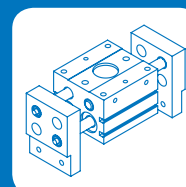
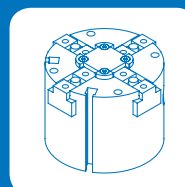
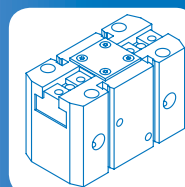
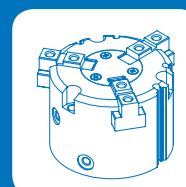
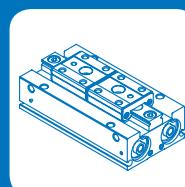
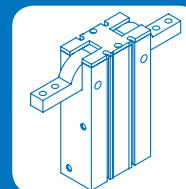
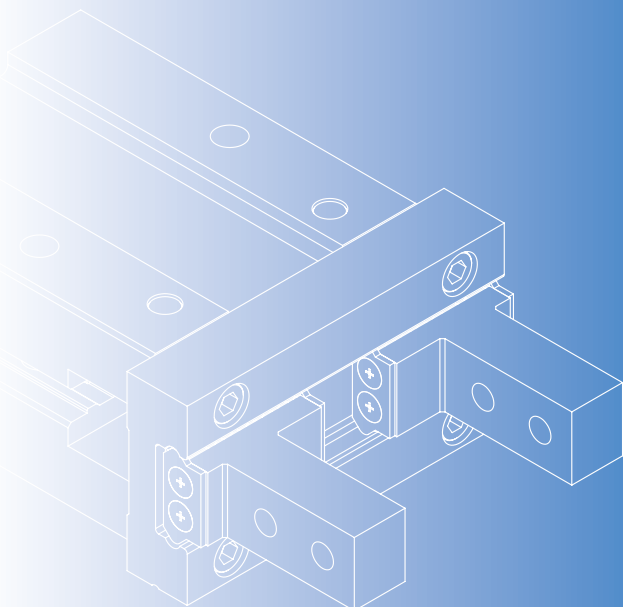


# GRIPPER



## Model Selection..... 3-2

### PARALLEL GRIPPER (2-Finger)

<b>MCHB</b>	ø12~ø32.....	3-3
<b>MCHC</b>	ø10~ø25.....	3-6
<b>MCHD</b>	ø8~ø20 <b>New</b> .....	3-16
<b>MCHH</b>	ø20~ø40.....	3-23
<b>MCHQ</b>	64~160.....	3-26
<b>MCHU</b>	ø12~ø20.....	3-29
<b>MCHS</b>	50~300.....	3-32
<b>MCHX</b>	ø10~ø32 (Wide type).....	3-38

### PARALLEL GRIPPER (3-Finger)

<b>MCHK</b>	20~50.....	3-43
<b>MCHG2</b>	ø16~ø125.....	3-45
<b>MCHG2L</b>	ø16~ø80.....	3-52
<b>MCHJ</b>	50~300.....	3-55
<b>MCHGH</b>	ø64~ø160 (Through center hold type) ..	3-59

### PARALLEL GRIPPER (4-Finger)

<b>MCHGF</b>	ø50~ø125.....	3-62
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## 30° ANGULAR GRIPPER

<b>MCHA</b>	ø12~ø32.....	3-64
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## 40° ANGULAR GRIPPER

<b>MCHT</b>	80~200.....	3-68
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## 180° ANGULAR GRIPPER

<b>MCHW</b>	ø20~ø50 (Rack & Pinion style) .....	3-72
<b>MCHY</b>	ø10~ø25 (Cam style).....	3-74

### 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

**$\mu$** : Coefficient of friction between the attachments and the workpiece

**m**: Workpiece mass (kg)

**g**: Gravitational acceleration ( $=9.8\text{m/s}^2$ )

**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:

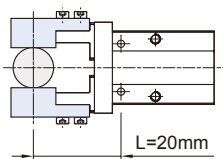
$$F \geq \frac{m \times g}{n \times \mu} \times a$$

### Model selection suggestions

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

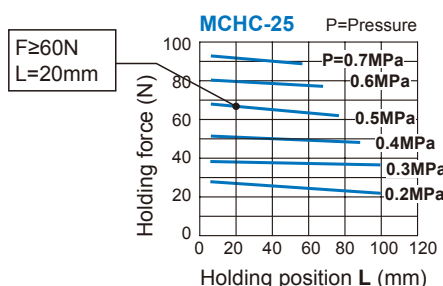
### Model selection example

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 ( $\mu$ ): 0.1, Holding position: L=20mm (no overhang)

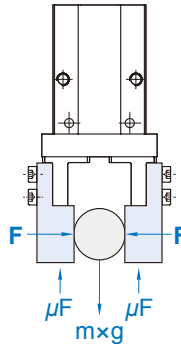


- Based on the above formula, the required gripping force can be derived:  

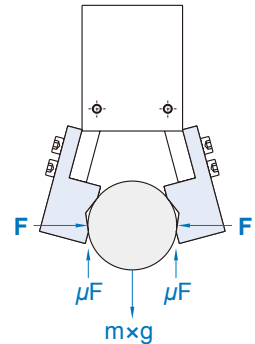
$$F \geq \frac{0.3 \times 9.8}{2 \times 0.1} \times 4 \geq 60(\text{N})$$
- From Effective Gripping Force Fig, Operating pressure: 0.5 MPa; Holding position: 20 mm Effective gripping force is greater than 60 (N) So selected **MCHC-25** grippers.



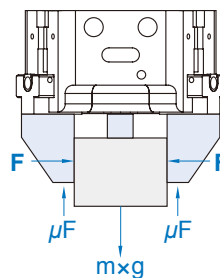
#### Parallel gripper (2-Finger)



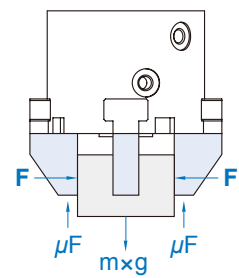
#### Angular gripper



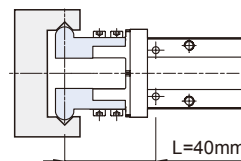
#### Parallel gripper (3-Finger)



#### Parallel gripper (4-Finger)

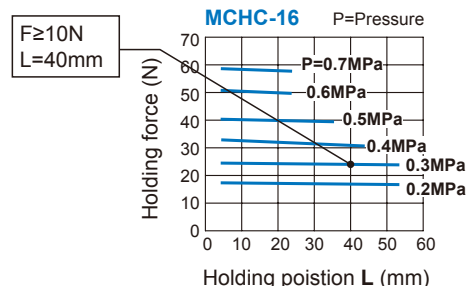


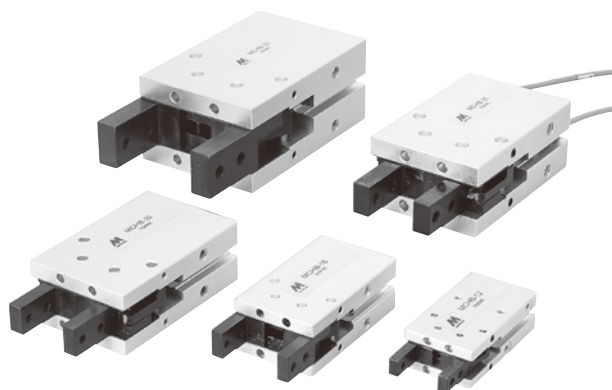
In the motion process did not produce high acceleration, deceleration or impact forces, Workpiece mass: 0.05kg , Gripping method : External gripping, Operating pressure: 0.3 MPa, Coefficient of friction ( $\mu$ ): 0.1, Holding position: L=40mm (no overhang)



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

$$F \geq \frac{0.05 \times 9.8}{2 \times 0.1} \times 4 \geq 10(\text{N})$$
- 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.





### Order example

**MCHB — 16**

MODEL

TUBE I.D.

12  
16  
20  
25  
32

### Features

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

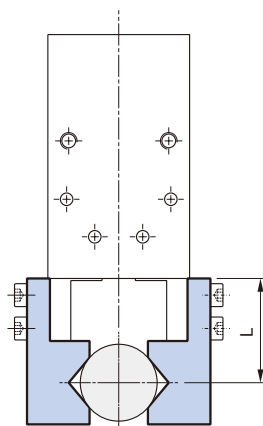
### Specification

Model		MCHB				
Acting Type		Double Acting				
Tube I.D. (mm)		12	16	20	25	32
Port size		M3×0.5	M5×0.8			
Medium		Air				
Operating pressure range		0.15~0.7 MPa				
Ambient temperature		-5~+60°C (No freezing)				
Max. frequency		180 Cycles/min				
Lubrication	Cylinder	Not required				
	Lever	Grease (Actuation at)				
Max. arm length (L) (mm)		30	40	60	70	85
Theoretical holding (*1) force (N)	Closed side	8	24	47	75	100
	Opened side	5	18	35	60	85
Lever open / close stroke		6	8	12	14	16
Sensor switch (*2)		RDE, RDE-D				
Weight (g)		66	144	255	419	719

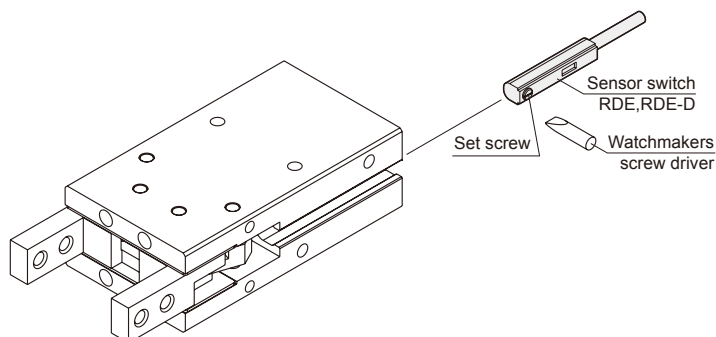
\*1. Gripping point length L=30mm, Pressure=0.5 MPa.

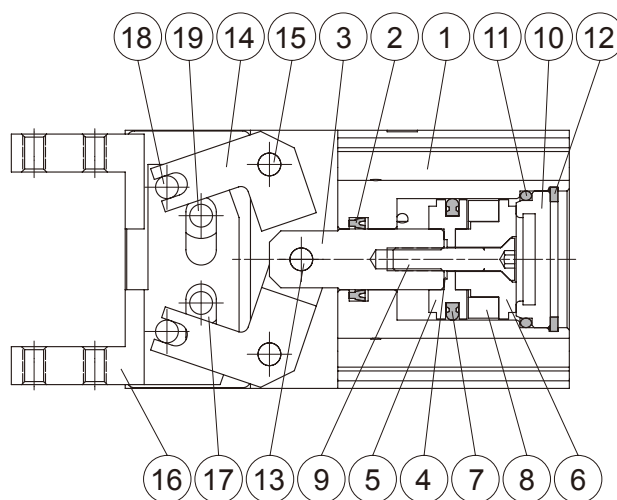
\*2. RDE, RDE-D specification, please refer to page 5-6.

