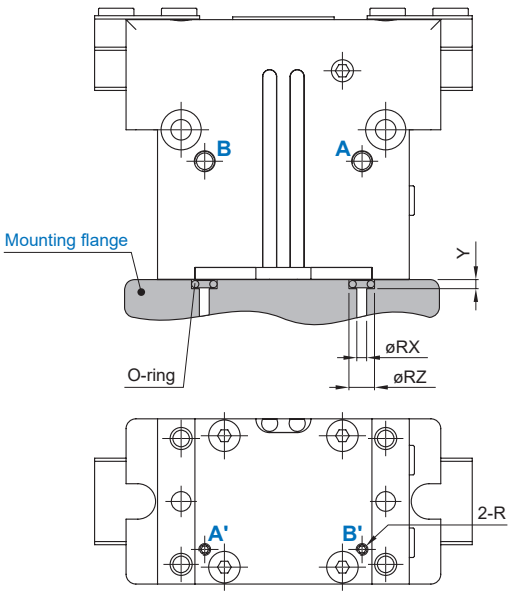
MCHS-100



MCHS-125

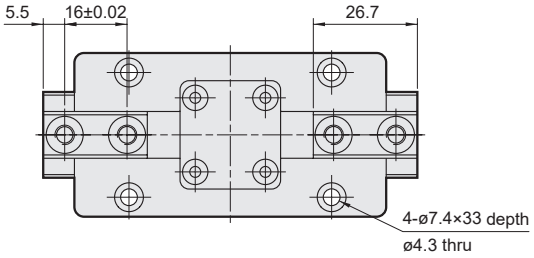


Hose-free direct connection

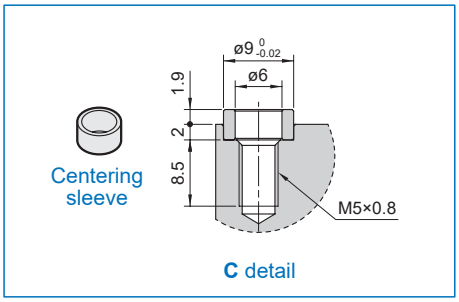


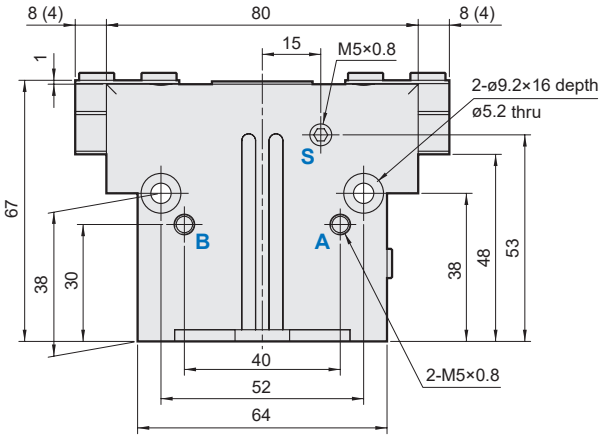
A/ A' : Gripper open
B/ B' : Gripper close

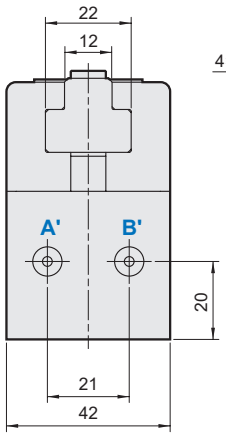
Code / Size	R	RX	RZ	Y
80	M3	3	5	0.7
100	M5	5	8	1.1
125	M5	5	8	1.1

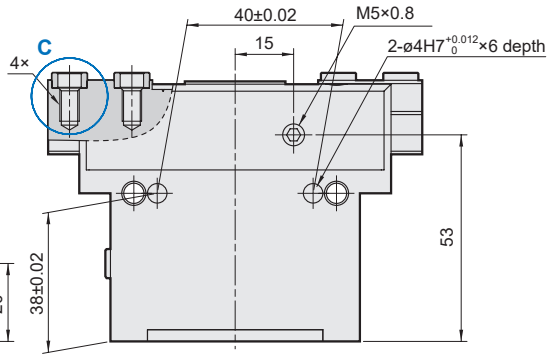


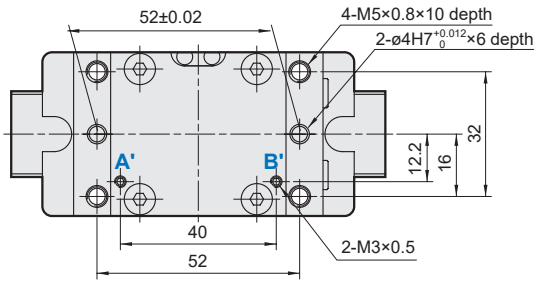
Centering sleeve



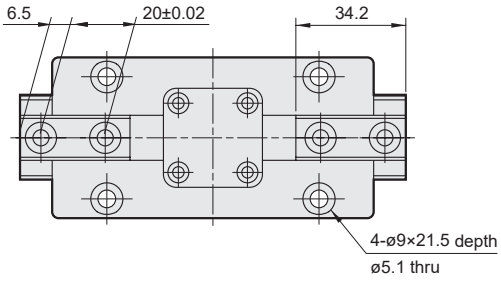




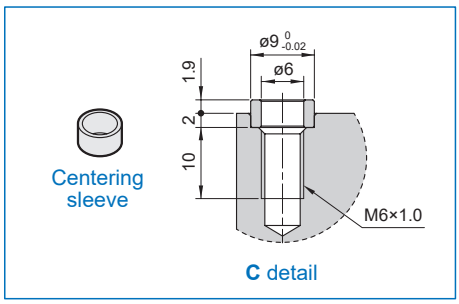


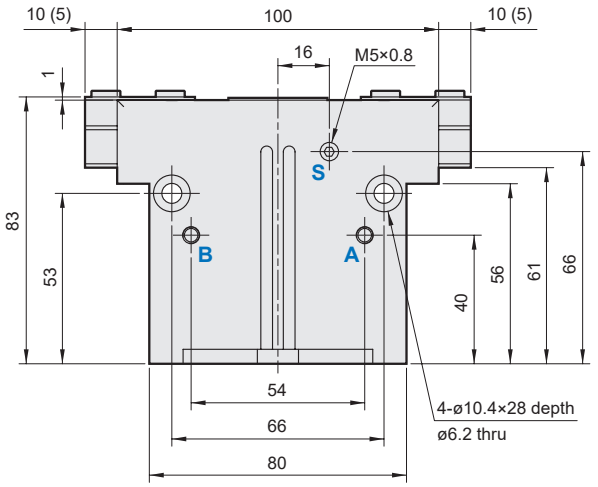


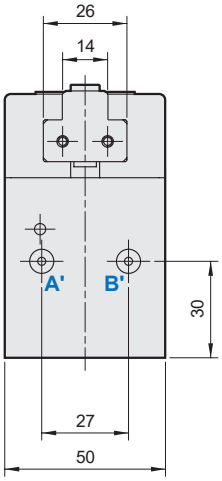
A/ **A'**: Gripper open
B/ **B'**: Gripper close
S: External vents
( ) for high gripping force

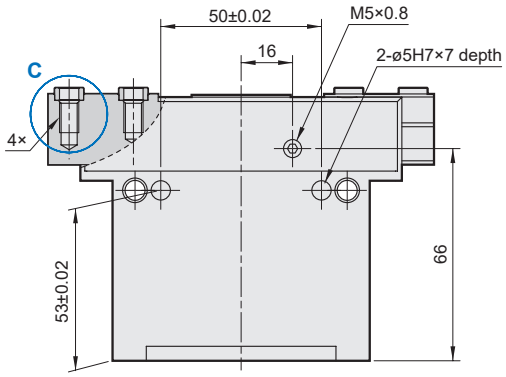


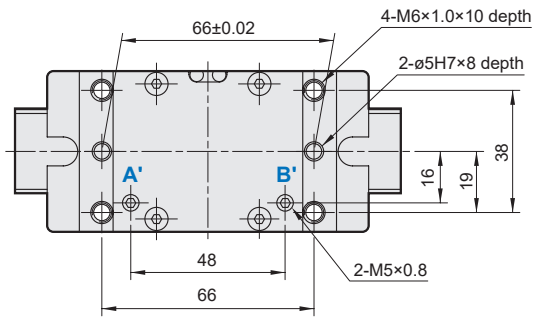
Centering sleeve











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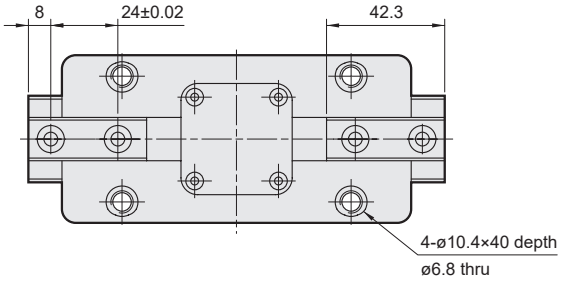
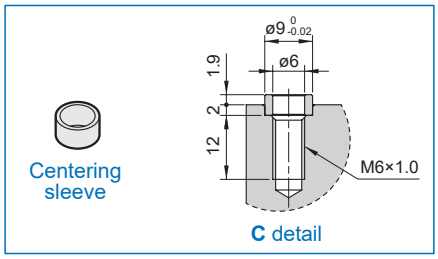
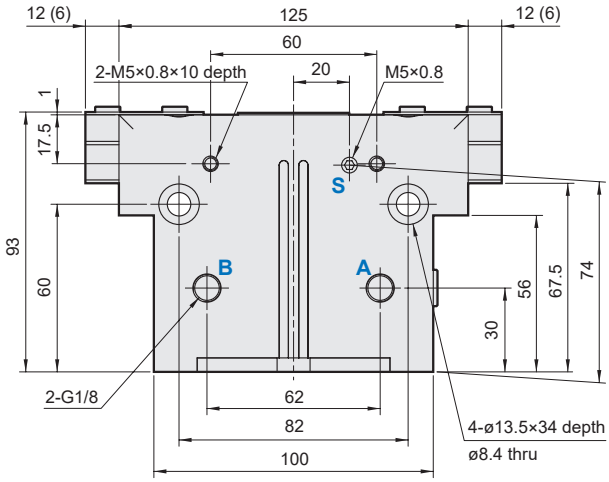
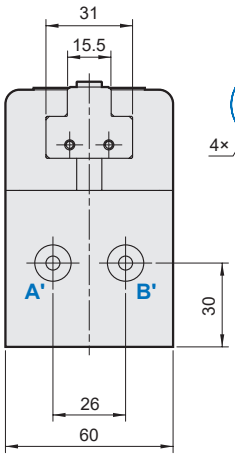
( ) for high gripping force

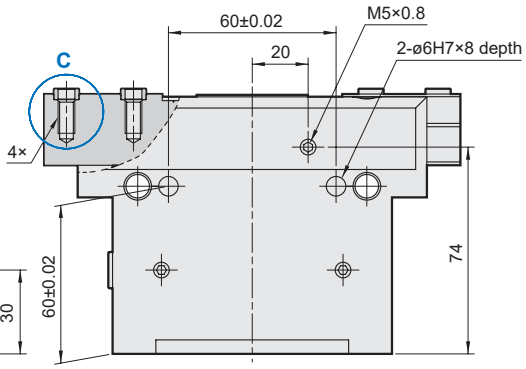


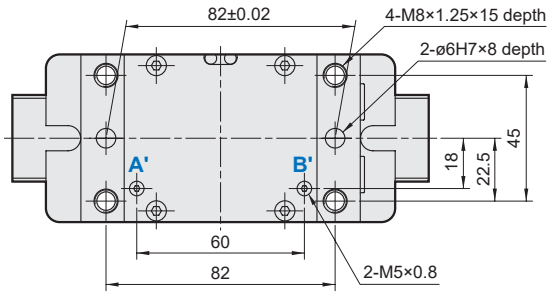
Centering sleeve



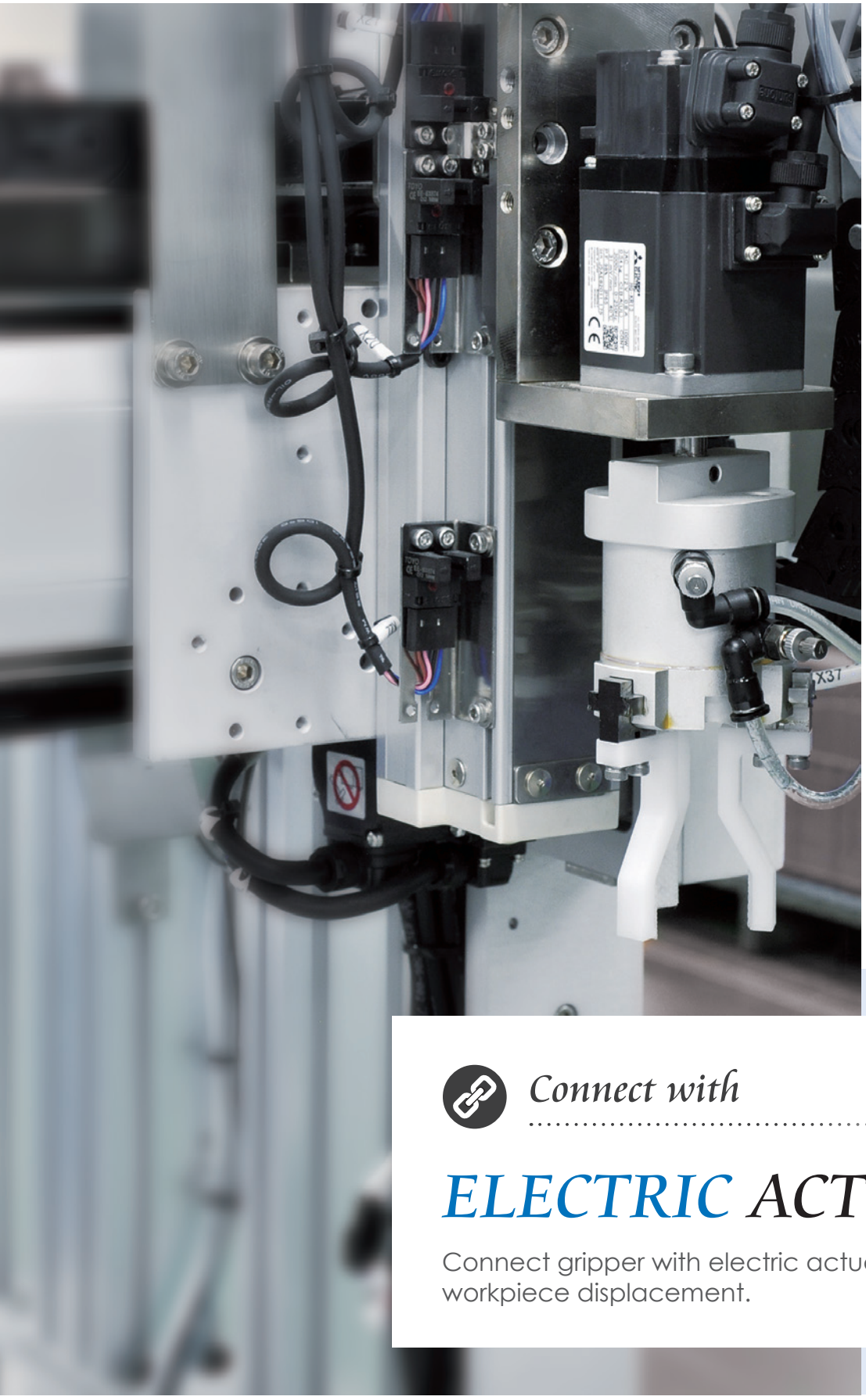








A/ A': Gripper open
B/ B': Gripper close
S: External vents
( ) for high gripping force



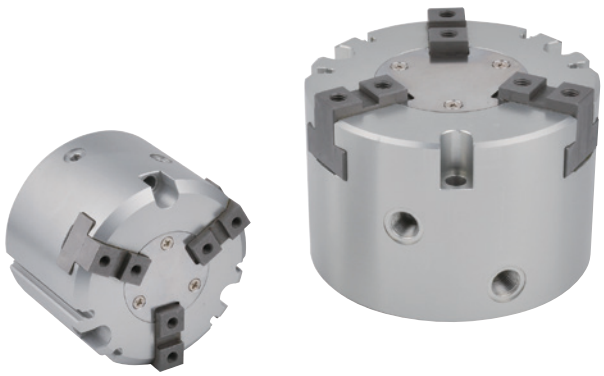
Connect with

ELECTRIC ACTUATOR

Connect gripper with electric actuator to achieve workpiece displacement.

MCHG2 series

PARALLEL GRIPPER (3-Finger)



Features

- Through holes in body enable simple mounting.
- Body manufactured from high tensile, anodised aluminum giving good resistance to corrosion.
- Available with sensors.
- Magnetic as standard.

Order example

MCHG2 — 16 M — □

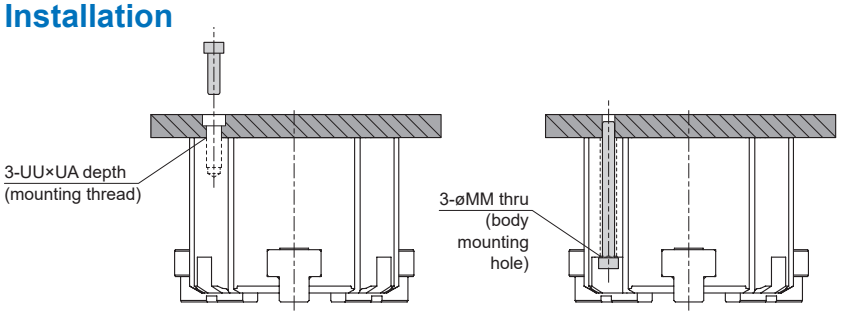
- MCHG2 — MODEL
- 16 — TUBE I.D. **16, 20, 25, 32, 40, 50, 63, 80, 100, 125**
- M — **M**: Magnet * Magnetic as standard.
- □ — PORT THREAD
  - Blank: M thread (only for ø16~ø63)
  - Blank: Rc thread
  - **G**: G thread
  - **NPT**: NPT thread (only for ø80~ø125)

Specification

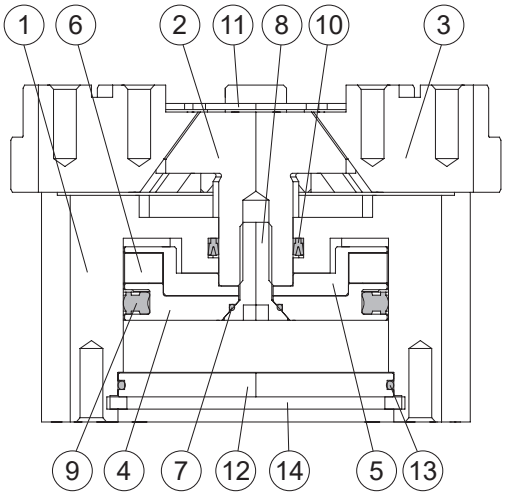
Model		MCHG2									
Acting type		Double acting									
Tube I.D. (mm)		16 (*2)	20	25	32	40	50	63 (*2)	80	100	125
Stroke (mm)		4	4	6	8	8	12	16	20	24	32
Port size		M3×0.5	M5×0.8						Rc1/8	Rc1/4	Rc3/8
Medium		Air									
Operating pressure (MPa)		0.2~0.6			0.1~0.6						
Ambient temperature		-10~+60°C (No freezing)									
Max. operating frequency (c.p.m)		120			60				30		
Lubrication		Not required									
Effective gripping force N at (0.5 MPa) (*1)	External	14(3.1)	25(5.6)	42(9.4)	74(16.6)	118(26.5)	187(42)	335(75)	500(112)	750(169)	1270(285)
	Internal	16(3.6)	28(6.3)	47(10.6)	82(18.4)	130(29)	204(46)	359(81)	525(118)	780(175)	1320(297)
Sensor switch	2 wire	**RDFE(V)**: Non-contact (Please refer to page 149)									
	3 wire	**RNFE(V)**: NPN, **RPFE(V)**: PNP									
Weight (g)		80	110	150	240	400	540	1020	1880	3300	6200

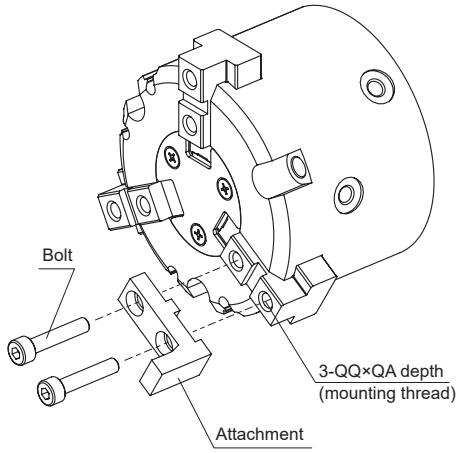
*1. Values for ø16~ø25 are with gripping length(L) = 20 mm, for ø32~ø63 with gripping length(L) = 30 mm, and for ø80~ø125 with gripping length(L) = 50 mm.
*2. ø16, ø63 are available with 2- finger type (Made to order). Please contact us if other size is needed.

Installation



Model	MM	UU×UA	Bolt
MCHG2-16	3.4	M3×0.5×4.5	M3×0.5
MCHG2-20	3.4	M3×0.5×6	M3×0.5
MCHG2-25	4.5	M4×0.7×6	M4×0.7
MCHG2-32	4.5	M4×0.7×6	M4×0.7
MCHG2-40	5.5	M5×0.8×7.5	M5×0.8
MCHG2-50	5.5	M5×0.8×10	M5×0.8
MCHG2-63	6.6	M6×1.0×9	M6×1.0
MCHG2-80	6.6	M6×1.0×12	M6×1.0
MCHG2-100	9	M8×1.25×16	M8×1.25
MCHG2-125	11	M10×1.5×20	M10×1.5





Material

No.	Part name	Material	Repair kits (inclusion)
1	Body	Aluminum alloy	
2	Lever	Carbon steel	
3	Slider	Carbon steel	
4	Piston	Aluminum alloy	
5	Piston-R	Aluminum alloy	
6	Magnet ring	Magnet material	
7	O-ring	NBR	●
8	Piston bolt	Carbon steel	
9	Piston packing	NBR	●
10	Rod packing	NBR	●
11	Table	Stainless steel	
12	End plate	Aluminum alloy	
13	O-ring	NBR	●
14	Snap ring	Carbon steel	

Order example of repair kits

Tube I.D.	Repair kits
ø16	**PS-MCHG2-16**
ø20	**PS-MCHG2-20**
ø25	**PS-MCHG2-25**
ø32	**PS-MCHG2-32**
ø40	**PS-MCHG2-40**
ø50	**PS-MCHG2-50**

Tube I.D.	Repair kits
ø63	**PS-MCHG2-63**
ø80	**PS-MCHG2-80**
ø100	**PS-MCHG2-100**
ø125	**PS-MCHG2-125**

Mounting precautions

The tightening torque of slider mounting bolt, please refer to the table below.

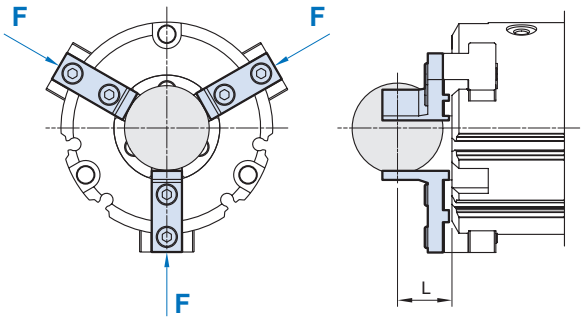
Model	QQ×QA	Bolt	Max. tightening torque (N.m)
MCHG2-16	M3×0.5×5	M3×0.5	0.59
MCHG2-20	M3×0.5×6	M3×0.5	0.59
MCHG2-25	M3×0.5×6	M3×0.5	0.59
MCHG2-32	M4×0.7×8	M4×0.7	1.4
MCHG2-40	M4×0.7×8	M4×0.7	1.4
MCHG2-50	M5×0.8×8	M5×0.8	2.8
MCHG2-63	M5×0.8×8	M5×0.8	2.8
MCHG2-80	M6×1.0×12	M6×1.0	4.8
MCHG2-100	M8×1.25×16	M8×1.25	12
MCHG2-125	M10×1.5×20	M10×1.5	24

Effective gripping force

* Finger selection please refer to page 8.

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

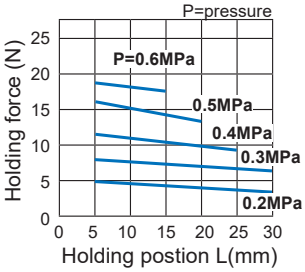
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



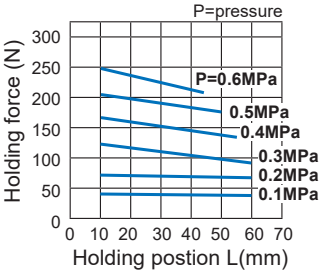
External grip

External gripping force

MCHG2-16



MCHG2-50



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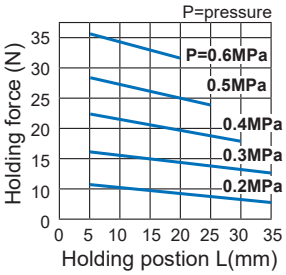
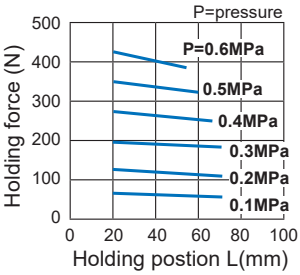


MCHG2-63



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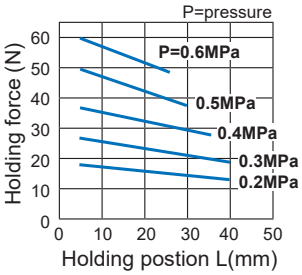

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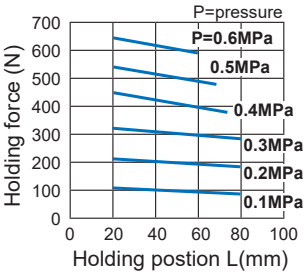

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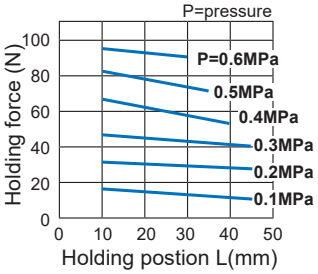

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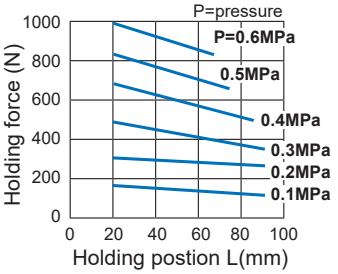

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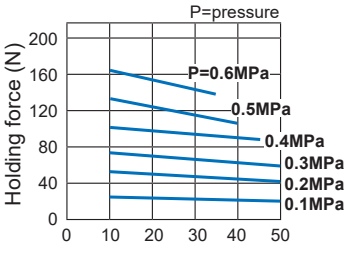

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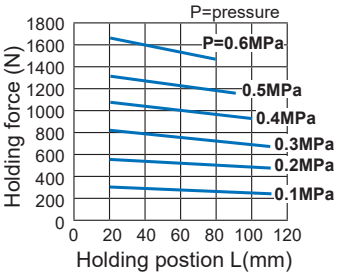
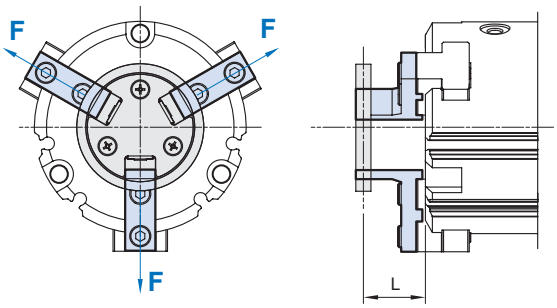


Effective gripping force

* Finger selection please refer to page 8.

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

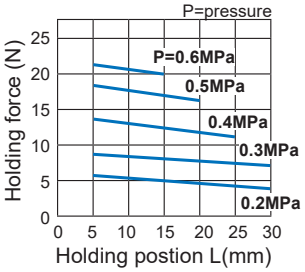
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



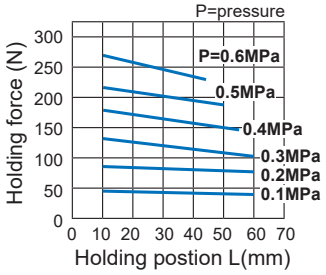
Internal grip

Internal gripping force

MCHG2-16



MCHG2-50



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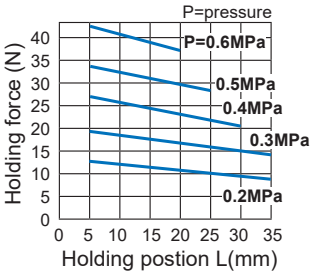
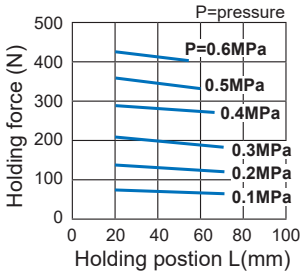


MCHG2-63



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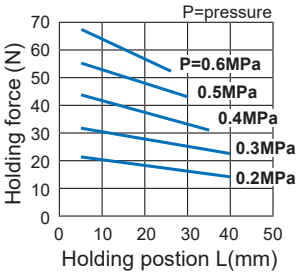

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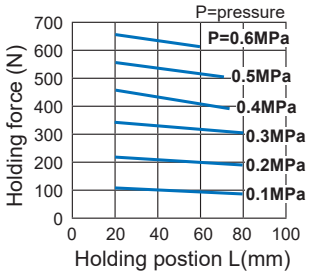
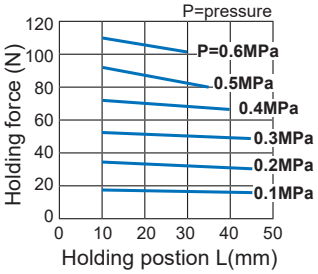


MCHG2-32



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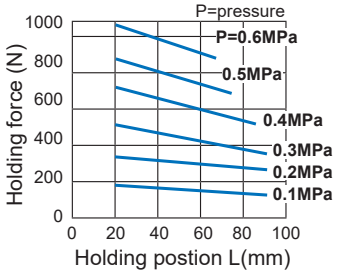

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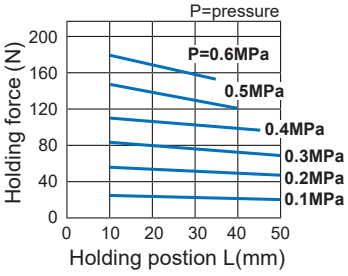
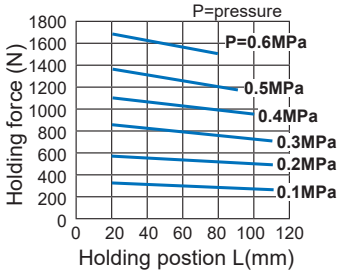
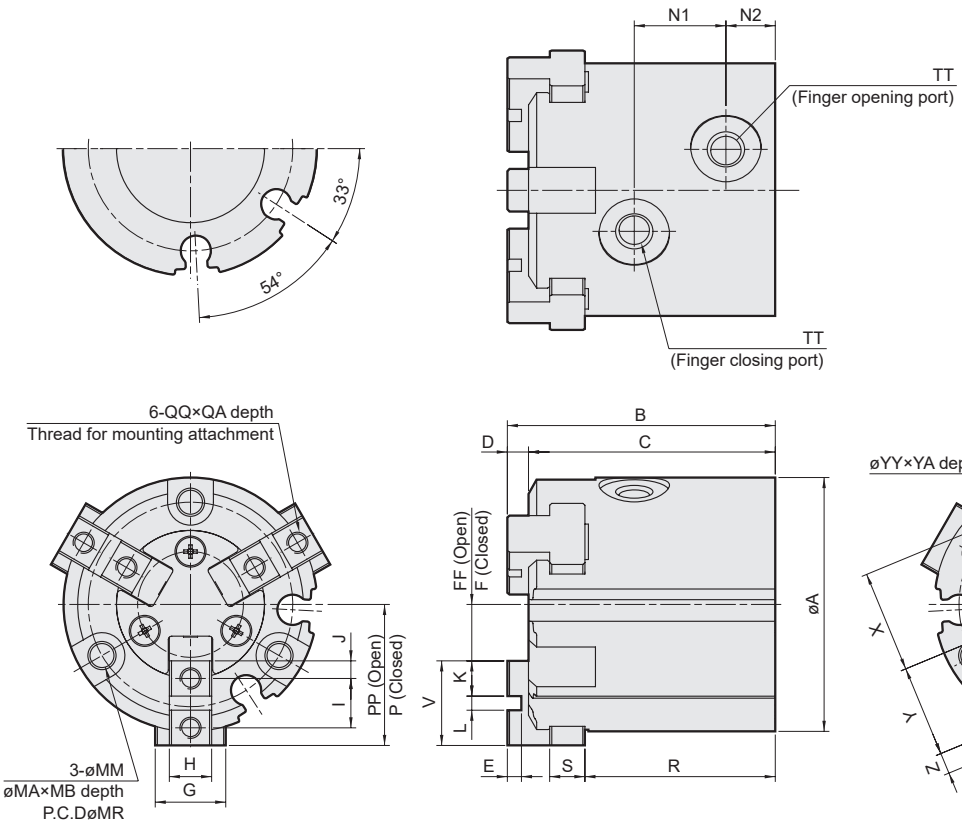


MCHG2-125



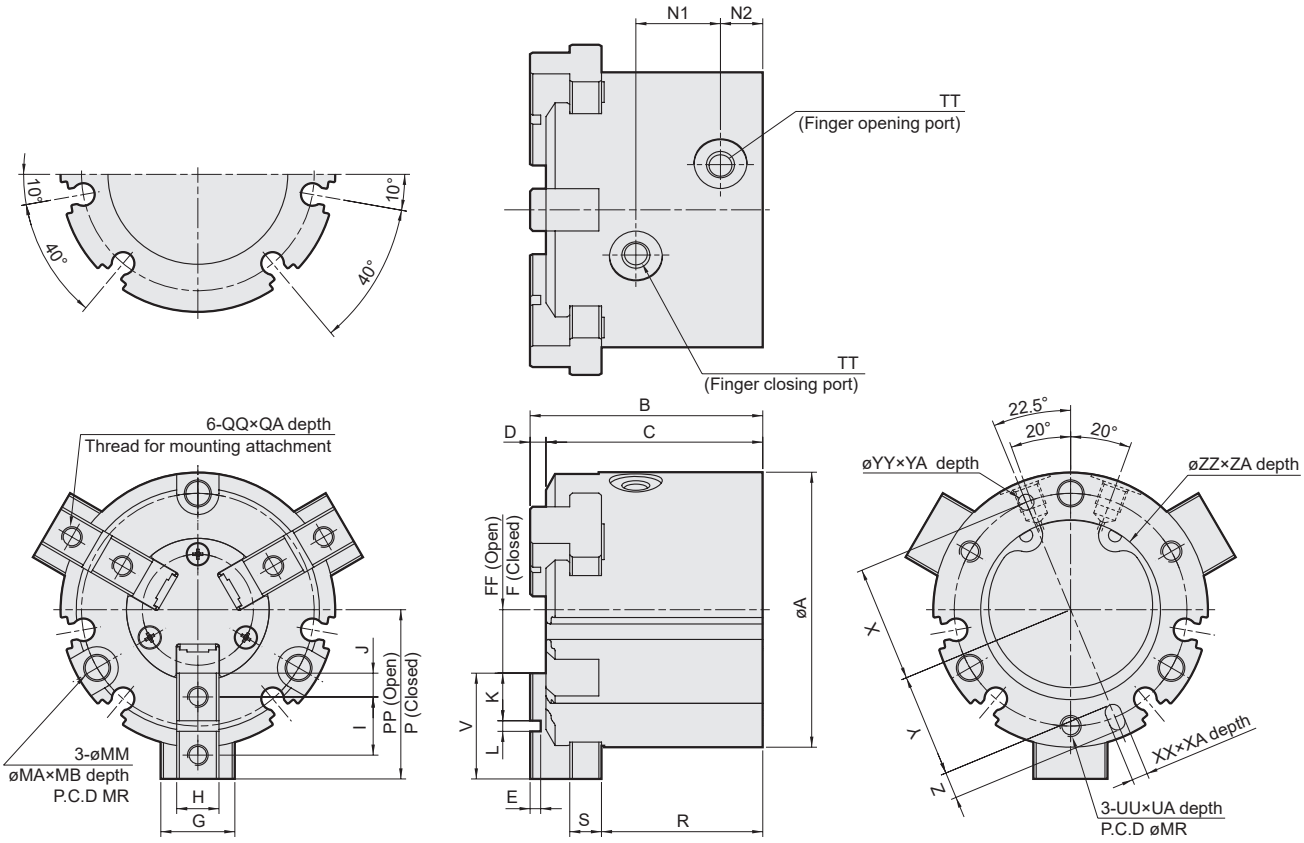


Code / Tube I.D.	A	B	C	D	E	F	FF	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S	TT
16	30	35	32	3	2	5	7	8	5h9 $^{+0}_{-0.030}$	6	2	4	2H9 $^{+0.025}_{-0}$	6.5	8	3.4	25	11	7	15	17	5	M3×0.5	25	4	M3×0.5
20	36	38	35	3	2	6	8	10	6h9 $^{+0}_{-0.030}$	7	2.5	5	2H9 $^{+0.025}_{-0}$	6.5	9.5	3.4	29	13	7	18	20	6	M3×0.5	27	5	M5×0.8
25	42	40	37	3	2	7	10	12	6h9 $^{+0}_{-0.030}$	8	3	6	2H9 $^{+0.025}_{-0}$	8	10	4.5	34	15	7	21	24	6	M3×0.5	28	5	M5×0.8

Code / Tube I.D.	UA	UU	V	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
16	4.5	M3×0.5	10	12.5	2	2H9 $^{+0.025}_{-0}$	11	2	2H9 $^{+0.025}_{-0}$	3	1.5	17H9 $^{+0.043}_{-0}$
20	6	M3×0.5	12	14.5	2	2H9 $^{+0.025}_{-0}$	13	2	2H9 $^{+0.025}_{-0}$	3	1.5	21H9 $^{+0.052}_{-0}$
25	6	M4×0.7	14	17	3	3H9 $^{+0.025}_{-0}$	14.5	3	3H9 $^{+0.025}_{-0}$	5	1.5	26H9 $^{+0.052}_{-0}$

MCHG2 Dimensions ø32~ø125

PARALLEL GRIPPER (3-Finger)



Code / Tube I.D.	A	B	C	D	E	F	FF	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ
32	52	44	41	3	2	8	12	14	8h9 $^{+0}_{-0.036}$	11	4.5	9	2H9 $^{+0.025}_{-0}$	8	9	4.5	44	16	8	28	32	8	M4×0.7
40	62	47	44	3	2	10	14	16	8h9 $^{+0}_{-0.036}$	12	4.5	9	3H9 $^{+0.025}_{-0}$	9.5	9	5.5	53	17	9	31	35	8	M4×0.7
50	70	55	52	3	2	11	17	18	10h9 $^{+0}_{-0.036}$	14	5	10	4H9 $^{+0.030}_{-0}$	9.5	12	5.5	62	20	9	35	41	10	M5×0.8
63	86	66	62	4	3	15	23	24	12h9 $^{+0}_{-0.043}$	17	5.5	11	6H9 $^{+0.030}_{-0}$	11	14	6.6	76	22	12	43	51	10	M5×0.8
80	106	82	77	5	4	21.5	31.5	28	14h9 $^{+0}_{-0.043}$	20	6	12	8H9 $^{+0.036}_{-0}$	11	19	6.6	95	27	13.5	53.5	63.5	12	M6×1.0
100	134	96	90	6	4	28	40	34	18h9 $^{+0}_{-0.043}$	23	7.5	15	8H9 $^{+0.036}_{-0}$	14	21	9	118	30.6	18	66	78	16	M8×1.25
125	166	122	114	8	6	30	46	40	22h9 $^{+0}_{-0.052}$	31	10.5	21	10H9 $^{+0.036}_{-0}$	17.5	34	11	148	38	23.5	82	98	20	M10×1.5

Code / Tube I.D.	R	S	TT	UU	UA	V	X	XA	XX	Y	YY	YA	Z	ZA	ZZ
32	30.5	6	M5×0.8	M4×0.7	6	20	22	3	3H9 $^{+0.025}_{-0}$	19.5	3H9 $^{+0.025}_{-0}$	3	5	2	34H9 $^{+0.062}_{-0}$
40	32	7	M5×0.8	M5×0.8	7.5	21	26.5	4	4H9 $^{+0.030}_{-0}$	23.5	4H9 $^{+0.030}_{-0}$	4	6	2	42H9 $^{+0.062}_{-0}$
50	37.5	9	M5×0.8	M5×0.8	10	24	31	4	4H9 $^{+0.030}_{-0}$	28	4H9 $^{+0.030}_{-0}$	4	6	2	52H9 $^{+0.074}_{-0}$
63	44	11	M5×0.8	M6×1.0	9	28	38	5	5H9 $^{+0.030}_{-0}$	34.5	5H9 $^{+0.030}_{-0}$	5	7	2.5	65H9 $^{+0.074}_{-0}$
80	56	12	Rc1/8	M6×1.0	12	32	47.5	6	6H9 $^{+0.030}_{-0}$	43.5	6H9 $^{+0.030}_{-0}$	6	8	3	82H9 $^{+0.087}_{-0}$
100	63	15	Rc1/4	M8×1.25	16	38	59	6	8H9 $^{+0.036}_{-0}$	54	8H9 $^{+0.036}_{-0}$	6	10	4	102H9 $^{+0.087}_{-0}$
125	84	18	Rc3/8	M10×1.5	20	52	74	8	10H9 $^{+0.036}_{-0}$	68	10H9 $^{+0.036}_{-0}$	8	12	6	130H9 $^{+0.100}_{-0}$

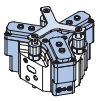
MCHJ series

PARALLEL GRIPPER (3-Finger)

Order example

MCHJ — 50 — SD

- MODEL
- SIZE: **50, 66, 80, 100, 125, 160**
- ACCESSORIES (Options)

P (*1)	SD (*2)	PSD (*1)
Pressure piece	Dust-proof Module	P+SD
		

*1. Only for size 50~80.
*2. When the size 50 is assembled with the dust-proof module, the proximity sensor cannot be used.