### Length of gripping point



### Installation of sensor switch



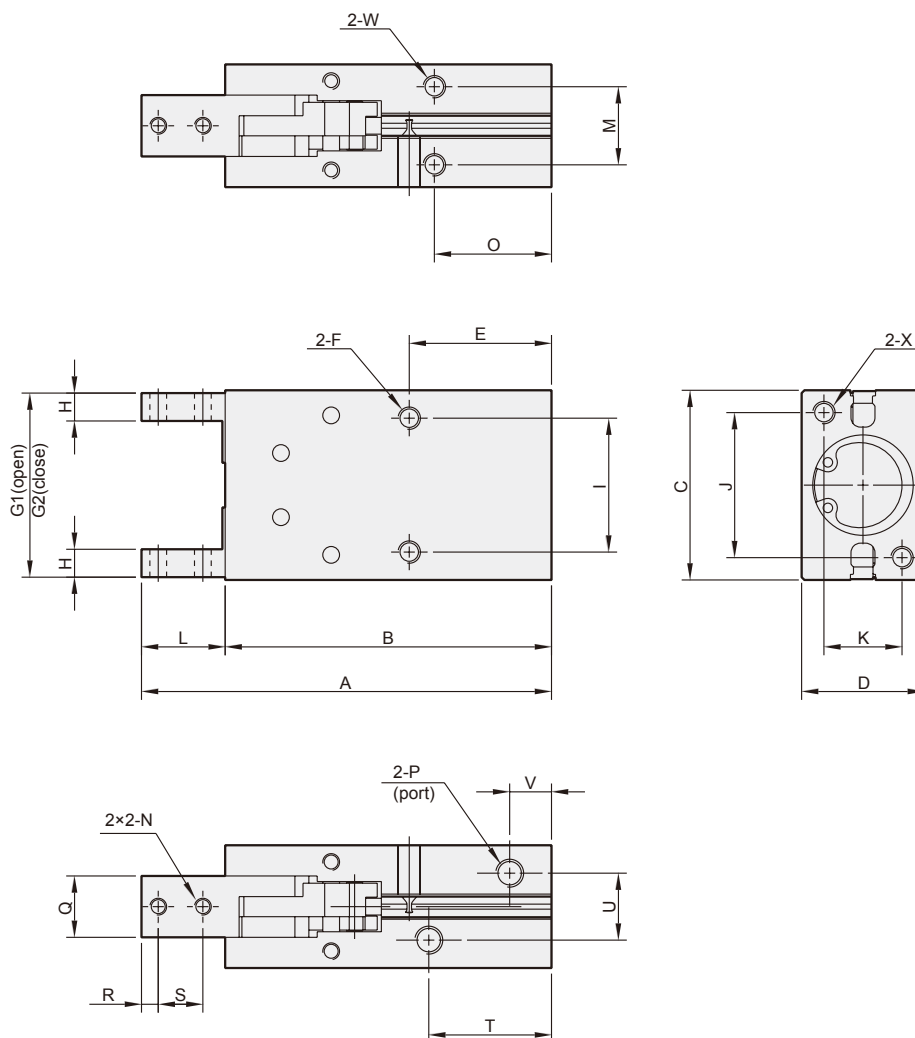


### Material

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	Washer for grip	Stainless steel	2	

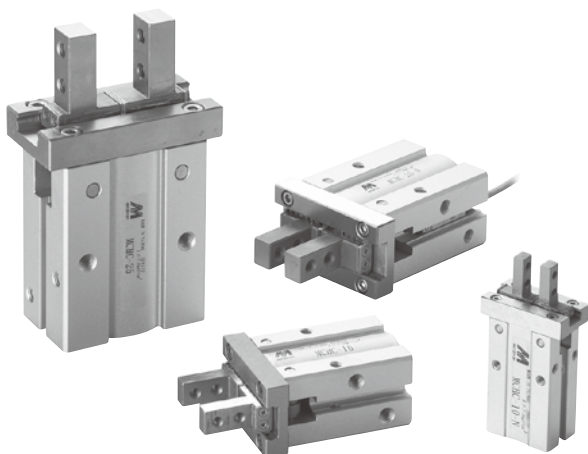
### Order example of repair kits

Tube I.D.	Repair kits
ø12	<b>PS-MCHB-12</b>
ø16	<b>PS-MCHB-16</b>
ø20	<b>PS-MCHB-20</b>
ø25	<b>PS-MCHB-25</b>
ø32	<b>PS-MCHB-32</b>



Code Tube I.D.	A	B	C	D	E	F	G1	G2	H	I	J	K	L	M	N	O	P	Q	R	S
12	63.5	50.5	28	16	20	M3×0.5×5 depth	27	21	4	18	17	10	13	10	M3×0.5	16	M3×0.5×5 depth	7	3	6
16	73.5	58.5	34	22	25.5	M4×0.7×11 depth	33	25	5	24	26	14	15	14	M3×0.5	21	M5×0.8×5 depth	11	3	8
20	88.5	69.5	45	26	25	M5×0.8×8 depth	44	32	6	30	35	16	19	16	M4×0.7	19	M5×0.8×5 depth	12	4	10
25	102.5	78.5	52	32	28	M6×1.0×10 depth	51	37	8	36	40	20	24	20	M5×0.8	22	M5×0.8×5 depth	14	5	12
32	120.5	90.5	60	40	34	M6×1.0×10 depth	59	43	10	44	46	24	30	26	M6×1.0	26	M5×0.8×5 depth	20	7	15

Code Tube I.D.	T	U	V	W	X
12	23	10.2	7.5	M3×0.5×5 depth	M3×0.5×5 depth
16	22	12	7.5	M4×0.7×7 depth	M4×0.7×7 depth
20	26	13	8	M5×0.8×8 depth	M5×0.8×8 depth
25	29	18	8.5	M6×1.0×10 depth	M6×1.0×10 depth
32	35	24	10.5	M6×1.0×10 depth	M6×1.0×10 depth



### Order example

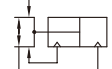
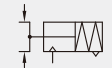
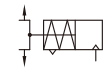
**MCHC — 20 — □ N**







MODEL

TUBE I.D.  
10, 16, 20, 25

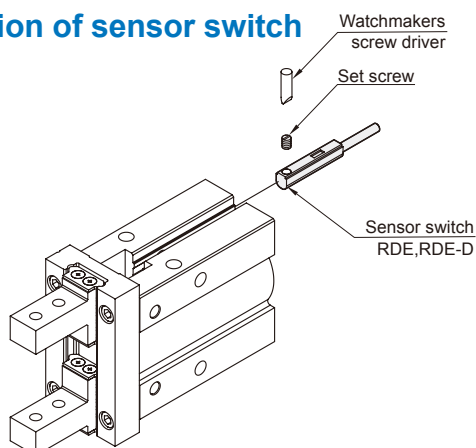
TYPE

STYLE

Code	Symbol	Description
Blank		Double acting
S		Single acting / Normally open
C		Single acting / Normally closed

Blank: Standard	N: Narrow
	
1: Side tapped mounting	N1: Narrow type side tapped mounting
	
2: Standard (Through hole)	N2: Narrow (Through hole)
	

### Installation of sensor switch



### Features

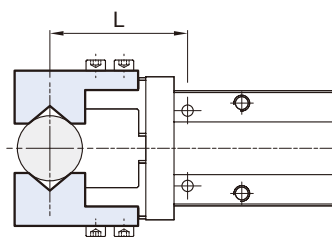
- Integral linear guide used for high rigidity and high precision.
- The material of finger is martensitic stainless steel.
- Body thickness tolerance  $\pm 0.05\text{mm}$ .
- Bottom pin holes for accurate re-locating.
- Grooves on the body for sensor switch to be inserted into.
- Standard with magnet.

### Specification

Model		MCHC			
Acting type		Double acting / Single acting			
Tube I.D. (mm)		10	16	20	25
Opening / Closing stroke (mm)		4	6	10	14
Port size		M3×0.5	M5×0.8		
Medium		Air			
Operating pressure range	Double acting	0.2~0.7	0.1~0.7 MPa		
	Single acting	0.35~0.7	0.25~0.7 MPa		
Ambient temperature		-10~+60℃ (No freezing)			
Repeatability		± 0.01 mm			
Max. frequency		180 cycles / min			
Lubricator		Not required			
Sensor switch (☞)		RDE, RDE-D			
Weight (g)	Double acting	55	125	250	460
	Single acting	70	145	270	490

\* RDE, RDE-D specification, please refer to page 5-6.

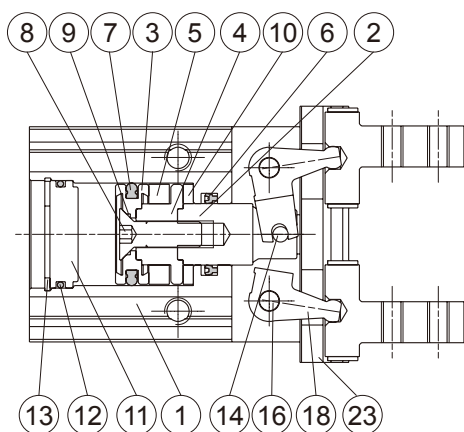
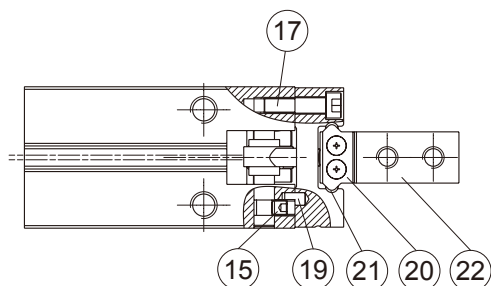
### Gripping force



Tube I.D. (mm)		10	16	20	25
Double acting	External	11(1.1)	34(3.5)	42(4.3)	65(6.6)
	Internal	17(1.7)	45(4.6)	66(6.7)	104(10.6)
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)

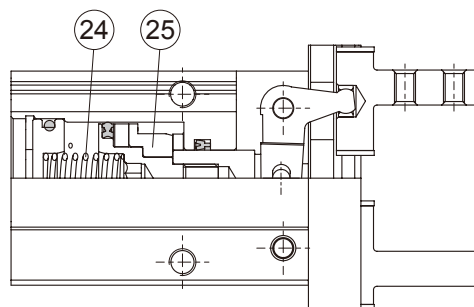
\* Operation pressure 0.5 MPa, gripping length 20mm, the effective gripping force for each finger is \*\*\* N(kgf).

### Double acting



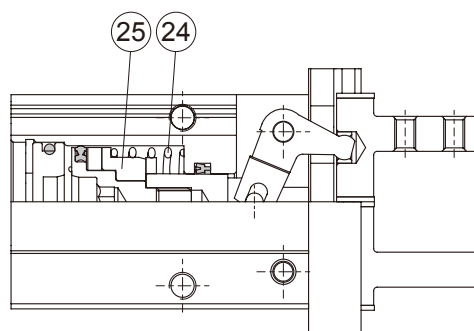
### Single acting

Normally open



### Single acting

Normally closed



### 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	Piston	Aluminum alloy				1	
4	Piston R	*1	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	Gasket	—	NBR			1	●
10	Cushion pad	PU				1	●
11	Head cover	Aluminum alloy				1	
12	Cover ring	NBR				1	●
13	Stop ring	*2	Stainless steel			1	
14	Spindle river	Carbon steel				1	
15	Screw	Carbon steel				4	
16	Grip rivet	Carbon steel				2	
17	Bolt	Stainless steel				4	
18	Lever	Stainless steel				2	

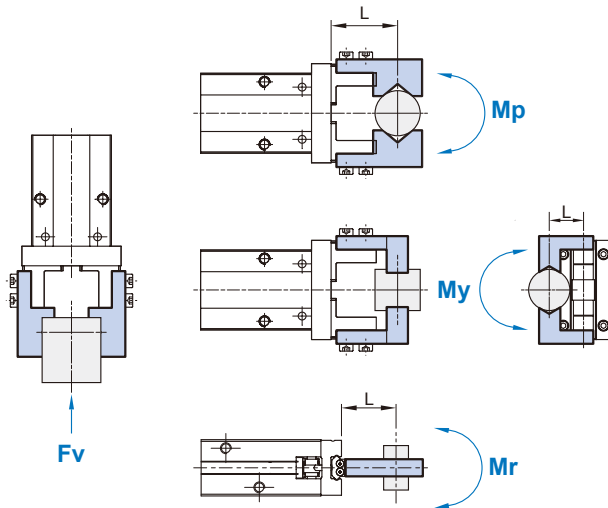
No.	Tube I.D. Part name	10	16	20	25	Q'y	Repair kits (inclusion)
19	Pin	Carbon steel				2	
20	Roller stopper	Stainless steel				4	
21	Steel balls	Bearing steel				24	
22	Finger	Stainless steel				2	
23	Guide	Stainless steel				1	
24	Magnet holder	Stainless steel				1	
25	Stop ring	Stainless steel				1	

\*1. Stainless steel \*2. Carbon steel

### Order example of repair kits

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

\* 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.

$$\begin{aligned} \text{Allowable load } F(N) &= \frac{0.68 (N \cdot m)}{25 \times 10^{-3} (m)} \\ &= 27.2 (N) \end{aligned}$$

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

### Model selection suggestions

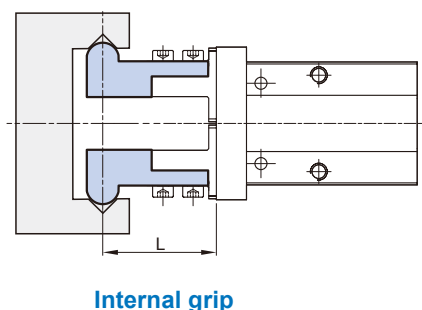
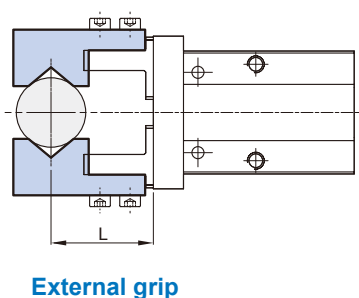
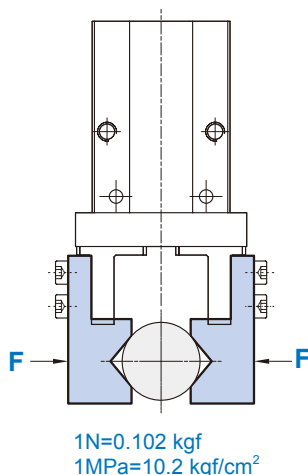
1. For normal gripping and carrying usage, the recommended safe factor (a) is 4.
2. The value of gripping force of single finger can be found at the gripping force table.
3. The safe factor (a) have to be higher if the gripper is using with a great accelerated velocity or impaction condition.



### Effective gripping force (Double acting)

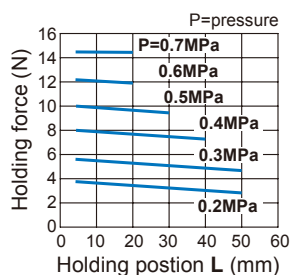
Indication of effective force.

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.

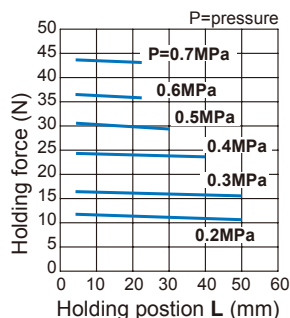


### External gripping force

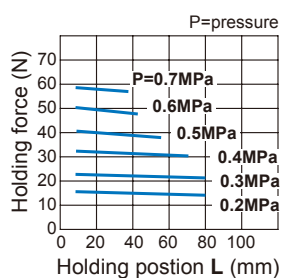
#### MCHC-10



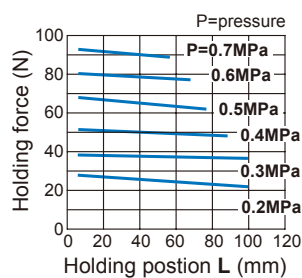
#### MCHC-16



#### MCHC-20

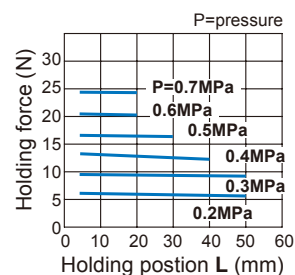


#### MCHC-25

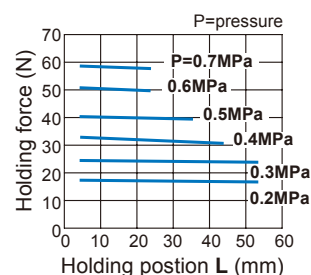


### Internal gripping force

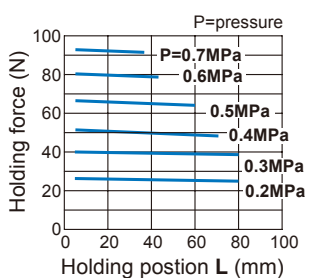
#### MCHC-10



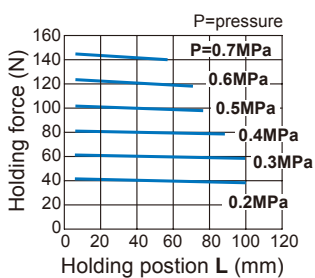
#### MCHC-16



#### MCHC-20



#### MCHC-25

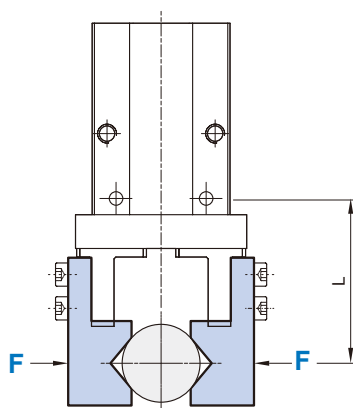


### Effective gripping force (Single acting)

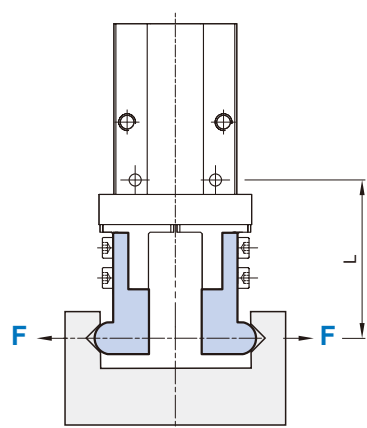
Indication of effective force.

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<sup>2</sup>

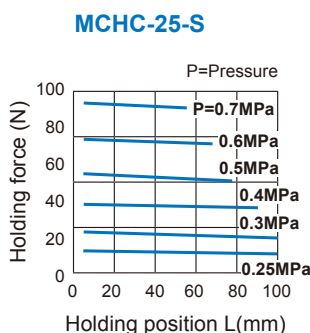
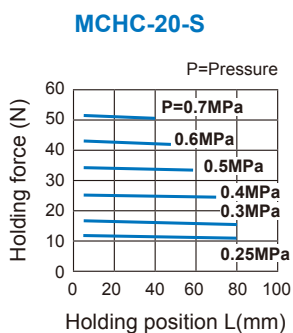
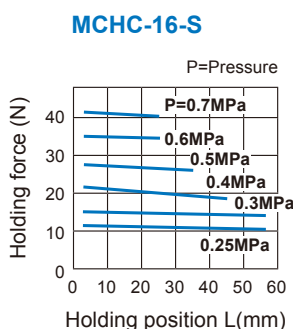
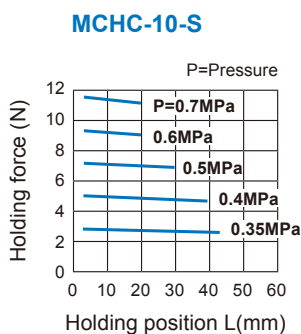


**External grip**  
(Single acting / Normally open)

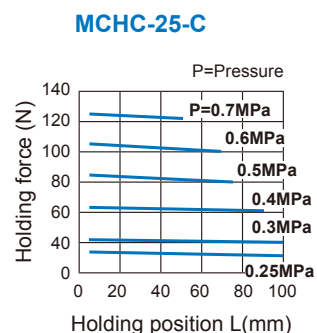
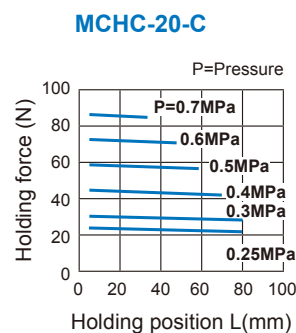
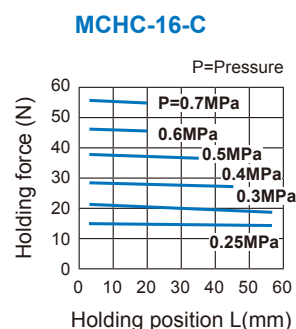
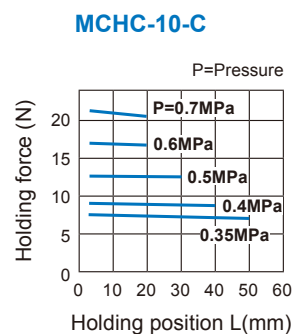


**Internal grip**  
(Single acting / Normally closed)

### External gripping force Single acting / N.O.

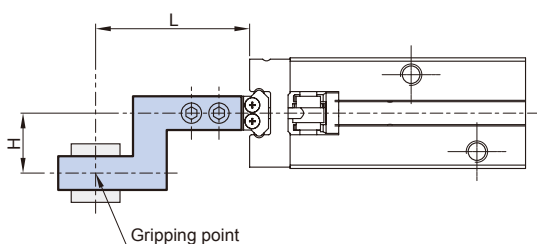


### Internal gripping force Single acting / N.C.

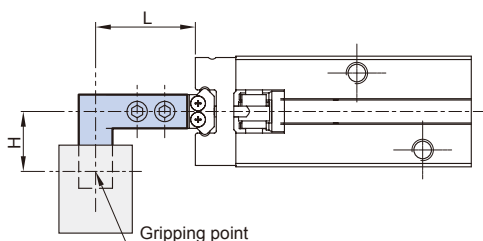


### Confirmation of gripping point

- 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.