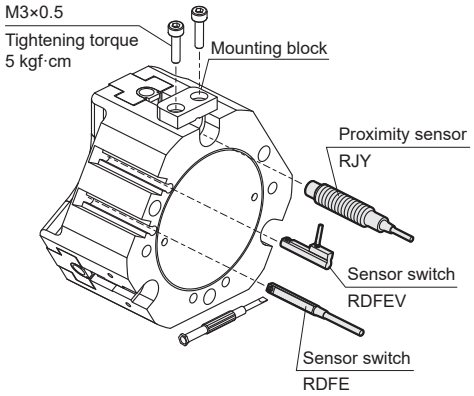
Accessories

SD — MCHJ — 50

- **SD**: Dust-proof module
  P : Pressuer piece
- SIZE: **50 ~ 160***

* Pressure piece (P) only for size 50~80.

Installation of sensor switch & speed controller



Features

- Compact design to ensure minimum interference while operating; robust T rail design, ensure accurate gripping.
- Can reach maximum torque suitable for long jaws design.
- Circular piston-driven design ensure maximum clamping force.
- Hose-free direct connection: Air supply channel can connect directly without piping or through thread to assure the flexibility of supplying compressed air on any kind of automation system.
- Assembling with a dust-proof module can prevent foreign matters (>0.5mm) entering the gripper.
- Magnetic as standard.

Dust-proof module

- For dusty environment usage.
- When installing soft-jaws, the length of jaws are measured from the the body surface.
- Heat resistance type of modules are also available. Please contact our sales department.

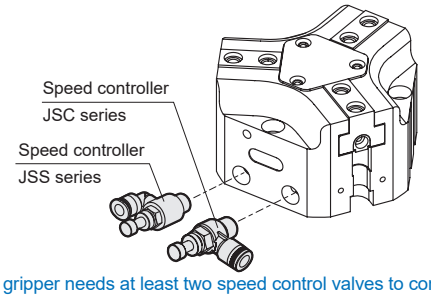
Pressure piece

- A special design for the gripper to eject the workpiece after gripper opens.

Specification

Model	MCHJ					
Acting type	Double acting					
Size	50	66	80	100	125	160
Stroke per-jaw (mm)	4	6	8	10	12	16
Effective external gripping force (N) (*1)	95	177	297	527	917	1756
Close/Open time (1/s)	0.025	0.03	0.05	0.1	0.2	0.25
Medium	Air					
Operating pressure range	0.2~0.8 MPa					
Compressed air consumption (cm^3)	9.2	21.5	47	100	195	485
Ambient temperature	+5°C~ +80°C					
Lubrication	Not required					
Senso switch (*3) 2 wire	*2	RDFE(V): Non-contact				
Senso switch (*3) 3 wire	*2	RNFE(V): NPN, RPFE(V): PNP				
Proximity sensor	–	RJY (Please refer to page 155)				
Accessories	Mounting block, Accessory kits					
Weight (kg)	0.22	0.5	0.85	1.6	2.8	5.2

*1. Under the condition of clamping length 40mm and operation pressure 0.6 MPa.
*2. Size 50 uses RDGV sensor switch.
*3. R*FE(V), RDGV specification, please refer to page 149, 150.

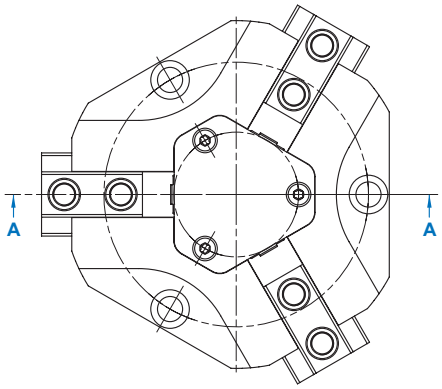


* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification, please refer to Mindman website.

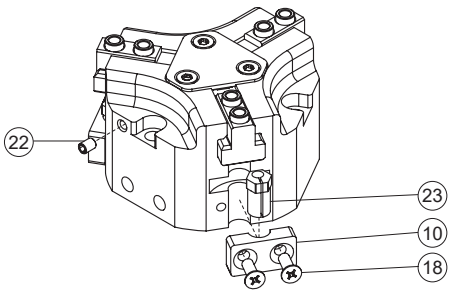
MCHJ Inside structure & Parts list

PARALLEL GRIPPER (3-Finger)

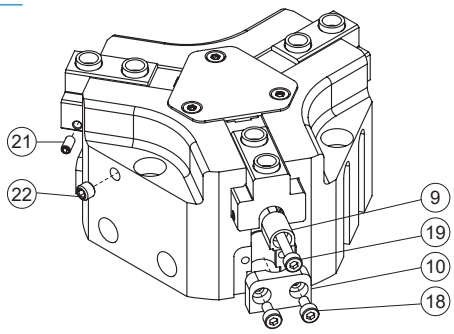
mindman

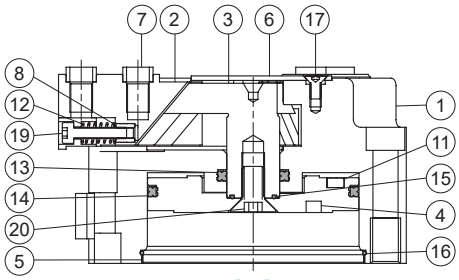


50



66~160





A-A

Material

No.	Size / Part name	50	66	80	100	125	160	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy						1	
2	Finger	Carbon steel						3	
3	Rod	Carbon steel						1	
4	Piston	Aluminum alloy						1	
5	End cover	Stainless steel						1	
6	Plate cover	Stainless steel						1	
7	Centering sleeve	Stainless steel						*4	
8	Thread insert	–		Brass				3	
9	Sensor adj block	–	Aluminum alloy					2	
10	Magnet holder	*1	Resina					2	
11	Magnet	Magnet material						1*2	
12	Spring	–	SWP					2	
13	Rod packing	NBR						1	●
14	Piston packing	NBR						1	●
15	O-ring	NBR						1	●
16	O-ring	NBR						1	●
17	Screw	Alloy steel						3	
18	Bolt	*3	Stainless steel					4	
19	Hex bolt	–	Stainless steel					2	
20	Bolt	Alloy steel						1	
21	Hex screw	–	Stainless steel					4	
22	Hex screw	*3	Stainless steel					3	
23	Adjust socket	SUS	–					2	

*1. Aluminum alloy *2. Size 125 Q'y: 2 pcs *3. Alloy steel *4. Included in accessory kits

Order example of repair kits

Model	Repair kits
MCHJ-50	**PS-MCHJ-50**
MCHJ-66	**PS-MCHJ-66**
MCHJ-80	**PS-MCHJ-80**
MCHJ-100	**PS-MCHJ-100**
MCHJ-125	**PS-MCHJ-125**
MCHJ-160	**PS-MCHJ-160**

Order example of accessory kits

Model	Accessory kits
MCHJ-50	**AK-MCHJ-50**
MCHJ-66	**AK-MCHJ-66**
MCHJ-80	**AK-MCHJ-80**
MCHJ-100	**AK-MCHJ-100**
MCHJ-125	**AK-MCHJ-125**
MCHJ-160	**AK-MCHJ-160**

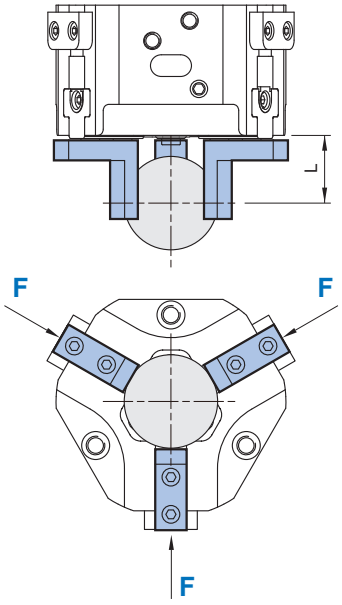
	
O-ring (×2) Material: NBR	Iron plug (×2) Stainless steel + NBR
	
PIN (×2) Bearing steel	Centering sleeve (×6) Stainless steel

Effective gripping force

* Finger selection please refer to page 8.

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

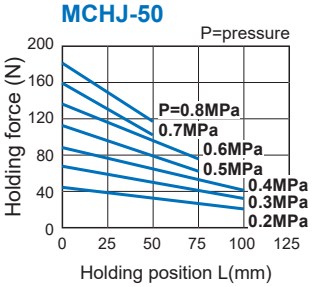
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



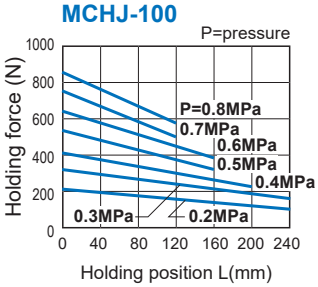
External grip

External gripping force

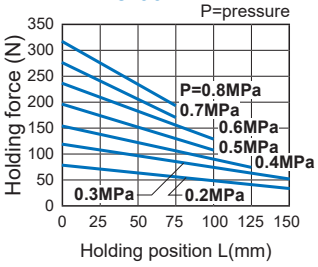
MCHJ-50



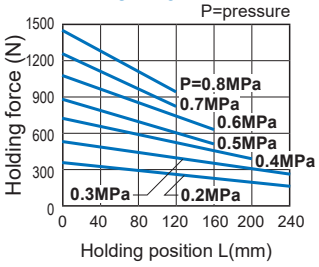
MCHJ-100



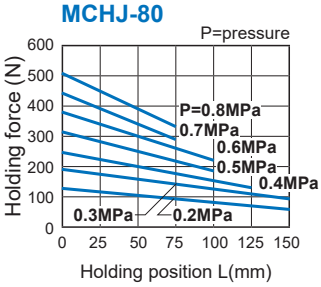
MCHJ-66



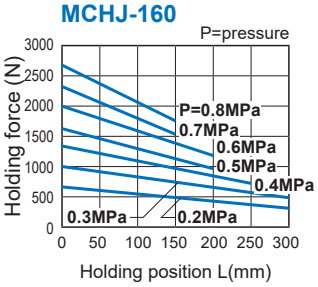
MCHJ-125

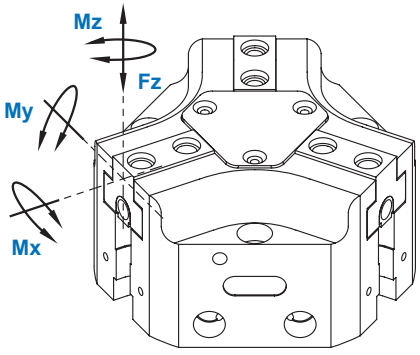


MCHJ-80



MCHJ-160





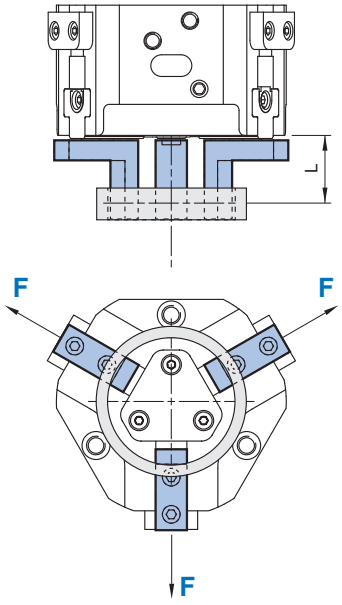
Code / Model	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)	Fz max. (N)
MCHJ-50	15	15	8	700
MCHJ-66	50	45	35	1200
MCHJ-80	80	60	50	1800
MCHJ-100	100	90	75	2500
MCHJ-125	120	120	100	3200
MCHJ-160	160	180	140	5000

Effective gripping force

* Finger selection please refer to page 8.

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

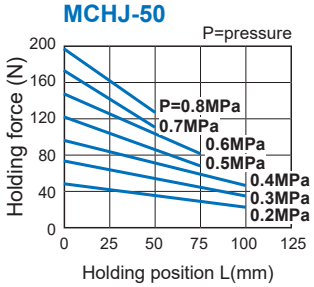
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



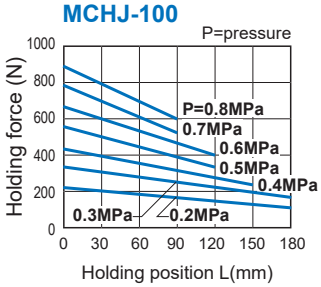
Internal grip

Internal gripping force

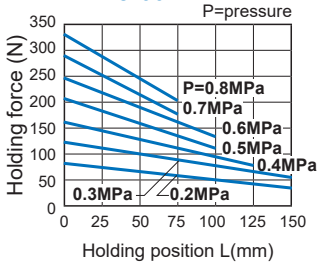
MCHJ-50



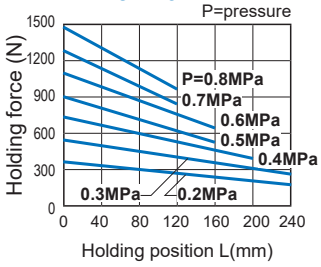
MCHJ-100



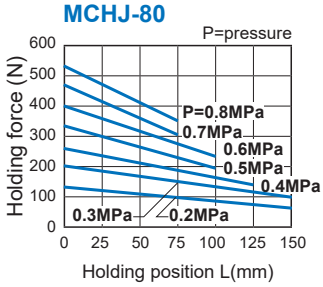
MCHJ-66



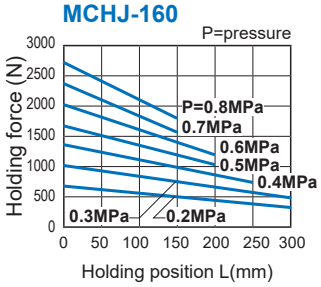
MCHJ-125



MCHJ-80

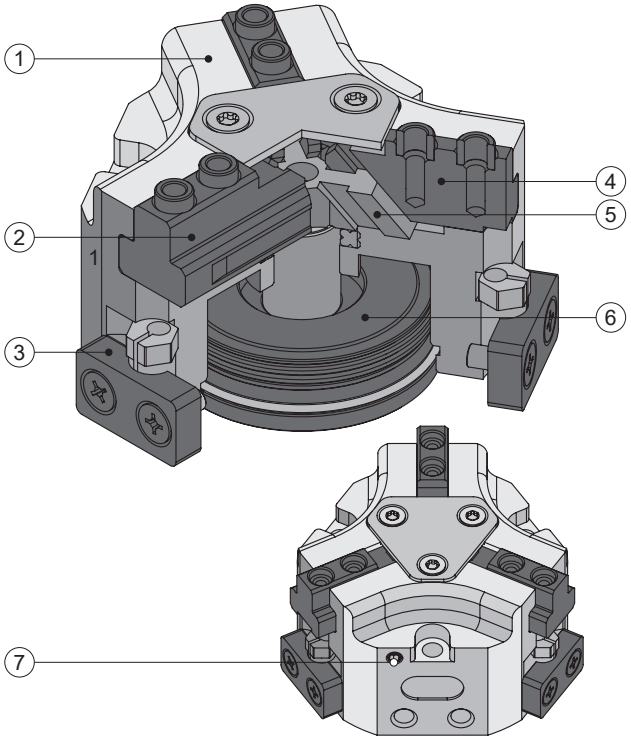


MCHJ-160



Internal structure & Movement description

Compressed air will push or press the circular piston.
By tilting the working surface, the wedge hook will transfer the movement to side movement, and initiate the action of the three base jaws simultaneously.



① **Material**
Anodized high rigid aluminum alloy to reduce weight.

② **Rail**
Bearing rails load the base jaw,which ensure the minimal vibration of long jaw.

③ **Sensor system**
Sensor switch or proximity sensor are available.

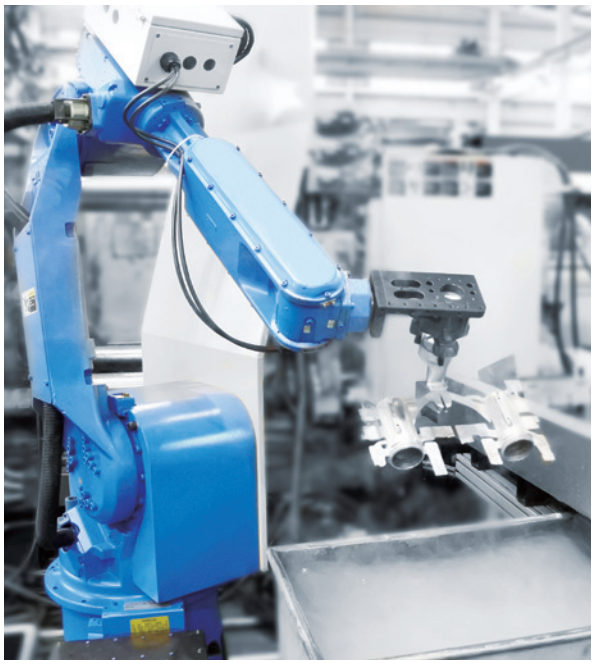
④ **Base jaw**
Jaws connected to work piece.

⑤ **Wedge hook**
High power transmission center jaws.

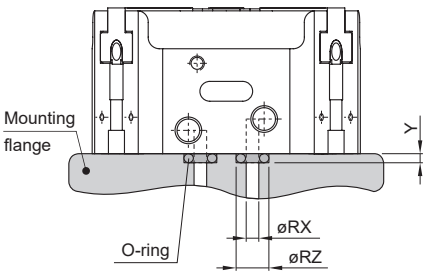
⑥ **Large circular piston**
Generate larger structural strength.

⑦ **Air purge connection** (External vents)
The air purge is used in order to make it more difficult for dirt and dust to penetrate into the product and the guiding areas.
* The air purge is effective only when the gripper is opened.
* Install a valve to control the air purge.

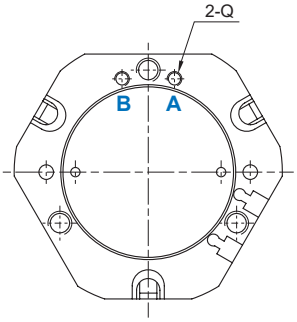
Application examples



Hose-free direct connection



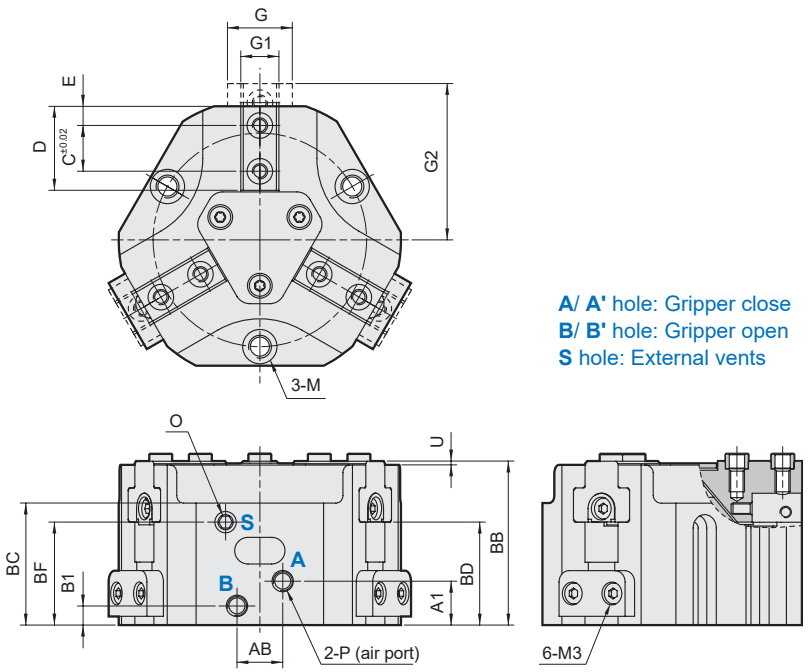
Code / Size	Q	RX	RZ	Y
50	M3	3	5	0.7
66	M5	5	8	1.2
80	M5	5	8	1.2
100	M5	5	8	1.2
125	M5	5	8	1.2
160	M5	5	8	1.2



A hole: Gripper close
B hole: Gripper open

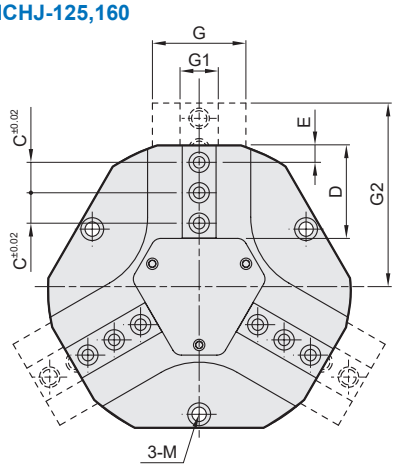
MCHJ Dimensions 50~160

PARALLEL GRIPPER (3-Finger)



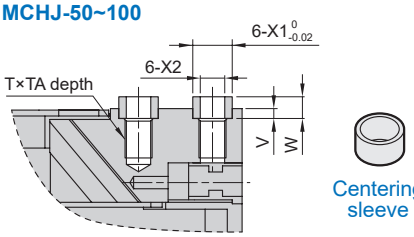
A/ A' hole: Gripper close
B/ B' hole: Gripper open
S hole: External vents

MCHJ-125,160

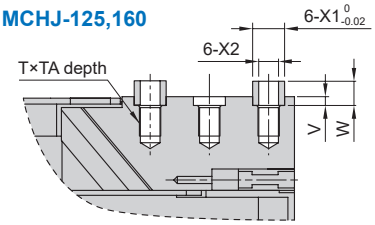


Centering sleeve

MCHJ-50~100



MCHJ-125,160

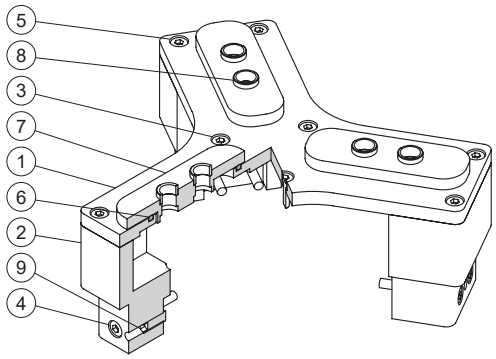


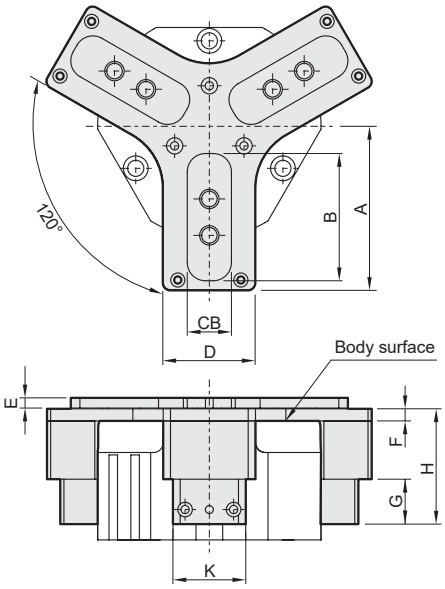
Code / Size	A1	AB	AC	B1	BB	BC	BD	BF	C	D	E	G	G1	G2	H1	H2	K	L
50	5	12	12	5	35	26	23	23	8	16	4	12	6.5	31	26	27	19	45
66	11.5	12	18	5	43	32	27	27	12	22	5	17	10	41	33	35	25	56
80	8	26	18	8	50	36	31	31	15	26.7	6	22	12	51.5	40.5	43.5	32	70
100	13.5	24	24	10	60	41	38	34	18	34.2	10	26	14	64	51	54	42	90
125	17	30	30	10	68	49	42.5	37	12.5	42.3	10	31	15.5	79	64	67	53	112
160	20	44	38	10.5	80	55	48	45	18	54.8	10	39	20	102	81	86	67.5	146

Code / Size	M	N	O	P	Q	R	S	T	TA	U	V	W	X1	X2
50	ø7.3×4.1dp, ø4.3 thru, P.C.D.ø45	M5×0.8×8dp	M3	M5×0.8	M3	57	ø4H7×5	6-M3×0.5	7	1	2	3.9	ø5	ø3
66	ø9×5.1dp, ø5.1 thru, P.C.D.ø56	M6×1.0×10dp	M5	M5×0.8	M5	74	ø4H7×8	6-M4×0.7	8	1	2	3.9	ø6	ø4
80	ø10.2×6.1dp, ø6.8 thru, P.C.D.ø70	M8×1.25×12dp	M5	G1/8	M5	92	ø5H7×8	6-M6×1.0	10	1	2	3.9	ø8	ø6
100	ø10.5×6.5dp, ø6.8 thru, P.C.D.ø90	M8×1.25×12dp	M5	G1/8	M5	114	ø5H7×8	6-M6×1.0	12	1	2	3.9	ø10	ø6
125	ø13.5×8.1dp, ø8.6 thru, P.C.D.ø112	M10×1.5×15dp	M5	G1/8	M5	139	ø6H7×10	9-M6×1.0	14	1	2	3.9	ø10	ø6
160	ø13.5×8.1dp, ø8.6 thru, P.C.D.ø146	M10×1.5×24dp	M5	G1/8	M5	179	ø6H7×10	9-M8×1.25	14	1	2	3.9	ø12	ø8

Inside structure & Parts list / Dimensions

Dust cover 50~160



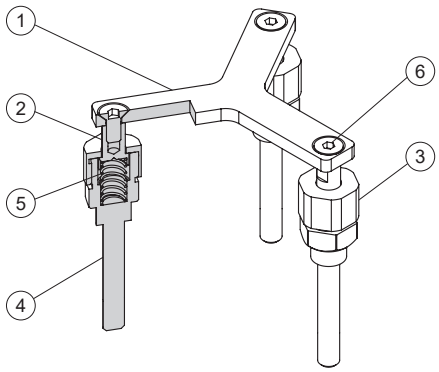


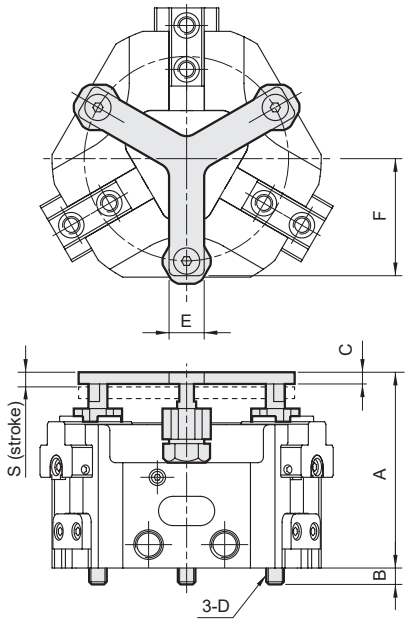
Material

No.	Part name	Material	Q'y	
			50	66~160
1	Dust cover	Aluminum alloy	1	1
2	Mounting block	Aluminum alloy	3	3
3	Bolt	Alloy steel	3	3
4	Bolt	Alloy steel	5	6
5	Bolt	Alloy steel	6	6
6	O-ring	NBR	3	3
7	Slider	Carbon steel	3	3
8	Centering sleeve	Stainless steel	6	6
9	Hexagon screw	Alloy steel	0	2

Code / Size	A	B	CB	D	E	F	G	H	K	Weight (g)
50	43	30	13	17	4.5	5	16	35.5	17	105
66	51	41	16.2	24	4.5	5	19.5	45.5	24	179
80	67.5	52.4	18.1	38	4.5	5	19	48	30	381
100	80	61	22	37	4.5	5	11.5	41	37	417
125	95	72	22	50	4.5	5	14.5	47.5	37	603
160	121	93	25	60	4.5	6	13	55	50	1019

Pressure piece 50~80

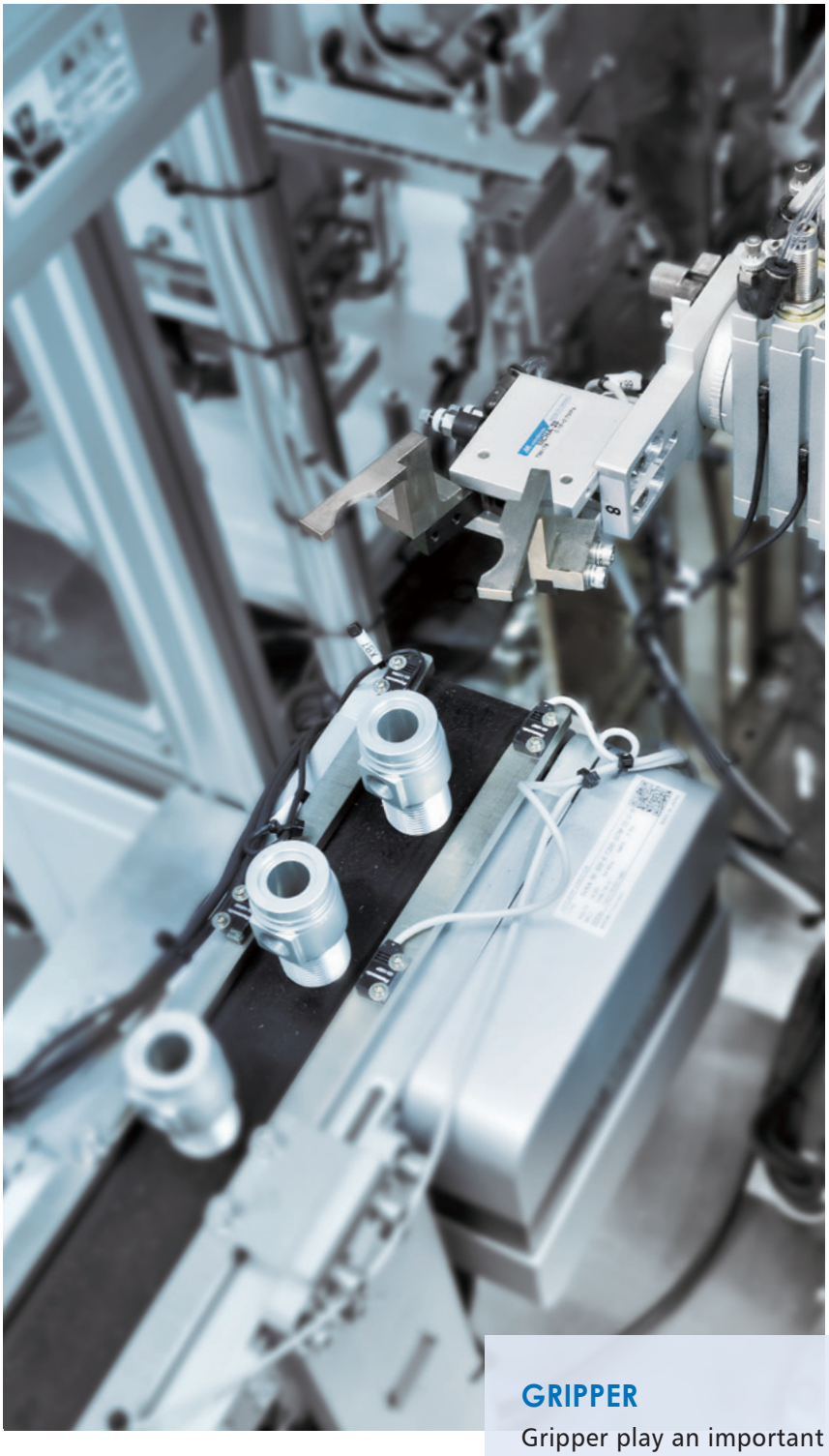




Material

No.	Part name	Material	Q'y
1	Top plate	Carbon steel	1
2	Spring pressure column	Carbon steel	3
3	Nut	Carbon steel	3
4	Fixed column	Carbon steel	3
5	Spring	Stainless steel	3
6	Bolt	Alloy steel	3

Code / Spec.	A	B	C	D	E	F	S	Weight (g)	Ejection force (kgf)	
									Retracted Min.	Extended Max.
50	55.5	5	2	M4×0.7	8	30	6	63	1	3.9
66	60.9	5.6	2	M5×0.8	10	35	5	93	2	3.8
80	66.9	5.6	4	M6×1.0	12	40	5	149	1.5	2.4



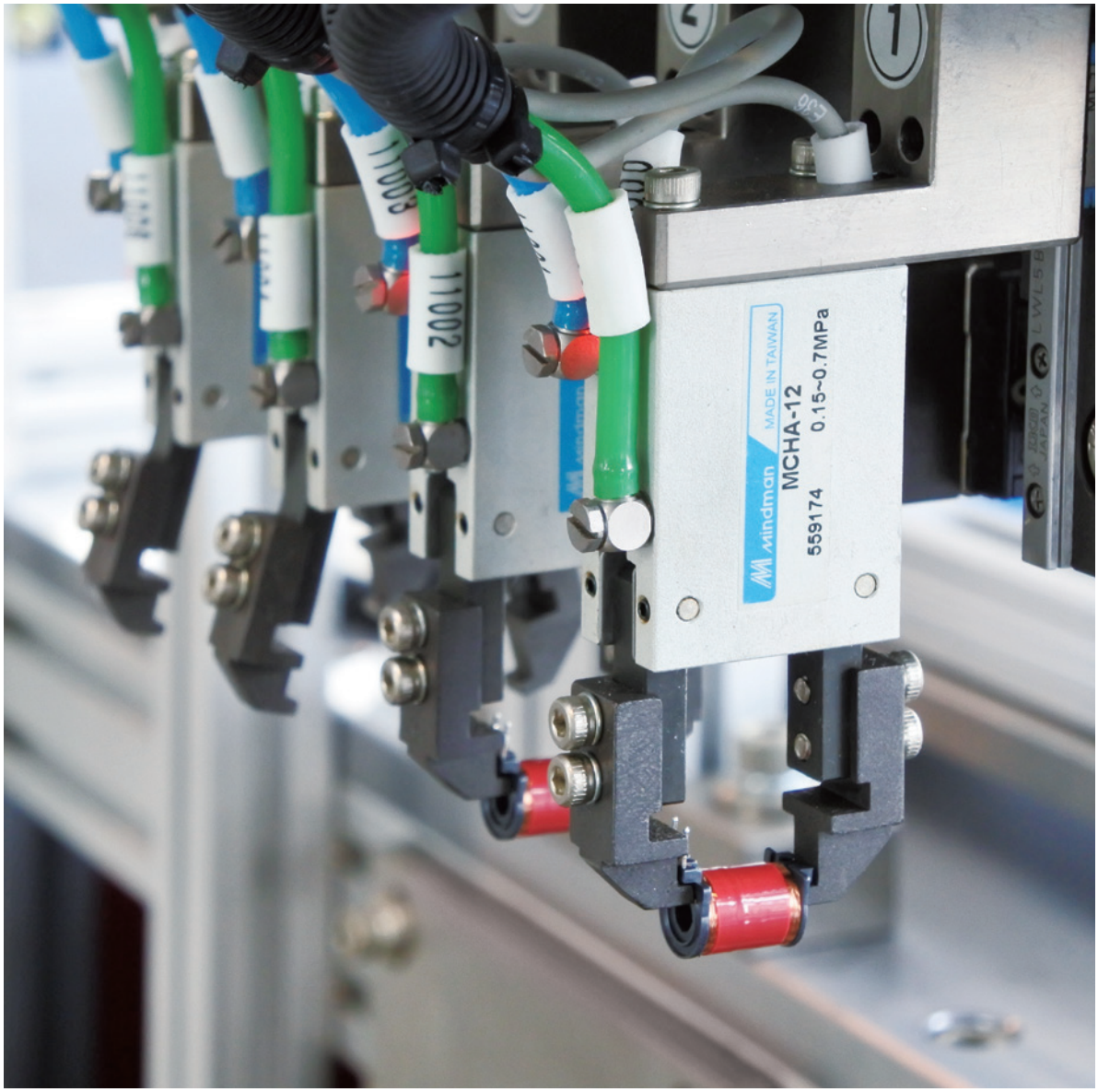
GRIPPER

Gripper play an important role in automation systems. Mindman provides various kinds of stable gripper for different applications.

Connect with

AIR CYLINDER

Connect gripper with cylinder to achieve regular workpiece gripping.



MCHA series

30° ANGULAR **GRIPPER**

mindman

Features

- Hardened gripping fingers for longer service life.
- Simple structure with high stability.
- Magnetic as standard.

Specification

Model		MCHA				
Acting type		Double acting / Single acting (N.O.)				
Tube I.D. (mm)		12	16	20	25	32
Port size		M3×0.5	M5×0.8			
Medium		Air				
Operating pressure range	Double acting	0.15~0.7 MPa				
	Single acting	0.3~0.7	0.2~0.7 MPa			
Ambient temperature		-5~+60°C (No freezing)				
Max. operating frequency (c.p.m)		180 (*1)				
Lubrication	Cylinder	Not required				
	Lever	Grease (Joint parts)				
Max. arm length (L) (*2)		30	40	60	70	85
Clamp / Release angle		-10~+30°				
Sensor switch (*3)		RDE, RDE-D: Non-contact				
Weight (g)		53	103	193	327	525

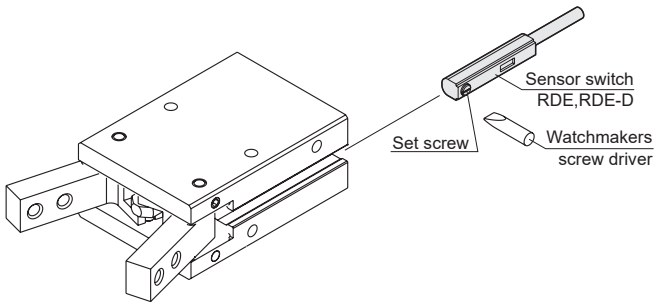
*1. Use tube I.D. 12 at max operating frequency will affect the service life.
*2. L: Arm length (mm)
*3. RDE, RDE-D specification, please refer to page 148.

Order example

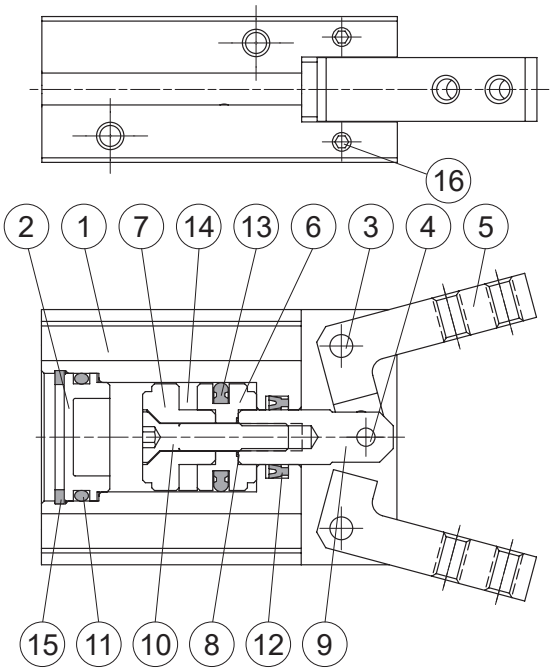
MCHA — 20 — □

- MODEL
- TUBE I.D.
  - **12**
  - **16**
  - **20**
  - **25**
  - **32**
- ACTING TYPE
  - Blank: Double acting
  - **S**: Single acting (Normally open)

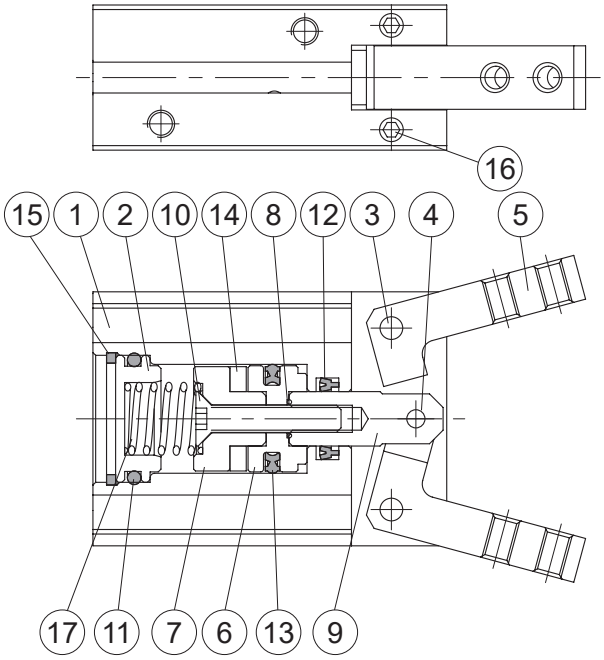
Installation of sensor switch



Double acting



Single acting Normally Open



Material

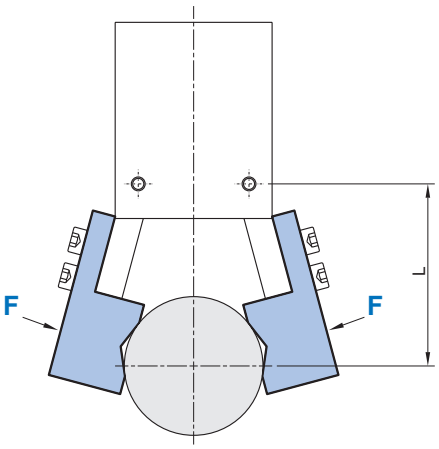
No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy	1	
2	Head cover	Aluminum alloy	1	
3	Grip rivet	Carbon steel	2	
4	Spindle rivet	Bearing steel	1	
5	Y-finger	Medium carbon steel	2	
6	Piston-R	Aluminum alloy	1	
7	Piston-H	Aluminum alloy	1	
8	Gasket	NBR	1	●
9	Piston rod	Stainless steel	1	
10	Screw	Stainless steel	1	
11	Cover ring	NBR	1	●
12	Rod packing	NBR	1	●
13	Piston packing	NBR	1	●
14	Magnet ring	Magnet material	1	
15	Stop ring	Spring steel	1	
16	Screw	SCM	4	
17	Spring	SWB-P	1	

Order example of repair kits

Tube I.D.	Repair kits
ø12	**PS-MCHA-12**
ø16	**PS-MCHA-16**
ø20	**PS-MCHA-20**
ø25	**PS-MCHA-25**
ø32	**PS-MCHA-32**

Effective gripping force

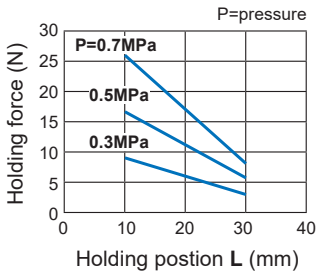
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



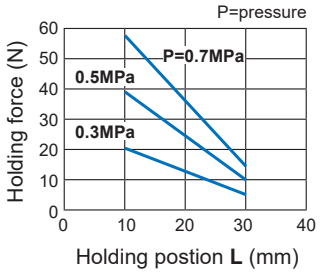
1N=0.102 kgf
1MPa=10.2 kgf/cm^2

Double acting

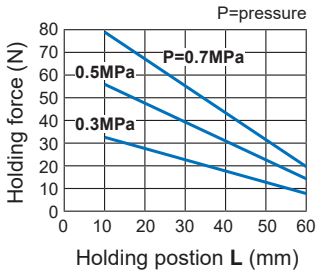
MCHA-12



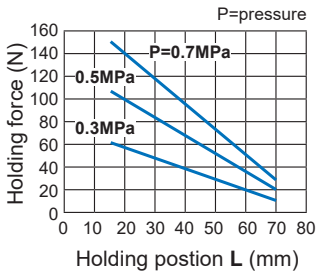
MCHA-16



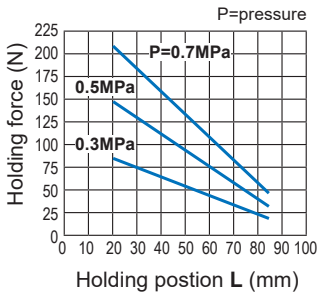
MCHA-20



MCHA-25

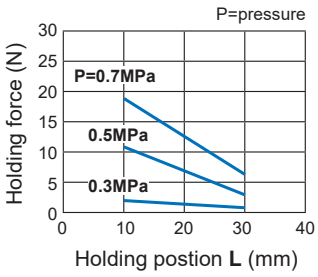


MCHA-32

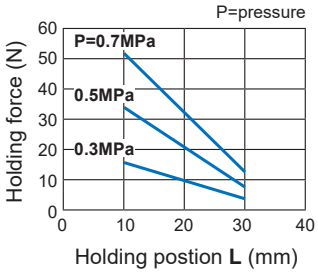


Single acting (Normally open)

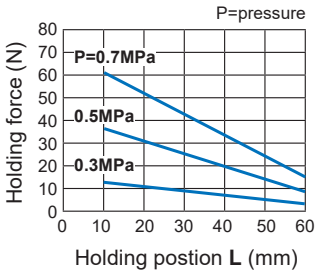
MCHA-12-S



MCHA-16-S



MCHA-20-S



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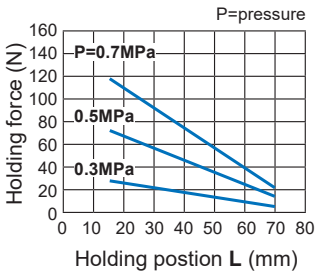
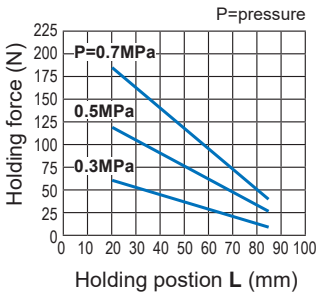
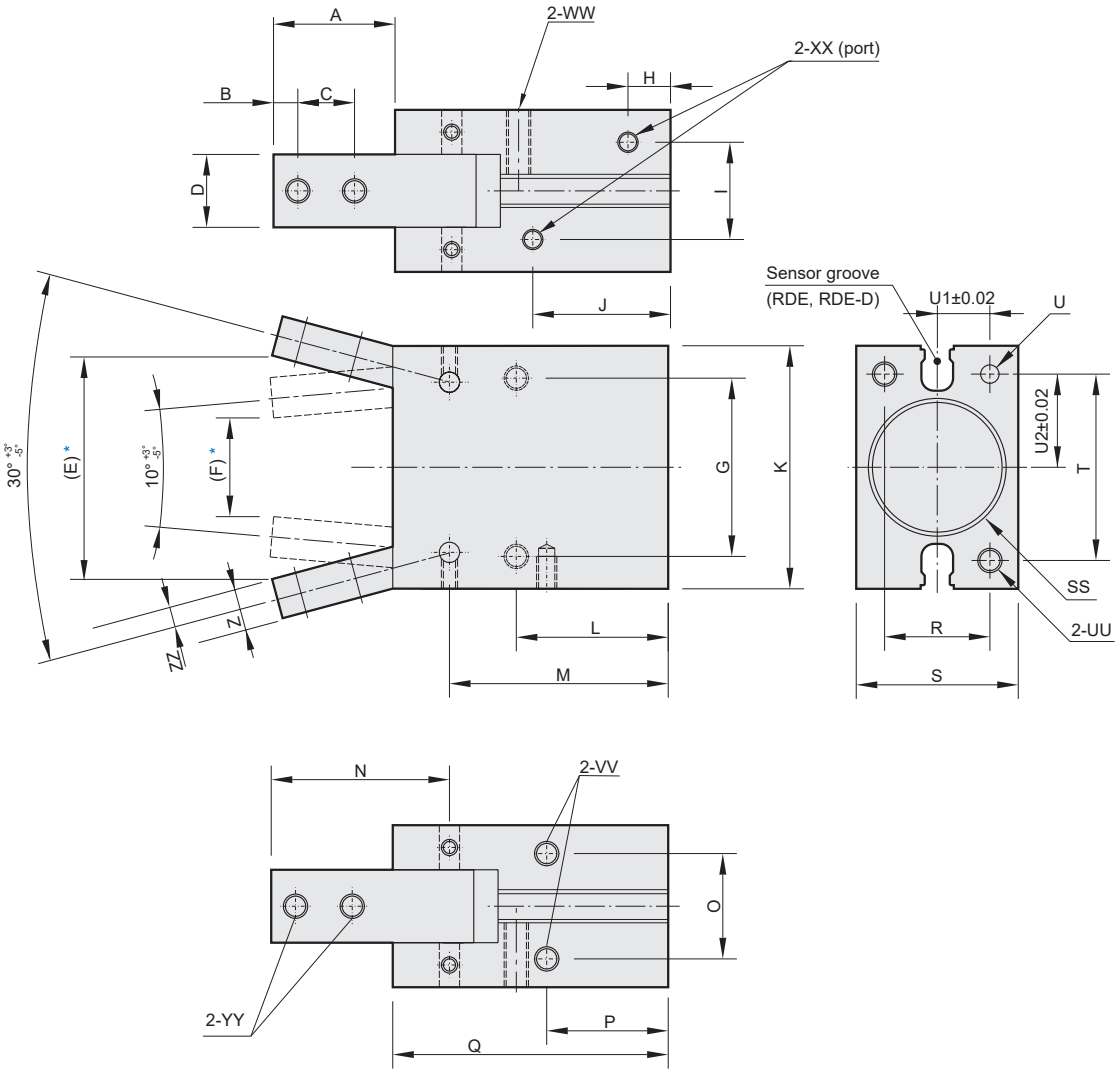


MCHA-32-S

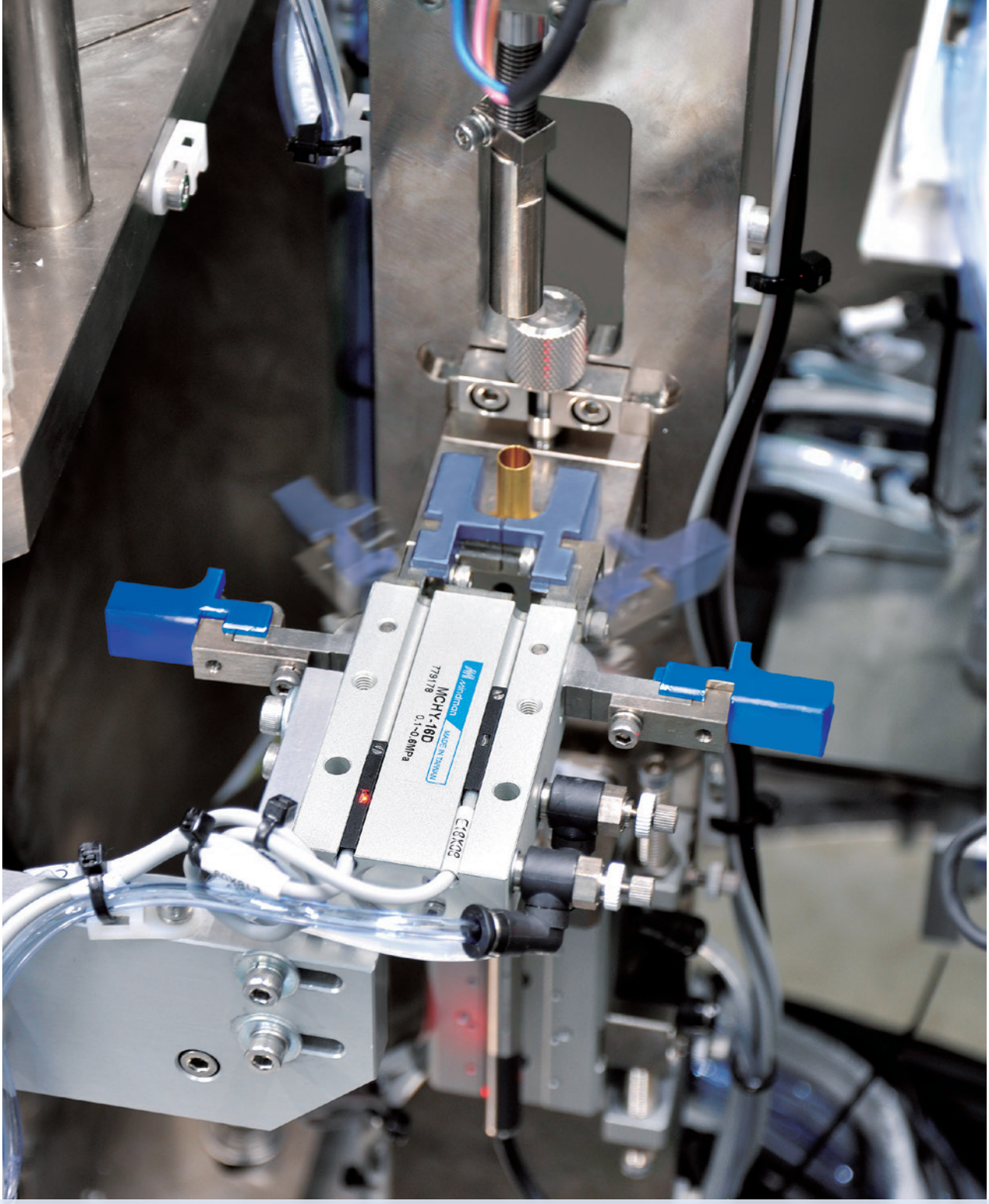




* Reference value.

Code / Tube I.D.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	SS	T
12	15.4	3	6	7	26.3	9	20	7.5	10.2	23	28	20	32.9	21.5	10.2	16	39	10	16	ø14H9 $^{+0.043}_{0}$ ×1.5 depth	22
16	17.5	3	8	9	31.1	14	24	7.5	12	22	34	22.5	35	25	14	18	42.5	14	22	ø18H9 $^{+0.043}_{0}$ ×1.5 depth	26
20	22	4	10	12	40.1	18	30	8.0	13	25	45	25	39.5	32.5	16	19	50	16	26	ø22H9 $^{+0.052}_{0}$ ×1.5 depth	35
25	26	5	12	14	47.9	21	36	8.5	18	28	52	28.5	45.5	38.5	20	21.5	58	20	32	ø27H9 $^{+0.052}_{0}$ ×2 depth	40
32	30	6	14	18	55.1	24	44	10.5	24	34	60	37.5	54	44	26	30	68	26	40	ø34H9 $^{+0.062}_{0}$ ×2.5 depth	46

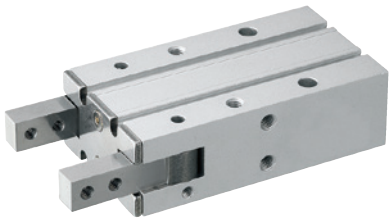
Code / Tube I.D.	U	U1	U2	UU	VV	WW	XX	YY	Z	ZZ
12	ø2H9 $^{+0.025}_{0}$ ×3 depth	5	11	M3×0.5×5 depth	M3×0.5×5 depth	M3×0.5×8 depth	M3×0.5×5 depth	M3×0.5	5	2.5
16	ø3H9 $^{+0.025}_{0}$ ×3 depth	7	13	M4×0.7×7 depth	M4×0.7×7 depth	M4×0.7×11 depth	M5×0.8×5 depth	M3×0.5	6	3
20	ø4H9 $^{+0.03}_{0}$ ×4 depth	8	17.5	M5×0.8×8 depth	M5×0.8×8 depth	M5×0.8×12 depth	M5×0.8×5 depth	M4×0.7	7	3.5
25	ø4H9 $^{+0.03}_{0}$ ×4 depth	10	20	M6×1.0×10 depth	M6×1.0×8 depth	M6×1.0×16 depth	M5×0.8×5 depth	M5×0.8	9	4
32	ø5H9 $^{+0.03}_{0}$ ×5 depth	13	23	M6×1.0×10 depth	M6×1.0×8 depth	M6×1.0×20 depth	M5×0.8×5 depth	M6×1.0	10	5

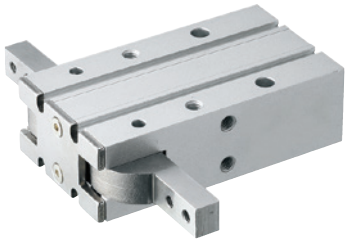


Connect with

AUTOMATIC ASSEMBLY MACHINE

Connect gripper with cylinder to achieve regular workpiece gripping.





Features

- Compact design and lightweight construction.
- High gripping forces achieved via internal cams. Reduced required offset while moving gripper. (Fig1).
- Reference points on gripping fingers are standard.
- Sensors can be mounted in any one of four positions.
- Rod seal prevents foreign objects to enter piston.
- Magnetic as standard.

Specification

Model		MCHY			
Acting Type		Double acting			
Tube I.D. (mm)		10	16	20	25
Medium		Air			
Operating pressure range		0.2~0.6 MPa			
Ambient temperature		-10~+60°C (No freezing)			
Repeatability		±0.2 mm			
Max. operating frequency (c.p.m)		60 (*1)			
Lubrication (*2)		Not required			
Effective force (Nm) at (0.5 MPa)		0.16	0.54	1.1	2.28
Operating angle (both sides)	Opened side	180°~182°			
	Closed side	-3°			
Sensor switch (*3)	2 wire	**RDFE(V)**: Non-contact			
	3 wire	**RNFE(V)**: NPN, **RPFE(V)**: PNP			
Weight (g)		80	150	320	600

*1. Speed controllers are required.
*2. Sliding area of jaws need scheduled relubrication.
*3. R*FE(V) specification, please refer to page 149.

Order example

MCHY — 16 D 1

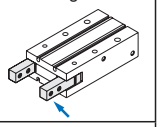
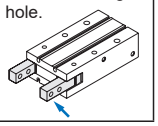
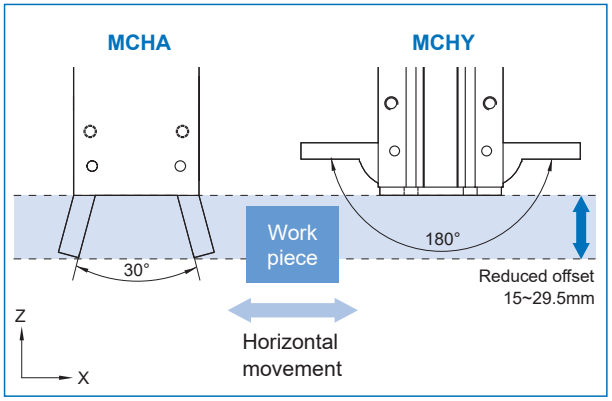
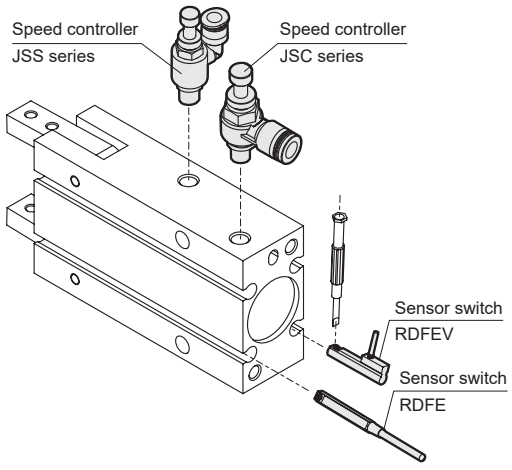
MODEL	TUBE I.D.		FINGER OPTION	
		D: Double acting	–	Standard tap mounting 
	10 16 20 25		1	Opening / closing direction through hole. 

Fig1. Reduced required offset while moving gripper



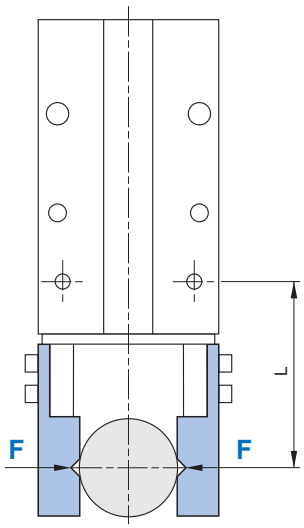
Installation of sensor switch & speed controller



* Each gripper needs at least two speed control valves to operate.
* Speed controller specification, please refer to Mindman website.

Effective gripping force

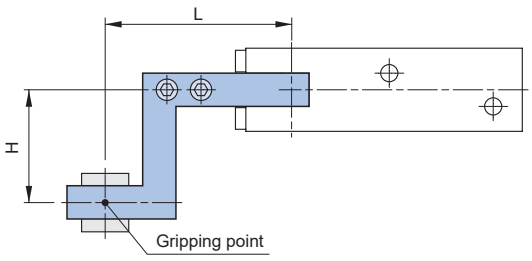
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.

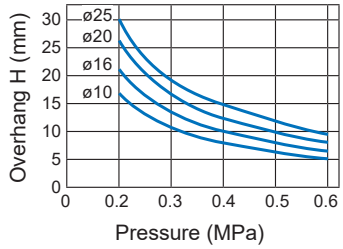


1N=0.102 kgf
1MPa=10.2 kgf/cm^2

Confirmation of gripping point

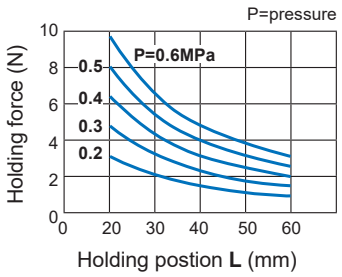
- The air gripper should be operated so that the workpiece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs to the right.
- If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the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



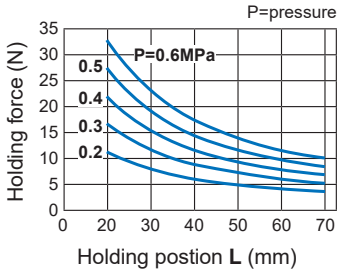


Gripping force

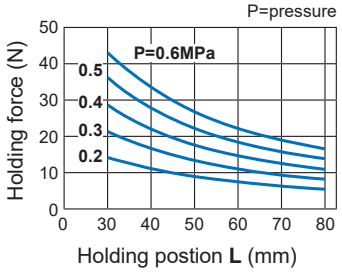
MCHY-10



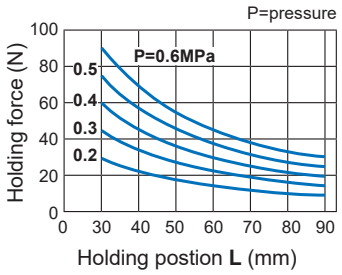
MCHY-16



MCHY-20

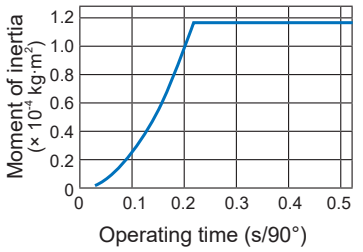


MCHY-25

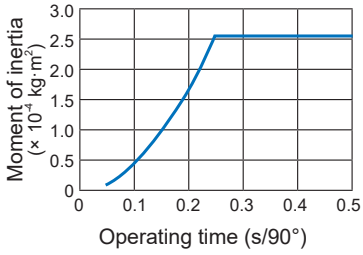


Moment of inertia

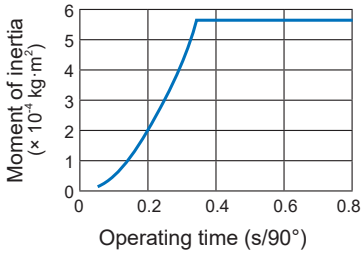
MCHY-10



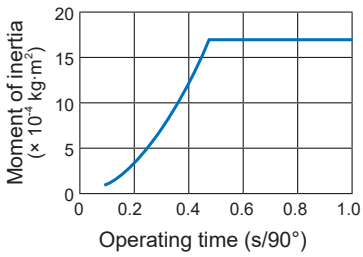
MCHY-16



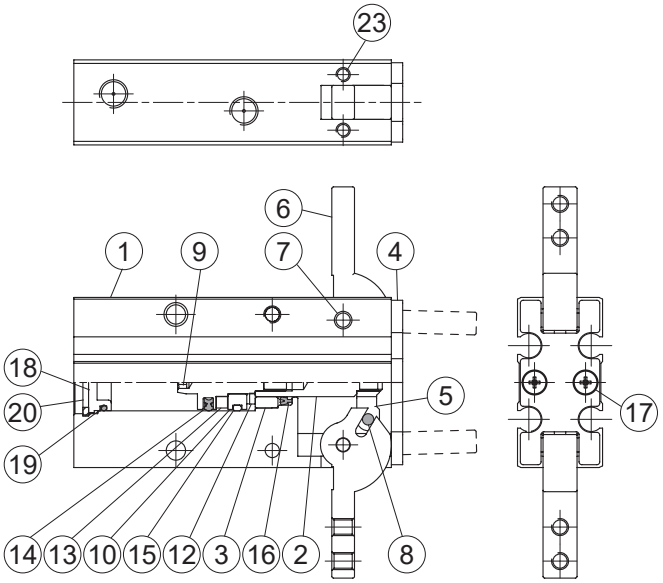
MCHY-20



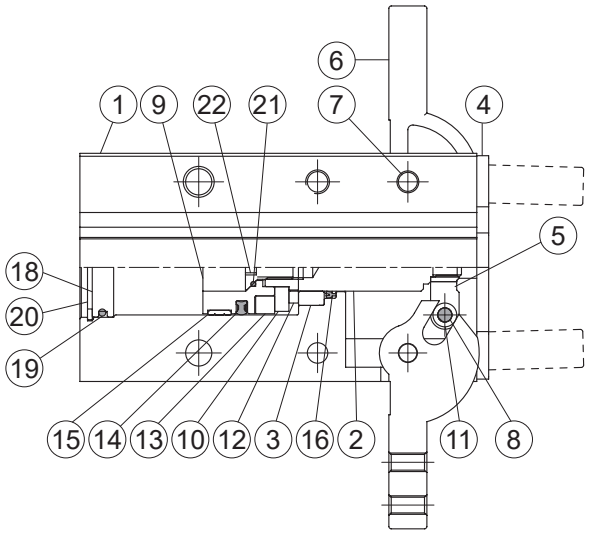
MCHY-25



ø10



ø16~ø25



Material

No.	Tube I.D. / Part name	10	16	20	25	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy				1	
2	Piston rod	Stainless steel				1	
3	Bushing	Brass				1	
4	Head cover	Stainless steel				1	
5	Lever	Stainless steel				1	
6	Gripper	Stainless steel				2	
7	Grip rivet	Carbon steel				2	
8	Pin	Carbon steel				2	
9	Piston	*1	Aluminum alloy			1	
10	Magnet holder	Stainless steel				1	
11	Pin bushing	–		SCM		2	
12	Cushion pad	NBR	PU			1	●
13	Magnet ring	Magnet material				1	
14	Piston packing	NBR				1	●
15	Wear ring	Resin				1	
16	Rod packing	NBR				1	●

No.	Tube I.D. / Part name	10	16	20	25	Q'y	Repair kits (inclusion)
17	Screw	Stainless steel				2	
18	Rod cover	Aluminum alloy				1	
19	O-ring	NBR				1	●
20	Snap ring	*2	Stainless steel			1	
21	O-ring	–	NBR			1	●
22	Hexagon Bolt	–	Stainless steel			1	
23	Scew	Stainless steel				4	

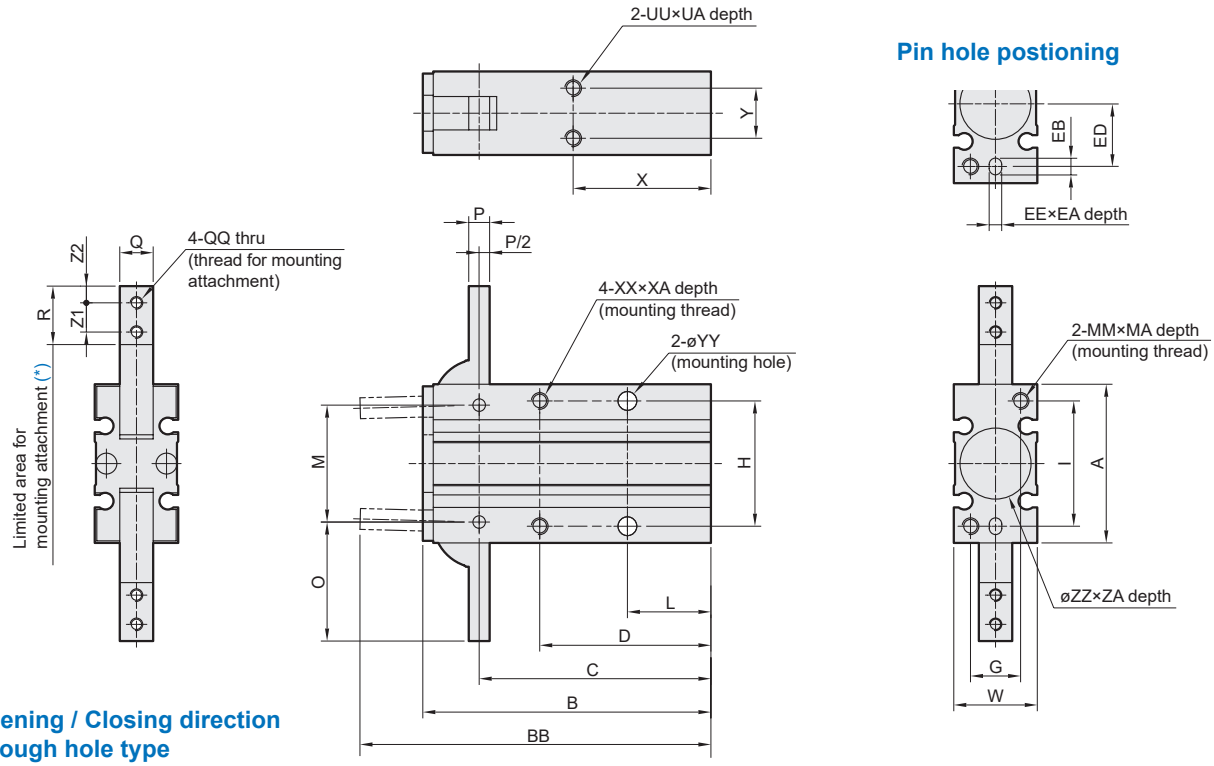
*1. Stainless steel *2. Carbon steel

Order example of repair kits

Tube I.D.	Repair kits
ø10	**PS-MCHY-10**
ø16	**PS-MCHY-16**
ø20	**PS-MCHY-20**
ø25	**PS-MCHY-25**

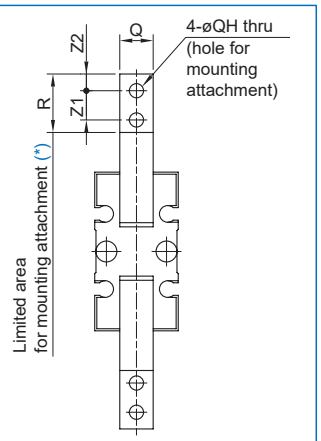
MCHY Dimensions ø10~ø25

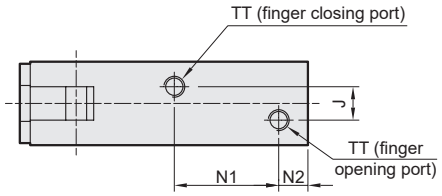
180° ANGULAR **GRIPPER** - CAM STYLE



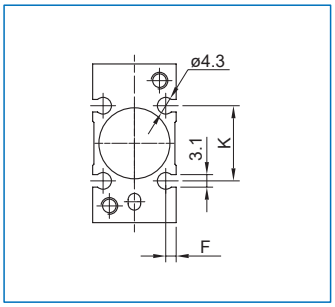
Pin hole postioning

Opening / Closing direction through hole type





Auto switch mounting groove position



* Do not extend the attachment from limited area for mounting to avoid interference with the attachment or main body.

Code / Tube I.D.	A	B	BB	C	D	EE	EA	EB	ED	F	G	H	I	J	K	L	M	MA	MM	N1	N2	O	P	Q	QH	QQ
10	30	58	71	47.5	35	3H9 $^{+0.025}_{-0}$	3	4	9	2	9	24	24	3	13	18	22	6	M3×0.5	23	7	23.5	4	6 $^{-0.005}_{-0.025}$	3.4	M3×0.5
16	38	69	84	55.5	41	3H9 $^{+0.025}_{-0}$	3	4	15	2.5	12	30	30	8	18	20	28	8	M4×0.7	25	7	28.5	5	8 $^{-0.005}_{-0.025}$	3.4	M3×0.5
20	48	86	106	69	50	4H9 $^{+0.030}_{-0}$	4	5	19	3	16	36	38	12	20	25	36	10	M5×0.8	32	8	37	8	10 $^{-0.005}_{-0.025}$	4.5	M4×0.7
25	58	107	131	86	60	4H9 $^{+0.030}_{-0}$	4	5	23	3	18	42	46	14	24	30	45	12	M6×1	42	8	45	10	12 $^{-0.005}_{-0.025}$	5.5	M5×0.8

Code / Tube I.D.	R	TT	UA	UU	W	X	XA	XX	Y	YY	ZA	ZZ	Z1	Z2
10	12	M5×0.8	4	M3×0.5	15	30	6	M3×0.5	9	3.4	1.5	11H9 $^{+0.043}_{-0}$	6	3
16	14	M5×0.8	5	M4×0.7	20	33	8	M4×0.7	12	4.5	1.5	17H9 $^{+0.043}_{-0}$	7	4
20	18	M5×0.8	8	M5×0.8	26	42	10	M5×0.8	14	5.5	1.5	21H9 $^{+0.052}_{-0}$	9	5
25	22.5	M5×0.8	10	M6×1	30	50	12	M6×1	16	6.6	1.5	26H9 $^{+0.052}_{-0}$	12	6

MCTA

Mindman Compact Tool Attach

TMPlug&Play CERTIFIED

All-in-One

GRIPPER for
TM ROBOT

J66

S80

Mindman × TM ROBOT

All-in-One

Module design with embedded solenoid valves and sensor switches.

Plug & Play

Only one I/O signal cable and one air tube is required.

High Reliability

High reliability and simple operation compare with electirc grippers.

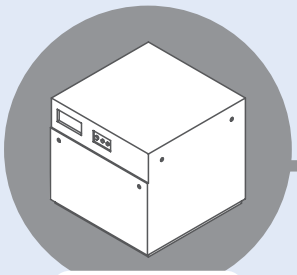
Mindman

Modular VS Conventional
System layout

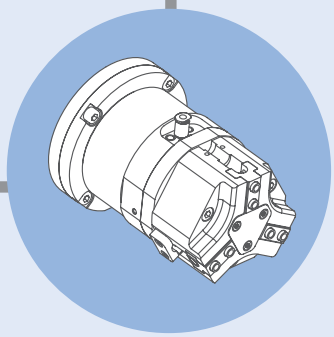
Modular

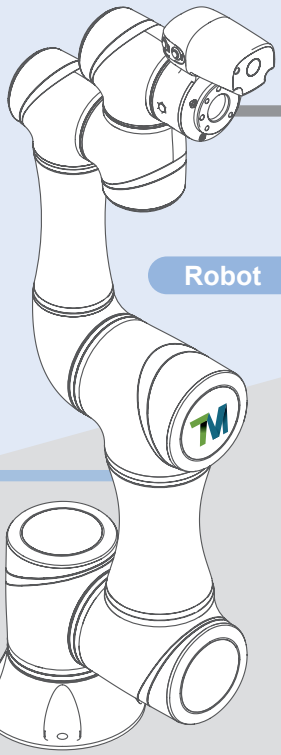
ALL-IN-ONE Pneumatic gripper

- Solenoid valve and position sensor switch are modularized.
- Required only one air tube and I/O signal.
- Plug and Play, simple installation.

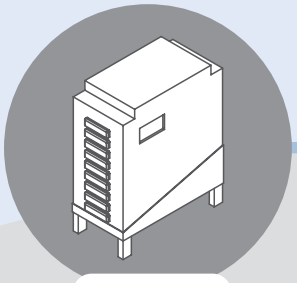


Air compressor

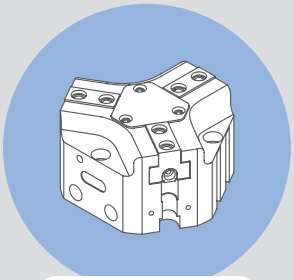




Robot

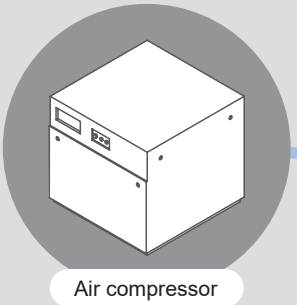


Control host

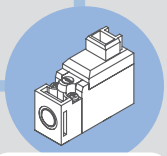


Pneumatic gripper

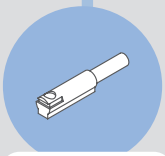
Conventional



Air compressor



Solenoid valve



Sensor switch

MCTA series

ALL-IN-ONE PNEUMATIC GRIPPER

TMPlug&Play CERTIFIED

Features

- All-In-One module design with embedded solenoid valves and sensor switches.
- Only one I/O signal cable and one air tube is required. Plug and play.
- High reliability and simple operation compare with electric grippers.
- Integrated wires with power-off protection.
- Easy mounting design with threads and bolts.
- Magnetic as standard.

Specification

Model	MCTA-J66	MCTA-S80
Acting type	Double acting	
Size	66	80
Stroke per-jaw (mm)	6	8
Effective external gripping force(N) *1	188	285
Effective internal gripping force (N) *1	194	290
Close/Open time (s)	0.03	0.04
Medium	Air	
Operating pressure range	0.2~0.8 MPa	0.3~0.8 MPa
Ambient temperature	+5~+80°C	
Lubrication	Not required	
Sensor switch *2	**RDFE**: Non-contact	
Accessories	Accessory kits	
Weight (kg)	≈1.3	
Recom. work piece weight (kg) *3	3.8	2.6

*1. Under the condition of clamping length 40mm and operation pressure 0.6 MPa.
*2. RDFE specification, please refer to page 149.
*3. The weight limit of gripping workpiece depends on the load limit of robot arm and usage parameters.

Order example of pneumatic gripper

MCTA — J66 — TM

MODEL | ❶ GRIPPER MODULE | ❷ ARM SPEC.

❶

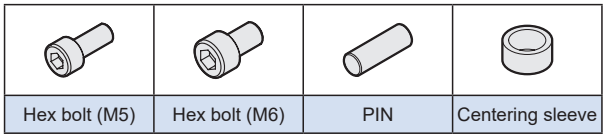
Gripper module	Model	Description
J66	MCHJ-66	3 finger
S80	MCHS-80	2 finger

❷

Arm spec.	Brand
TM	TM Robot (TM5/12/14)

Order example of accessory kits

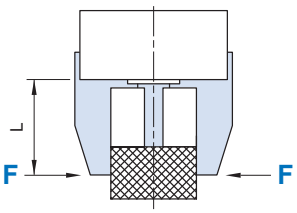
No.	Model / Order example / Part name	Accessory kits & Q'y	
		MCTA-J66	MCTA-S80
		AK-MCTA-J66-TM	**AK-MCTA-S80-TM**
1	Hex bolt (M5)	4	4
2	Hex bolt (M6)	4	4
3	PIN	4	4
4	Centering sleeve	6	4

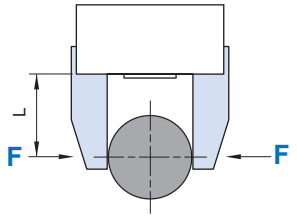


Hex bolt (M5)	Hex bolt (M6)	PIN	Centering sleeve

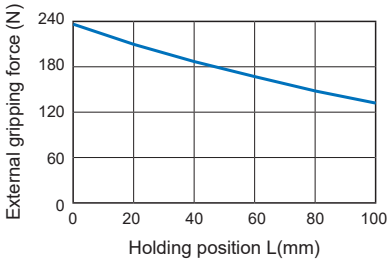
Holding force

* Operating pressure 0.6 MPa.