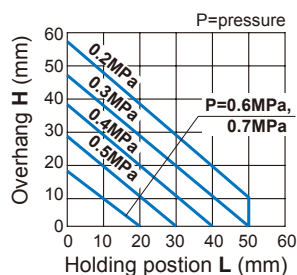
External grip



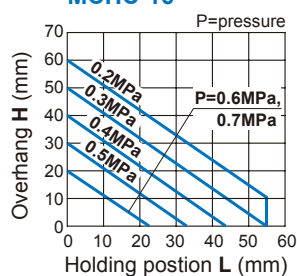
Internal grip

### External gripping force

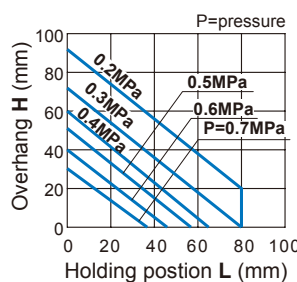
#### MCHC-10



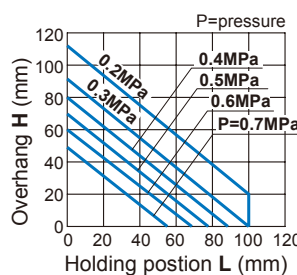
#### MCHC-16



#### MCHC-20

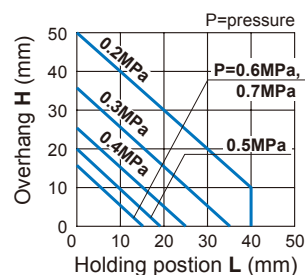


#### MCHC-25

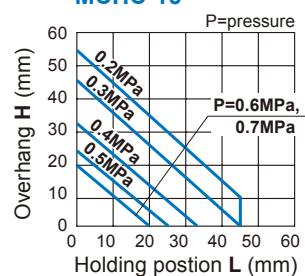


### Internal gripping force

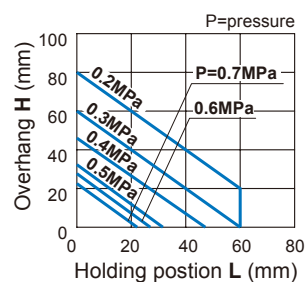
#### MCHC-10



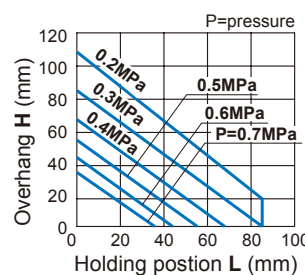
#### MCHC-16



#### MCHC-20

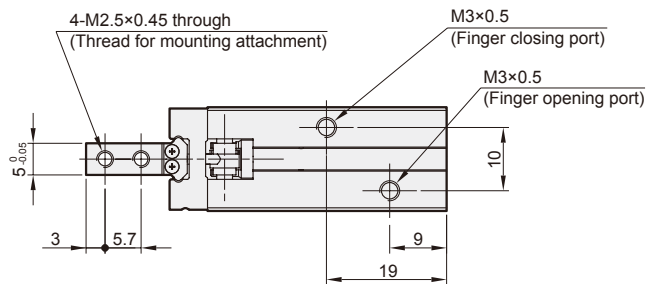
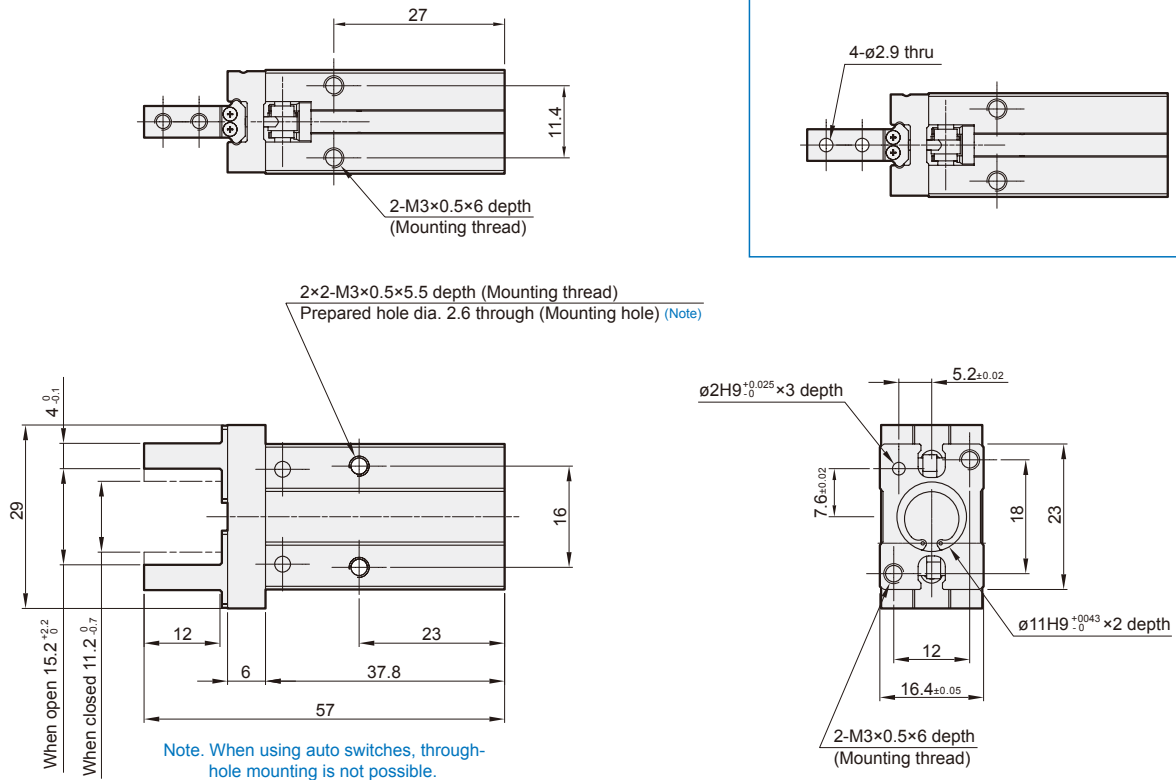


#### MCHC-25



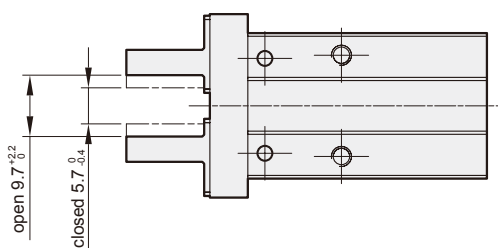
### Through hole type

#### MCHC-10-2 / MCHC-10-N2



### Finger position – Narrow type

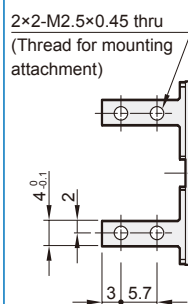
#### MCHC-10-N



### Side tapped mounting

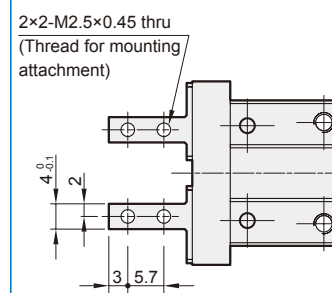
#### Standard

#### MCHC-10-1



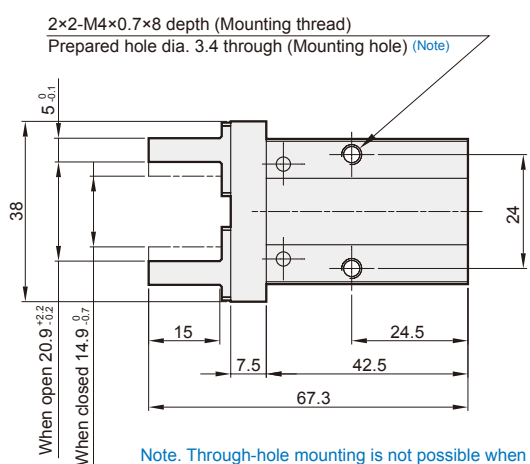
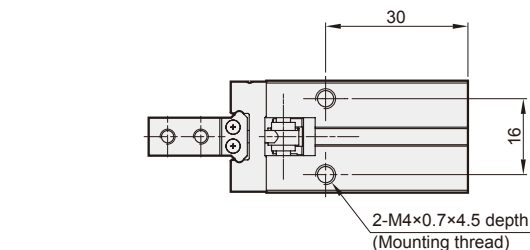
#### Narrow type

#### MCHC-10-N1

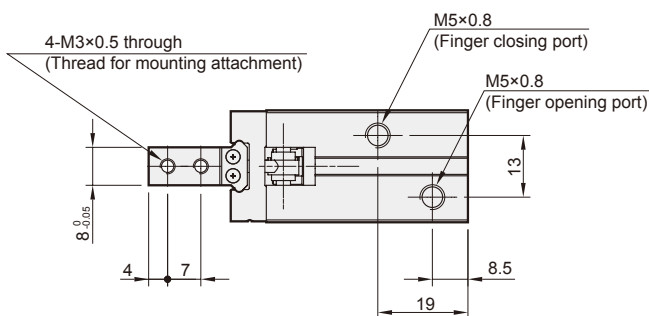
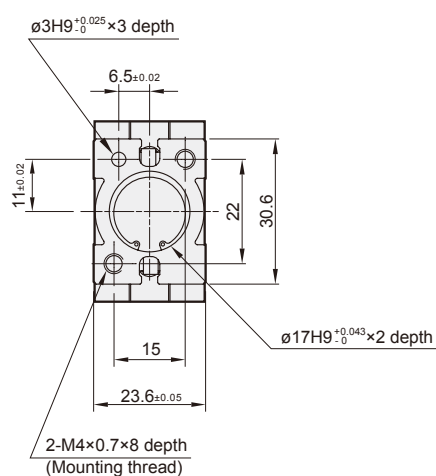


### Through hole type

#### MCHC-16-2 / MCHC-16-N2

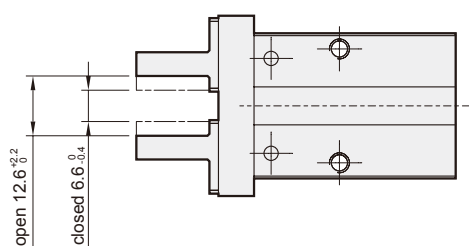


Note. Through-hole mounting is not possible when using the auto switch at the square groove.



### Finger position – Narrow type

#### MCHC-16-N

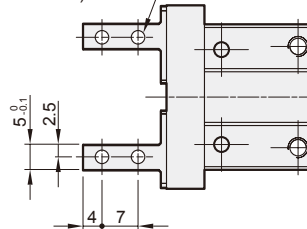


### Side tapped mounting

#### Standard

#### MCHC-16-1

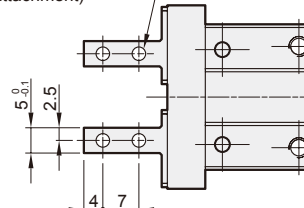
2x2-M3x0.5 thru  
(Thread for mounting attachment)



#### Narrow type

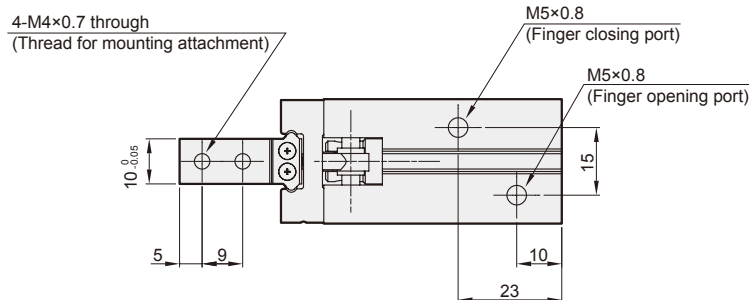
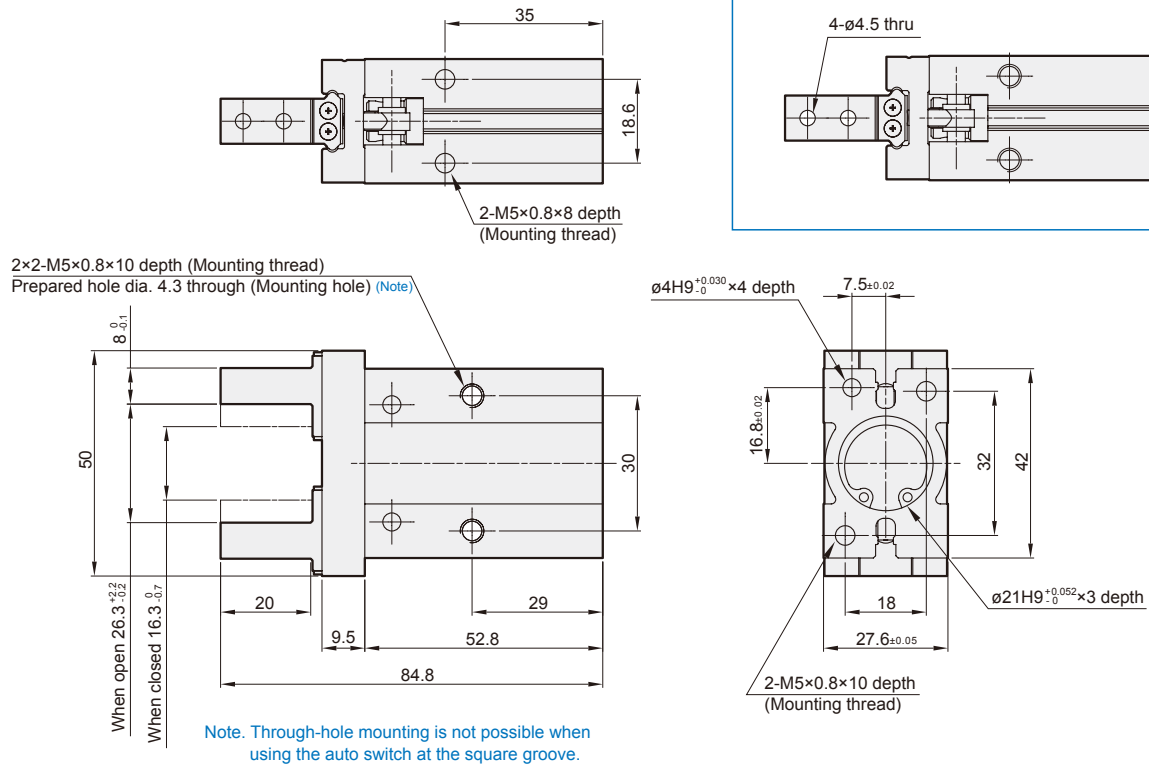
#### MCHC-16-N1

2x2-M3x0.5 thru  
(Thread for mounting attachment)