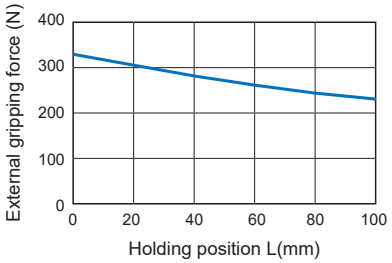




MCTA-J66



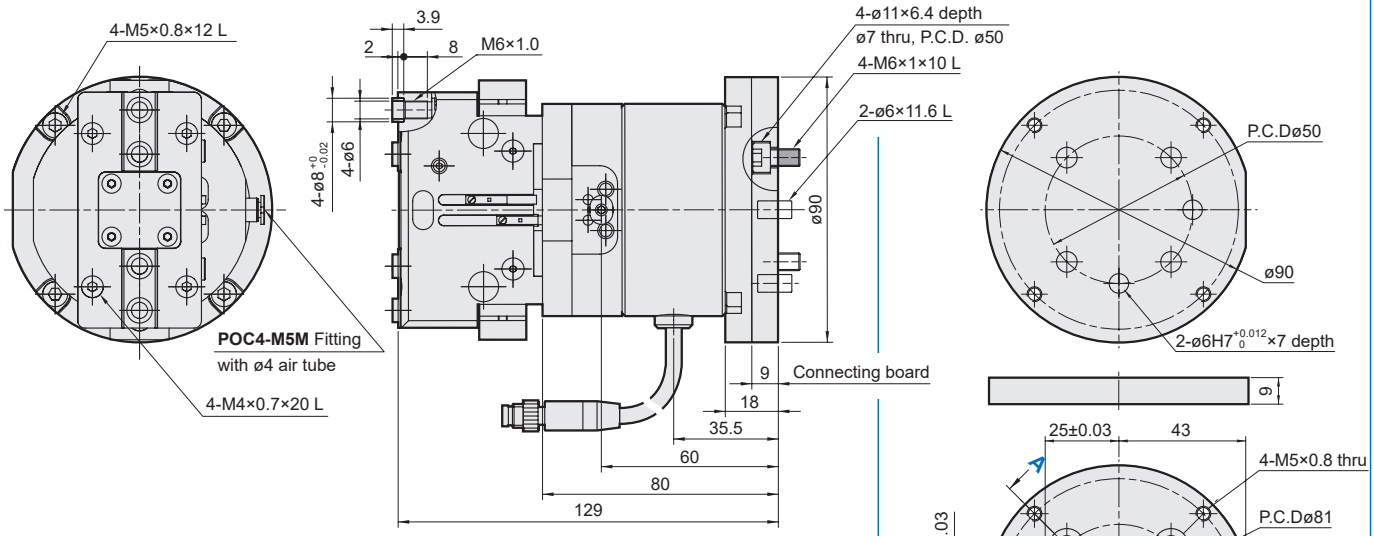
MCTA-S80



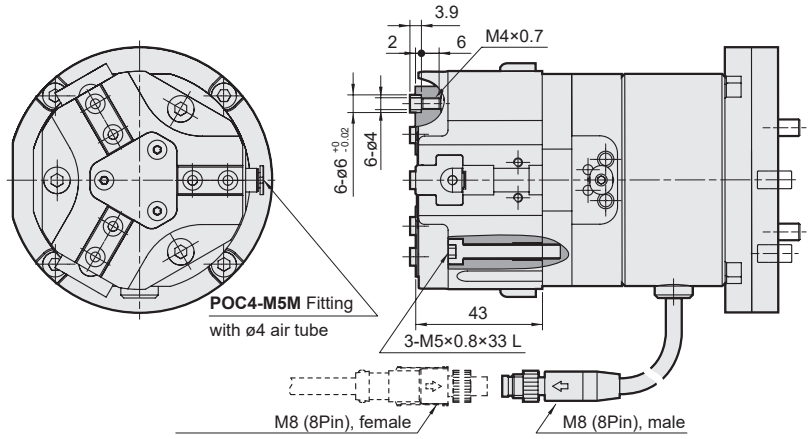
MCTA Dimensions

ALL-IN-ONE PNEUMATIC GRIPPER

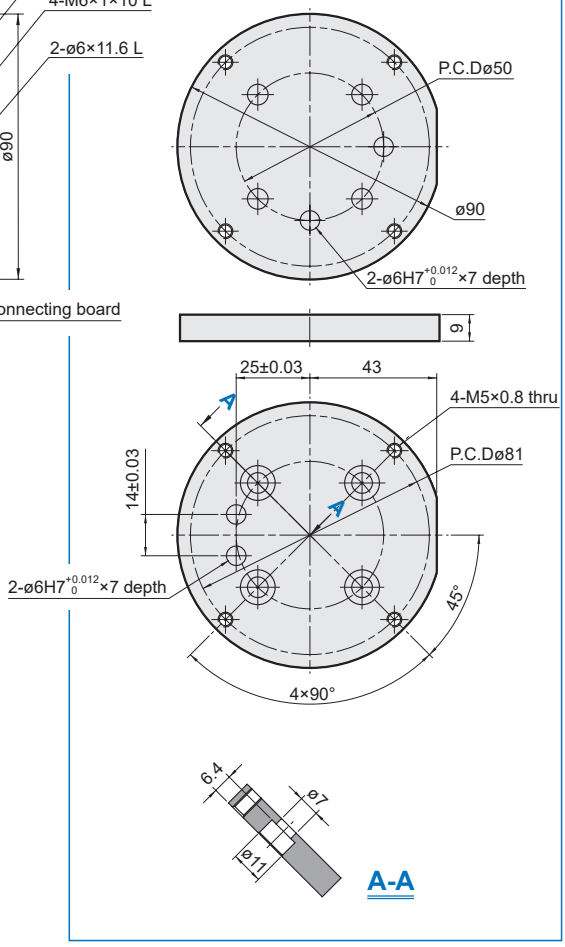
MCTA-S80-TM



MCTA-J66-TM



Connecting board



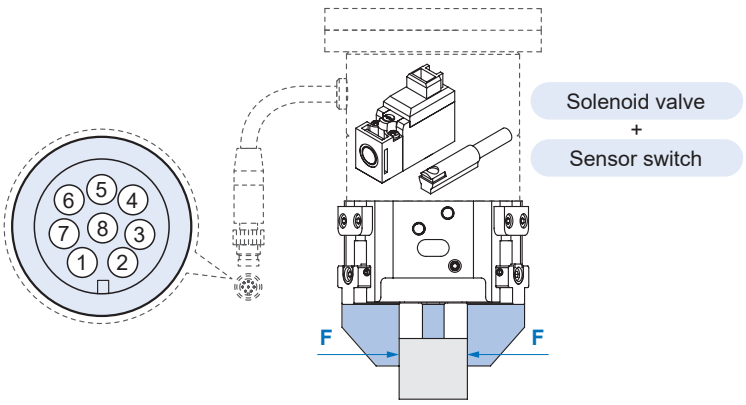
PIN Define

8-PIN digital I/O connector of robot

PIN	Color *	8 PIN Define	Directions	Function
1	Brown	+24V	24V Output	—
2	Red	DI_0	Digital Input0	Sensor switch (close)
3	Orange	DI_1	Digital Input1	Sensor switch (open)
4	Yellow	DI_2	Digital Input2	—
5	Green	DO_0	Digital output0	Solenoid valve (open)
6	Blue	DO_1	Digital output1	Solenoid valve (close)
7	Violet	DO_2	Digital output2	—
8	Black	0v	0v	—

* Color for lead wire of M8 female connecter.

Built-in **solenoid valve** and **sensor switch**



Connect with

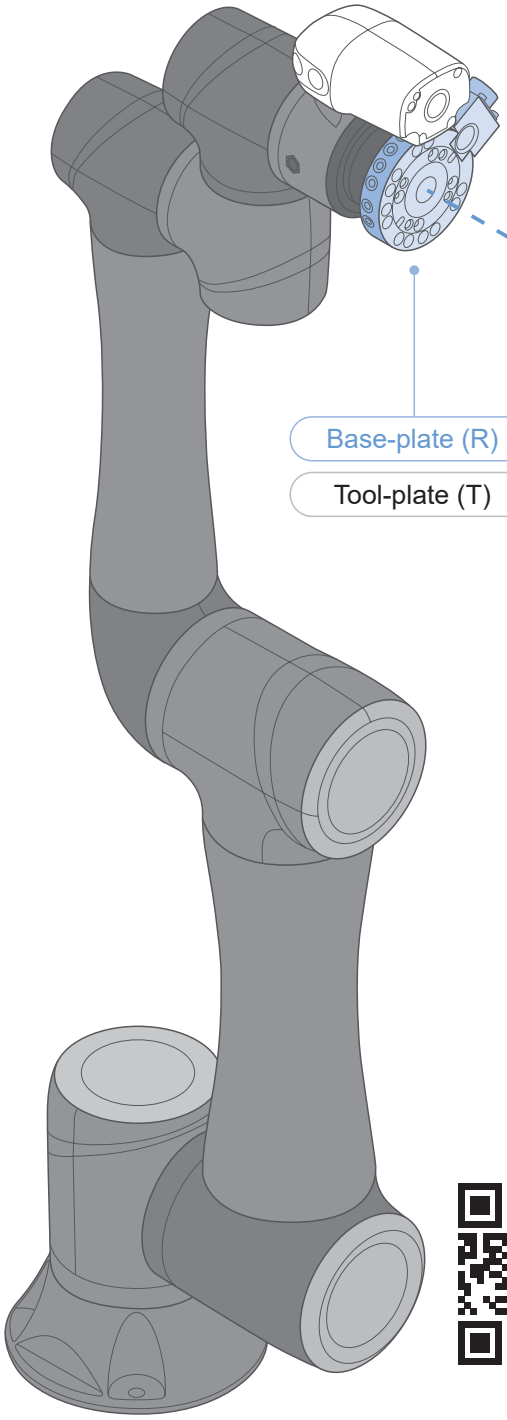
ROBOT ARM

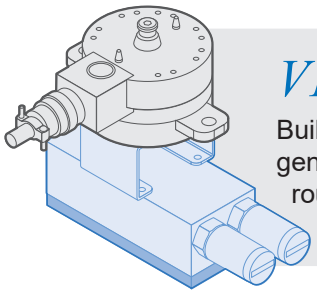
High rigidity, high location accuracy, high repeat accuracy.

Great production flexibility, save wiring time and lower labor cost.

AUTOMATIC TOOL CHANGER

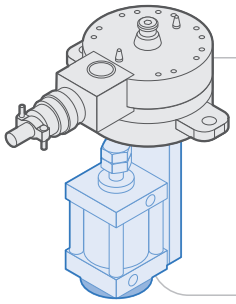
MCTC seires: One Base-plate (R) can match multiple Tool-plates (T). Tool-plates can be installed with gripper, pneumatic tool or vacuum pad etc...





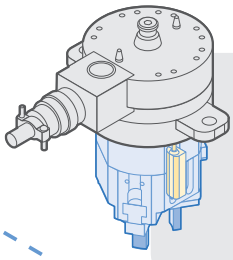
VMG series

Built-in large flow vacuum generator. Suitable for irregular/ rough surfaces. Lifting objects with partial suction is capable.



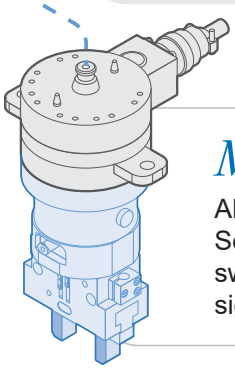
Magnet Gripper

Attracting and holding workpieces with magnet. Attraction force adjustable through the nuts.



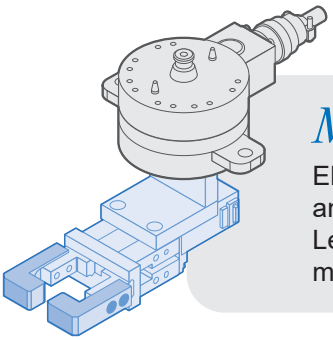
MCHJ series

Parallel gripper with **RLZ** series linear position sensor. Gripping storke can be measured.



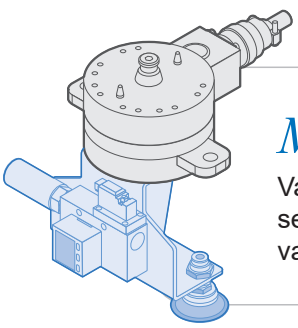
MCTA series

All-in-One pneumatic gripper. Solenoid valves and sensor switches embedded. Only one I/O signal cable and air tube required.



MEHC2 series

Electric gripper. Gripping force and stroke programmable. Less power consumption and more eco-sustainable.



MVVA series

Vacuum generator with **MP41** series pressure sensor and vacuum pad.

TAIWAN EXCELLENCE 2022

Total handing weight	Size **20** : 25 kg	Size **41** : 50 kg

Order example of automatic tool changer

MCTC — 20 R —SIP

- MODEL
- SIZE: **20**, **41**
- HOUSING TYPE
- PROXIMITY SENSOR TYPE: Blank: Standard; **SIP**: proximity sensor type; * (R) Base plate only

Blank: Base + tool	**R**: Base plate	**T**: Tool plate
		

Electric feed-through module

K19 — MCTC — 20 R

- ELECTRIC FEED-THROUGH MODULE
- SIZE: **20**, **41**
- Housing type: **R**: Base plate; **T**: Tool plate

Cable

* Size 20 and 41 use the same cable.

KBL□ — MCTC — 20 R — 5M

- Blank: Straight cable (*1); **V**: Vertical cable

*1. Base plate (R) not suitable for straight cable.

Housing type	Cable
R: Base plate	**5M**: 5000mm **10M**: 10000mm
T: Tool plate	**1M**: 1000mm **3M**: 3000mm

Features

- High rigidity locating pins with special treatment for good service life.
- Tapered locating stud for high locating accuracy.
- Repeat accuracy ±0.015mm
- Ejection mechanism for releasing base plate (R) and tool plate (T).
- Self-locking mechanism for preventing plates from ejecting when pneumatic source was accidently removed.
- Accurate connection change with electric module to avoid manual operation mistakes.
- ISO flange for easy-mounting on most of the robot arms.

Specification

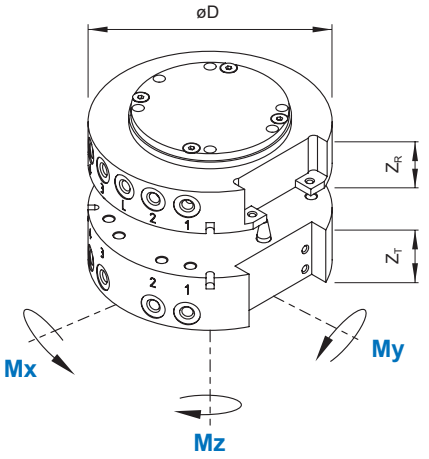
Model			MCTC	
Size			20	41
Recommended handing weight (*1)	Tool (*2)	(kg)	3.5	18
	Workpiece	(kg)	21.5	32
Locking force (*3)		(N)	2300	4500
Repeat accuracy		(mm)	±0.015	
Max. permissible XY-axis offset		(mm)	±1	±2
Max. permissible angular offset		(°)	±2	
Operating pressure		(MPa)	0.45~0.7	
Ambient temperature		(°C)	+5 ~ +60	
Proximity sensor			RJY (Please refer to page 155)	
Weight	Base plate (R)	(kg)	0.47	1.3
	Tool plate (T)	(kg)	0.37	0.87

*1. Tool and workpiece please refer to Applications.
*2. With tool plate (T).
*3. Under locking condition.
*4. Spring, tapered locating stud, and locating pin are consumables. Please consider to replace when performing below expectations.

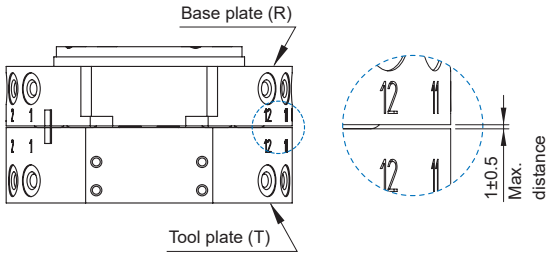
Electric feed-through module

Model		K19-MCTC-*			
Housing type		Base plate (R)		Tool plate (T)	
Size		20	41	20	41
Min. ambient temp.	(°C)	5			
Max. ambient temp.	(°C)	60			
Number of pin contacts		19			
Nominal current	(A)	3/pin			
Nominal voltage	(V DC)	50			
Electrical connection		Bayonet lock connector (male)		Bayonet lock socket (female)	
Weight	(g)	85	118	91	119

Max. allowable moment



Max. distance when locking

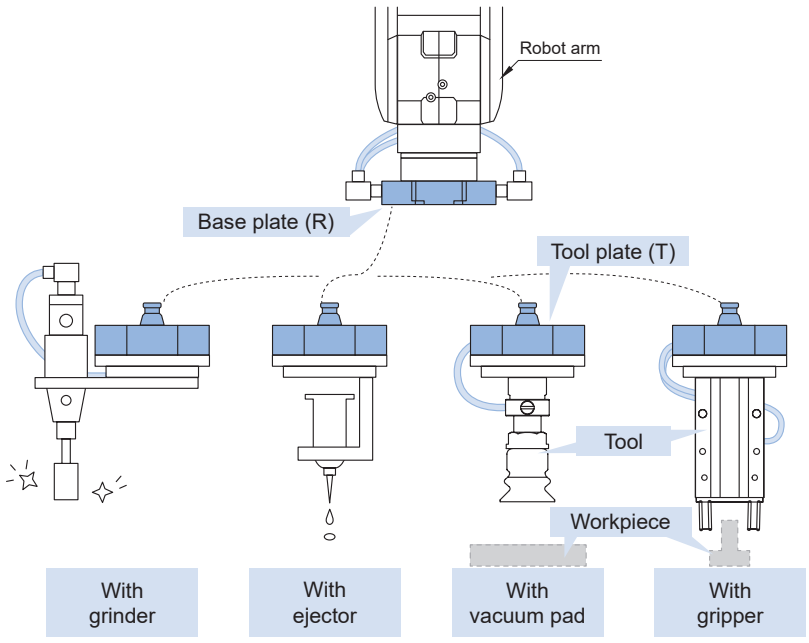


Size	øD	Z_R	Z_T	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)
20	90	18.7	23.7	161	161	209
41	130	32.3	27	447	447	616

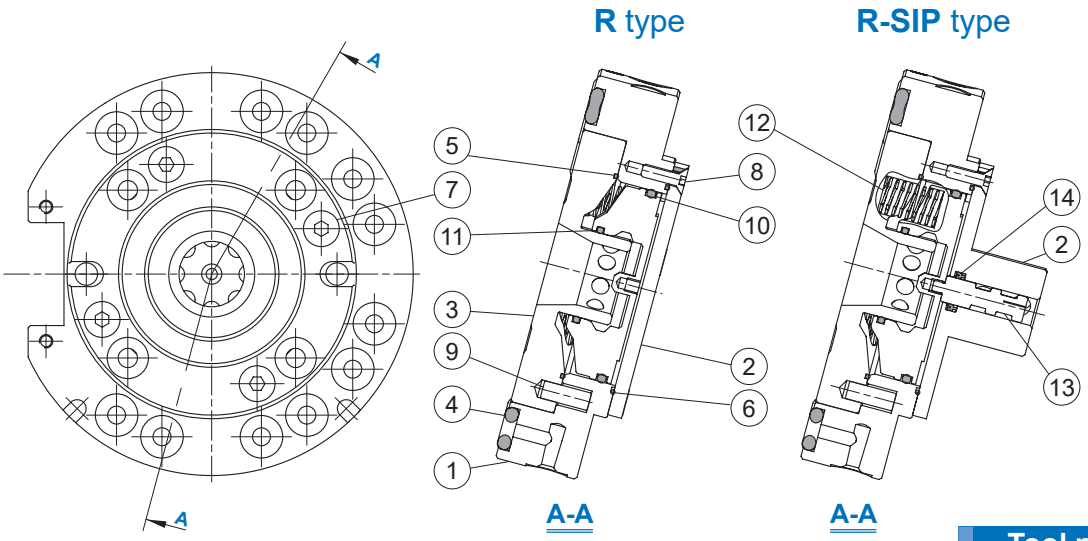
* Only for locking state.

Applications

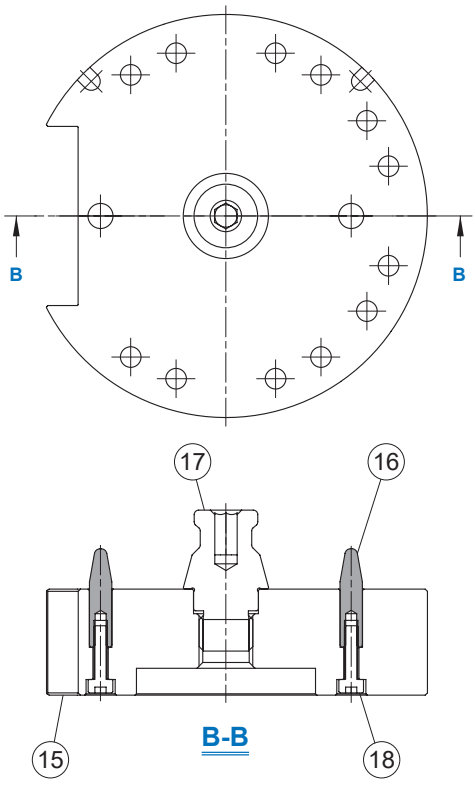
1. MCTC can be used on any type of robot arm.
2. The main feature is the quick tool exchange with good repeat accuracy.
3. MCTC can be used for various applications within max. 50 kg (Size 41) total load as shown below.



Base plate



Tool plate



Material – Base plate (R)

No.	Part name	Material	Q'y / Size		Repair kits (inclusion)
			20	41	
1	Body	Aluminum alloy	1		
2	Cover	Aluminum alloy	1		
3	Locator	Composite material	1		
4	O-ring	NBR	12	10	●
5	O-ring	NBR	1		●
6	O-ring	NBR	1		●
7	Bolt	Stainless steel	4		
8	Bolt	Stainless steel	4		
9	Pin	Carbon steel	1		
10	O-ring	NBR	1		●
11	O-ring	NBR	1		●
12	Spring	Spring steel	6		●
13	Detection shaft	Stainless steel	1*		
14	Packing	NBR	1*		●

* Only for base plate – proximity sensor type (R-SIP).

Material – Tool plate (T)

No.	Part name	Material	Q'y	Repair kits (inclusion)
15	Body	Aluminum alloy	1	
16	Locating pin	Alloy steel	2	●
17	Tapered locating stud	Stainless steel	1	●
18	Bolt	Stainless steel	2	●

Order example of repair kits

Size	Base plate (R)	Base plate (R) – proximity sensor type (R-SIP)	Tool plate (T)
20	**PS-MCTC-20R**	**PS-MCTC-20R-SIP**	**PS-MCTC-20T**
41	**PS-MCTC-41R**	**PS-MCTC-41R-SIP**	**PS-MCTC-41T**

Base plate (R)

Thread (×2)

For inductive proximity sensor.

Ejection Mechanism

Eject the plates with piston force smoothly without interference.

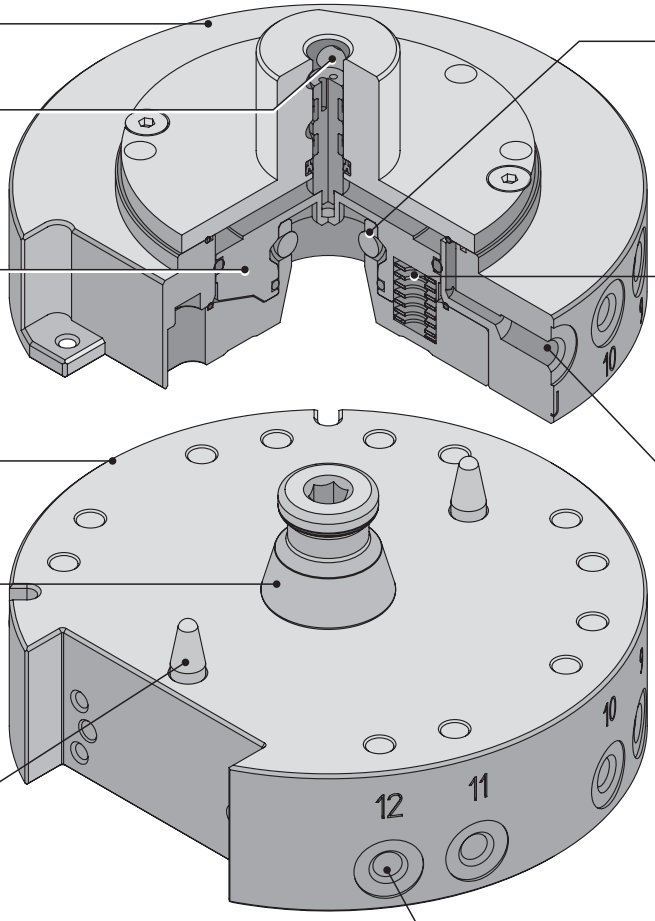
Tool plate (T)

Tapered locating stud

Tapered locating stud for high locating accuracy.

Locating pin (×2)

Tempered locating pin for good non-rotating accuracy.



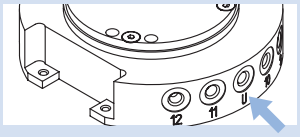
Locking mechanism

High accurate curved plate fitting for smooth combining and releasing.

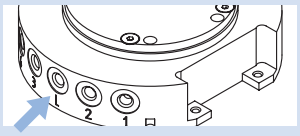
Self-locking mechanism

Prevent the plates from releasing with high tension springs when the pneumatic source is accidently removed.

Unlock (U)



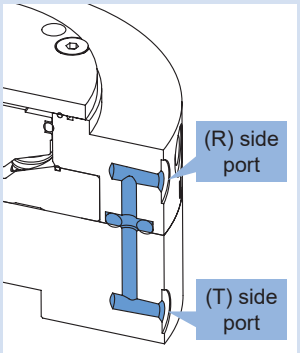
Lock (L)



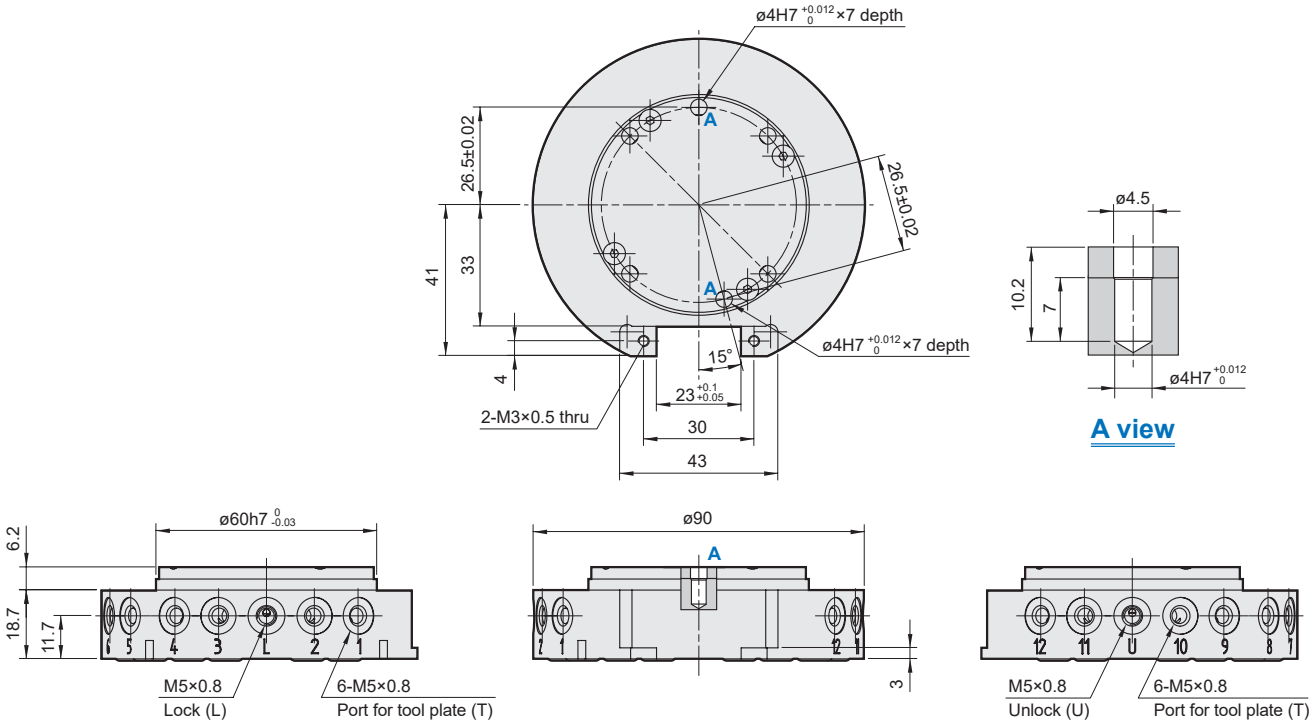
Air inlet

Without interfering contours due to the integration into the housing. Also suitable for vacuum.

* Ports with identification number for piping.

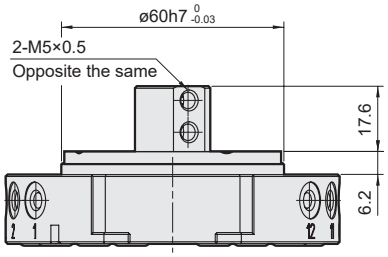


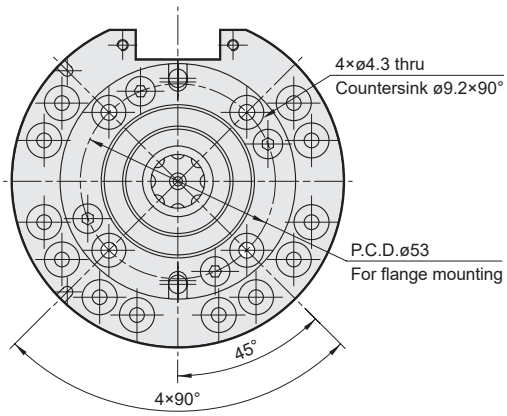
R Base plate



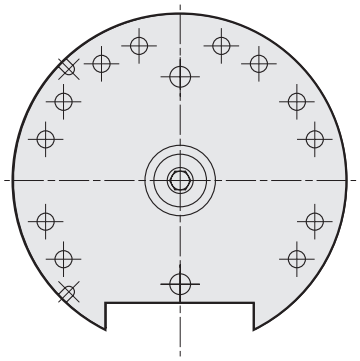
MCTC-20R-SIP

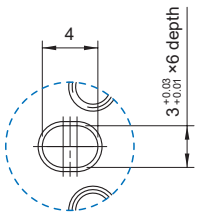
for proximity sensor



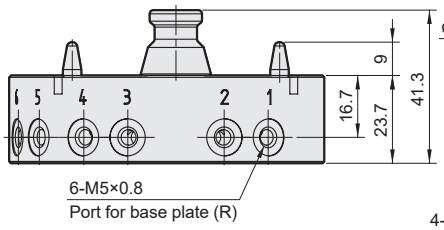


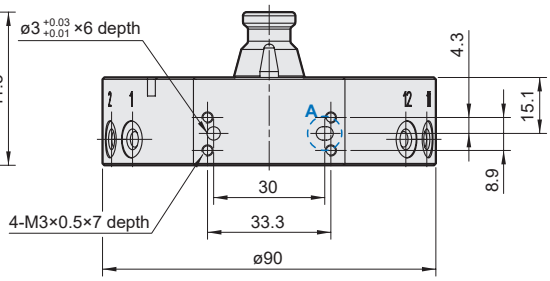
T Tool plate

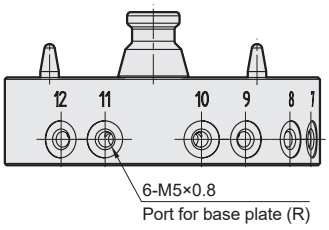


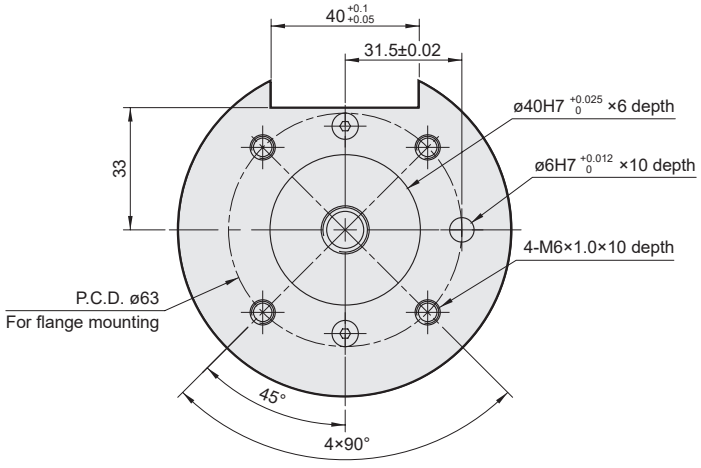


A view

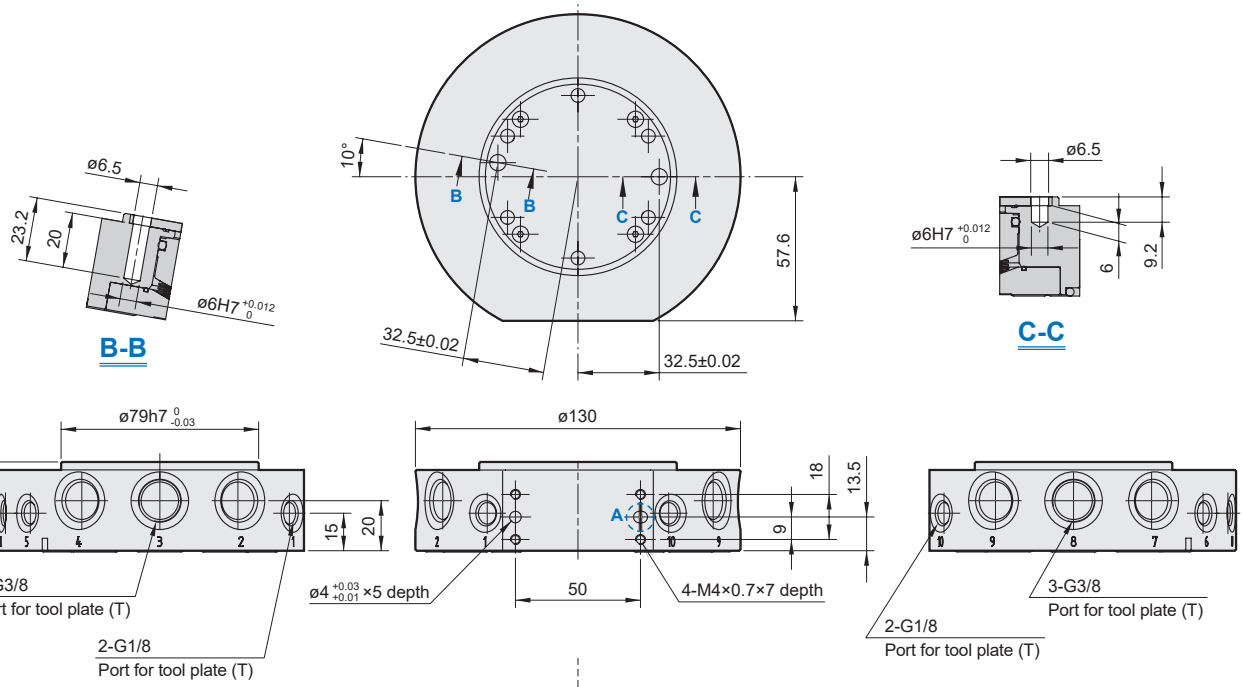


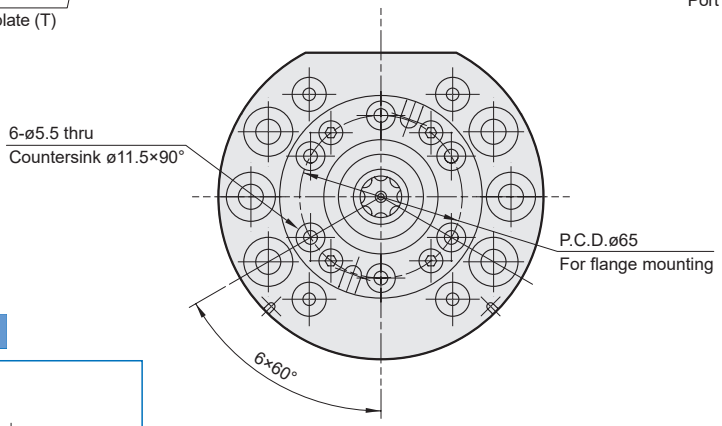


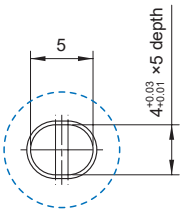




R Base plate



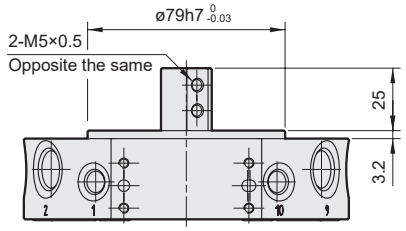


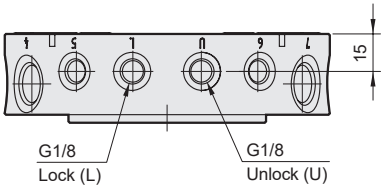


A view

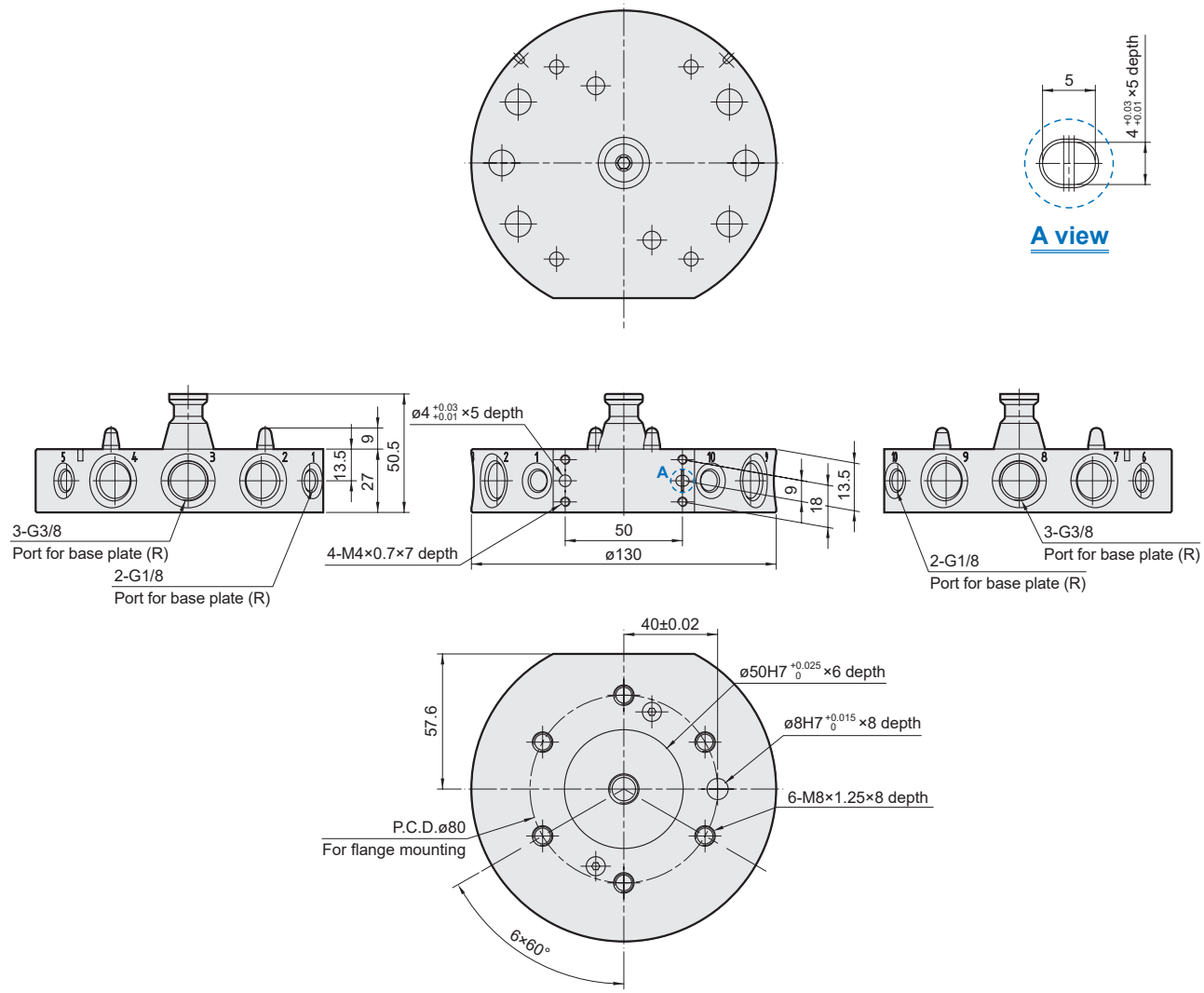
MCTC-41R-SIP

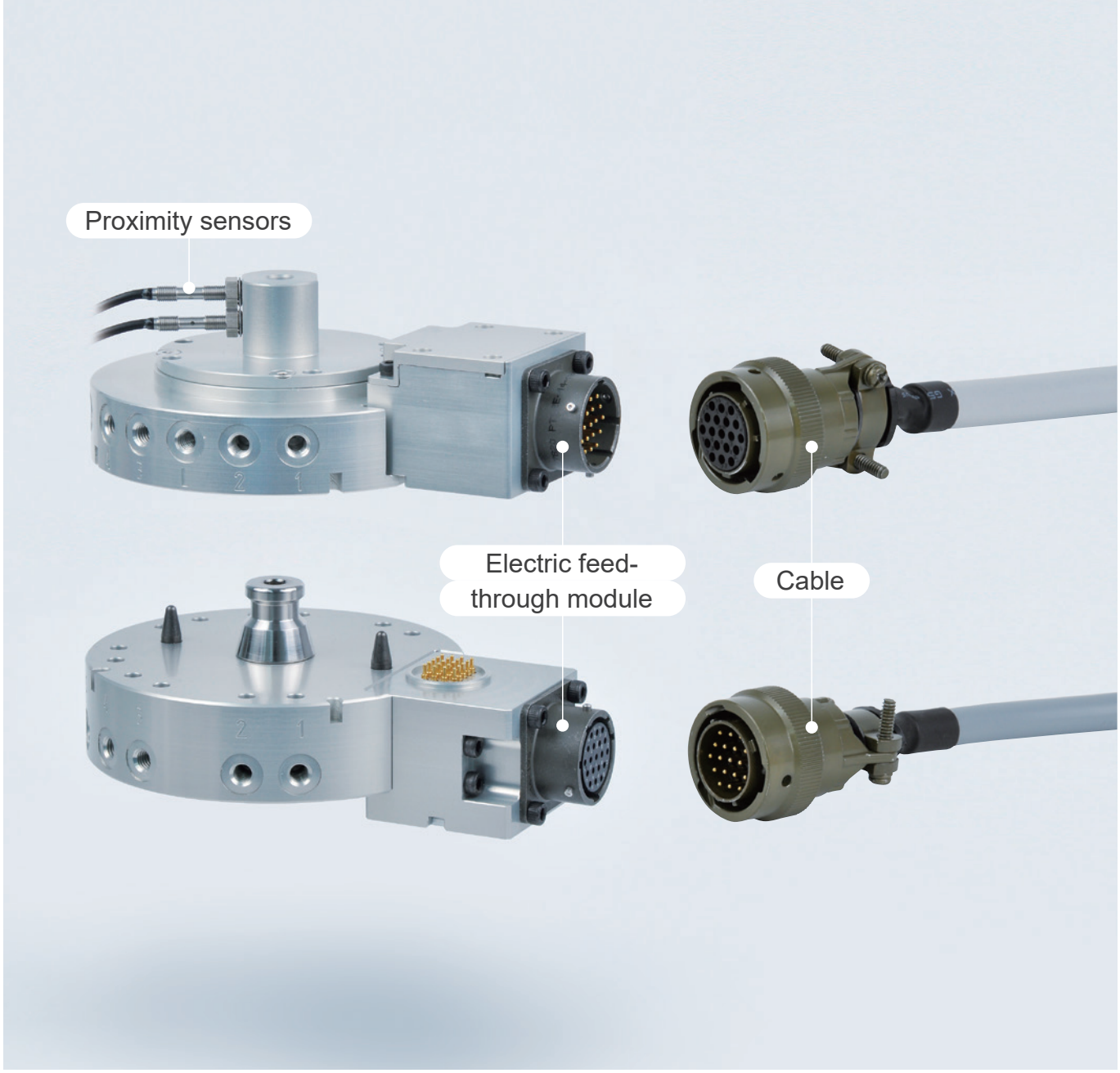
for proximity sensor





T Tool plate


5
4 +0.03 +0.01 ×5 depth
A view
ø4 +0.03 +0.01 ×5 depth
3-G3/8
Port for base plate (R)
2-G1/8
Port for base plate (R)
4-M4×0.7×7 depth
50
ø130
3-G3/8
Port for base plate (R)
2-G1/8
Port for base plate (R)
40±0.02
ø50H7 +0.025 0 ×6 depth
ø8H7 +0.015 0 ×8 depth
6-M8×1.25×8 depth
P.C.D.ø80
For flange mounting
6×60°
57.6
13.5
9
27
50.5
18



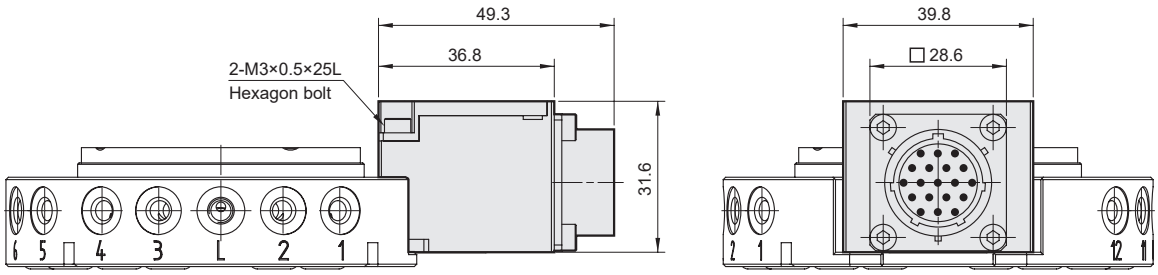
Proximity Sensors

- Proximity sensors can be installed on the Base-plate.
- The proximity sensors can check the position of the product for easy remote trouble-shooting.