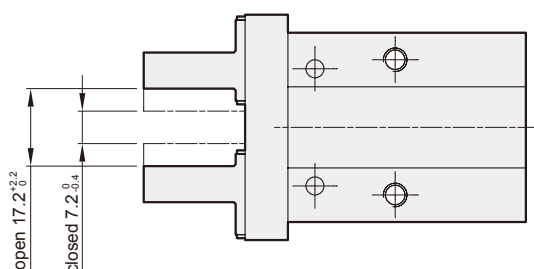
### Through hole type

#### MCHC-20-2 / MCHC-20-N2



### Finger position – Narrow type

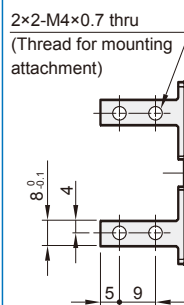
#### MCHC-20-N



### Side tapped mounting

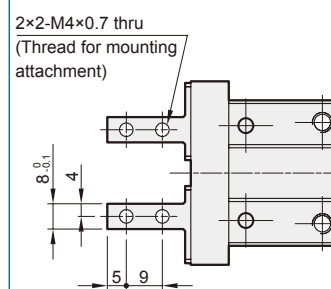
#### Standard

#### MCHC-20-1



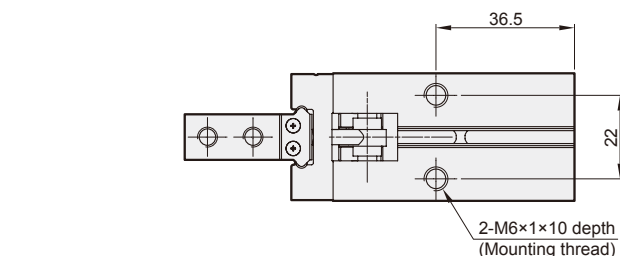
#### Narrow type

#### MCHC-20-N1

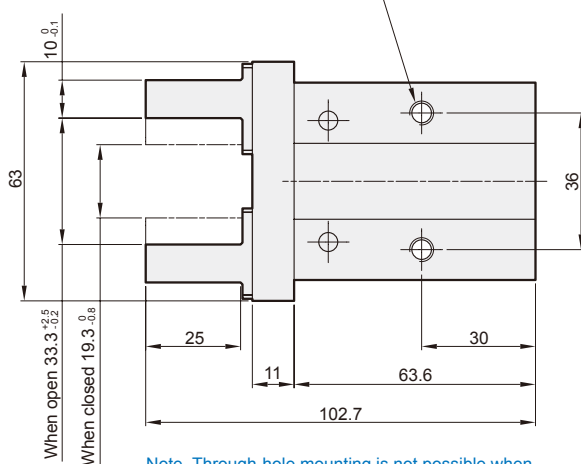


### Through hole type

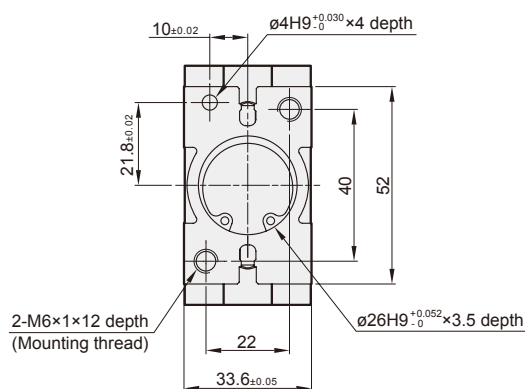
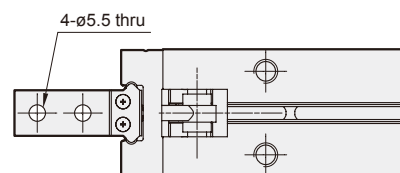
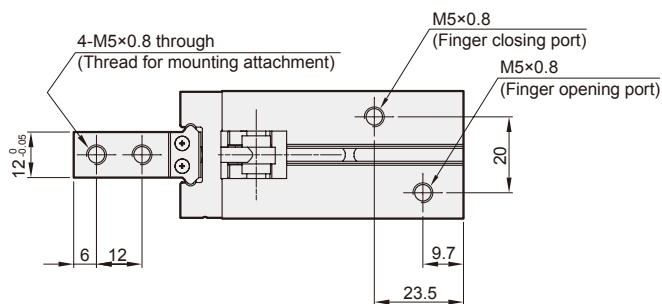
#### MCHC-25-2 / MCHC-25-N2



2x2-M6x1x12 depth (Mounting thread)  
Prepared hole dia. 5.1 through (Mounting hole) (Note)

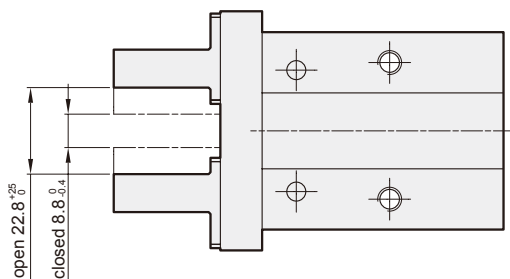


Note. Through-hole mounting is not possible when using the auto switch at the square groove.



### Finger position – Narrow type

#### MCHC-25-N

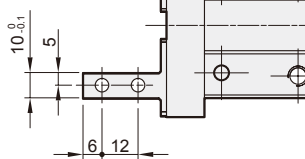


### Side tapped mounting

#### Standard

#### MCHC-25-1

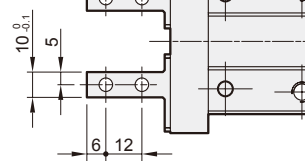
2x2-M5x0.8 thru  
(Thread for mounting attachment)

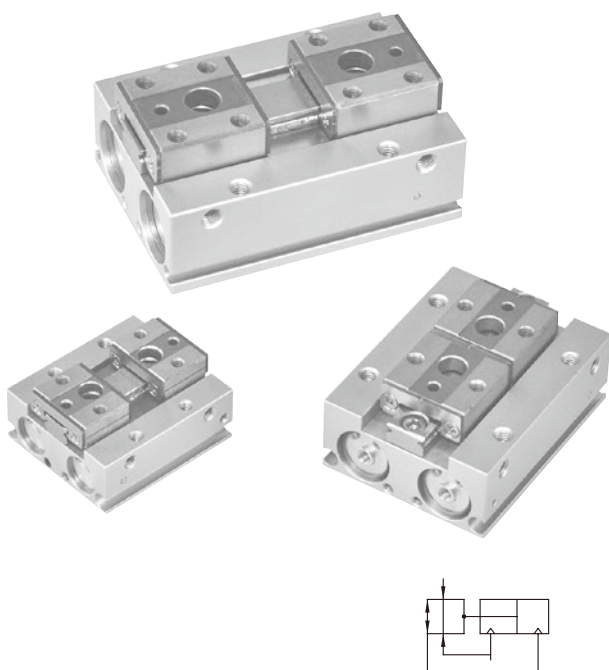


#### Narrow type

#### MCHC-25-N1

2x2-M5x0.8 thru  
(Thread for mounting attachment)



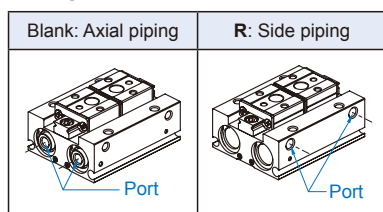


### Order example

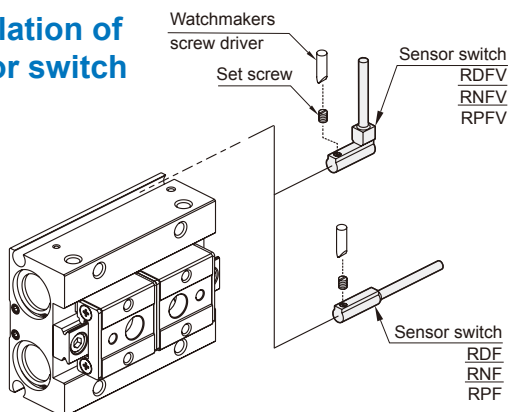
**MCHD — 20R**

MODEL TUBE I.D.  
8  
12  
16  
20

PIPING TYPE



### Installation of sensor switch



### 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.
- Standard with magnet.

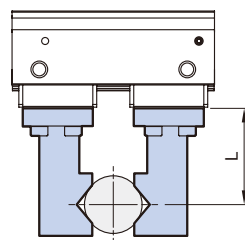
### Specification

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. frequency	120 cycles / min			
Lubricator	Not required			
Sensor switch (*2)	2 wire	RDF(V) : Solid state type		
	3 wire	RNF(V) : NPN ; RPF(V) : PNP		
Attached bolt	2 pcs		—	
Weight (g)	65	150	350	660

\* 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. RDF/ RNF/ RPF specification, please refer to page 5-10.

### Gripping force

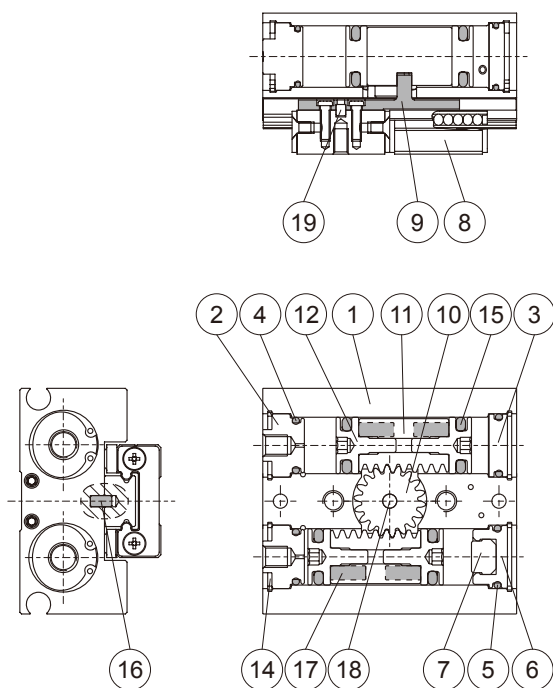


Tube I.D. (mm)	Gripping force per finger effective value (N) (*)	Open / close stroke (both sides)(mm)
8	19	8
12	48	12
16	90	16
20	141	20

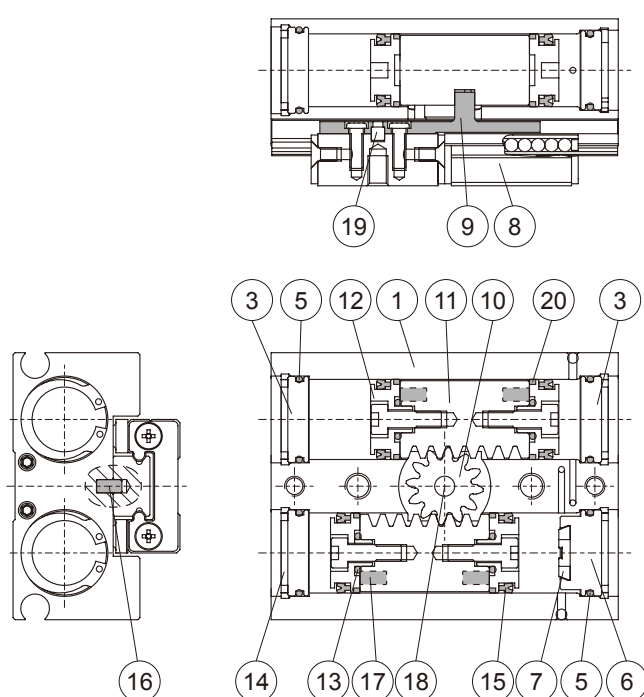
\* Values based on pressure of 0.5 MPa, gripping point L=20mm, at center of stroke.



### Axial piping



### Side piping



### Material

No.	Tube I.D.	Material				Q'y		Repair kits (inclusion)
	Part name	8	12	16	20	Axial piping	Side piping	
1	Body	Aluminum alloy				1	1	
2	Cover A	Aluminum alloy				2	—	
3	Cover B	Aluminum alloy				1	3	
4	Cover A packing	NBR				2	—	●
5	Cover B packing	NBR				2	4	●
6	Cover C	Aluminum alloy				1	1	
7	Cushion pad	PU				1	1	●
8	Guide set	Stainless steel				1	1	
9	Lever	Stainless steel				2	2	
10	Pinion	SCM				1	1	
11	Pinion piston	Stainless steel				2	2	
12	Piston	*1	Aluminum alloy			4	4	
13	O-ring	—	NBR			4	4	●
14	Snap ring	*1	*2	Stainless steel		4	4	
15	Piston packing	NBR				4	4	●
16	Pin	Bearing steel				2	2	
17	Magnet	Magnet material				4	4	
18	Pin	Bearing steel				1	1	
19	Pin	Bearing steel				2	2	
20	Wear ring	—		Teflon		4	4	

\*1 Stainless steel \*2. Carbon steel

### Order example of repair kits

Tube I.D.	Repair kits
ø8	PS-MCHD-8
ø12	PS-MCHD-12
ø16	PS-MCHD-16
ø20	PS-MCHD-20

### 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)

$\mu$ : Coefficient of friction between the attachments and the workpiece

**m**: Workpiece mass (kg)

**g**: Gravitational acceleration ( $=9.8\text{m/s}^2$ )

**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:

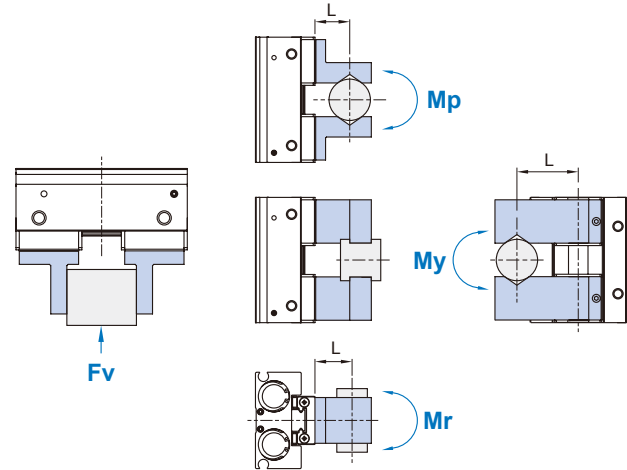
$$F = \frac{mg}{2 \times \mu} \times a$$

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.

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

- Even in cases where the coefficient of friction is greater than  $\mu=0.2$ , for reasons of safety, please select a gripping force which is at least 10 to 20 times greater than the workpiece weight.
- 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  $f=20\text{N}$  is operating, which applies pitch moment to point  $L=25\text{mm}$  from the **MCHD-16** guide.

$$\begin{aligned} \text{Allowable load } F(N) &= \frac{1.4 (N \cdot m)}{25 \times 10^{-3} (m)} \\ &= 56 (N) \end{aligned}$$

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 ( $\mu$ ): 0.1,  
Holding position: 20mm (no overhang)

- The conditions under which the workpiece will not drop are,

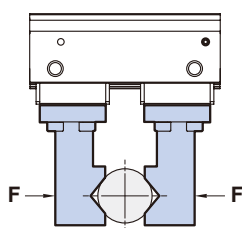
$$F = \frac{0.3}{2 \times 0.1} \times 4 = 6 (\text{kgf}) \approx 60 (N)$$

- 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)

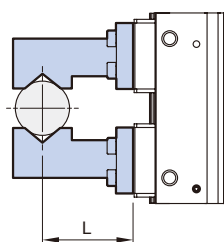
Indication of effective force.

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.

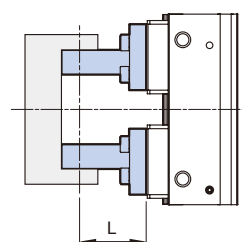


$$1\text{N} = 0.102 \text{ kgf}$$

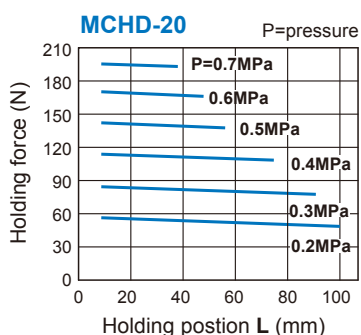
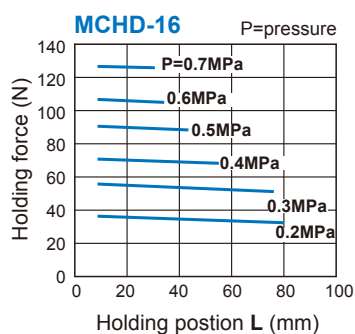
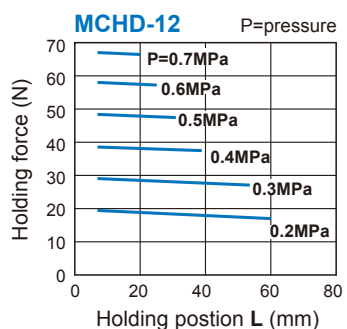
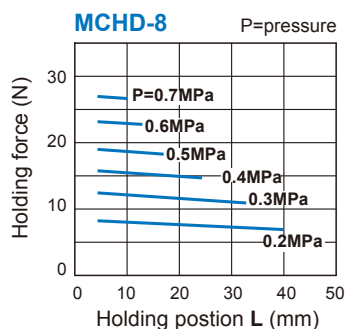
$$1\text{MPa} = 10.2 \text{ kgf/cm}^2$$



External grip

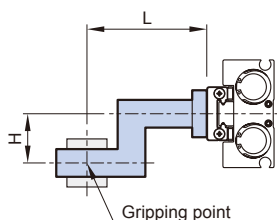


Internal grip

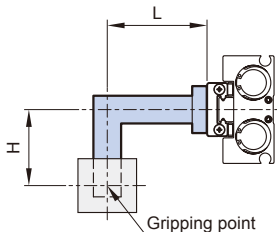


### Confirmation of gripping point

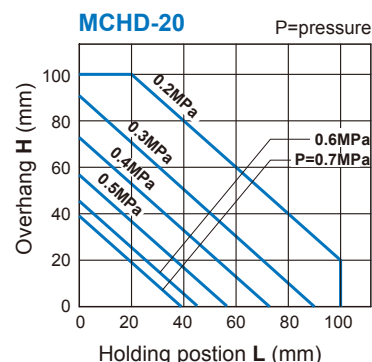
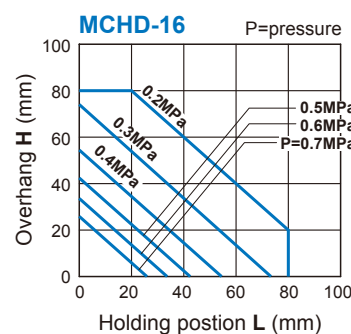
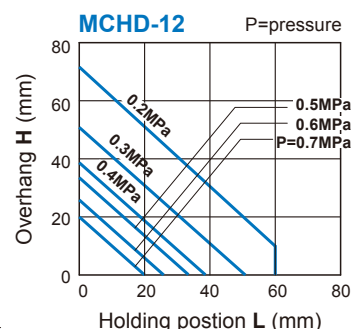
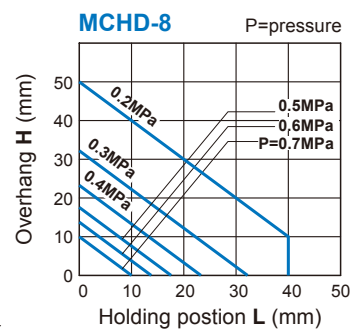
- The air gripper should be operated so that the workpiece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs.
- If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the life the air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



External grip



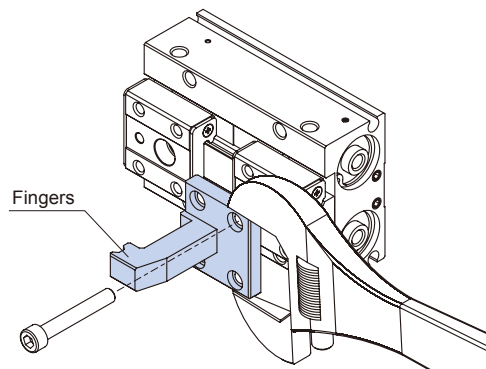
Internal grip



### 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

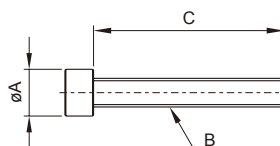


### Order example of attached bolt

**BOLT — MCHD — 8**

ATTACHED  
BOLT

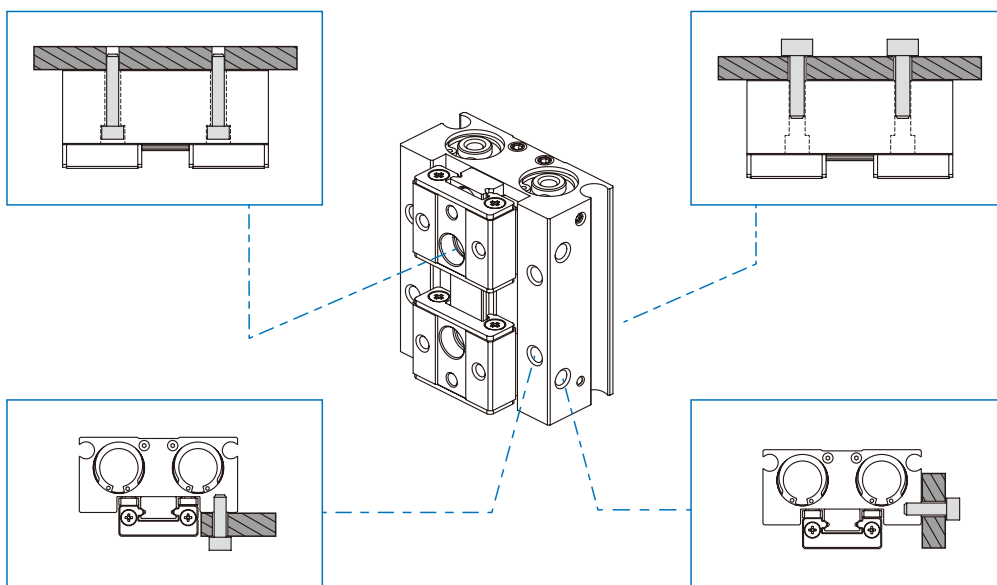
TUBE I.D.  
8  
12



Code Tube I.D.	A	B	C
8	3.8	M2.5×0.45	15
12	4.9	M3×0.5	20

### High degree of mounting flexibility

\* Use the attached bolt for mounting in tube I.D.  $\varnothing 8$ ,  $\varnothing 12$ .