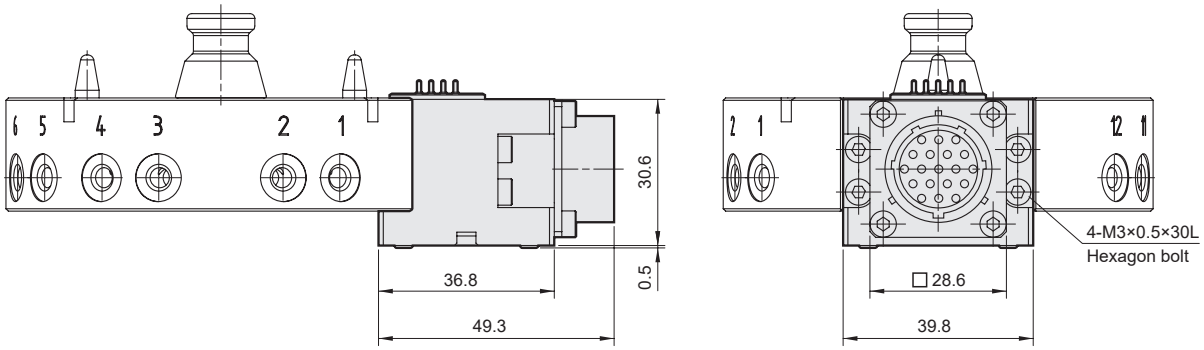
Electric Signal Module

- Main features
  Sensor signal feedback.
  Prevent signal error from frequent connection/disconnection.
  Reduce failure chance from manual configuration.
- Precise military connector
- IP65 (When base-plate and tool-plate are connected)

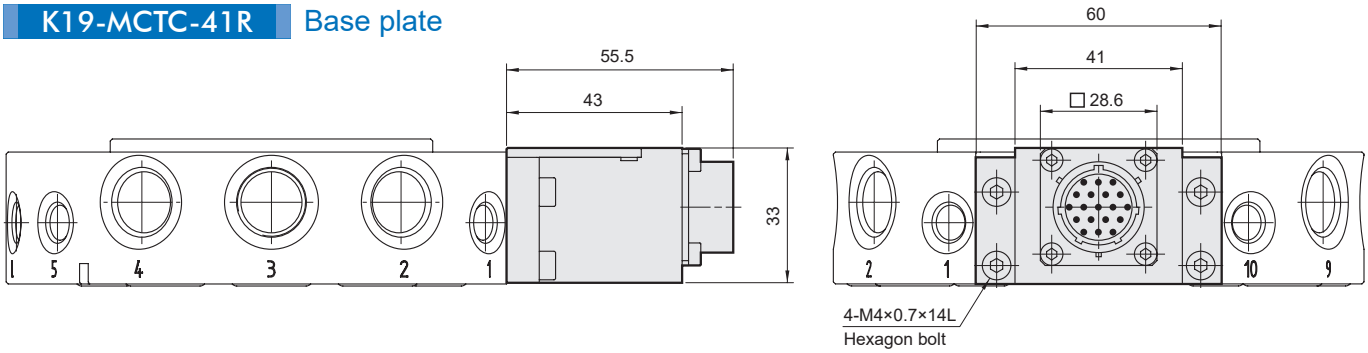
K19-MCTC-20R Base plate



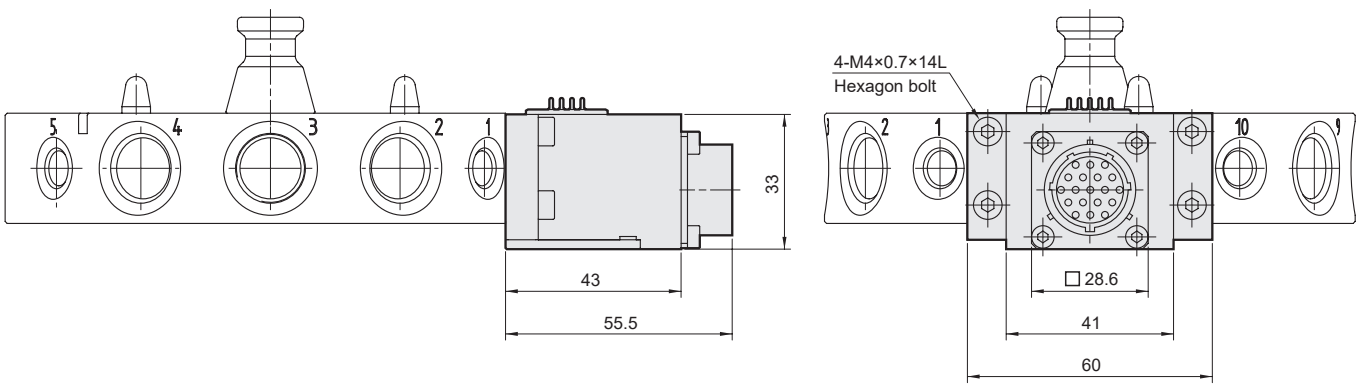
K19-MCTC-20T Tool plate



K19-MCTC-41R Base plate

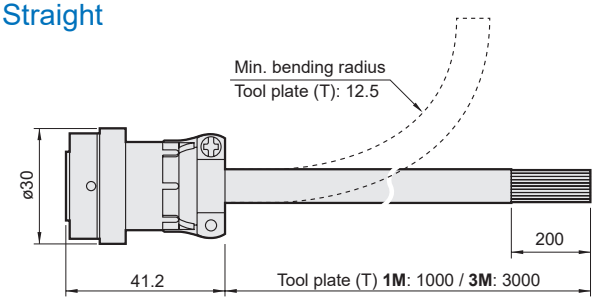


K19-MCTC-41T Tool plate



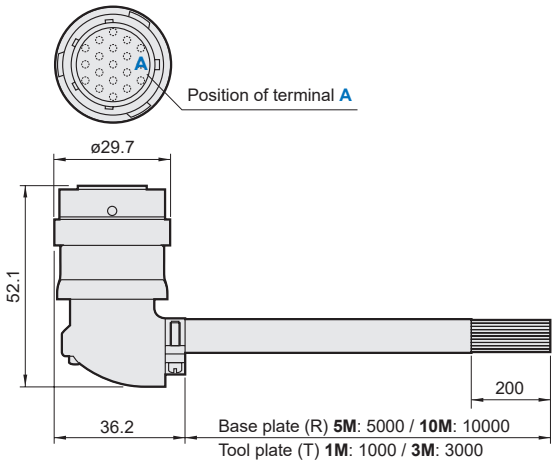
KBL-MCTC-20T Straight

Size 20 and 41 use the same cable



KBLV-MCTC-20R/T Vertical

Size 20 and 41 use the same cable



19 Pin layout

Electric		Way	Color	Cable	
Base plate (R) Bayonet lock connector (Male)	A	<----< <----<	White	A	**Base plate** (R) (Female)
	B	<----< <----<	Brown	B	
	C	<----< <----<	Green	C	
	D	<----< <----<	Yellow	D	
	E	<----< <----<	Gray	E	
	F	<----< <----<	Pink	F	
	G	<----< <----<	Blue	G	
	H	<----< <----<	Red	H	
	J	<----< <----<	Black	J	
	K	<----< <----<	Violet	K	
Tool plate (T) Bayonet lock socket (Female)	L	<----< <----<	Gray/Pink	L	**Tool plate** (T) (Male)
	M	<----< <----<	Red/Blue	M	
	N	<----< <----<	White/Green	N	
	P	<----< <----<	Brown/Green	P	
	R	<----< <----<	White/Yellow	R	
	S	<----< <----<	Yellow/Brown	S	
	T	<----< <----<	White/Gray	T	
	U	<----< <----<	Gray/Brown	U	
	V	<----< <----<	White/Pink	V	

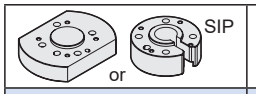
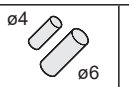
Accessory kits of ISO adapter board

* for base plate (R)

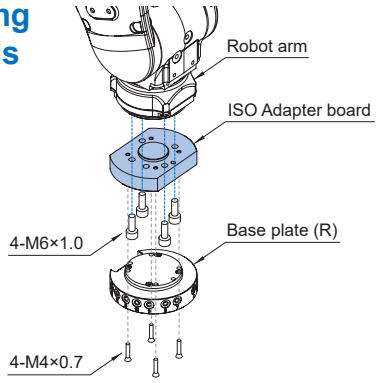
AK — MCTC — 20R — SIP — A50

PROXIMITY SENSOR TYPE
Blank: Standard type
SIP: Proximity sensor type

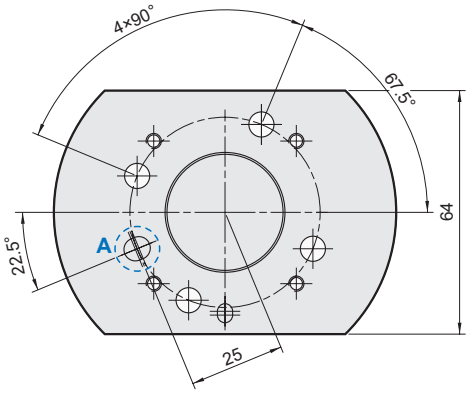
ADAPTER BOARD P.C.D

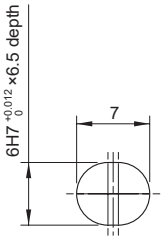
			
ISO Adapter board	Pin (each 1)	Bolt (×4)	Bolt (×4)

Mounting methods

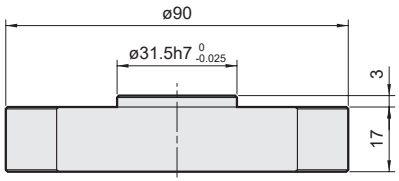


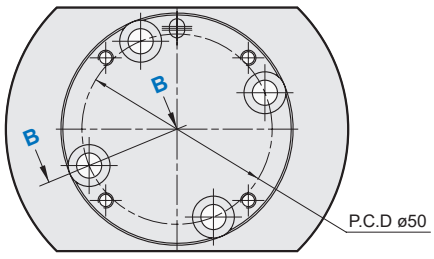
A50

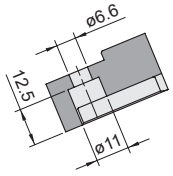




A view



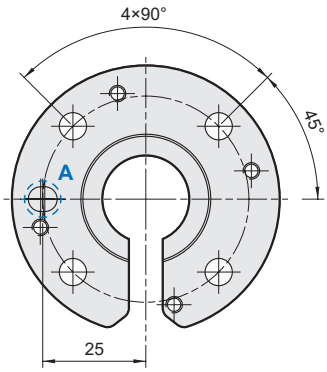


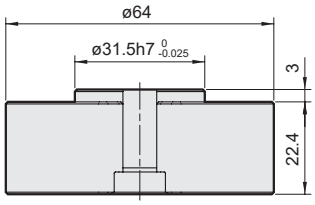


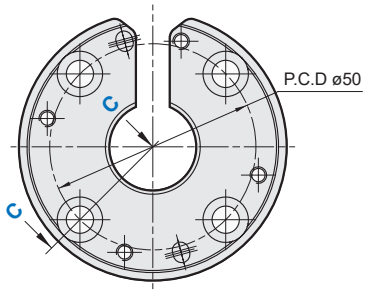
B-B

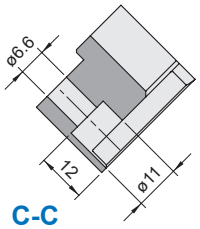
SIP-A50

Proximity sensor type









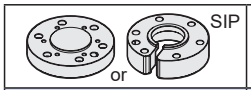
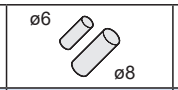
C-C

Accessory kits of ISO adapter board

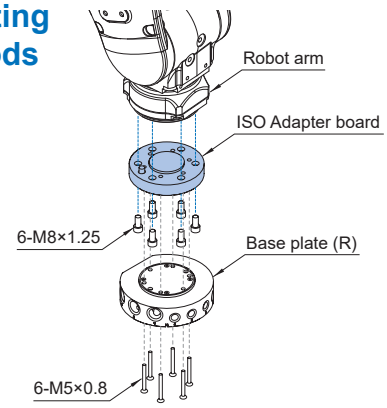
* for base plate (R)

AK — MCTC — 41R — SIP — A80

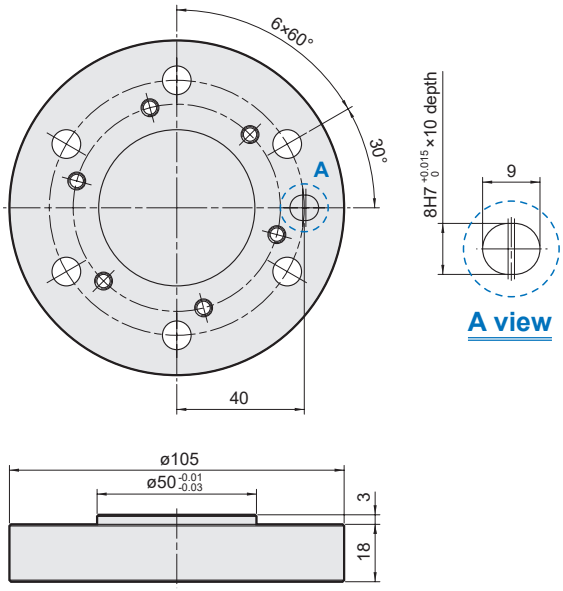
- SIP: PROXIMITY SENSOR TYPE
  Blank: Standard type
  SIP: Proximity sensor type
- A80: ADAPTER BOARD P.C.D

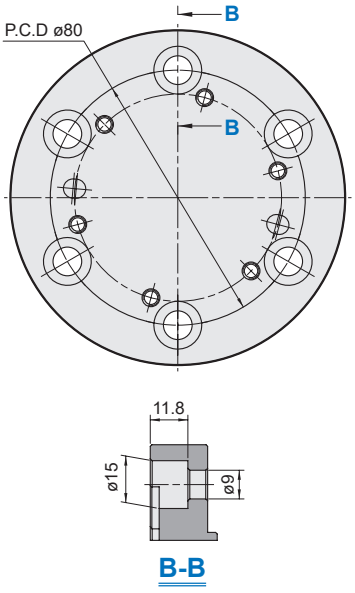
			
ISO Adapter board	Pin (ø6×2, ø8×1)	Bolt (×6)	Bolt (×6)

Mounting methods



A80

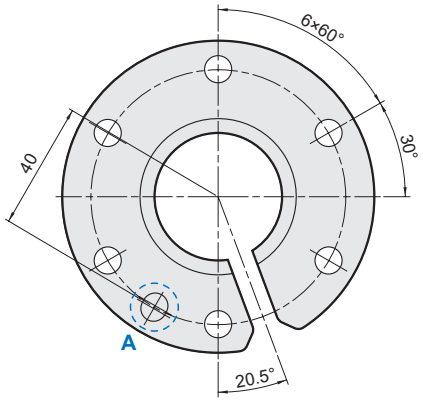


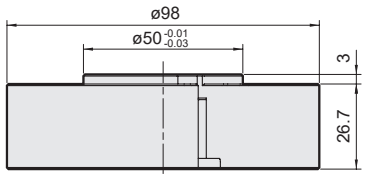


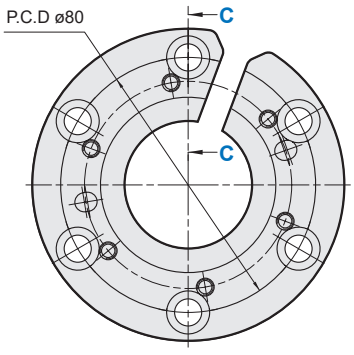
B-B

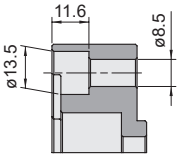
SIP-A80

Proximity sensor type

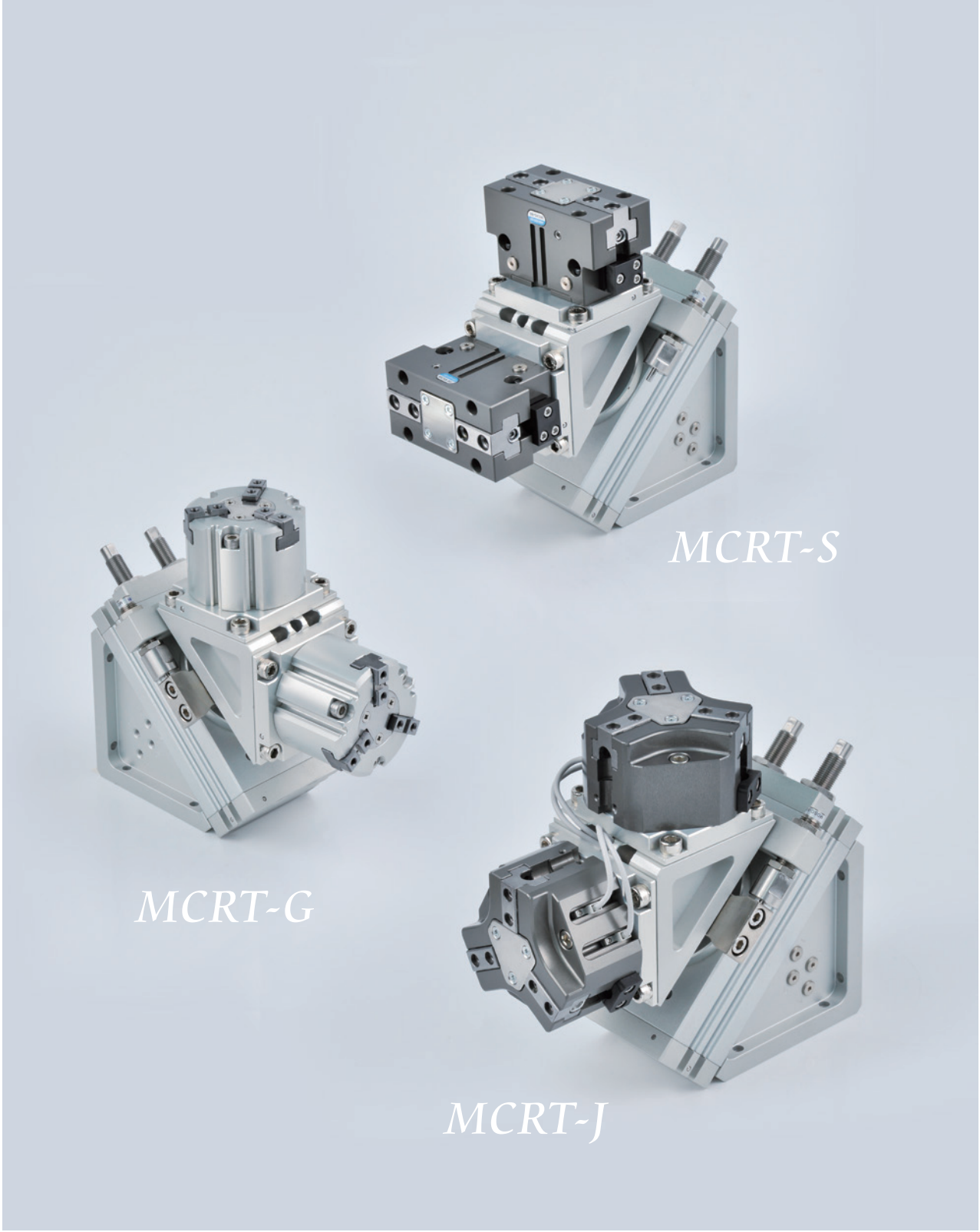








C-C



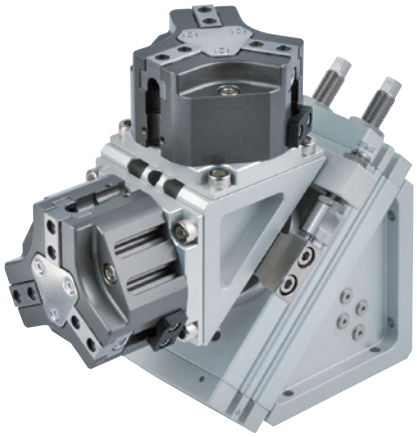
Connect with

ROBOT ARM

Modular rotation and gripping
system for automation applications.

MCRT series

180° ROTATION GRIPPER



Order example

MCRT — 20 — J66

- MODEL
- TUBE I.D.: 20, 25
- GRIPPER MODULE

Code	Model	Size	Tube I.D.	Description
S50	MCHS	50	20	2 finger
S66		66		
S80		80		
S100		100	25	
S125		125		
J50	MCHJ	50	20	3 finger
J66		66		
J80		80	25	
J100		100		
G16	MCHG2 (*)	16	20	
G20		20		
G25		25		
G32		32		
G40		40		
G50		50	25	
G63		63		

* The MCHG2 on MCRT series is modified.
Please contact us if you need to replace it.

Weight

Unit: kg

Rotary actuator + gripper module×2				
Size	MCHS	MCHJ	Size	MCHG2
50	3.5	3.8	16	3.4
66	3.8	4.2	20	3.5
80	4.2	7.0	25	3.6
100	7.1	8.8	32	3.7
125	8.8	–	40	4.1
			50	6.4
			63	7.4

Features

- Hollow shaft design for easy sensor wiring.
- Various grippers are available for exchange.
- Hose-free direct connection: Air supply tunnel can connect directly without piping to assure the flexible when rotating.
- Modular rotation and gripping system for automation applications.
- Water repellent design for environment with cutter fluid.
- Magnetic as standard. Can be used with embedded sensors.

Specification – Rotation gripper

Model	MCRT	
Tube I.D. (mm)	20	25
Port size	Rotary actuator piping: Rc1/8 Gripper piping: M5×0.8	
Rotary angle	180°	
Medium	Air	
Operating pressure range (MPa)	0.45~0.7	
Ambient temperature	+5~+60°C (No freezing)	
Lubrication	Not required	
Sensor switch *1	RDFE(V)	
Cushion	Shock absorber *2	
Max. allowable kinetic energy (J) *3	1.21	1.82
Rotary cylinder torque (N.m)	3	5.5

*1. RDFE(V) specification, please refer to page 149.
*2. The shock absorber is expendable. Replace when damping performance decrease.
*3. Excluding gripper module.

Specification – Gripper

Model	MCHS	MCHJ	MCHG2
Operating pressure range (MPa)	0.3~0.8	0.2~0.8	0.2~0.6 (0.1~0.6) *
Sensor switch	RDFEV (Please refer to page 149)		

* ( ) for gripper module G32~G63.

MCHS size		S50	S66	S80	S100	S125
Effective gripping force at 0.6 MPa	(N)	69	122	225	315	505
	(mm)	40 (clamping length)				

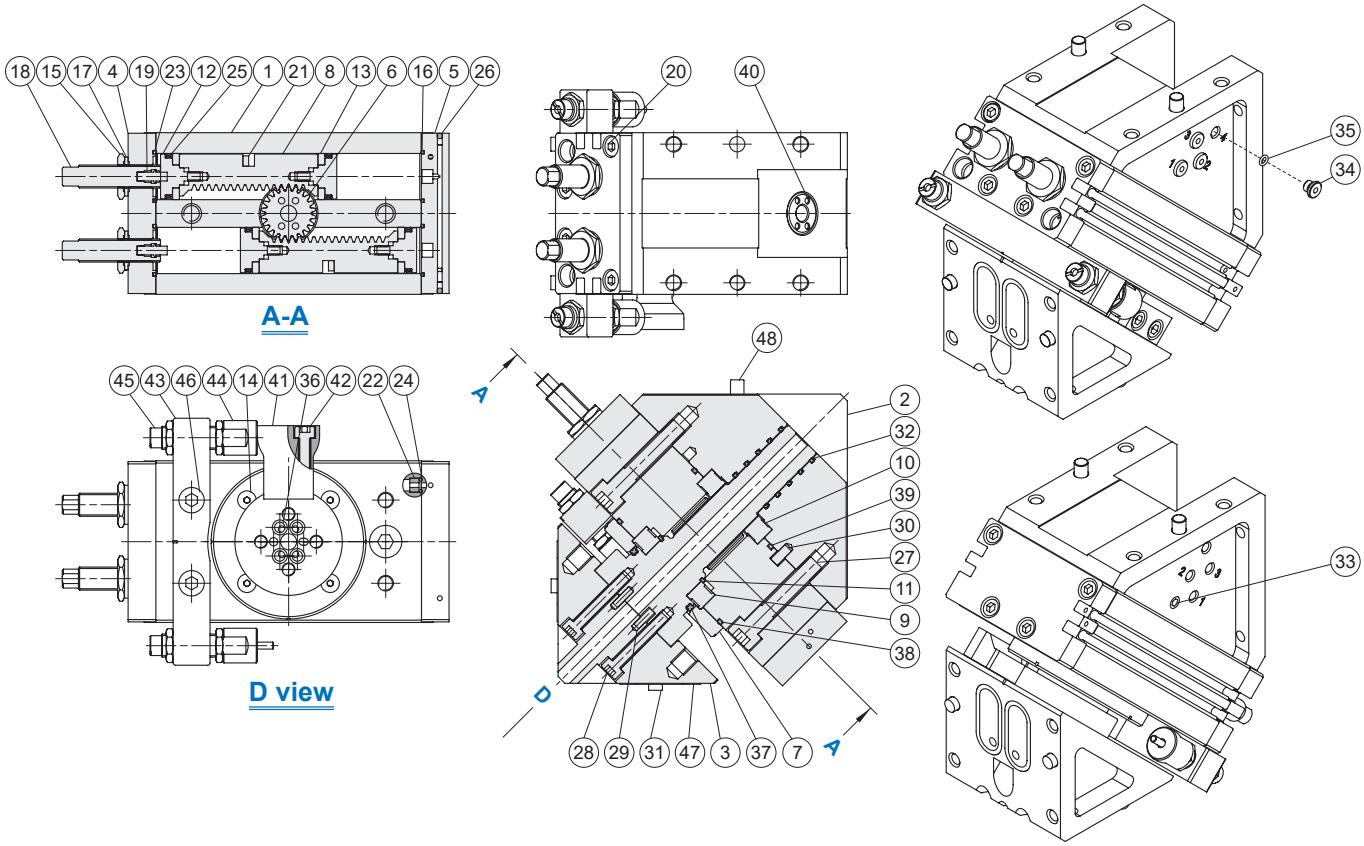
* MCHS series specification, please refer to page 64.

MCHJ size		J50	J66	J80	J100
Effective gripping force at 0.6 MPa	(N)	95	177	297	527
	(mm)	40 (clamping length)			

* MCHJ series specification, please refer to page 86.

MCHG2 size		G16	G20	G25	G32	G40	G50	G63
Effective gripping force at 0.5 MPa	(N)	15	26	42	69	110	180	301
	(mm) *1	20			30			

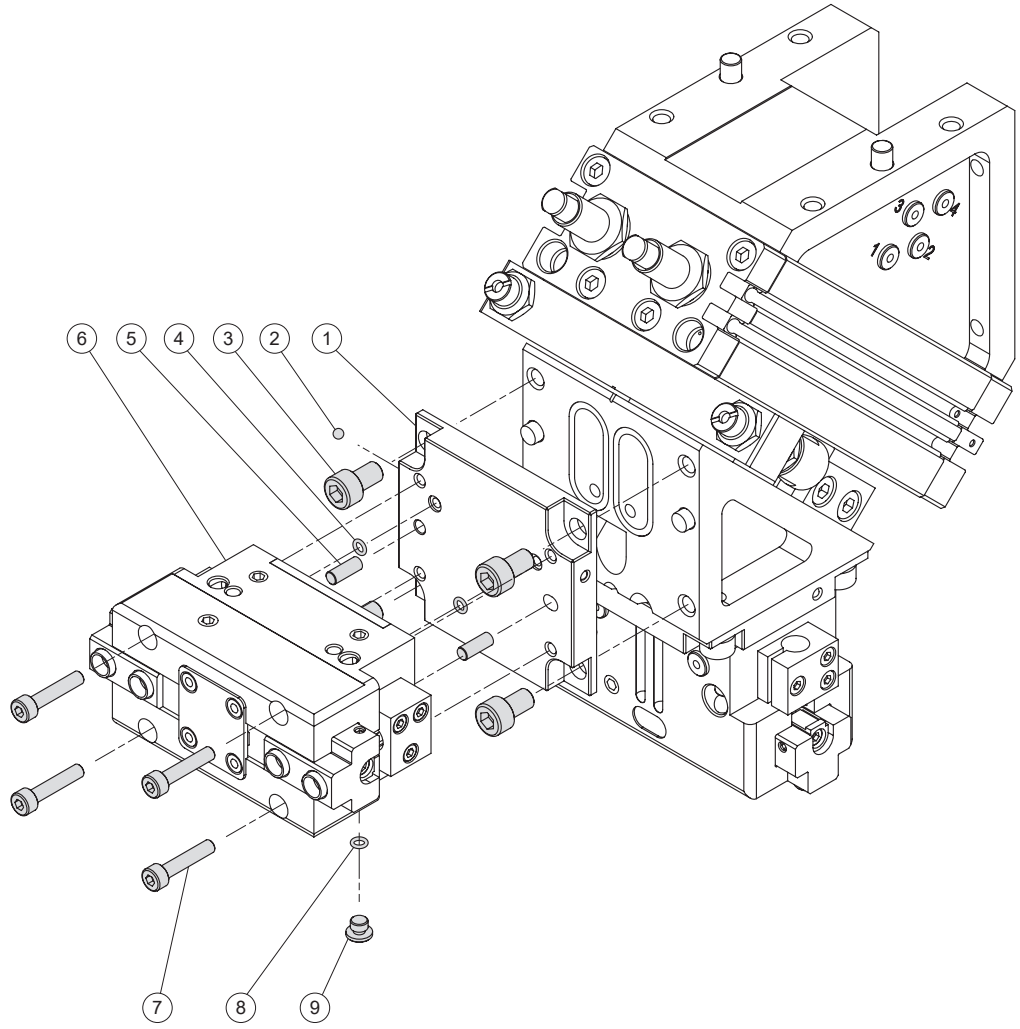
*1. Clamping length
*2. MCHG2 series specification, please refer to page 80.