# MCHD Dimensions – Axial piping ø8~ø20

## PARALLEL GRIPPER (2-Finger)



Rotary Actuator

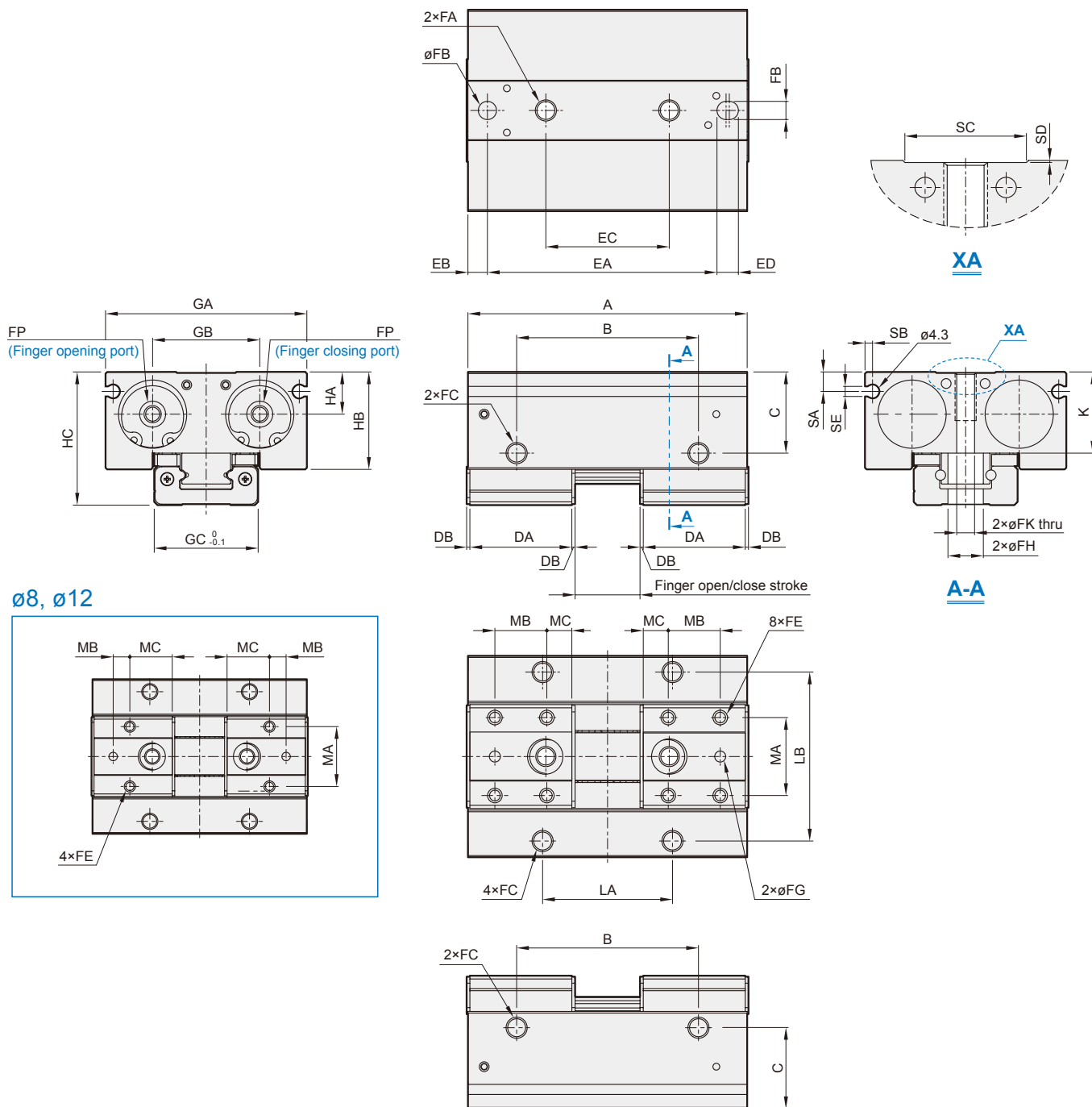
Clamp Cylinder

Gripper

Electric Actuator

Auxiliary Equipment

Hydraulic Cylinder



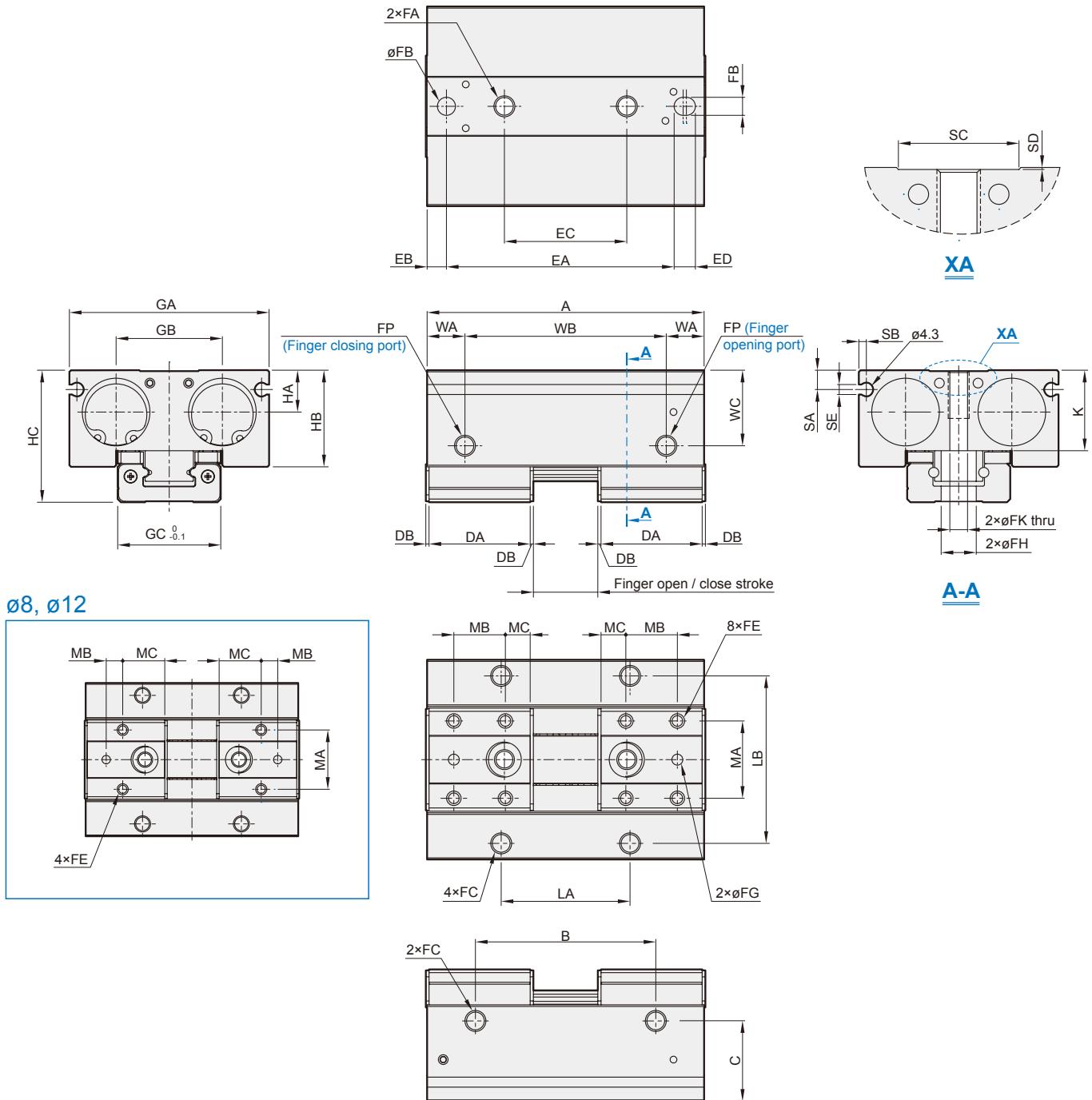
Unit: mm

Code Tube I.D.	A	B	C	DA	DB	EA	EB	EC	ED	FA	FB	FC	FE	FG	FH
8	36	22	11	12	0.8	28.3	3	16	3.4	M3×0.5×7 dp	2.5H9 <sup>+0.025</sup> <sub>0</sub> 2.5dp	M3×0.5×4 dp	M2.5×0.45×3 dp	2H9 <sup>+0.025</sup> <sub>0</sub> 2 dp	4.5
12	52	38	15	18	1	42	4	26	4	M4×0.7×10 dp	3H9 <sup>+0.025</sup> <sub>0</sub> 3dp	M4×0.7×5 dp	M3×0.5×4 dp	2.5H9 <sup>+0.025</sup> <sub>0</sub> 2.5 dp	5.5
16	72	52	20	25.4	1	57.5	6	38	5	M5×0.8×12 dp	4H9 <sup>+0.03</sup> <sub>0</sub> 3dp	M5×0.8×5.5 dp	M4×0.7×4 dp	3H9 <sup>+0.025</sup> <sub>0</sub> 3 dp	7.5
20	86	56	25	31.4	1	71	6	38	6	M6×1.0×15 dp	5H9 <sup>+0.03</sup> <sub>0</sub> 4dp	M6×1.0×6 dp	M4×0.7×4 dp	3H9 <sup>+0.025</sup> <sub>0</sub> 3 dp	10

Code Tube I.D.	FK	FP	GA	GB	GC	HA	HB	HC	K	LA	LB	MA	MB	MC	SA	SB	SC	SD	SE
8	2.6	M3×0.5	32	15.8	17	5.9	14	19	11	14	26	12	4	6	3	1.3	11	0.2	3.4
12	3.4	M5×0.8	40	20	20	7.7	19	25	14.8	28	33	15	5	9	3.3	1.7	10	0.3	3.1
16	4.3	M5×0.8	50	26	27	10.6	24	33	20	36	43	20	15	5.2	4.6	2.2	14.4	0.3	3.1
20	5.2	M5×0.8	62	33	32	13	30	41	25	40	52	24	16	7.7	6	2.3	18	0.3	3.1

# MCHD Dimensions – Side piping $\varnothing 8 \sim \varnothing 20$

## PARALLEL GRIPPER (2-Finger)



$\varnothing 8, \varnothing 12$

Unit: mm

Code Tube I.D.	A	B	C	DA	DB	EA	EB	EC	ED	FA	FB	FC	FE	FG	FH
8	36	22	11	12	0.8	28.3	3	16	3.4	M3×0.5×7 dp	2.5H9 $^{+0.025}_0$ 2.5dp	M3×0.5×4 dp	M2.5×0.45×3 dp	2H9 $^{+0.025}_0$ 2 dp	4.5
12	52	38	15	18	1	42	4	26	4	M4×0.7×10 dp	3H9 $^{+0.025}_0$ 3dp	M4×0.7×5 dp	M3×0.5×4 dp	2.5H9 $^{+0.025}_0$ 2.5 dp	5.5
16	72	52	20	25.4	1	57.5	6	38	5	M5×0.8×12 dp	4H9 $^{+0.03}_0$ 3dp	M5×0.8×5.5 dp	M4×0.7×4 dp	3H9 $^{+0.025}_0$ 3 dp	7.5
20	86	56	25	31.4	1	71	6	38	6	M6×1.0×15 dp	5H9 $^{+0.03}_0$ 4dp	M6×1.0×6 dp	M4×0.7×4 dp	3H9 $^{+0.025}_0$ 3 dp	10

Code Tube I.D.	FK	FP	GA	GB	GC	HA	HB	HC	K	LA	LB	MA	MB	MC	SA	SB	SC	SD	SE	WA	WB	WC
8	2.6	M3×0.5	32	15.8	17	5.9	14	19	11	14	26	12	4	6	3	1.3	11	0.2	3.4	5.5	25	11
12	3.4	M5×0.8	40	20	20	7.7	19	25	14.8	28	33	15	5	9	3.3	1.7	10	0.3	3.1	7	38	14.8
16	4.3	M5×0.8	50	26	27	10.6	24	33	20	36	43	20	15	5.2	4.6	2.2	14.4	0.3	3.1	9	54	19
20	5.2	M5×0.8	62	33	32	13	30	41	25	40	52	24	16	7.7	6	2.3	18	0.3	3.1	10	66	23

# MCHH series

## PARALLEL GRIPPER (2-Finger)



### Order example

**MCHH — 25 M**

MODEL

TUBE I.D.

20  
25  
40

M: Magnet

\* Magnetic as standard.

### Features

- With the same tube I.D., the gripping 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.

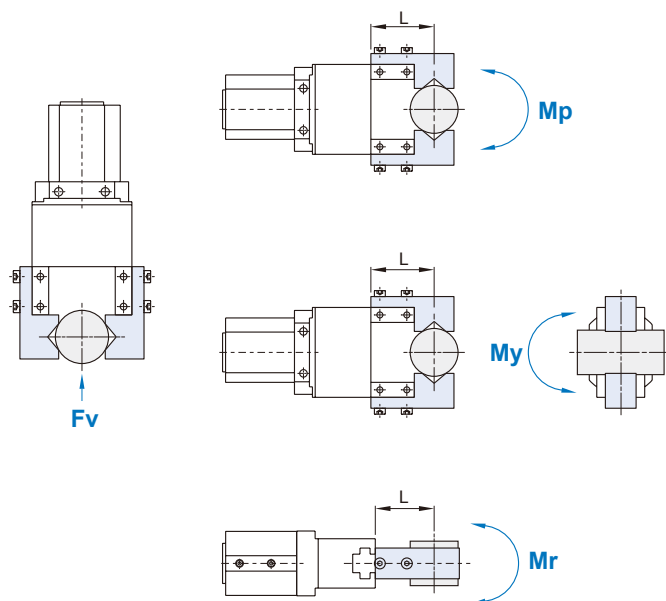
### Specification

Model	MCHH		
Acting type	Double acting		
Tube I.D. (mm)	20	25	40
Stroke	16	26	41
Medium	Air		
Operating pressure range	0.3~0.7 MPa		
Ambient temperature	-10~+60°C (No freezing)		
Lubrication (*)	Not required		
Repeatability	± 0.04 mm		
Sensor switch	<b>PS:</b> Reed switch, <b>PSN:</b> NPN, <b>PSP:</b> PNP		
Weight (kg)	0.26	0.57	1.42

\* Re-lubrication after fingers approx. 1.5 million cycles recommended.

### Confirmation of external force on fingers

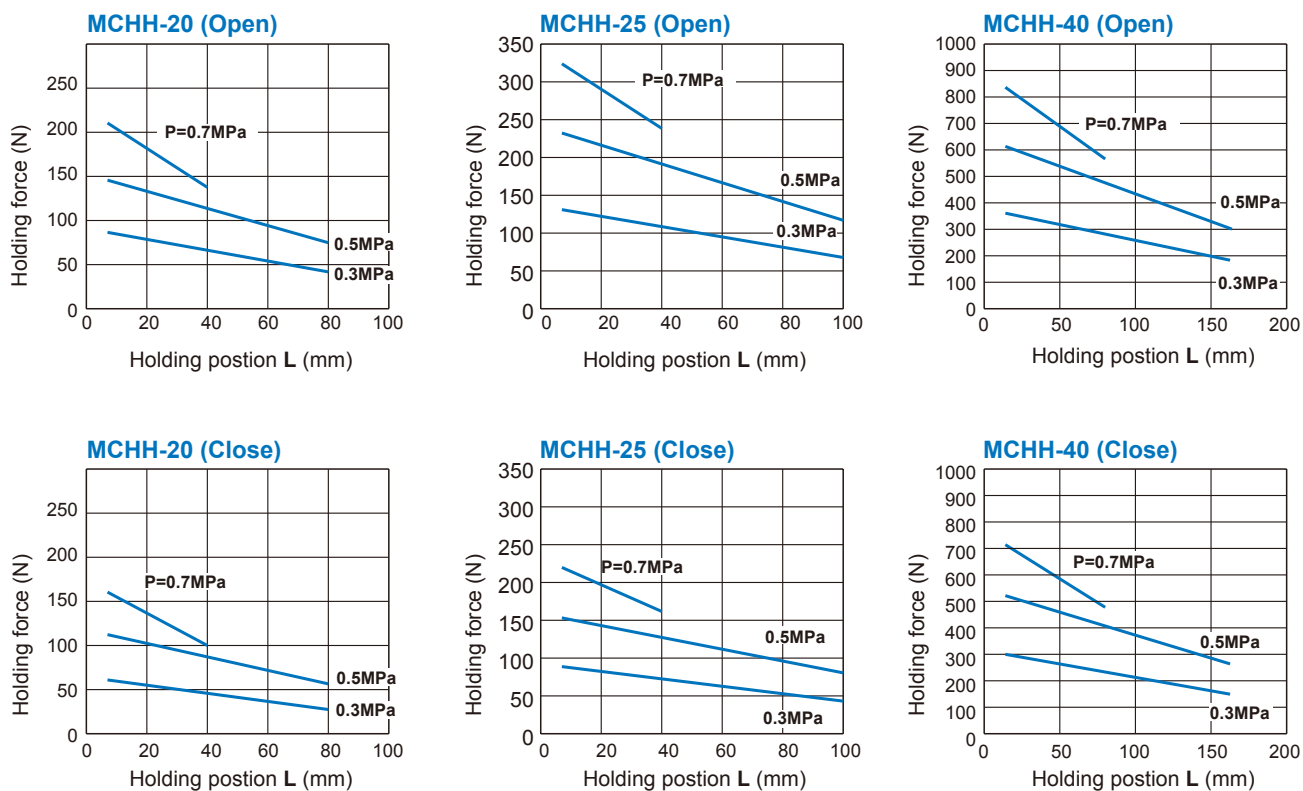
L: Distance to the point at which the load is applied (mm)