Material

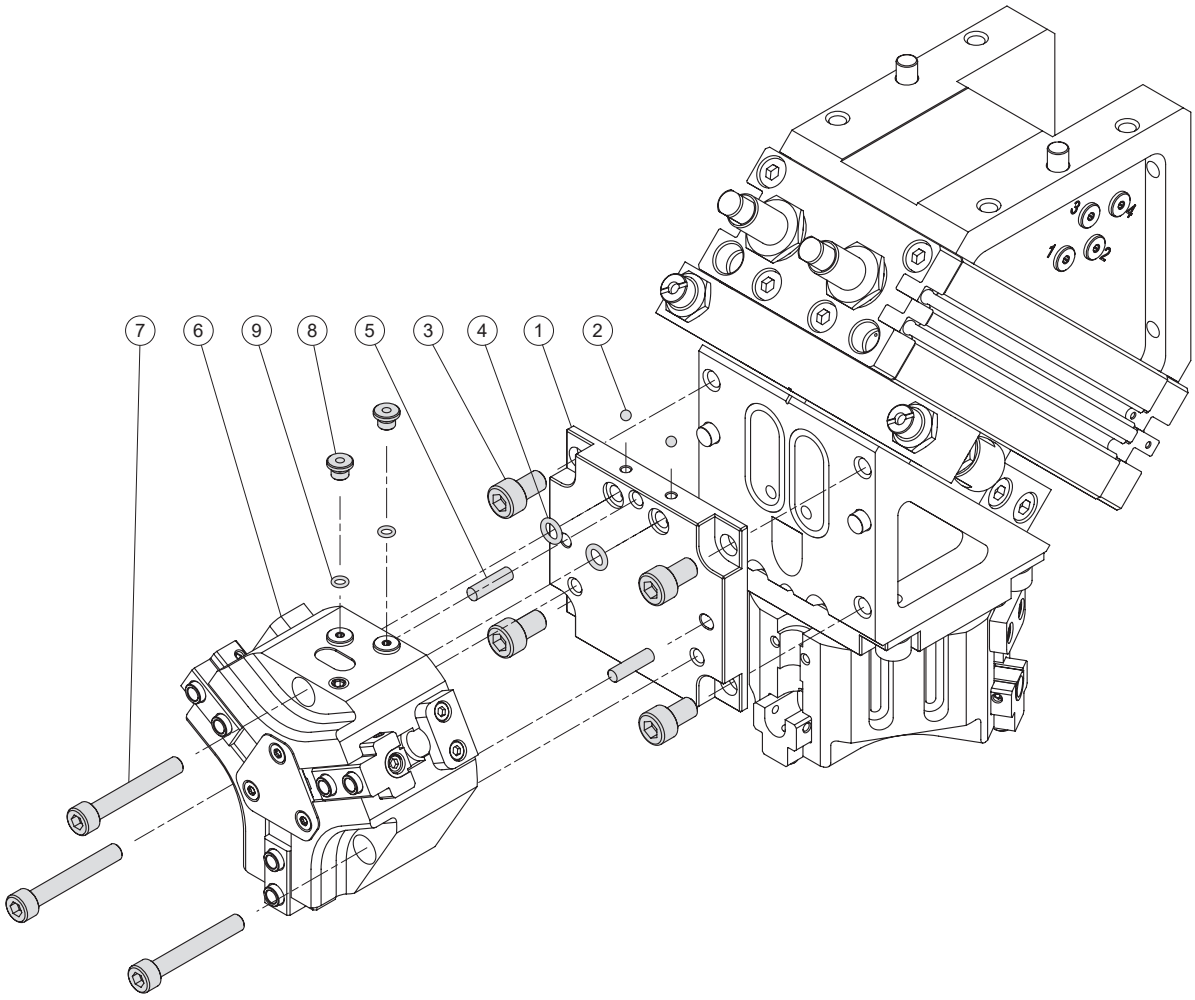
No.	Part name	Material	Q'y
1	Body	Aluminum alloy	1
2	Base	Aluminum alloy	1
3	Gripper fixed seat	Aluminum alloy	1
4	Cover	Aluminum alloy	1
5	End cover	Aluminum alloy	1
6	Pinion	Alloy steel	1
7	Bearing retainer	Aluminum alloy	1
8	Piston	Stainless steel	2
9	Ball bearing	Bearing steel	1
10	Ball bearing	Bearing steel	1
11	Snap ring	Spring steel	1
12	Piston	Aluminum alloy	4
13	Wear ring	Resin	4
14	Bolt	Carbon steel	4
15	Nut	Stainless steel	2
16	O-ring	NBR	2
17	Seal washer	NBR+Carbon steel	2
18	Adjust screw	Stainless steel	2
19	Cushion pad	NBR	2
20	Bolt	Stainless steel	8
21	Magnet	Magnet material	2
22	Fixed	Copper	2
23	Piston packing	NBR	2
24	O-ring	NBR	2

No.	Part name	Material	Q'y
25	Piston Seal	NBR	4
26	Ball	Stainless steel	6
27	Bolt	Stainless steel	2
28	Bolt	Stainless steel	4
29	Pin	Steel	2
30	Pin	Steel	1
31	Pin	Steel	4
32	Piston Seal	NBR	5
33	Screw	Stainless steel	1
34	Plug	Copper	4
35	O-ring	NBR	4
36	O-ring	NBR	4
37	Piston Seal	NBR	1
38	O-ring	NBR	1
39	O-ring	NBR	1
40	Ball	Stainless steel	4
41	Fixing plate	Carbon steel	1
42	Bolt	Stainless steel	2
43	Cushion mount	Aluminum alloy	1
44	Fixing nut	Stainless steel	2
45	Shock absorber	–	2
46	Bolt	Stainless steel	2
47	O-ring	NBR	4
48	Pin	Steel	2



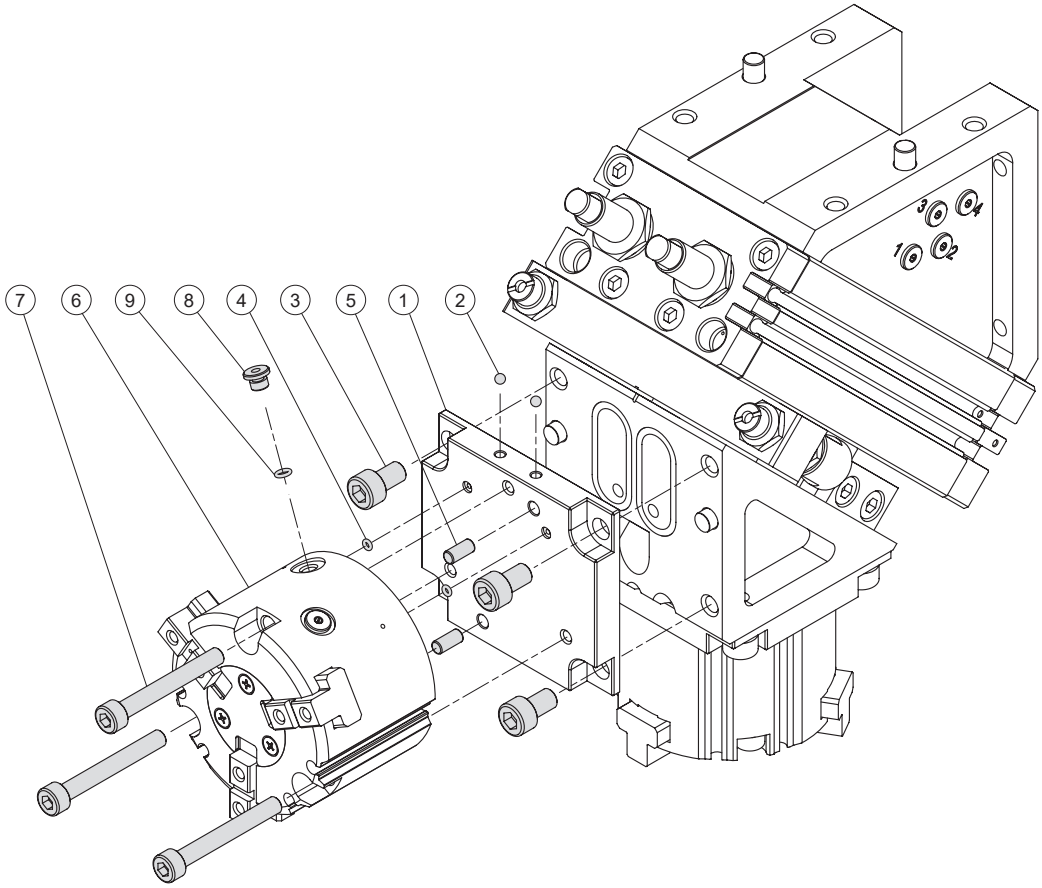
Material

with gripper **MCHS** series			Q'y	
No.	Part name	Material	MCRT-20	MCRT-25
			S50~S80	S100, S125
1	Connecting board	Aluminum alloy	2	2
2	Ball	Stainless steel	4	4
3	Bolt	Carbon steel	8	8
4	O-ring	NBR	4	4
5	Pin	Steel	4	4
6	MCHS Gripper	–	2	2
7	Bolt	Carbon steel	8	8
8	Plug	Copper	4	4
9	O-ring	NBR	4	4



Material

with gripper **MCHJ** series			Q'y			
No.	Part name	Material	MCRT-20		MCRT-25	
			J50	J66	J80	J100
1	Connecting board	Aluminum alloy	2	2	2	2
2	Ball	Stainless steel	–	4	–	4
3	Bolt	Carbon steel	8	8	8	8
4	O-ring	NBR	4	4	4	4
5	Pin	Steel	4	4	4	4
6	MCHJ Gripper	–	2	2	2	2
7	Bolt	Carbon steel	6	6	6	6
8	Plug	Copper	4	4	4	4
9	O-ring	NBR	4	4	4	4

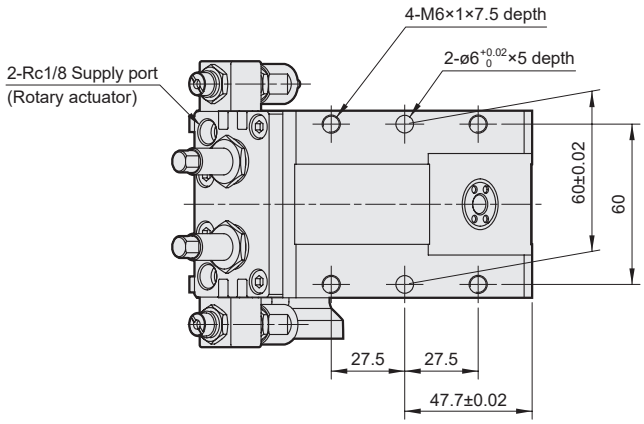


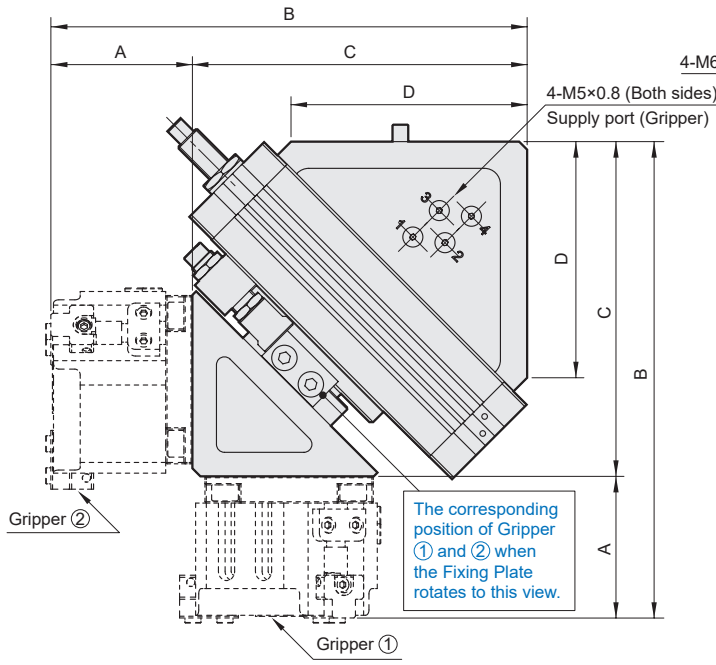
Material

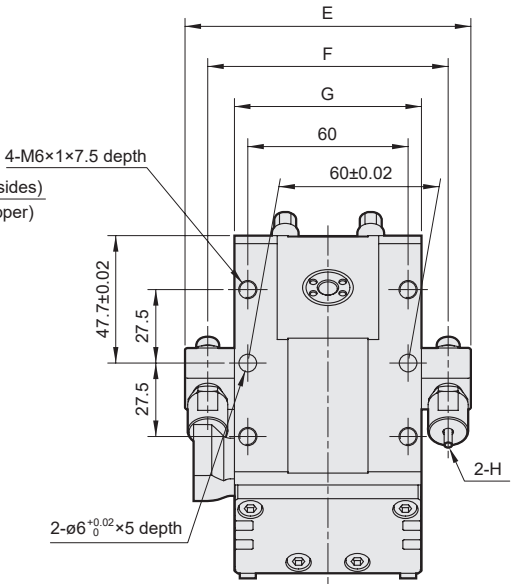
with gripper **MCHG2** series			Q'y			
No.	Part name	Material	MCRT-20		MCRT-25	
			G16	G20~G40	G50	G63
1	Connecting board	Aluminum alloy	2	2	2	2
2	Ball	Stainless steel	4	4	–	4
3	Bolt	Carbon steel	8	8	8	8
4	O-ring	NBR	4	4	4	4
5	Pin	Steel	4	4	4	4
6	MCHG2 Gripper	–	2	2	2	2
7	Bolt	Carbon steel	6	6	6	6
8	Screw	Stainless steel	4	–	–	–
	Plug	Copper	–	4	4	4
9	O-ring	NBR	–	4	4	4

MCRT Dimensions

180° ROTATION GRIPPER







Gripper								
MCHS			MCHJ			MCHG2		
Code / Tube I.D. / Size	A	B	Code / Tube I.D. / Size	A	B	Code / Tube I.D. / Size	A	B
20 S50	41	166.3	20 J50	45	170.3	G16	45	170.3
20 S66	49	174.3	20 J66	53	178.3	G20	48	173.3
S80	59	184.3	25 J80	60	211	20 G25	50	175.3
25 S100	65	216	25 J100	70	221	G32	54	179.3
25 S125	74	225				G40	57	182.3
						25 G50	65	216
						25 G63	76	227

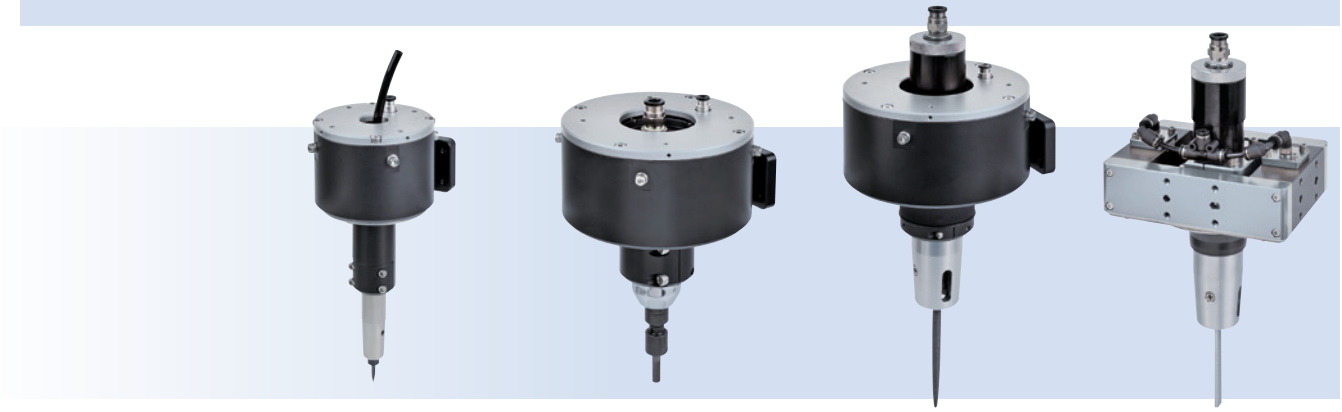
Supply port (Gripper)

Gripper	Gripper open	Gripper close
①	2	1
②	4	3

Code / Tube I.D.	C	D	E	F	G	H
20	125.3	88.4	107	90	70	MDSC-1008-3-N
25	151	94	135	110	80	MDSC-1412-3-N

COMPLIANT DEBURRING TOOL

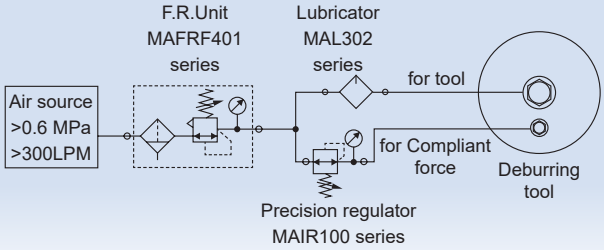
FOR ROBOT (RADIAL / ANGULAR)



Model	TRG20	TRG30	TRF20	TAF20
Compliant type	Radial	Radial	Radial	Angular
Applications	Curved edge	Curved edge	Curved edge	Straight edge
Burr size	S, M	L	S	S
Tool	Milling cutter	Milling cutter	Round file	File
Workpiece type	Plastic, die-casting	Plastic, die-casting	Die-casting	Die-casting

Suggested circuit diagram

Prepare a suitable air source as illustrated below.



Compliant type

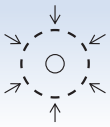
For different application requirements, there are two types of floats to choose from.

Angular

Floating in an angular direction. Allow lateral tolerance and position change. Suitable for straight line or plane deburring.

Radial

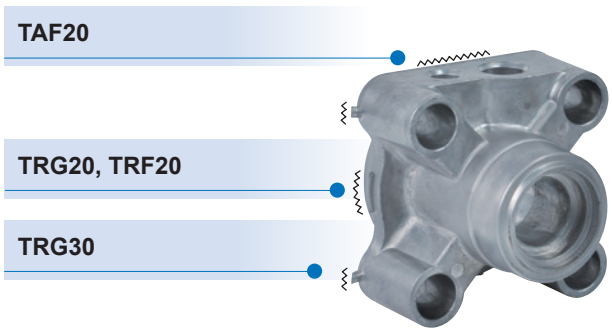
Floating in a radial direction. Allow radial tolerance or position change. Suitable for complex contour deburring.



Application of workpiece

① The contact force to the edge of the workpiece can be set. (Please refer to the manual for details)

② Improve work efficiency and workpiece quality.



< Die-casting workpiece >

TRG20 series

RADIAL COMPLIANT DEBURRING TOOL FOR ROBOT

(Milling cutter is not attached)

Feature

- Used to remove the smallest burrs on curved edges.
- Suitable for plastic, die-casting and machined workpieces.

Specification

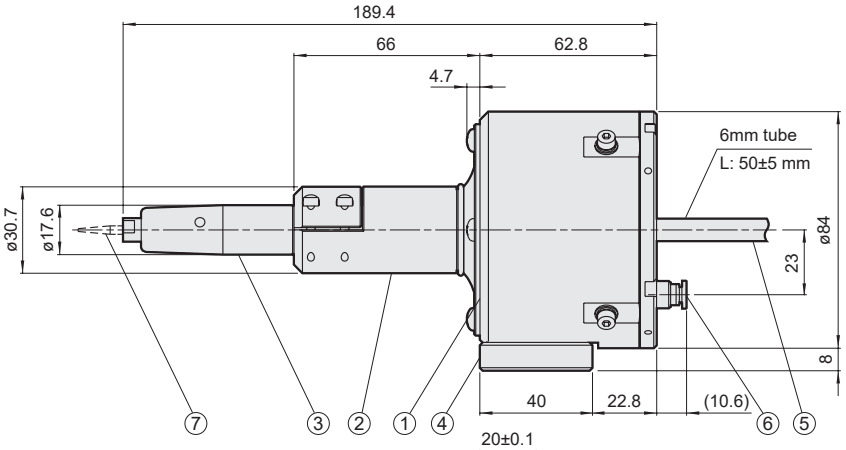
Model		TRG20
Compliant angle	(°)	3.5 (radial)
Compliant force	(N)	2-10
Nominal operating pressure	(MPa)	Compliant force: 0.1-0.5 Spindle: 0.6
Air source requirement		> 0.6 MPa, clean, dry, filtered ≤ 5μm
Air consumption	(LPM)	Compliant force: neglectable Spindle: 150
Oil consumption	(drops/min)	1-2 (for the spindle only, do not lubricate the compliant part)
Spindle type		Vane motor
Spindle idle speed	(RPM)	65000
Cutter shank diameter	(mm)	3
Ambient temperature	(°C)	+5~+35
Ambient moisture	(%)	< 95
Weight	(kg)	1.2

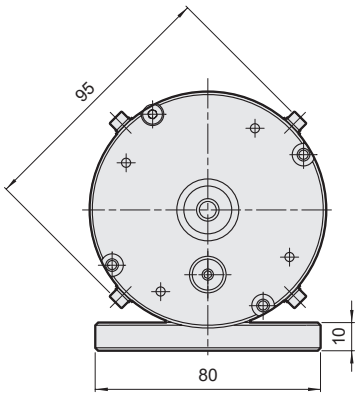
* Please contact our sales department when the product requires to be repaired and replacement of consumables. Unauthorized disassembly will void the warranty.

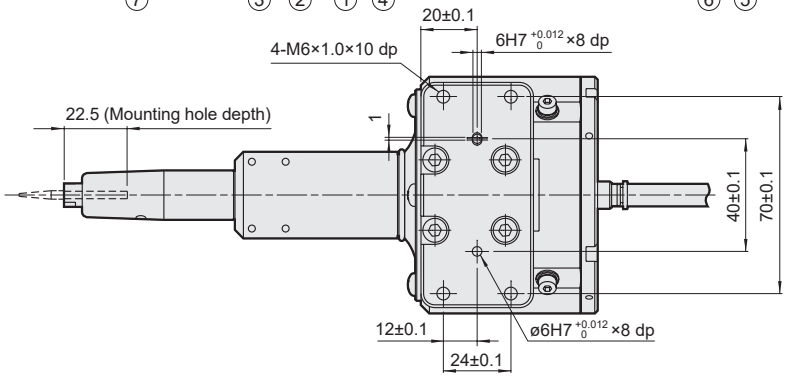
Order example

TRG20

MODEL







No.	Part	Q'y	Note
1	Housing	1	–
2	Spindle holder	1	–
3	Spindle	1	Consumable
4	Installation plate	1	–
5	Spindle air source	1	6 mm tube
6	Compliant air source	1	4 mm fitting
7	Milling cutter	0	Extra purchase

TRG30 series

RADIAL COMPLIANT DEBURRING TOOL FOR ROBOT

(Milling cutter is not attached)

Feature

- Used to remove the thicker burrs on curved edges.
- Suitable for plastic, die-casting and machined workpieces.

Specification

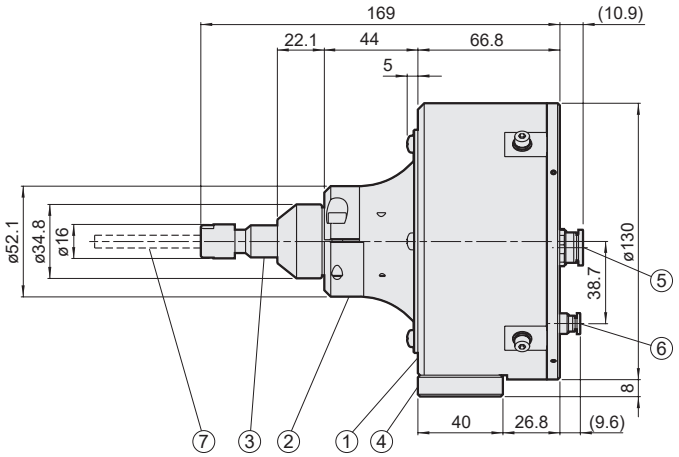
Model		TRG30
Compliant angle	(°)	3.5 (radial)
Compliant force	(N)	6-30
Nominal operating pressure	(MPa)	Compliant force: 0.1-0.5 Spindle: 0.6
Air source requirement		> 0.6 MPa, clean, dry, filtered ≤ 5μm
Air consumption	(LPM)	Compliant force: neglectable Spindle: 350
Oil consumption	(drops/min)	1-2 (for the spindle only, do not lubricate the compliant part)
Spindle type		Vane motor
Spindle idle speed	(RPM)	25000
Cutter shank diameter	(mm)	6
Ambient temperature	(°C)	+5~+35
Ambient moisture	(%)	< 95
Weight	(kg)	2.9

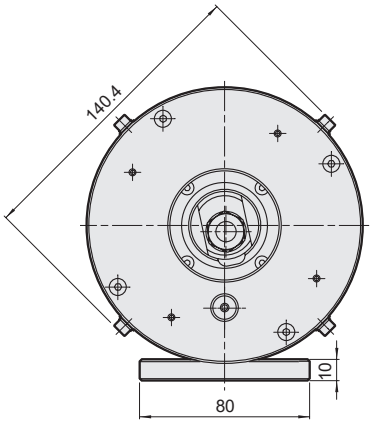
* Please contact our sales department when the product requires to be repaired and replacement of consumables. Unauthorized disassembly will void the warranty.

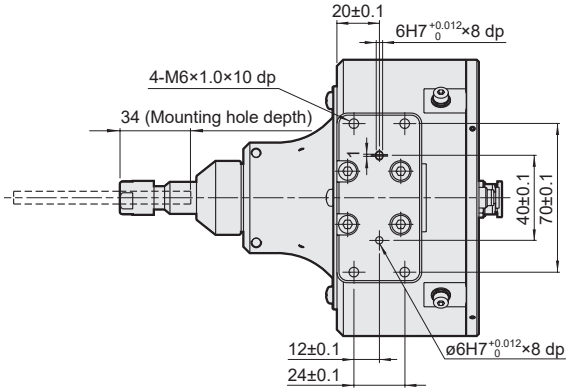
Order example

TRG30

MODEL







No.	Part	Q'y	Note
1	Housing	1	–
2	Spindle holder	1	–
3	Spindle	1	Consumable
4	Installation plate	1	–
5	Spindle air source	1	8 mm fitting
6	Compliant air source	1	4 mm fitting
7	Milling cutter	0	Extra purchase

TRF20 series

RADIAL COMPLIANT DEBURRING TOOL FOR ROBOT

(Round file is not attached)

Feature

- Used to remove the smallest burrs on curved edges.
- Suitable for die-casting and machined workpieces.

Specification

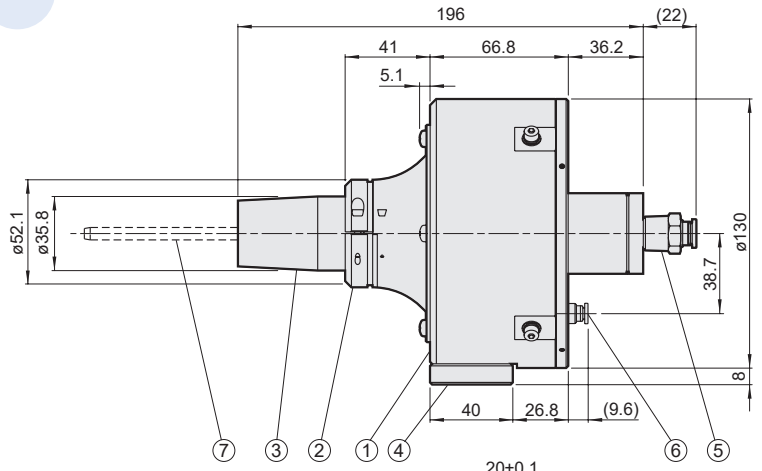
Model		TRF20
Compliant angle	(°)	3.5 (radial)
Compliant force	(N)	5-30
Nominal operating pressure	(MPa)	Compliant force: 0.1-0.5 Pneumatic file: 0.6
Air source requirement		> 0.6 MPa, clean, dry, filtered ≤ 5μm
Air consumption	(LPM)	Compliant force: neglectable Pneumatic file: 170
Oil consumption	(drops/min)	1-2 (for the pneumatic file only, do not lubricate the compliant part)
File idle frequency	(BPM)	9000
File stroke	(mm)	10
File shank diameter	(mm)	5
Ambient temperature	(°C)	+5~+35
Ambient moisture	(%)	< 95
Weight	(kg)	2.9

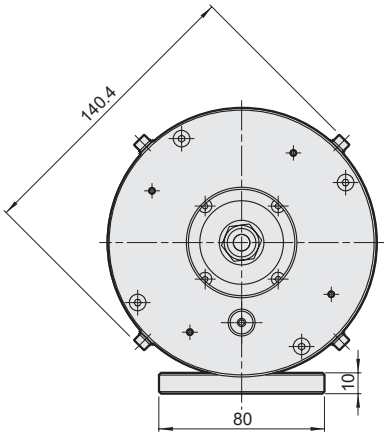
* Please contact our sales department when the product requires to be repaired and replacement of consumables. Unauthorized disassembly will void the warranty.

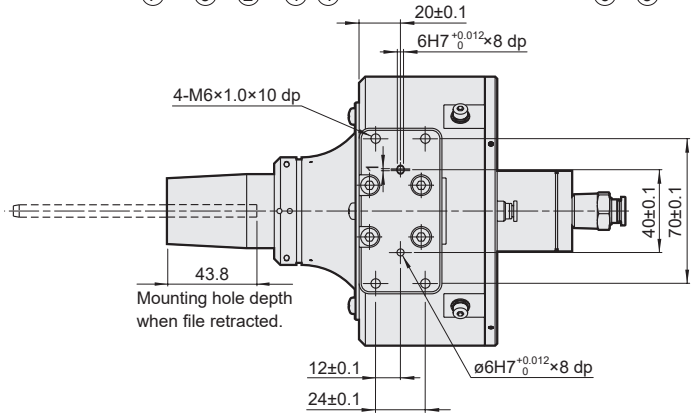
Order example

TRF20

MODEL







No.	Part	Q'y	Note
1	Housing	1	–
2	Spindle holder	1	–
3	Spindle	1	Consumable
4	Installsion plate	1	–
5	Spindle air source	1	8 mm fitting
6	Compliant air source	1	4 mm fitting
7	Round file	0	Extra purchase

TAF20 series

ANGULAR COMPLIANT DEBURRING TOOL FOR ROBOT

(File is not attached)

Feature

- Used to remove the smallest burrs on straight edges.
- Suitable for die-casting workpieces.

Specification

Model		TAF20
Compliant angle	(°)	±5.5 (planary)
Compliant force	(N)	4-20
Nominal operating pressure	(MPa)	Compliant force: 0.1-0.5 Pneumatic file: 0.6
Air source requirement		> 0.6 MPa, clean, dry, filtered ≤ 5μm
Air consumption	(LPM)	Compliant force: neglectable Pneumatic file: 170
Oil consumption	(drops/min)	1-2 (for the pneumatic file only, do not lubricate the compliant part)
File idle frequency	(BPM)	9000
File stroke	(mm)	10
File shank diameter	(mm)	5
Ambient temperature	(°C)	+5~+35
Ambient moisture	(%)	<95
Weight	(kg)	1.7

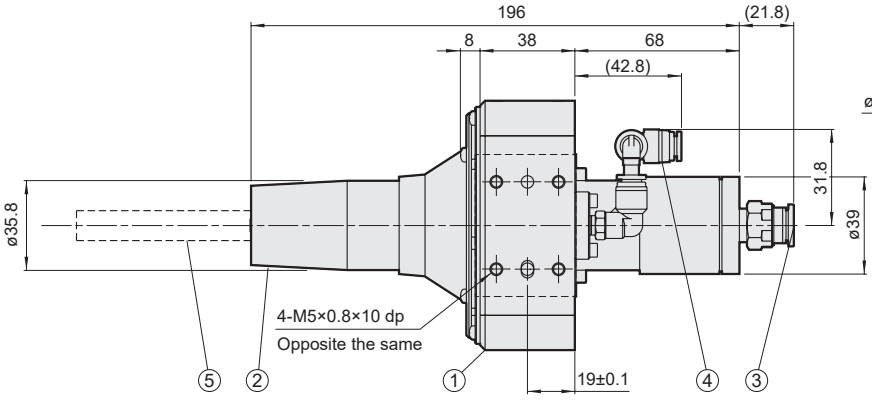
* Please contact our sales department when the product requires to be repaired and replacement of consumables. Unauthorized disassembly will void the warranty.

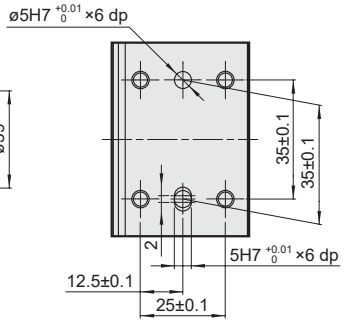
Order example

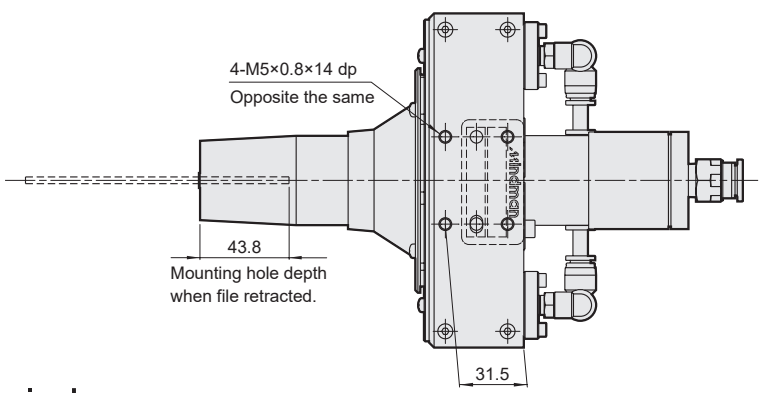
TAF20

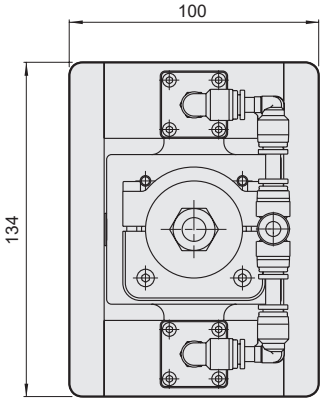
MODEL

No.	Part	Q'y	Note
1	Housing	1	–
2	Pneumatic file	1	Consumable
3	File air source	1	8 mm fitting
4	Compliant air source	1	4 mm fitting
5	File	0	Extra purchase









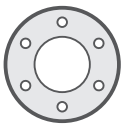
VRG / VMG / VLG series Feature

VACUUM GRIPPER FOR LARGE OBJECTS

Vacuum Gripper suitable for conveyance of large work-piece.

Suitable for adsorption and handling of large objects.

760 ℓ/min
Max.
suction flow



P.C.D
5 kinds
specifications

VP
Variety of
arrangements

Rectangler ring **VRG**

1512.7 N
Max. theoretical suction force

General purpose **VMG**

Bellows cups	Sealing foam pad
2369.5 N	1546.4 N
Max. theoretical suction force	Max. theoretical suction force

General purpose **VLG**

Bellows cups	Sealing foam pad
118.1 N	31.5 N
Max. theoretical suction force	Max. theoretical suction force

VRG / VMG / VLG series Feature

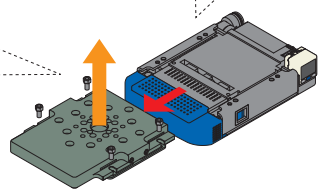
VACUUM GRIPPER FOR LARGE OBJECTS

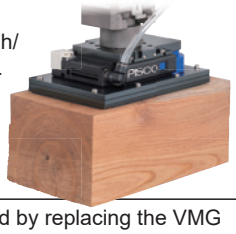
Features / Ring **VRG** and general purpose **VMG**

- Vacuum Gripper suitable for conveyance of large work-piece.
- There are three types of adsorption surface: sponge (Rectangler ring, full sponge) and bellows cups.
- Multi-stage venturi generates suction flow 760 L/min which enables to lift breathable or crumpled objects. * The value of the three vacuum generators included creates.
- Vacuum pump compatible type is available.
- Can be easily installed by sliding it in to the flange mounting plate that is fixed to the robot. Improved operability and safety.

① Install the mounting plate on the robot arm.
P.C.D 31.5
P.C.D 40
P.C.D 56
P.C.D 80
P.C.D 100

② Slide the vacuum jig onto the mounting plate to set up.



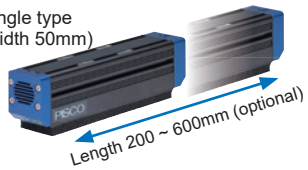
	Ring shaped **VRG**	General purpose **VMG**	
Type	Ring sponge Max. theoretical suction force: 1512.7 N (*1) 	Arranged vacuum pad Max. theoretical suction force: 2369.5 N (*1) 	Surface sponge Max. theoretical suction force: 1546.4 N (*1) 
Recommended work-piece	Sacks and shrink wrapped bottles. Thanks to the elastic yield of foam rubber, it will grip irregular/ rough surfaces. 	Box cartons, bags, objects vary in dimensions and heights. 	Wooden boards, exterior wall, objects with rough/ uneven surfaces. 
Replace the pad	The foam rubber with the frame can be replaced.	Vacuum pad series with pad thread can be installed (Symbol for pad connection: select from M6) (*2)	It can be replaced by replacing the VMG sponge board.
		VMG general purpose plate for easy replacement of suction cups and sponges.	
Acces-sories	Gasket (included) By changing the height of the adjustment plate inside the vacuum pad, the stroke can be adjusted according to the workpiece. 4 suction strokes: 10, 15, 20, 25 mm (Default: 25 mm). Can be changed in 5 mm increments. * 8, 13, 18, 23 mm for VRG1515. (Default: 23 mm)	Fixing hole or coupling type fixing hole (optional) By setting an orifice and restricting the flow rate, it is possible to suppress a decrease in vacuum degree caused by leakage at a non-suction point. The vacuum pad of the coupling type fixed hole is easy to install and disassemble. Since the sleeve has a built-in stop mechanism, unwanted vacuum pads can be removed.  Unadsorbed part - Removable	Fixing hole (optional)

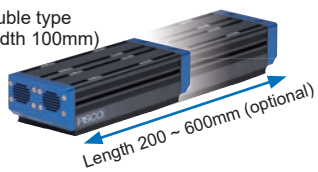
*1. Safety factor 1/4 (horizontal).
*2. Standard bellow vacuum pads, if you want to install other pads, please select "no vacuum pad". (vacuum pad sold separately)

Video
Vacuum gripper adsorption video
https://www.pisco.co.jp/product/r/r06/#product-video

Features / General purpose **VLG**

- 2 types of grippers are available: whole surface sponge type and arranged vacuum pads type.
- Body width (50, 100mm) and length (200~600mm, 5 types) are optional.

Single type (width 50mm)


Double type (Width 100mm)


- Mounting plate available for connection to robots with P.C.D. 31.5 (sold separately).
- Built-in large flow vacuum generator. Max. suction flow rate: 890 L/min (*). * Values for 4 built-in ejectors specification.
- Capable of lifting even if there are non-absorbed area if fall prevention valves or check valves are attached.

	General purpose **VLG**	
Type	Arranged vacuum pad* 	Surface sponge 
Recommended workpiece	Cardboard and bags	Wooden boards, exterior wall, objects with rough/ uneven surfaces
Optional	Fall prevention valves	Check valve

* Standard bellow vacuum pads, if you want to install other pads, please select "no vacuum pad". (vacuum pad sold separately)

VRG series

VACUUM GRIPPER FOR LARGE OBJECTS

Vacuum Gripper suitable for conveyance of large work-piece.

Order example / Components

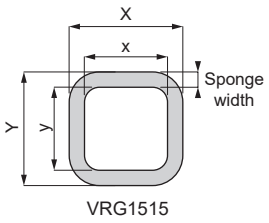
VRG 2817 – 40 – SS05 – 163 – V4N

1 2 3 4 5 6

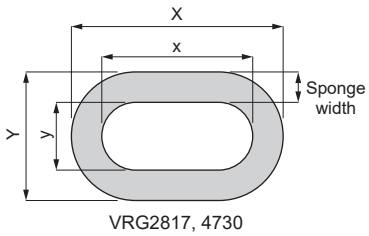
① Rectangular ring – Vacuum gripper

② Foam lip dimensions

Code	1515	2817	4730
External (mm)	X:150, Y:150	X:280, Y:170	X:470, Y:300
Inside (mm)	x:110, y:110	x:200, y:90	x:390, y:220
Width (mm)	25		



VRG1515



VRG2817, 4730

③ Foam lip thickness

Code	20	40
Thickness (mm)	20	40
Foam lip code	1515	2817, 4730

④ Foam rubber material and durometer

Code	SS05	SS10
Material, Durometer	Silicon, Shore E: 5°	Silicon, Shore E: 10°

⑤ Vacuum generator type

Code	Number of Nozzle	Suction flow (ℓ/min)	Air consumption (ℓ/min)	Vacuum (kPa)	Nozzle size (mm)
161	1	290	110	-94	ø1.6
162	2	550	220		
163	3	760	330		
P	Without vacuum generator (vacuum pump compatible type)				

* Value at rated supply pressure (0.5 MPa).

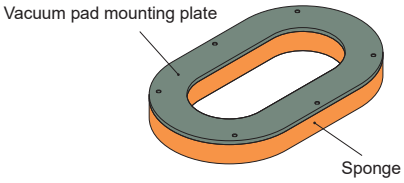
⑥ Sensor switch

Code	Description
V4N	Digital pressure sensor NPN SW 2-point display + analog output
V4P	Digital pressure sensor PNP SW 2-point display + analog output

Order example / Vacuum pad only (Ring sponge)

VRG – VP – 2817 – 40 – SS05

1 2 3 4 5

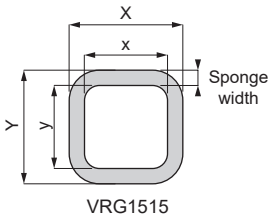


① Rectangular ring – Vacuum gripper

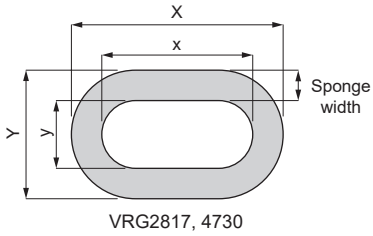
② Vacuum pad mounting plate

③ Foam lip dimensions

Code	1515	2817	4730
External (mm)	X:150, Y:150	X:280, Y:170	X:470, Y:300
Inside (mm)	x:110, y:110	x:200, y:90	x:390, y:220
Width (mm)	25		



VRG1515



VRG2817, 4730

④ Foam lip thickness

Code	20	40
Thickness (mm)	20	40
Foam lip code	1515	2817, 4730

⑤ Foam rubber material and durometer

Code	SS05	SS10
Material, Durometer	Silicon, Shore E: 5°	Silicon, Shore E: 10°

Specification

Model		VRG		
Type		Ring sponge		
Size		1515	2817	4730
Adsorption surface size		150×150	280×170	470×300
Fluid		Air, Vacuum *1		
Vacuum Generator	Operating pressure range	0.3~0.7 MPa		
	Rated supply pressure	0.5 MPa		
	Noise	75dB(A)		
Vacuum pump	Vacuum pressure	-100~0 kPa		
Operating temp. range		5~50°C (No freezing)		
Theoretical suction force*2,3	Safety factor 1/4 (Horizontal)	235.8N	326.2N	1512.7N
	Safety factor 1/8 (Vertical)	117.9N	163.1N	756.4N

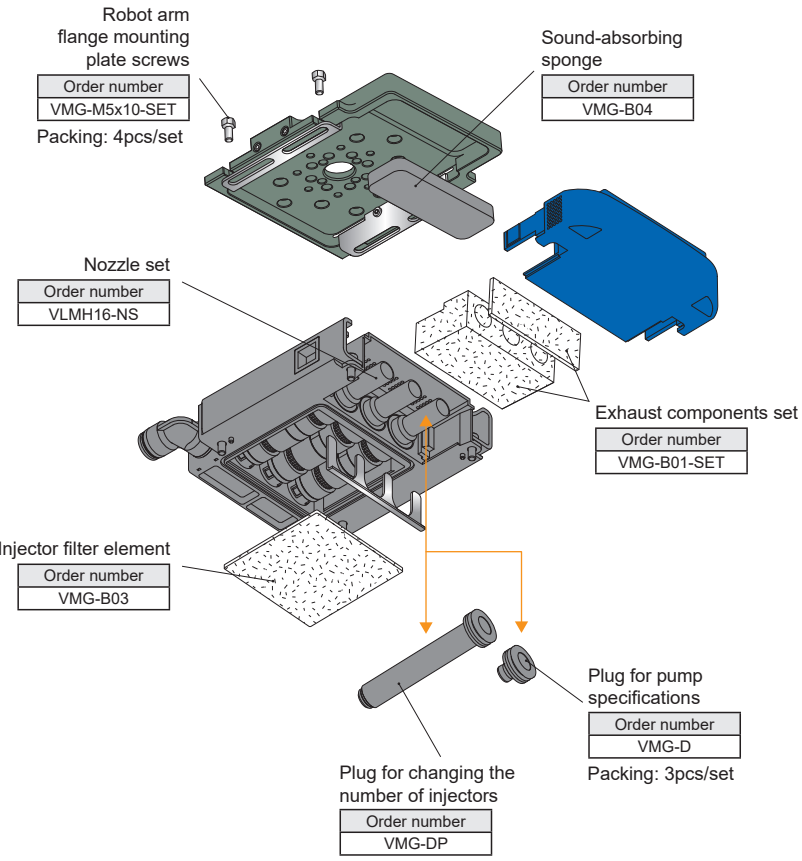
*1."Fluid medium: Vacuum" is only for vacuum pump compatible types.
*2. Theoretical suction force at a vacuum of -80 kPa.
*3. Do not exceed the maximum load capacity of 980N of the main body mounting section, including the weight of the gripper body and inertia forces during transport.

Shape	Pad dimensions (mm)	Pad width and thickness (mm)	Sponge material (Durometer)	Model	Replacement sponge (VRG sponge mounting plate)
VRG Ring sharped 	150×150	Width 20 Thickness 25	Silicon (5°)	VRG1515-20-SS05-161-⑥	VRG-VP-1515-20-SS05
				VRG1515-20-SS05-162-⑥	
				VRG1515-20-SS05-163-⑥	
				VRG1515-20-SS05-P-⑥	
			Silicon (10°)	VRG1515-20-SS10-161-⑥	VRG-VP-1515-20-SS10
				VRG1515-20-SS10-162-⑥	
				VRG1515-20-SS10-163-⑥	
				VRG1515-20-SS10-P-⑥	
	280×170	Width 40 Thickness 25	Silicon (5°)	VRG2817-40-SS05-161-⑥	VRG-VP-2817-40-SS05
				VRG2817-40-SS05-162-⑥	
				VRG2817-40-SS05-163-⑥	
				VRG2817-40-SS05-P-⑥	
			Silicon (10°)	VRG2817-40-SS10-161-⑥	VRG-VP-2817-40-SS10
				VRG2817-40-SS10-162-⑥	
				VRG2817-40-SS10-163-⑥	
				VRG2817-40-SS10-P-⑥	
	470×300	Width 40 Thickness 25	Silicon (5°)	VRG4730-40-SS05-161-⑥	VRG-VP-4730-40-SS05
				VRG4730-40-SS05-162-⑥	
				VRG4730-40-SS05-163-⑥	
				VRG4730-40-SS05-P-⑥	
			Silicon (10°)	VRG4730-40-SS10-161-⑥	VRG-VP-4730-40-SS10
				VRG4730-40-SS10-162-⑥	
				VRG4730-40-SS10-163-⑥	
				VRG4730-40-SS10-P-⑥	

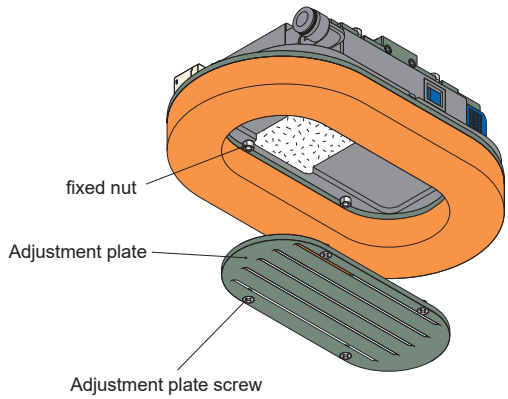
* Order model ⑥ sensor switch specifications of VRG series, please refer to P.131 for order number.

Repair parts

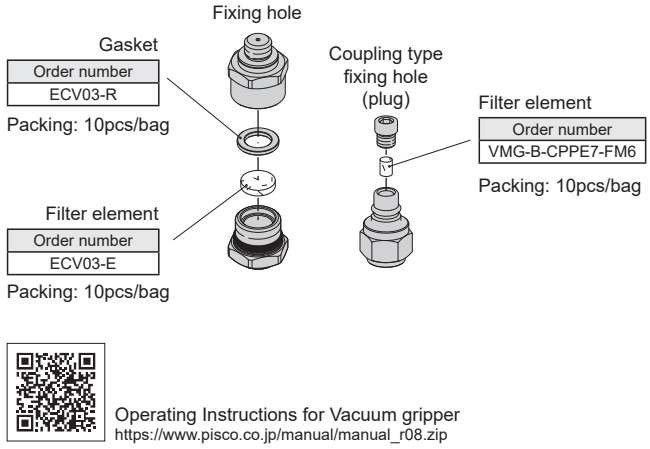
VRG, VMG
general purpose
mounting plate



Parts for **VRG**



Parts for **VMG**



Operating Instructions for Vacuum gripper
https://www.pisco.co.jp/manual/manual_r08.zip

VMG series

VACUUM GRIPPER FOR LARGE OBJECTS

Vacuum generator built-in type and vacuum pump compatible type are available.

Order example / Components

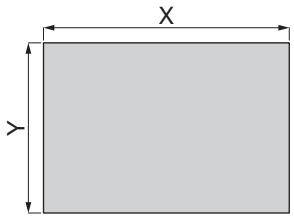
VMG 2618 — SE5L — EP20S — K0.8 — 163 — V4N

1 2 3 4 5 6 7

① General purpose – Vacuum gripper

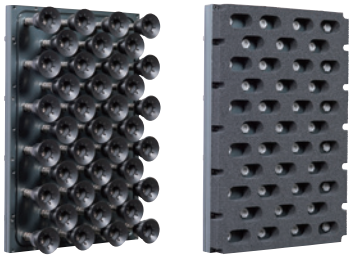
② Mounting plate dimensions

Code		2618	3725	5738
Dimensions (mm)	X	260	370	570
	Y	180	250	380



③ Number of pad rows

Code	Type	Hole diameter (shape)	Row	Pitch (mm)	Number of pad	Mounting plate dimensions		
						2618	3725	5738
P5L	Arranged vacuum pad	ø40	5	64	18	○		
P7L		ø20	7	36	44	○		
		ø40	7	64	39		○	
P11L		ø40	11	64	94			○
SE5L	Surface sponge	ø30 quite oval hole	5	64	18	○		
S7L		ø20 round hole	7	36	44	○		
SE7L		ø30 quite oval hole	7	64	39		○	
SE11L		ø30 quite oval hole	11	64	94			○



Arranged vacuum pad

Surface sponge

④ Specification of sponge pad

Code	Type	Specification	Material	Number of pad rows
–	Arranged vacuum pad	No pad	–	P5L, P7L, P11L
-20BN		ø20 mm Bellows pad	Nitrile rubber	P7L (2618 only)
-20BS			Silicone	
-40BN		ø40 mm Bellows pad	Nitrile rubber	P5L, P7L, P11L
-40BS			Silicone	
-EP20S	Surface sponge	20mm thick sponge	EPDM	SE5L, S7L, SE7L, SE11L

⑤ Mounting brackets

Code	Specification	Hole diameter	Pad specification
–	No hole	–	All
-0.5	Coupling type fixing hole *	ø0.5	Arranged vacuum pad
-0.8		ø0.8	
-1.5		ø1.5	
-2.0		ø2.0	All
-K0.5	Fixing hole	ø0.5	
-K0.8		ø0.8	
-K1.5		ø1.5	
-K2.0		ø2.0	

* When choosing coupling type fixing holes, please check the precautions on the PISCO website.

⑥ Vacuum generator

Code	Number of Nozzle	Suction flow (ℓ/min)	Air consumption (ℓ/min)	Vacuum (kPa)	Nozzle size (mm)
161	1	290	110	-94	ø1.6
162	2	550	220		
163	3	760	330		
P	Without vacuum generator (vacuum pump compatible type)				

* Value at rated supply pressure (0.5 MPa).

⑦ Sensor switch

Code	Description
V4N	Digital pressure sensor NPN SW 2-point display + analog output
V4P	Digital pressure sensor PNP SW 2-point display + analog output

Order example / General purpose mounting plate

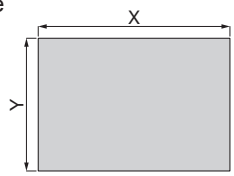
VMG — EXP — 2618 — SE5L — EP20S — K0.8

1 2 3 4 5 6

① General purpose – Vacuum gripper ② General purpose mounting plate

③ Mounting plate dimensions

Code		2618	3725	5738
Dimensions (mm)	X	260	370	570
	Y	180	250	380



④ Number of pad rows

Code	Type	Hole diameter (shape)	Row	Pitch (mm)	Number of pad	Mounting plate dimensions		
						2618	3725	5738
P5L	Arranged vacuum pad	ø40	5	64	18	○		
P7L		ø20	7	36	44	○		
		ø40	7	64	39		○	
P11L		ø40	11	64	94			○
SE5L	Surface sponge	ø30 quite oval hole	5	64	18	○		
S7L		ø20 round hole	7	36	44	○		
SE7L		ø30 quite oval hole	7	64	39		○	
SE11L		ø30 quite oval hole	11	64	94			○

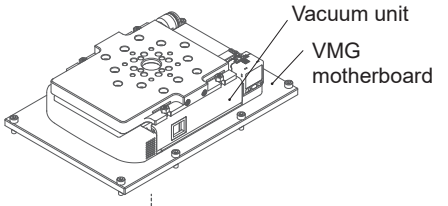
⑤ Specification of sponge pad

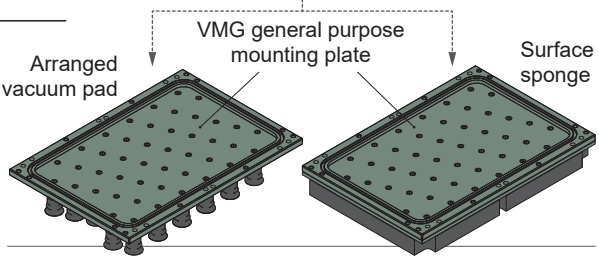
Code	Type	Specification	Material	Number of pad rows
–	Arranged vacuum pad	No pad	–	P5L, P7L, P11L
-20BN		ø20 mm Bellows pad	Nitrile rubber	P7L (2618 only)
-20BS			Silicone	
-40BN		ø40 mm Bellows pad	Nitrile rubber	P5L, P7L, P11L
-40BS			Silicone	
-EP20S	Surface sponge	20mm thick sponge	EPDM	SE5L, S7L, SE7L, SE11L

⑥ Mounting brackets

Code	Specification	Hole diameter	Pad specification
–	No hole	–	All
-0.5	Coupling type fixing hole *	ø0.5	Arranged vacuum pad
-0.8		ø0.8	
-1.5		ø1.5	
-2.0		ø2.0	All
-K0.5	Fixing hole	ø0.5	
-K0.8		ø0.8	
-K1.5		ø1.5	
-K2.0		ø2.0	

* When choosing coupling type fixing holes, please check the precautions on the PISCO website.

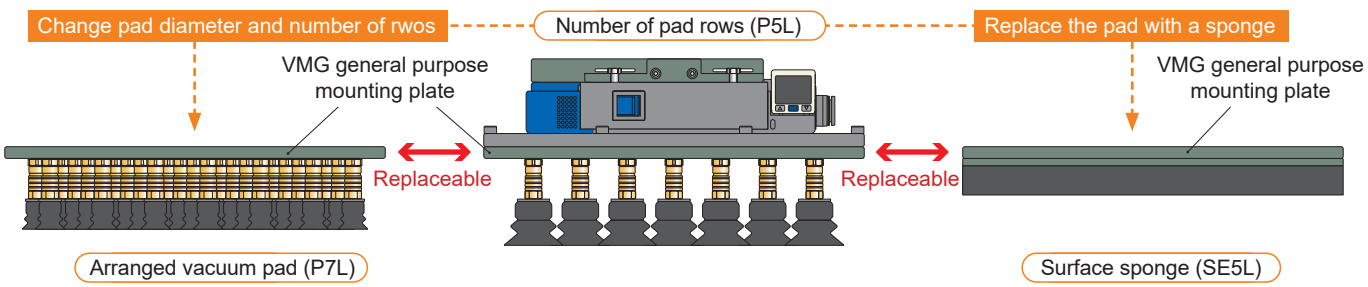




VMG series sponge pad specification replacement

Pad (sponge) specifications can be easily changed by replacing the VMG general purpose mounting plate.
* Different mounting plate sizes are not interchangeable.

Example: In the case of mounting plate size 2618



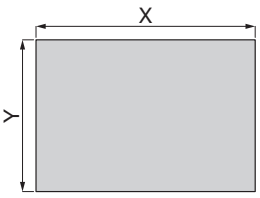
Order example / Vacuum pad only (Surface sponge)

VMG — VP — 2618 — SE5L — SEP20S

1 2 3 4 5

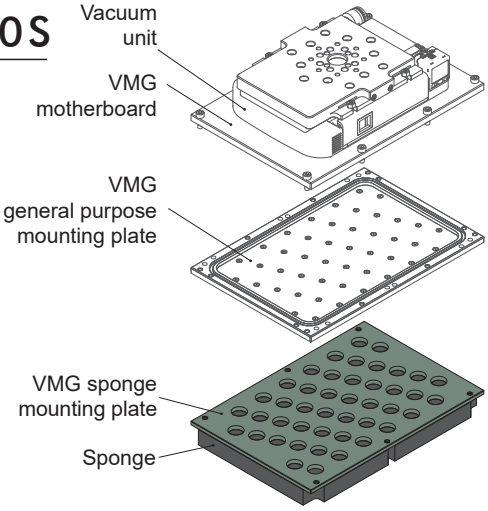
① General purpose – Vacuum gripper
② General purpose mounting plate
③ Mounting plate dimensions

Code		2618	3725	5738
Dimensions (mm)	X	260	370	570
	Y	180	250	380



④ Number of pad rows

Code	Hole diameter (shape)	Row	Pitch (mm)	Number of pad	Mounting plate dimensions		
					2618	3725	5738
SE5L	ø30 quite oval hole	5	64	18	○		
S7L	ø20 round hole	7	36	44	○		
SE7L	ø30 quite oval hole	7	64	39		○	
SE11L	ø30 quite oval hole	11	64	94			○



⑤ Specification of sponge

Code	Specification	Material
SEP20S	20mm thick sponge	EPDM

VMG vacuum pad unit

Pad connection code: A kit with M6 pad threads can be installed. Please refer to the vacuum pad-thread kit set for detailed specifications.

Order example / Coupling type fixing hole

VMG — CPPE7 — FM6 — 0.8

1 2 3

① General purpose – Vacuum gripper
② Coupling type plug suitable

③ Orifice diameter

Code	Orifice diameter
0.5	ø0.5
0.8	ø0.8
1.5	ø1.5
2.0	ø2.0

Order example / Fixing hole parts

VMG — VPEM6 S — K0.8

1 2 3 4

① General purpose – Vacuum gripper
② Fixing hole parts
③ Specification

Code	Part Specifications
P	Arranged vacuum pad
S	Surface sponge

④ Orifice diameter

Code	Orifice diameter
K0.5	ø0.5
K0.8	ø0.8
K1.5	ø1.5
K2.0	ø2.0

Order example / Coupling type fixing hole (sleeve)

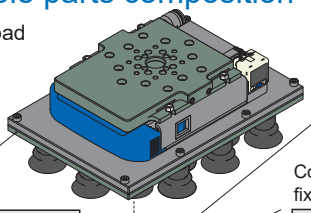
VMG — CPSE7 — M6

1 2

① General purpose – Vacuum gripper
② Suitable for coupling type sleeve

VMG fixed hole parts composition

Arranged vacuum pad

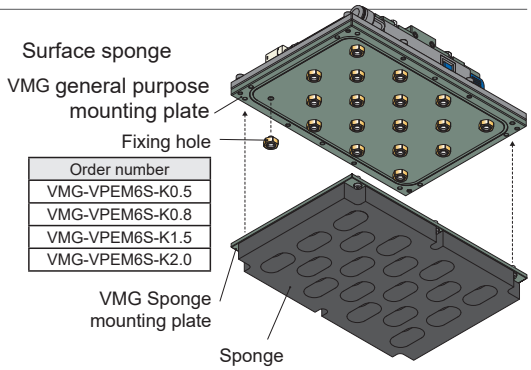


Order number
VMG-VPEM6P-K0.5
VMG-VPEM6P-K0.8
VMG-VPEM6P-K1.5
VMG-VPEM6P-K2.0

Order number
VMG-CPSE7-M6

Order number
VMG-CPPE7-FM6-0.5
VMG-CPPE7-FM6-0.8
VMG-CPPE7-FM6-1.5
VMG-CPPE7-FM6-2.0

Surface sponge



Order number
VMG-VPEM6S-K0.5
VMG-VPEM6S-K0.8
VMG-VPEM6S-K1.5
VMG-VPEM6S-K2.0

VMG series

VACUUM GRIPPER FOR LARGE OBJECTS

mindman

Specification

Model		VMG							
Type		Arranged vacuum pads				Surface sponge			
Specifitions		2618-P5L	2618-P7L	3725-P7L	5738-P11L	2618-SE5L	2618-S7L	3725-SE7L	5738-SE11L
Adsorption area		260×180		370×250	570×380	260×180		370×250	570×380
Number of rows of holes		5 rows	7 rows	7 rows	11 rows	5 rows	7 rows	7 rows	11 rows
Fluid medium		Air, Vacuum *1							
Vacuum generator	Operating pressure range	0.3~0.7 MPa							
	Rated supply pressure	0.5 MPa							
	Noise	75dB(A)							
Vacuum pump	Operating vacuum pressure	-100~0 kPa							
Operating temp. range		5~50°C (No freezing)							
Theoretical *2,3 suction force	Safety factor 1/4 (Horizontal)	453.7N	277.3N	983.1N	2369.5N	296.1N	277.3N	641.6N	1546.4N
	Safety factor 1/8 (Vertical)	226.9N	138.6N	491.5N	1184.7N	148.1N	138.6N	320.8N	773.2N

*1. "Fluid medium: Vacuum" is only for vacuum pump compatible types.

*2. Theoretical suction force at a vacuum of -80 kPa.

*3. Do not exceed the maximum load capacity of 980N of the main body mounting section, including the weight of the gripper body and inertia forces during transport.

Shape	Adsorption area (mm)	Number of hole and pad rows (mm)	Pad material	Order number	VMG general purpose mounting plate (with pad)
VMG Arranged vacuum pad 	260×180	ø40, 5 rows	Nitrile rubber	VMG2618-P5L-40BN[5]-161-[7] VMG2618-P5L-40BN[5]-162-[7] VMG2618-P5L-40BN[5]-163-[7] VMG2618-P5L-40BN[5]-P-[7]	VMG-EXP-2618-P5L-40BN[5]
			Silicone	VMG2618-P5L-40BS[5]-161-[7] VMG2618-P5L-40BS[5]-162-[7] VMG2618-P5L-40BS[5]-163-[7] VMG2618-P5L-40BS[5]-P-[7]	VMG-EXP-2618-P5L-40BS[5]
	260×180	ø20, 7 rows	Nitrile rubber	VMG2618-P7L-20BN[5]-161-[7] VMG2618-P7L-20BN[5]-162-[7] VMG2618-P7L-20BN[5]-163-[7] VMG2618-P7L-20BN[5]-P-[7]	VMG-EXP-2618-P7L-20BN[5]
			Silicone	VMG2618-P7L-20BS[5]-161-[7] VMG2618-P7L-20BS[5]-162-[7] VMG2618-P7L-20BS[5]-163-[7] VMG2618-P7L-20BS[5]-P-[7]	VMG-EXP-2618-P7L-20BN[5]
	370×250	ø40, 7 rows	Nitrile rubber	VMG3725-P7L-40BN[5]-161-[7] VMG3725-P7L-40BN[5]-162-[7] VMG3725-P7L-40BN[5]-163-[7] VMG3725-P7L-40BN[5]-P-[7]	VMG-EXP-3725-P7L-40BN[5]
			Silicone	VMG3725-P7L-40BS[5]-161-[7] VMG3725-P7L-40BS[5]-162-[7] VMG3725-P7L-40BS[5]-163-[7] VMG3725-P7L-40BS[5]-P-[7]	VMG-EXP-3725-P7L-40BS[5]
	570×380	ø40, 11 rows	Nitrile rubber	VMG5738-P11L-40BN[5]-161-[7] VMG5738-P11L-40BN[5]-162-[7] VMG5738-P11L-40BN[5]-163-[7] VMG5738-P11L-40BN[5]-P-[7]	VMG-EXP-5738-P11L-40BN[5]
			Silicone	VMG5738-P11L-40BS[5]-161-[7] VMG5738-P11L-40BS[5]-162-[7] VMG5738-P11L-40BS[5]-163-[7] VMG5738-P11L-40BS[5]-P-[7]	VMG-EXP-5738-P11L-40BS[5]

Sharp	Adsorption area (mm)	hole diameter, sharp, row (mm)	Sponge material	Order number	VMG general purpose mounting plate (With sponge mounting plate set)	Replacement sponge (VMG sponge mounting plate set)
VMG Surface sponge 	260×180	ø30 quite oval 5 rows	EPDM	VMG2618-SE5L-EP20S[5]-161-[7] VMG2618-SE5L-EP20S[5]-162-[7] VMG2618-SE5L-EP20S[5]-163-[7] VMG2618-SE5L-EP20S[5]-P-[7]	VMG-EXP-2618-SE5L-EP20S[5]	VMG-VP-2618-SE5L-EP20S
		ø20 quite round 7 rows	EPDM	VMG2618-S7L-EP20S[5]-161-[7] VMG2618-S7L-EP20S[5]-162-[7] VMG2618-S7L-EP20S[5]-163-[7] VMG2618-S7L-EP20S[5]-P-[7]	VMG-EXP-2618-S7L-EP20S[5]	VMG-VP-2618-S7L-EP20S
	370×250	ø30 quite oval 7 rows	EPDM	VMG3725-SE7L-EP20S[5]-161-[7] VMG3725-SE7L-EP20S[5]-162-[7] VMG3725-SE7L-EP20S[5]-163-[7] VMG3725-SE7L-EP20S[5]-P-[7]	VMG-EXP-3725-SE7L-EP20S[5]	VMG-VP-3725-SE7L-EP20S
	570×380	ø30 quite oval 11 rows	EPDM	VMG5738-SE11L-EP20S[5]-161-[7] VMG5738-SE11L-EP20S[5]-162-[7] VMG5738-SE11L-EP20S[5]-163-[7] VMG5738-SE11L-EP20S[5]-P-[7]	VMG-EXP-5738-SE11L-EP20S[5]	VMG-VP-5738-SE11L-EP20S

* For VMG series [5] mounting bracket specifications and [7] sensor switch specifications, please refer to page 134 for order number.
* VMG series can choose "no pad". Please refer to page 134 for order number.

VLG series

VACUUM GRIPPER FOR LARGE OBJECTS

Vacuum Gripper suitable for conveyance of large work-piece.

Order example / Components

VLG 30S – S2L – EP20S – CV – 161 – V4N

1 2 3 4 5 6 7

① General purpose – Vacuum gripper

② Dimensions

Code						
	Single (W:50mm)	**20S**	**30S**	**40S**	**50S**	**60S**
	Double (W:100mm)	**20D**	**30D**	**40D**	**50D**	**60D**
L(mm)		200	300	400	500	600

③ Number of pad rows

■ Single type

Code	Type	Hole diameter (shape)	Row	Pitch (mm)	Number of pad (hole)				
					200 (mm)	300 (mm)	400 (mm)	500 (mm)	600 (mm)
P2L	Arranged vacuum pad	ø15	2	20	20	30	40	50	60
		ø20	2	25	16	24	32	40	48
		ø25	2	30	12	19	25	32	39
P1L		ø30	1	40	5	7	10	12	15
		ø40	1	50	4	6	8	10	12
S2L	Surface sponge	ø10 roung hole	2	20	20	30	40	50	60

■ Double type

Code	Type	Hole diameter (shape)	Row	Pitch (mm)	Number of pad (hole)				
					200 (mm)	300 (mm)	400 (mm)	500 (mm)	600 (mm)
P4L	Arranged vacuum pad	ø15	4	20	40	60	80	100	120
		ø20	4	25	32	48	64	80	96
		ø25	4	30	24	38	50	64	78
P2L		ø30	2	40	10	14	20	24	30
		ø40	2	50	8	12	16	20	24
S4L	Surface sponge	ø10 roung hole	4	20	40	60	80	100	120

Arranged vacuum pad

Surface sponge

④ Specification of sponge pad

Code	Type	Specification		Material
15	Arranged vacuum pad	No pad *1 *2	ø15, pitch 20mm	–
20			ø20, pitch 25mm	–
25			ø25, pitch 30mm	–
30			ø30, pitch 40mm	–
40			ø40, pitch 50mm	–
15BN		ø15 mm Bellows pad		Nitrile rubber
15BS				Silicone
20BN		ø20 mm Bellows pad		Nitrile rubber
20BS				Silicone
25BN		ø25 mm Bellows pad		Nitrile rubber
25BS				Silicone
30BN		ø30 mm Bellows pad		Nitrile rubber
30BS				Silicone
40BN		ø40 mm Bellows pad		Nitrile rubber
40BS				Silicone
EP20S	Surface sponge	20mm thick sponge		EPDM

*1. If there is no pad, enter the symbol of the pad diameter to specify the pitch.
*2. Mounting thread size without pad.

Code	Mounting thread size
15	M4×0.7 (Pad connection mark: Kit with M4 pad thread can be installed)
20,25,30,40	M6×1.0 (Pad connection mark: Kit with M6 pad thread can be installed)

Please refer to the vacuum pad-thread kit set for detailed specifications.

⑤ Mounting brackets

Code	Specification	Pad specification
–	No hole	All
-ECV	Fall prevention valves	Arranged vacuum pad
-CV	Check valve	Surface sponge

⑥ Vacuum generator

Code	Number of Nozzle	Suction flow (ℓ/min)	Air consumption (ℓ/min)	Vacuum (kPa)	Nozzle size (mm)	Corresponding size	
						Single	Double
161	1	290	110	-94	ø1.6	20S~40S	–
162	2	550	220			50S~	20D~40D
164	4	890	440			–	50D~

* Value at rated supply pressure (0.5 MPa).

⑦ Sensor switch

Code	Description
–	No sensor switch
-V4N	Digital pressure sensor NPN SW 2-point display + analog output
-V4P	Digital pressure sensor PNP SW 2-point display + analog output

Order example / Vacuum pad only (Surface sponge)

VLG — VP — 30S — S2L — EP20S
1 2 3 4 5

① General purpose – Vacuum gripper
② Sponge
③ Dimensions

Code						
	Single (W:50mm)	**20S**	**30S**	**40S**	**50S**	**60S**
	Double (W:100mm)	**20D**	**30D**	**40D**	**50D**	**60D**
L(mm)		200	300	400	500	600

④ Specification of sponge

Code	Specifications	Material
EP20S	20mm thick sponge	EPDM

* When double type, use 2 single type sponges per set.

④ Number of pad rows

■ Single type

Code	Hole diameter (shape)	Row	Pitch (mm)	Number of pad (hole)				
				200 (mm)	300 (mm)	400 (mm)	500 (mm)	600 (mm)
S2L	ø10 roung hole	2	20	20	30	40	50	60

■ Double type

Code	Hole diameter (shape)	Row	Pitch (mm)	Number of pad (hole)				
				200 (mm)	300 (mm)	400 (mm)	500 (mm)	600 (mm)
S4L	ø10 roung hole	4	20	40	60	80	100	120

Order example / Fall prevention valves

ECV M4 — FM4
1 2 3

* Only applicable to Arranged vacuum pad.

① Fall prevention valves
② Vacuum unit side male thread dimensions
③ Pad side female thread dimensions

Code	M4-FM4	M6-FM6
Vacuum unit side male thread dimensions	M4×0.7	M6×1.0
Pad side female thread dimensions	M4×0.7	M6×1.0
Pad diameter (mm)	ø15	ø20, 25, 30, 40

Robot arm end flange plate

VLG — RFP — S
1 2 3

① General purpose – Vacuum gripper
② Robot arm end flange mounting plate
③ Dimensions

Code	S	D
Dimensions (mm)	Single type (W: 50mm)	Double type (W: 100mm)

* Robot arm end flange mounting plate does not support the length 500, 600mm type. (Dimensions code: 50S, 50D, 60S, 60D)

Specification (Single type, length 200mm)

Model		VLG					
Type		Arranged vacuum pads					Surface sponge
Pad hole diameter		ø15	ø20	ø25	ø30	ø40	ø10
Number of rows of holes		2 rows	2 rows	2 rows	1 row	1 row	2 row
Fluid medium		Air					
Operating pressure range		0.3~0.7 MPa					
Rated supply pressure		0.5 MPa					
Noise		1 or 2 nozzles: 76dB(A), 4 nozzles: 80dB(A)					
Operating temp. range		5~50°C (No freezing)					
Theoretical suction force*1,2	Safety factor 1/4 (Horizontal)	70.9N	100.8N	118.1N	70.9N	100.8N	31.5N
	Safety factor 1/8 (Vertical)	35.4N	50.4N	59.1N	35.4N	50.4N	15.8N

*1. Theoretical suction force at a vacuum of -80 kPa.
*2. Double type × 2 times. Calculate other length×length ratios (Ex. single type 300mm×1.5 times).

Shape	Length (mm)	Row	Pad diameter (mm)	Material	Order number
VLG Single Type (Arranged vacuum pad) 	200	2 rows	ø15	Nitrile rubber	VLG20S-P2L-15BN[5]-161[7]
				Silicone	VLG20S-P2L-15BS[5]-161[7]
			ø20	Nitrile rubber	VLG20S-P2L-20BN[5]-161[7]
				Silicone	VLG20S-P2L-20BS[5]-161[7]
			ø25	Nitrile rubber	VLG20S-P2L-25BN[5]-161[7]
				Silicone	VLG20S-P2L-25BS[5]-161[7]
		1 row	ø30	Nitrile rubber	VLG20S-P1L-30BN[5]-161[7]
				Silicone	VLG20S-P1L-30BS[5]-161[7]
			ø40	Nitrile rubber	VLG20S-P1L-40BN[5]-161[7]
				Silicone	VLG20S-P1L-40BS[5]-161[7]
	300	2 rows	ø15	Nitrile rubber	VLG30S-P2L-15BN[5]-161[7]
				Silicone	VLG30S-P2L-15BS[5]-161[7]
			ø20	Nitrile rubber	VLG30S-P2L-20BN[5]-161[7]
				Silicone	VLG30S-P2L-20BS[5]-161[7]
			ø25	Nitrile rubber	VLG30S-P2L-25BN[5]-161[7]
				Silicone	VLG30S-P2L-25BS[5]-161[7]
		1 row	ø30	Nitrile rubber	VLG30S-P1L-30BN[5]-161[7]
				Silicone	VLG30S-P1L-30BS[5]-161[7]
			ø40	Nitrile rubber	VLG30S-P1L-40BN[5]-161[7]
				Silicone	VLG30S-P1L-40BS[5]-161[7]
	400	2 rows	ø15	Nitrile rubber	VLG40S-P2L-15BN[5]-161[7]
				Silicone	VLG40S-P2L-15BS[5]-161[7]
			ø20	Nitrile rubber	VLG40S-P2L-20BN[5]-161[7]
				Silicone	VLG40S-P2L-20BS[5]-161[7]
			ø25	Nitrile rubber	VLG40S-P2L-25BN[5]-161[7]
				Silicone	VLG40S-P2L-25BS[5]-161[7]
		1 row	ø30	Nitrile rubber	VLG40S-P1L-30BN[5]-161[7]
				Silicone	VLG40S-P1L-30BS[5]-161[7]
			ø40	Nitrile rubber	VLG40S-P1L-40BN[5]-161[7]
				Silicone	VLG40S-P1L-40BS[5]-161[7]
	500	2 rows	ø15	Nitrile rubber	VLG50S-P2L-15BN[5]-162[7]
				Silicone	VLG50S-P2L-15BS[5]-162[7]
			ø20	Nitrile rubber	VLG50S-P2L-20BN[5]-162[7]
				Silicone	VLG50S-P2L-20BS[5]-162[7]
			ø25	Nitrile rubber	VLG50S-P2L-25BN[5]-162[7]
				Silicone	VLG50S-P2L-25BS[5]-162[7]
		1 row	ø30	Nitrile rubber	VLG50S-P1L-30BN[5]-162[7]
				Silicone	VLG50S-P1L-30BS[5]-162[7]
			ø40	Nitrile rubber	VLG50S-P1L-40BN[5]-162[7]
				Silicone	VLG50S-P1L-40BS[5]-162[7]
	600	2 rows	ø15	Nitrile rubber	VLG60S-P2L-15BN[5]-162[7]
				Silicone	VLG60S-P2L-15BS[5]-162[7]
			ø20	Nitrile rubber	VLG60S-P2L-20BN[5]-162[7]
				Silicone	VLG60S-P2L-20BS[5]-162[7]
			ø25	Nitrile rubber	VLG60S-P2L-25BN[5]-162[7]
				Silicone	VLG60S-P2L-25BS[5]-162[7]
		1 row	ø30	Nitrile rubber	VLG60S-P1L-30BN[5]-162[7]
				Silicone	VLG60S-P1L-30BS[5]-162[7]
			ø40	Nitrile rubber	VLG60S-P1L-40BN[5]-162[7]
				Silicone	VLG60S-P1L-40BS[5]-162[7]

VLG

Robot Flange Mounting Plate For Single Type

Order number
VLG-RFP-S

* Robot arm flange mounting plate does not support lengths of 500, 600 mm (Dimensions code: 50S, 60S).

ECV

Fall Prevention Valve

M

FM

Order number
ECVM4-FM4
ECVM6-FM6

Shape	Length (mm)	Row	Pad diameter (mm)	Material	Order number	Replacement Sponge
VLG Single Type (Surface Sponge) 	200	2 rows	ø10	EPDM	VLG20S-S2L-EP20S[5]-161[7]	VLG-VP-20S-S2L-EP20S
	300				VLG30S-S2L-EP20S[5]-161[7]	VLG-VP-30S-S2L-EP20S
	400				VLG40S-S2L-EP20S[5]-161[7]	VLG-VP-40S-S2L-EP20S
	500				VLG50S-S2L-EP20S[5]-162[7]	VLG-VP-50S-S2L-EP20S
	600				VLG60S-S2L-EP20S[5]-162[7]	VLG-VP-60S-S2L-EP20S

* For VLG series [5] mounting bracket and sensor [7] switch specifications, please refer to page 138 for order number.
* VLG series can choose "no pad". Please refer to page 138 for order number.

Shape	Length (mm)	Row	Pad diameter (mm)	Material	Order number
VLG Double Type (Arranged vacuum pad) 	200	4 rows	ø15	Nitrile rubber	VLG20D-P4L-15BN[5]-162[7]
				Silicone	VLG20D-P4L-15BS[5]-162[7]
			ø20	Nitrile rubber	VLG20D-P4L-20BN[5]-162[7]
				Silicone	VLG20D-P4L-20BS[5]-162[7]
			ø25	Nitrile rubber	VLG20D-P4L-25BN[5]-162[7]
				Silicone	VLG20D-P4L-25BS[5]-162[7]
		2 rows	ø30	Nitrile rubber	VLG20D-P2L-30BN[5]-162[7]
				Silicone	VLG20D-P2L-30BS[5]-162[7]
			ø40	Nitrile rubber	VLG20D-P2L-40BN[5]-162[7]
				Silicone	VLG20D-P2L-40BS[5]-162[7]
	300	4 rows	ø15	Nitrile rubber	VLG30D-P4L-15BN[5]-162[7]
				Silicone	VLG30D-P4L-15BS[5]-162[7]
			ø20	Nitrile rubber	VLG30D-P4L-20BN[5]-162[7]
				Silicone	VLG30D-P4L-20BS[5]-162[7]
			ø25	Nitrile rubber	VLG30D-P4L-25BN[5]-162[7]
				Silicone	VLG30D-P4L-25BS[5]-162[7]
		2 rows	ø30	Nitrile rubber	VLG30D-P2L-30BN[5]-162[7]
				Silicone	VLG30D-P2L-30BS[5]-162[7]
			ø40	Nitrile rubber	VLG30D-P2L-40BN[5]-162[7]
				Silicone	VLG30D-P2L-40BS[5]-162[7]
	400	4 rows	ø15	Nitrile rubber	VLG40D-P4L-15BN[5]-162[7]
				Silicone	VLG40D-P4L-15BS[5]-162[7]
			ø20	Nitrile rubber	VLG40D-P4L-20BN[5]-162[7]
				Silicone	VLG40D-P4L-20BS[5]-162[7]
			ø25	Nitrile rubber	VLG40D-P4L-25BN[5]-162[7]
				Silicone	VLG40D-P4L-25BS[5]-162[7]
		2 rows	ø30	Nitrile rubber	VLG40D-P2L-30BN[5]-162[7]
				Silicone	VLG40D-P2L-30BS[5]-162[7]
			ø40	Nitrile rubber	VLG40D-P2L-40BN[5]-162[7]
				Silicone	VLG40D-P2L-40BS[5]-162[7]
	500	4 rows	ø15	Nitrile rubber	VLG50D-P4L-15BN[5]-164[7]
				Silicone	VLG50D-P4L-15BS[5]-164[7]
			ø20	Nitrile rubber	VLG50D-P4L-20BN[5]-164[7]
				Silicone	VLG50D-P4L-20BS[5]-164[7]
			ø25	Nitrile rubber	VLG50D-P4L-25BN[5]-164[7]
				Silicone	VLG50D-P4L-25BS[5]-164[7]
		2 rows	ø30	Nitrile rubber	VLG50D-P2L-30BN[5]-164[7]
				Silicone	VLG50D-P2L-30BS[5]-164[7]
			ø40	Nitrile rubber	VLG50D-P2L-40BN[5]-164[7]
				Silicone	VLG50D-P2L-40BS[5]-164[7]
	600	4 rows	ø15	Nitrile rubber	VLG60D-P4L-15BN[5]-164[7]
				Silicone	VLG60D-P4L-15BS[5]-164[7]
			ø20	Nitrile rubber	VLG60D-P4L-20BN[5]-164[7]
				Silicone	VLG60D-P4L-20BS[5]-164[7]
			ø25	Nitrile rubber	VLG60D-P4L-25BN[5]-164[7]
				Silicone	VLG60D-P4L-25BS[5]-164[7]
		2 rows	ø30	Nitrile rubber	VLG60D-P2L-30BN[5]-164[7]
				Silicone	VLG60D-P2L-30BS[5]-164[7]
			ø40	Nitrile rubber	VLG60D-P2L-40BN[5]-164[7]
				Silicone	VLG60D-P2L-40BS[5]-164[7]

VLG

Robot Flange
Mounting Plate
For Double Type

Order number
VLG-RFP-D

* Robot arm flange mounting plate does not support lengths of 500, 600 mm (Dimensions code: 50D, 60D).

Shape	Length (mm)	Row	Pad diameter (mm)	Material	Order number	Replacement Sponge
VLG Double Type (Surface Sponge) 	200	4 rows	ø10	EPDM	VLG20D-S4L-EP20S[5]-162[7]	VLG-VP-20D-S4L-EP20S
	300				VLG30D-S4L-EP20S[5]-162[7]	VLG-VP-30D-S4L-EP20S
	400				VLG40D-S4L-EP20S[5]-162[7]	VLG-VP-40D-S4L-EP20S
	500				VLG50D-S4L-EP20S[5]-164[7]	VLG-VP-50D-S4L-EP20S
	600				VLG60D-S4L-EP20S[5]-164[7]	VLG-VP-60D-S4L-EP20S

* For VLG series [5] mounting bracket and sensor [7] switch specifications, please refer to page 138 for order number.
* VLG series can choose "no pad". Please refer to page 138 for order number.

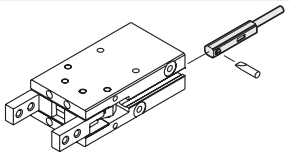
Order example
* Special order is available.

RCE — □

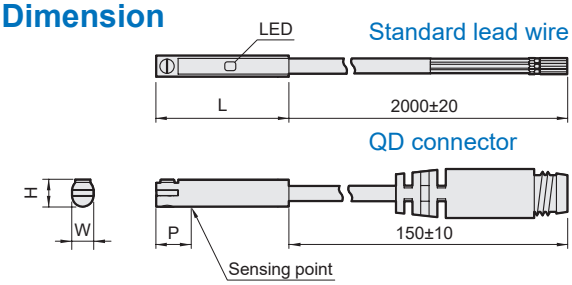
MODEL
RCE: Reed Switch
RDE: Non-contact
RDE-D: Non-contact, two indicators
RNE: NPN
RNEE: NPN
RPE: PNP
RPEE: PNP

WIRE LENGTH
1M: L=1000mm
2M: L=2000mm
QD: M8, 3 Pin connector
EQD: M8, 3 Pin connector

Assembling style

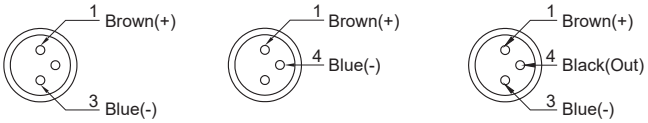
Gripper type	Mounting clamp
MCHA, MCHB, MCHC	

Dimension



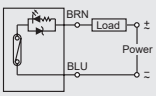
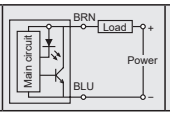
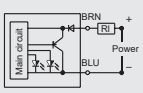
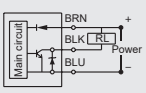
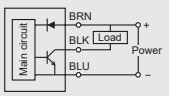
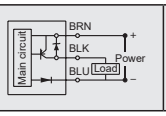
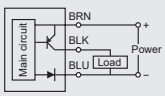
Wiring of the QD

● 2 wire QD wiring ● 2 wire EQD wiring ● 3 wire QD wiring



Code / Model	H	L	P	W
RCE	5	26	12.5	4
RDE, RDE-D	5	24	6	4
RNE, RPE	4.65	22	6	4.1
RNEE, RPEE	5	22	6	4

Specification

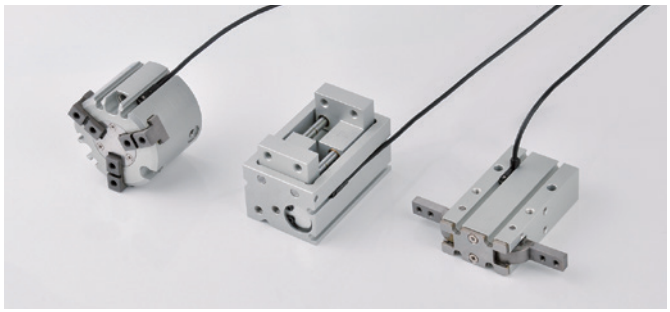
Model	RCE	RDE	RDE-D	RNE	RNEE	RPE	RPEE
Wiring method	2 wire			3 wire			
Switching logic	SPST N.O.	Solid state output, normally open					
Switch Type	Reed switch	Non-contact		NPN current sinking		PNP current sourcing	
Operating voltage	5~220V DC/AC	10~28V DC		5~30V DC			
Switching current	50mA max.	50mA max.	80mA max.	50mA max.	200mA max.	50mA max.	200mA max.
Switching rating(*1)	10W max.	1.5W max.	2W max.	1.5W max.	6W max.	1.5W max.	6W max.
Current consumption	—			10 mA@24V DC max.	6 mA@24V DC max.	12 mA@24V DC max.	6 mA@24V DC max.
Voltage drop	3.5V max.		4V max.	0.5V max.	0.5V @200mA max.	1.5V max.	0.5V @200mA max.
Leakage current	—	0.1mA max.	1mA max.	0.01mA max.			
Indicator (LED)	Red		Red/Green	Red		Green	
Cable	ø2.8,2C,PUR	ø2.8,2C,PUR		ø3, 3C, PU			
Temperature range	-10~+70°C (No freezing)						
Shock (*2)	30G	50G					
Vibration (*3)	9G						
Enclosure classification	IEC 60529 IP67						
Protection circuit (*4)	1	3,4	2,3,4	3,4			
Weight	20 g (2m cable)						
Connect diagram							

*1. Warning: Never exceed rating (watt=voltage×amperage). Permanent damage to sensor will occur.
*2. Sin wave / X.Y.Z. 3 directions / 3 times each direction / 11ms each time.
*3. Double amplitude 1.5mm / 10Hz~55Hz~10Hz(Sweep 1min) / X.Y.Z. 3 directions / 1 hour each time.
*4. 1=None / 2=Short-circuit / 3=Power source reverse polarity / 4=Surge suppression
*5. Caution for safety please refer to page 158.

RDFE series

SENSOR SWITCH

mindman



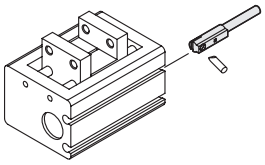
Order example

* Special order is available.

RDFE V – □

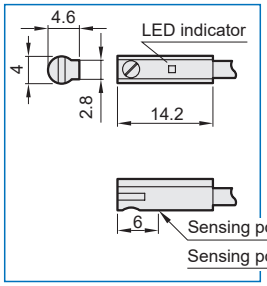
MODEL	AUTO SWITCH TYPE	WIRE LENGTH
RDFE: Non-contact **RNFE**: NPN **RPFE**: PNP	Blank: Straight cable **V**: Angle cable	**1M**: L=1000mm **2M**: L=2000mm **QD**: M8, 3 Pin connector **EQD**: M8, 3 Pin connector

Assembling style

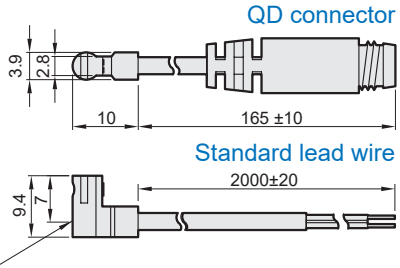
Gripper type	Mounting clamp
MCHC-6, MCHD, MCHH, MCHU, MCHS, MCHX, MCHG2, MCHJ, MCHY, MCRT	

Dimension

Straight cable

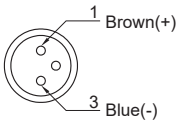


Angle cable

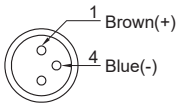


Wiring of the QD

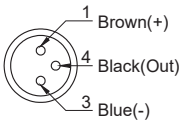
● 2 wire QD wiring



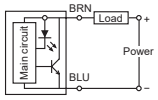
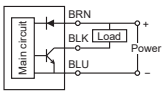
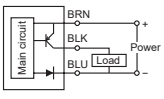
● 2 wire EQD wiring



● 3 wire QD wiring



Specification

Model	RDFE / RDFEV	RNFE	RNFEV	RPFE	RPFEV
Wiring method	2 wire	3 wire			
Switching logic	Solid state output, Normally open				
Switch Type	Non-contact	NPN current sinking		PNP current sourcing	
Operating voltage	5~30V DC	5~30V DC		5~30V DC	
Switching current	50mA max.	50mA max.	80mA max.	50mA max.	80mA max.
Contact rating(*1)	1.5W max.	1.5W max.	2.2W max.	1.5W max.	2.2W max.
Current consumption	—	10mA @24V DC max.	6mA @24V DC max.	10mA @24V DC max.	6mA @24V DC max.
Voltage drop	3.5V max.	0.5V @ 50mA max.			
Leakage current	0.1mA(40uA) max.	0.01mA max.			
Indicator	Red LED				
Cable	ø2.6, 2C, PVC	ø2.6, 3C, PVC			
Operating Frequency	1000 Hz				
Temperature range	–10~+70°C (No freezing)				
Shock (*2)	50G				
Vibration (*3)	9G				
Enclosure classification	IEC 60529 IP67				
Protection circuit (*4)	3, 4				
Weight	12.8 g (1m cable) / 23.8 g (2m cable)				
Connect diagram					

*1. Warning: Never exceed rating (watt=voltage×amperage). Permanent damage to sensor will occur.
*2. Sin wave / X.Y.Z. 3 directions / 3 times each direction / 11ms each time.
*3. Double amplitude 1.5mm / 10Hz~55Hz~10Hz(Sweep 1min) / X.Y.Z. 3 directions / 1 hour each time.
*4. 1=None / 2=Short-circuit / 3=Power source reverse polarity / 4=Surge suppression
*5. Caution for safety please refer to page 158.

RDGV series

SENSOR SWITCH

Order example

RDGV – □

AUTO SWITCH TYPE
V: Angle cable

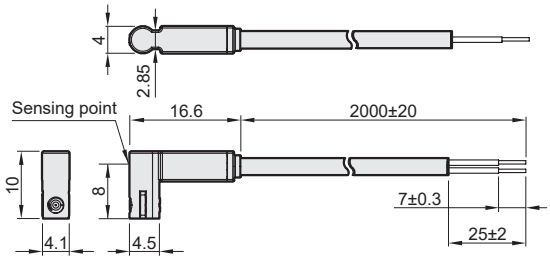
WIRE LENGTH
1M: L=1000mm
2M: L=2000mm
QD: M8, 3 Pin connector
EQD: M8, 3 Pin conncetor

SWITCH TYPE
D: Non-contact
N: NPN
P: PNP

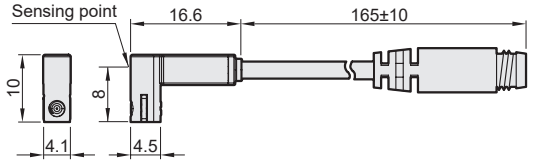
* Special order is available.

Dimension

RDGV / RNGV / RPGV

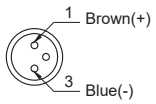


RDGV-QD / RNGV-QD / RPGV-QD

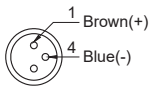


Wiring of the QD

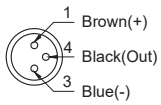
• 2 wire
QD wiring



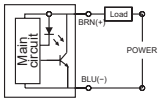
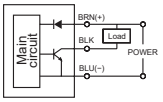
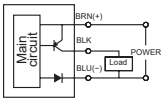
• 2 wire
EQD wiring



• 3 wire
QD wiring

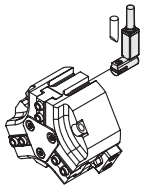


Specification

Model	RDGV	RNGV	RPGV
Wiring method	2 wire	3 wire	
Switching logic	Solid state output, Normally open		
Switch type	Non-contact	NPN current sinking	PNP current sourcing
Operating voltage	10~28V DC	5~28V DC	
Switching current	4~20mA max.	50mA max.	
Contact rating (*1)	0.6W max.	1.5W max.	
Current consumption	—	10mA @24V DC max.	
Voltage drop	3.5V max.	0.5V @ 50mA max.	
Leakage current	0.8mA max.	0.01mA max.	
Indicator	Red LED		
Cable	ø2.6, 2C, PVC	ø2.6, 3C, PVC	
Operating Frequency	1000 Hz		
Temperature range	-10°C~+70°C (No freezing)		
Shock (*2)	50G		
Vibration (*3)	9G		
Enclosure classification	IEC 60529 IP67		
Protection circuit (*4)	4	3, 4	
Weight	23 g (2m cable)		
Connect diagram			

* 1. Warning: Never exceed rating (watt=voltage×amperage). Permanent damage to sensor will occur.
* 2. Sin wave / X.Y.Z. 3 Directions / 3 Times each direction / 11ms each time.
* 3. Double amplitude 1.5mm / 10Hz~55Hz~10Hz(Sweep 1min) /X.Y.Z. 3 Directions / 1 Hour each time.
* 4. 1=None / 2=Short-circuit / 3=Power source reverse polarity / 4=Surge suppression.
* 5. Caution for safety please refer to page 158.

Assembling style

Gripper type	Mounting clamp
MCHJ-50	

RLG series

MAGNETIC POSITION SENSOR

Order example

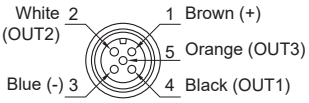
RLG — 3N — □

- RLG — MODEL
- 3N — **3N**: 3 NPN, **3P**: 3 PNP
- □ — WIRE LENGTH
  - **2M**: L=2000mm
  - **QD**: M12, 5 Pin connector

* Special order is available.

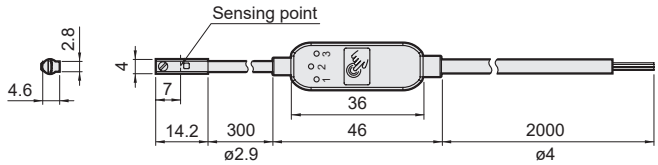
Wiring of the QD

• 5 wire QD wiring

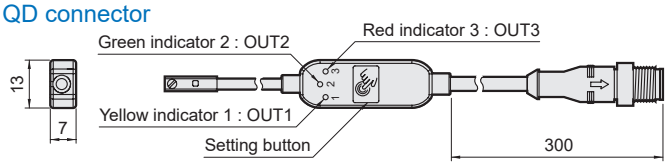


Dimension

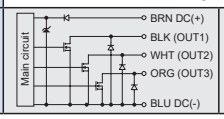
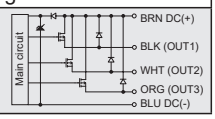
Standard lead wire



QD connector



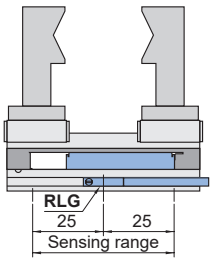
Specification

Model	RLG-3N	RLG-3P
Measuring range (*1)	50 mm	
Switching logic	Solid state output, normally open / normally close switchable	
Switch type	3 NPN current sinking	3 PNP current sourcing
Operating voltage	5 ~ 30 V DC	
Switching current (*2)	150 mA max.	
Power supply voltage (*2)	30 V DC	
Contact rating (*2)	4.5 W max.	
Current consumption	20 mA @ 24 V DC max.	
Voltage drop (*2)	1.5 V max. (with resistive load)	
Leakage current	0.01 mA max.	
Repeatability	≤ 0.01 mm	
Indicator	Yellow LED, Green LED, Red LED	
Cable	ø4 PVC - 26 AWG (0.15mm²) - 5 cores	
Operating frequency	50 Hz	
Magnet requirement (*3)	40 ~ 1000 Gauss	
Temperature range	-10 ~ 70 °C	
Shock (*4)	50 G	
Vibration (*5)	9 G	
Enclosure classification	IEC 60529 IP69	
Protection circuit (*6)	2, 3, 4	
Weight	54 g	
Connect diagram		

*1. The difference of magnetism, environment, and interference of magnetic field can cause the deviation of measurement.
*2. The standard is for each output.
*3. Measuring standard target: ø15.5 × ø8 × 5t (Anisotropy rubber magnet)
*4. Sin wave / X , Y , Z 3 directions / 3 times each direction / 11 ms each time.
*5. Double amplitude 1.5 mm / 10 Hz ~ 55 Hz ~ 10 Hz (Sweep 1 min) / X , Y , Z 3 directions / 1 hour each time.
*6. 1=None / 2=Short-circuit / 3=Power source reverse polarity / 4=Surge suppression.

Setting example

State 1
Gripper open

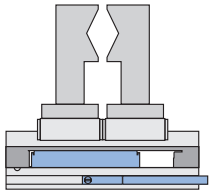


Setting procedure example for state 3

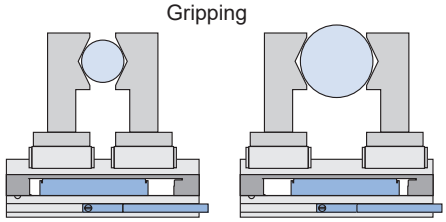
1. Press button once, then long press until three indicators flash.
2. Keep press button till indicator 3 flashes, then adjust gripper to gripping position.
3. Long press button to finish.

* Check manual for more details.

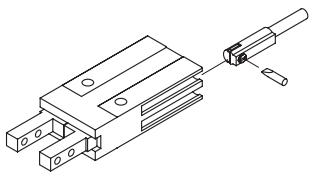
State 2
Gripper close



State 3
Gripping



Assembling style

Cylinder type	Mounting clamp
MCHC-6, MCHD*, MCHH, MCHU, MCHS, MCHX, MCHG2, MCHJ, MCHY, MCRT	

* To ensure good repeatability MCHD require special specification orders, must use single magnet specification,refer to order example of special cylinder when ordering.

Order example of special cylinder

Standard model no. — XZ1

Suitable for RLG series

* Special cylinder, please contact us

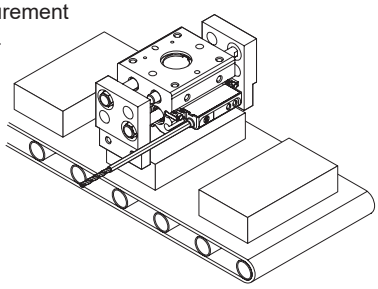
Order example

RLZ – C040 – QD

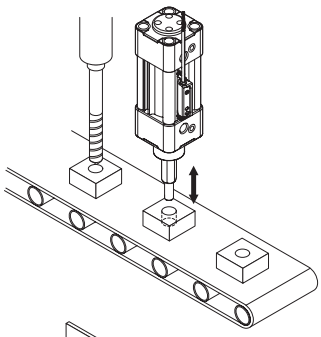
MODEL	GROOVE TYPE	MEASURING RANGE	WIRE LENGTH
	C: C type **T**: T type	**040**: 40mm	**2M**: L=2000mm **QD**: M8, 3Pin male connector

Applicable

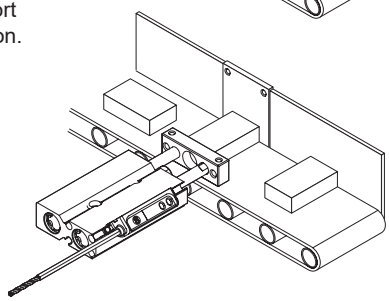
For the measurement of dimensions.



Used to check machined holes.



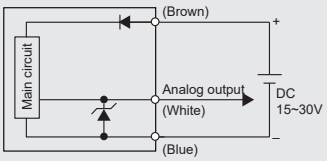
For long/short side detection.



Features

- Repeatability ± 0.01 mm
- Analog output invertible (0~10V⟷10~0V)(4~20mA⟷20~4mA)
- Sampling time ≤ 0.3 ms
- Voltage / current output switchable
- Freely set measuring range

Specification

Model		RLZ
Measuring range		40±1 mm
Power supply voltage		15 ~ 30 V DC, Ripple (P-P) ≤ 10 %
Current consumption *8		≤ 15 mA (with no load)
Displacement resolution *1		0.001 mm
Linearity error *1		± 0.2 mm @ 25 °C
Repeatability *1,2		± 0.01 mm @ 25 °C
Sampling time		≤ 0.3 ms
Analog voltage output *3		Voltage Output : 0 ~ 10 V Max. Load Resistance, Current Output : 2 KΩ Linearity : ± 0.05 % F.S. @ 25 °C Sensitivity : 0.25 mV/μm
Analog current output *4		Current Output : 4 ~ 20 mA Min. Load Resistance, Voltage Input : 500 Ω Linearity : ± 0.05 % F.S. @ 25 °C Sensitivity : 0.4 μA/μm
Magnetic field strength*1,5		20 ~ 200 Gauss
Environment	Enclosure	IP69 IEC 60529
	Ambient temp. Range	Operation : 0 ~ 50 °C, Storage : -10 ~ 60 °C (No condensation or freezing)
	Ambient humidity range	Operation / Storage : 35 ~ 85 % RH (No condensation)
	Withstand voltage	1000 V AC in 1-min (between case and lead wire)
	Insulation resistance	≥ 50 MΩ (at 500 V DC, between case and lead wire)
	Shock *6	30 G
	Vibration *7	10 G
Indicator		Red, Green, Blue, White
Lead wire		ø2.9 PUR - 26 AWG (0.15mm2) - 3 cores
Protection circuit		Power source reverse polarity, Surge suppression
Weight (with 2M lead wire)		Approx. 33 g (C type), Approx. 37 g (T type)
Connect diagram		

*1. Measuring standard target : Ø15.5 × Ø8 × 5t (Anisotropy rubber magnet)
*2. Repeatability with magnet movement from one direction.
*3. If analog voltage output is selected, the analog current output cannot be selected at the same time.
*4. If analog current output is selected, the analog voltage output cannot be selected at the same time.
*5. The analog measured value can deviate according to different conditions.
*6. Sin wave / X , Y , Z 3 directions / 3 times each direction / 11 ms each time.
*7. Double amplitude 1.5 mm or 10 G / 10 Hz ~ 55 Hz ~ 10 Hz (Sweep 1 min) / X, Y, Z 3 directions / 2 hours each time.
*8. It bases on conditions of voltage 24V DC, ambient temp. 25°C and cable 2M length. Voltage drop increases in pace with cable length.
*9. Caution for safety please refer to page 158.

RLZ Applicable cylinder

LINEAR POSITION SENSOR

⚠ Caution

* The repeatability of sensor will be affected by the operational condition and environment.
* Avoid piston and magnet of cylinder spin to cause inaccuracy.
* To ensure good repeatability, models marked with ◉ require special specification orders.

● Standard cylinder
◉ Special cylinder

	Model	Tube I.D. / Spec.	6	8	10	12	16	20	25	32	40	50	63	80	100	125	160	200	300
Gripper	**MCHD** (C type) *1	Short				◉	◉	◉											
		Medium		◉ *2		◉	◉	◉											
		Long		◉		◉	◉	◉											
	MCHU (C type)					●	●	●											
	MCHS (C type)																●	●	●
	MCHX (C type)				◉		◉	◉	◉	◉	◉								
	MCHY (C type)				◉		◉	◉	◉										

*1. MCHD must use single magnet specification.
*2. Please install the sensor in the middle of MCHD-8 medium stroke (as shown in Figure 2).
*3. The built-in magnets must be glued except *2.
*4. RLZ is also applicable to the models marked with ◉ in standard specification if good repeatability is not required. (except MCHD series)
*5. Please contact us if required models not found in the table.

Order example of special gripper

Standard model no. — XZ1

Suitable for RLZ series
* Special gripper, please contact us

Installation

Move the sensor to the required position, then tighten the screw by hexagon wrench 2.0 mm with tightening torque 0.2 ~ 0.4 Nm (as shown in Figure 1).

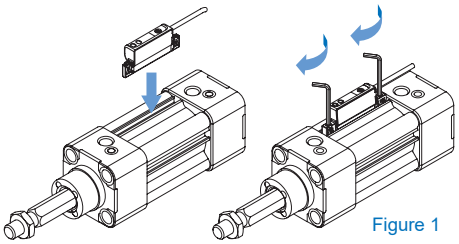


Figure 1

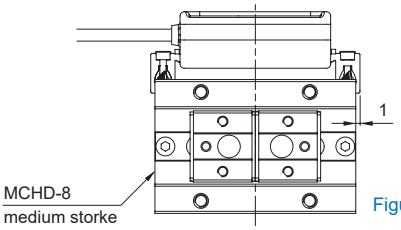


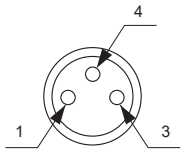
Figure 2

⚠ Precautions (Read before installing)

- Be sure to tighten within the recommended tightening torque when mounting the actuator position sensor.
- According to the installation condition, the cylinder may not operate even when mounted appropriately. If the sensor doesn't work, try following solutions:1. Restart the power. 2. Operate the cylinder for several times.
- Turn off power before connecting wiring. Wrong wiring or short circuit will damage and / or cause malfunction.

Wiring of the QD

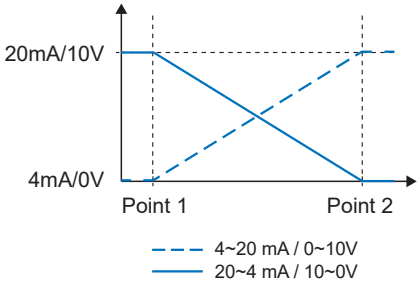
- 3 wire QD wiring



1 Brown(+)
3 Blue(-)
4 White (analog output)

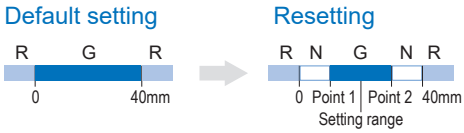
Analog output function

- Analog voltage / current output can be switched.
- Analog output can be inverted.



Information indicator LED color description

Please ensure that the required measurement range of the cylinder is within the measurement range of RLZ.

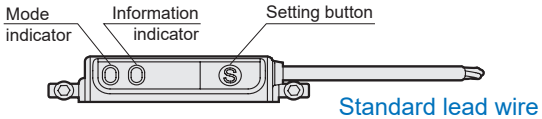


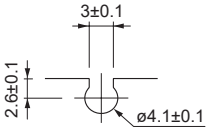
Description	
G (Green)	Within the setting range
N (Non)	Within the measuring range, but outside the setting range.
R (Red)	Outside the measuring range

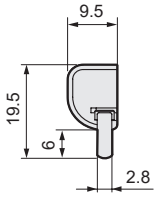
Dimensions

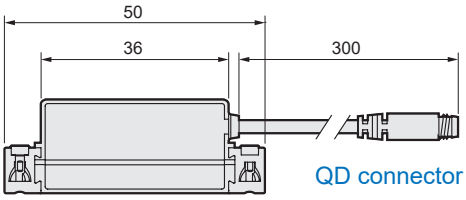
RLZ-C

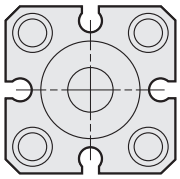
C type





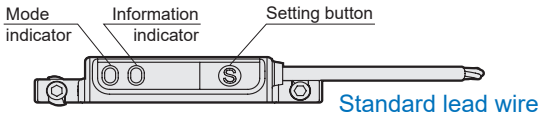


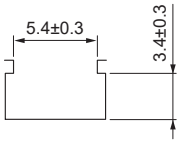


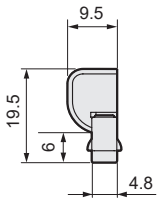


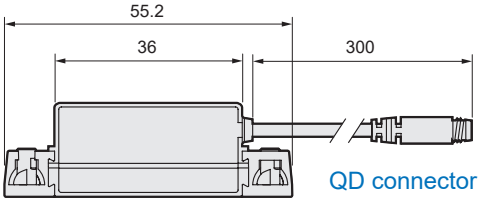
RLZ-T

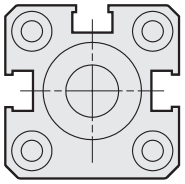
T type





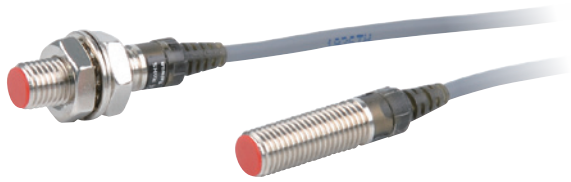






RJY series

PROXIMITY SENSOR



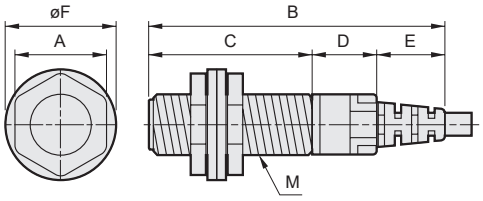
Order example

RJY — N — M8 — 3M

- RJY: MODEL
- N: SWITCH TYPE (**N**: NPN, **P**: PNP)

Body thread	Wire length
M5	**2M**: 2000mm
M8	**3M**: 3000mm

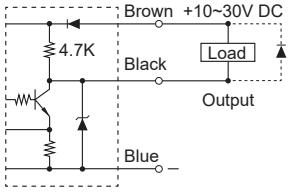
Dimension



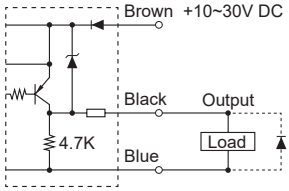
Code / Model	A	B	C	D	E	F	M
RJY-*-M5	7	–	20	–	–	8	M5×0.5
RJY-*-M8	12	39	21.5	8.5	9	15.5	M8×1.0

Connect diagram

NPN



PNP

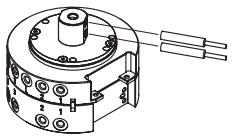
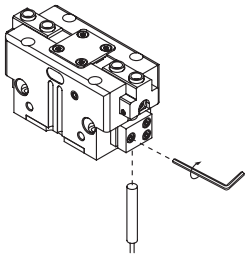


Specification

Model	RJY	
Body thread	M5	M8
Operating voltage	10~30V DC	
Power ripple	20% peak to peak	
Current consumption (mA)	10 max.	
Detection distance (mm)	1.0±0.2 (steel)	1.8~2.0 (steel) 0.4~0.6 (aluminum)
Hysteresis	10% of sensing distance max.	
Response frequency (KHz)	2.5 min.	
Output type	NPN, PNP	
Output logic	N.O.	
Output current (mA)	100 max.	150 max.
Residual voltage (V)	0.1 max.	
Leakage current (mA)	0.8 max.	
Protection type	Short circuit & polarity reversed protection	
Indicator (LED)	Green	White
Cable	3c/ø3	
	Gray cover, oil and shaking resistance	
Maximum voltage resistance	2.5kv / 1 minute min.	
Operating environment	-20°C ~ +80°C, 35% ~ 85% RH	
Protection class	IP 67	

* Caution for safety please refer to page 158.

Assembling style

Model	Gripper type	Mounting clamp
RJY-*-M5	MCTC	
RJY-*-M8	MCHJ MCHS	

Caution for safety

⚠ PLEASE READ **BEFORE USING**

Before selecting model and servicing of the product, read throughly this CAUTIONS for SAFETY for the proper usage.

- The following cautions are for the purpose of preventing your personnel from suffering injury, by following the proper usage of the products.
- Items are classified in three categories, DANGER, WARNING, and CAUTION. All items are crucial for the safety and need to be followed without exception.

DANGER ⚠	Obviously dangerous, which may cause death or serious injury of personnel, and damage or destruction of property.
WARNING ⚠	Not immediately subject to danger, however not avoiding the displayed danger when mishandling the product may cause death or serious injury of personnel and damage or destruction of property.
CAUTION ⚠	Not immediately subject to danger, however not avoiding the displayed danger when mishandling the product may cause injury of personnel and damage or destruction of property.

For the correct handling, please read the instruction manual before installing and servicing of the product.

⚠ DANGER

(Applies to all products on the catalogue)

❶ Do not use any of our products for the purpose of maintenance and care of human life or body.

❷ Do not use any product in the condition or the environment other than stipulated in the specification or where the hazardous stuff exists.

❸ When installing a product, refer to the instruction manual for mounting style and fix securely (including the work carrier). Otherwise products may topple, fall, and operates out of control causing the injury of personnel.

❹ Disassembling and reassembling of products should be made by the personnel who has enough knowledge and experience.

❺ Depressurize products before disassembling or reassembling.

❻ Do not remodel the products.

⚠ WARNING

(Applies to all products on the catalogue)

❶ When servicing, keep within the working pressure range and voltage.

❷ At a place where water or oil drops and where is much dust, cover the equipment. Otherwise damage and trouble will be caused.

❸ Do not operate if the fluid or atmosphere contains the substance which may cause corrosion. Otherwise damage and trouble will be caused.

❹ Do not touch the terminal part or switches, etc. when the product is energized. It may cause the inaccurate operation and the electric shock from the short circuit and the circuit trouble.

❺ Do not stand on, use as a footing, or put things on the product. You may miss your step and fall, and the falling product may cause the injury of personnel. Also the product may get damaged causing the inaccurate operation and hazardous moves out of control.

(Pneumatic Actuator)

❶ When starting operation, pay the full attention to the cylinder's moving direction.

❷ Do not put hands where the cylinder moves.

❸ Please use a speed control valve to adjust the piston speed within the limited value in our catalogue.

❹ The value of dividing operation time into cylinder stroke is the average speed rather than max speed.

The max. speed of cushion pad type cylinders occur at the end of the stroke.

The max. speed of air cushion type cylinders occur at the start poiont of cusioning structure.

❺ The max. speed of cylinders usually uses the value of average speed times 1.4~1.5.

❻ When the load on cylinder is large, we suggest to use ourter shock absorber - even the max speed is within the limited value.

❼ Cords such as the sensor switch's lead wire should not be damaged. Damaging, forcing, twisting tugging, winding, putting on a heavy object, and pinching will cause fire, electric shock abnormal operation by short circuit or circuit error.

(Pneumatic Valve. Pneumatic Accessories. Sensor Switch)

❶ Cords such as the pressure switch's lead wire, solenoid valve's power supply cord should not be damaged. Damaging, forcing, twisting, tugging, winding, putting heavy object on, and pinching will cause fire, electric shock, abnormal operation by short circuit or circuit error.

❷ Do not use filter or lubricator without a case guard.

❸ For filter and lubricator, do not use a flawed or stained case.

Caution for safety

PLEASE READ **BEFORE USING**

mindman

CAUTION

(Applies to all products on the catalogue)

❶ If necessary, use protection glove, protection glasses, and safety shoes to secure the safety when operating products.

❷ For the easy maintenance, enough space around the product should be provided.

❸ When mounting, flush inside throughly to remove chips from piping, and seal tape, rust and dusts, in order to prevent troubles such as air leak.

❹ When screwing in the fittings, fasten with the tie torque of proper size to the connection size.

❺ Use clean air. Equip an air filter near the equipment to remove drain, dusts and etc. Periodically remove drain from the filter.

❻ Spindle oil and machine oil must not be used for lubrication, or the swelled packings will cause operation troubles.

❼ Operation below the temperature 5°C must be paid the full attention since it may cause the freezing of drain.

❽ Magnetic products such as disk card, tape, and tester must be kept away from the magnet-equipped cylinder and solenoid valve's solenoid part.

❾ When the product is no longer available for operation or needed, discard in a proper way as an industrial waste.

❿ Do not throw the product into fire. The product may explode or the toxic gas may be generated.

(Pneumatic Actuator)

❶ Products should be mounted on the plane face. Mounting on the warped face causes poor accuracy, air leak and troubles.

❷ Flaw or dent on the mounting part of the cylinder may make the uneven face.

❸ The chafing parts of piston rod and guide rod must be free from flaw or dent. Otherwise packings got damaged and air will leak.

❹ When the cylinder draws, be careful not to put yourself between the cylinder and the link bar at the top (Twin guide cylinder).

❺ Products do not need lubrication since they are initially lubricated. For lubrication, use turbine oil first class (ISO VG32) or the equivalent.

❻ Sensor switch which senses the cylinder position must not be operated in the magnetically disturbed area. It will react to the magnetism and the sensing accuracy will be disturbed.

❼ If the two switch-equipped cylinders are mounted close in parallel, a switch may react to the another cylinder's moving magnet, and effects on the sensing accuracy.

❽ Avoid the load over the switch 's allowable maximum load.

❾ It is difficult for a valve to control more than two cylinders to act at the same time, because the friction coefficient of each pneumatic cylinder is different. Even if the pipes, joints, solenoid valves, and speed control valves have the same conditions , they can only approach the same movement, but cannot achieve absolute synchronization. So please avoid this way of use as much as possible to avoid increasing the burden on the cylinder and shortening the life of the cylinder.

(Pneumatic Valve. Pneumatic Accessories. Sensor Switch)

❶ Flaw or dent on the mounting part of the cylinder may make the uneven face.

❷ Do not use solenoid valve, pressure switch, flow switch, on foot switch in the environment where the large electric current or the strong magnetism exist.

❸ Products do not need lubrication. As for directional valve, check in the instruction manual whether the lubrication is needed. If needed, use turbine oil first class ISO VG32 on the equivalent.

❹ In the case of double solenoid valve, do not energize both solenoids.

❺ Avoid the load over the switch's allowable maximum load.

❻ The setting range of the secondary pressure of the pressure regulation valve use as 85% of primary pressure or below to achieve better pressure setting and regulation.

❼ The swing button of the pressure regulator must be pulled before truning, increase pressure while turning in clockwise direction and vice versa to decrease. Press in and secure the swing button after operation. After turning to max value (either positive or reverse)(with no pressure variation anymore), don't turn by force or use tool to avoid damage.

(Sensor Switch)

❶ Do not drop, hit or allow excessive shock. Even if switch body appears undamaged, internal components may be broken and can cause malfunction.

❷ This product is not explosion-proof rated. Do not use in atmosphere containing flammable or explosive gases.

❸ Wiring for pressure sensor should avoid power source line and high voltage line. If use in the same circuit, noise may cause malfunction.

❹ Sensors at end-of-life must be disposed of in accordance with E-Waste regulations of the country/region, NOT disposed of with regular garbage.

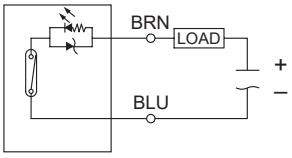
Technical information

⚠ CAUTION

Do not exceed specification, permanent damage to the sensor may occur.

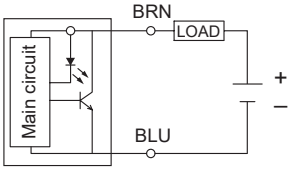
1. The 2-wire type magnetic sensor must be connected in series with load. Or the sensor may malfunction.

2. For reed switch type sensors, polarity must also be observed for the proper function of LED. Connect the brown wire in series with load to positive (+) and the blue wire to negative (-) of DC power soure. If the polarity is reversed, reed sensor remain functional but LED will remain in "OFF" state.



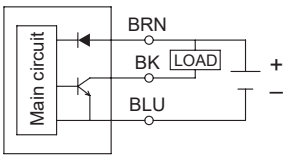
3. For solid-state type sensors, connect brown wire to the positive (+) and the blue to the negative (-) of DC power source. For 3-wire type, the black wire must be connected to the load only. If the black wire is accidentally connected to the power source, sensor may malfunction.

2-wire type

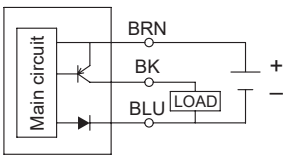


3-wire type

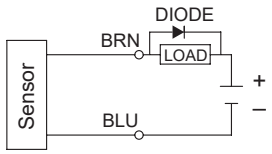
(NPN Output)

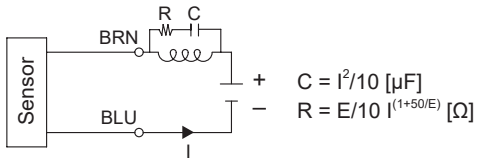


(PNP Output)



4. An external protection circuit may be required if the magnetic sensor is used with inductive load, such as relay or solenoid. For DC inductive load, attach an external diode parallel to the load and use R-C circuit parallel with AC inductive load as illustrated below.





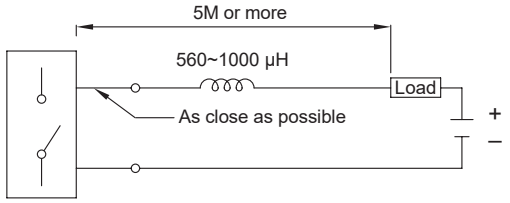
C: Capacitor I: Load current
R: Resistance E: AC power

5. Keep sensors away form strong magnetic field to prevent malfunction.

6. Reed sensors are without protection circuit.
When a reed sensor is used with a capacitive load or with more than 5 meters lead wire, the life of the contact will be shortened. (especially when the switch is always ON)

Note

Please install a surge suppressor within 1 meter or an inductor (560~1000μH) in series of the sensor to prevent damage.

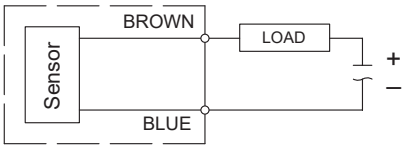


Connection method

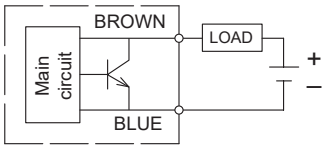
2 wire sensor connection

▶ General connection

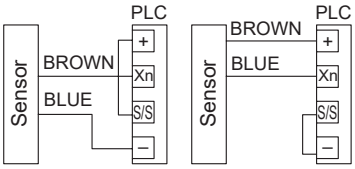
Reed switch



Solid-state type



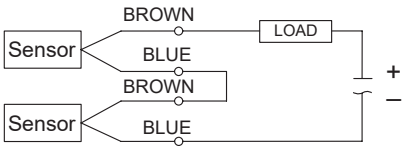
PLC



Connection to NPN input module

Connection to PNP input module

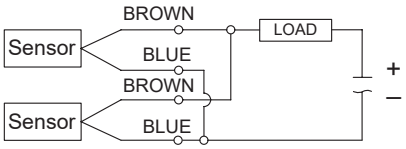
▶ Series connection (AND)



Note

1. When connecting 2-wire sensors in series (AND), don't exceed more than two sensors due to the internal voltage drop (Typical V drop=2.5~4V per switch). Excessive Voltage drop will cause the load fail to operate.

▶ Parallel connection (OR)



Note

1. When connecting solid state 2-wire sensors in parallel (OR), current leakage will increase and cause improper load operation.
2. When connecting two magnetic sensors in parallel (OR), possible concurrent operation will cause dim LED illumination due to lower current distribution.

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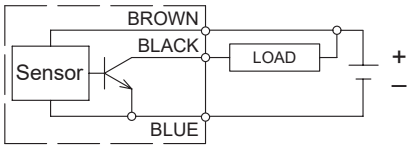
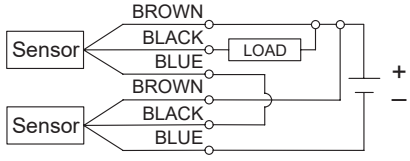
3 wire NPN connection

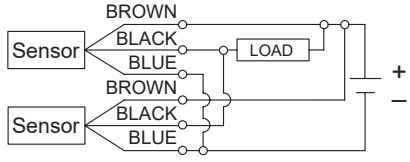
▶ General connection



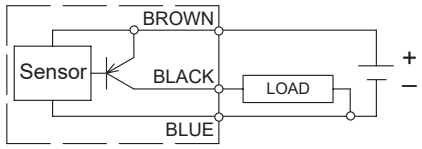
▶ Series connection (AND)

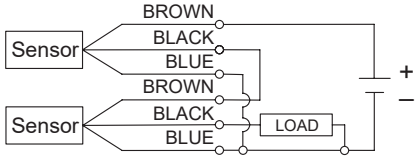


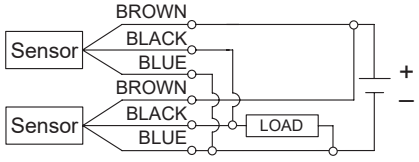
▶ Parallel connection (OR)



3 wire PNP connection







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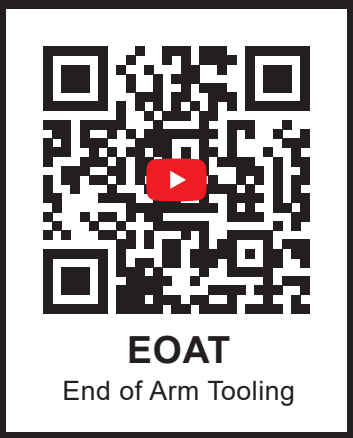
News

New Product / Design Change Notice / Exhibition Information



EOAT

End of Arm Tooling

CAT. NO: MD-DM2310-E