Tube I.D. (mm)	Allowable vertical load Fv(N)	Maximum allowable moment	
		Pitch moment & Yaw moment Mp / My (N-m)	Roll moment Mr (N-m)
20	56.55	0.41	0.83
25	80.86	0.78	1.56
40	371.56	4.58	9.17

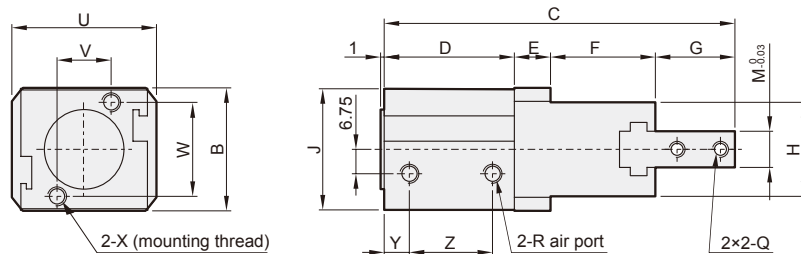
\* Values for load and moment in the table indicate static values.

### Effective gripping force

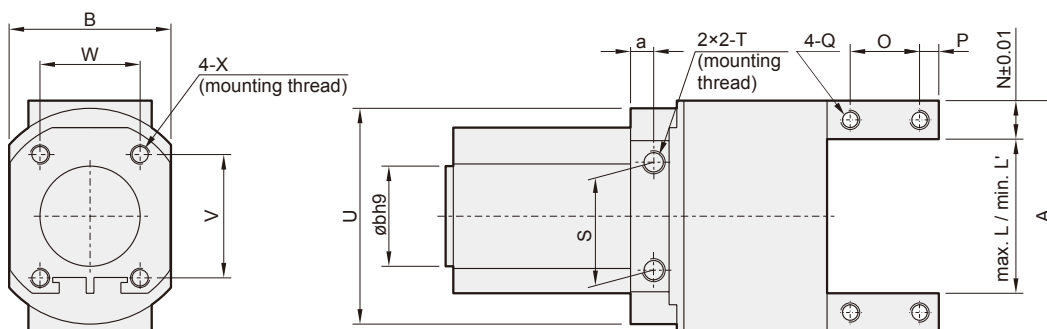
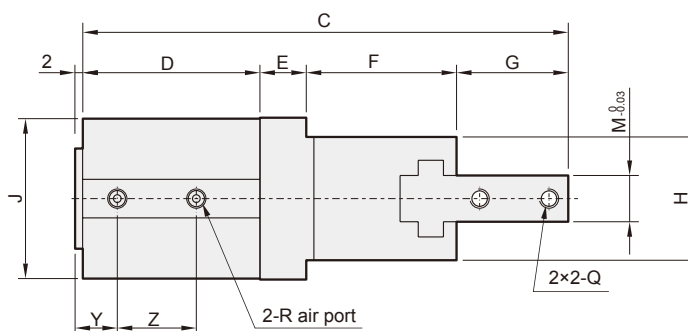




### $\phi 20$



### $\phi 25, \phi 40$



Code Model	A	a	B	b	C	D	E	F	G	H	J	L	L'	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
MCHH-20	40	5	34	22	97	36	10	29	22	26	33.5	24	8	10	8	12	4	M4×0.7	M5×0.8	24	M5×0.8×12dp	40	15	26	M5×0.8×10dp	7	23
MCHH-25	60	6	42	26	126	46	12	39	29	32	41.5	40	14	12	10	18	5	M5×0.8	M5×0.8	28	M6×1.0×14dp	ø56	32	26	M5×0.8×12dp	11	28.5
MCHH-40	92	8	60	42	167	57	15	58	37	38	59	68	27	14	12	20	7	M6×1.0	Rc1/8	42	M8×1.25×14dp	ø82	44	34	M6×1.0×15dp	12	35



### Order example

**MCHQ — 64 M — OS**

MODEL

BODY  
DIAMETER

64  
80  
100  
125  
160

M: Magnet

\* Magnetic as standard.

Mechanical gripping force  
safety device for O.D.  
gripping even with a drop  
pressure.

### Features

- Compact design enables gripper to be used for a wide range of industrial applications.
- Unit takes high bending moments whilst still giving high gripping force.
- Magnetic as standard.

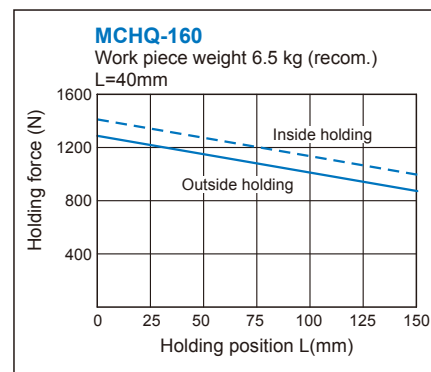
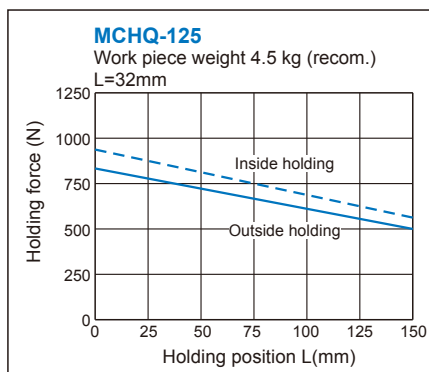
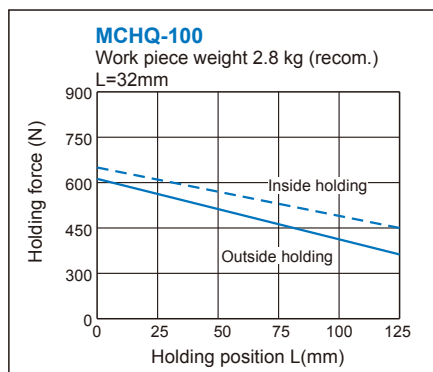
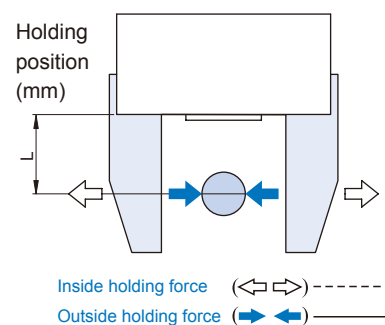
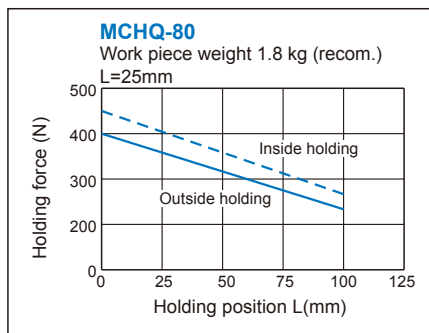
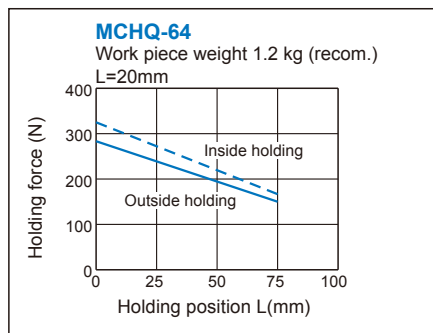
### Specification

Model	MCHQ				
Acting type	Double acting				
Body diameter (mm)	64	80	100	125	160
Stroke (mm)	12	16	20	26	32
Medium	Air 0.3~0.7 MPa				
Ambient temperature	-5~+60°C (No freezing)				
Lubrication (*1)	Not required				
Sensor switch (*2)	RH: Reed switch, RHN: NPN, RHP: PNP				
Weight (kg)	0.28	0.45	0.76	1.4	2.5

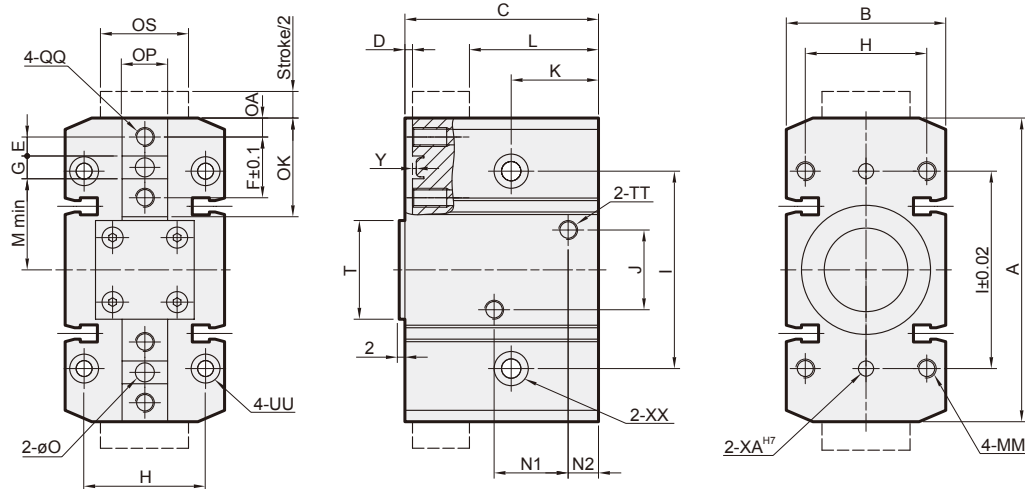
\* 1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

\* 2. RH specification, please refer to page 5-12.

Gripping force in relation to the holding position "L" at 0.6 MPa



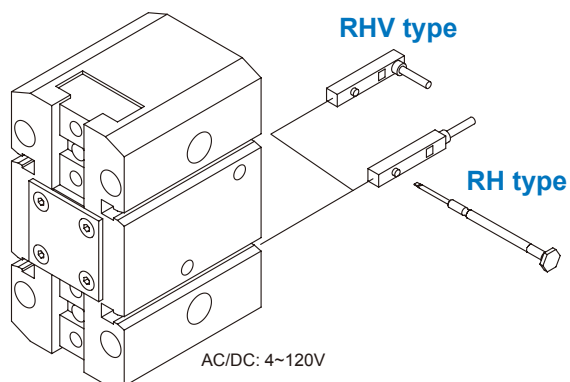
- With reference to the holding force, under the condition must be considered.
- Condition: friction coefficient, great acceleration impact is expected during work piece rotate.
- It recommend: select a type of arithmetic holding force that can produce 10 to 20 times for work piece weight.



Code Model	A	B	C	D	E	F	G	H	I	J	K	L	M	MM	N1	N2	O	OA	OK	OP	OS	QQ	T	TT
<b>MCHQ-64</b>	64	36	42	2.5	4	13	5	27	42	16	22	27	19	M5×0.8	7	16.5	4	4	20	10	17	M4×0.7×8 dp	20	M5×0.8
<b>MCHQ-80</b>	80	42	51	2	5	16	6	32	52	21	23	34	24	M5×0.8	8	19.5	5	5	25	12	23	M5×0.8×10 dp	25	M5×0.8
<b>MCHQ-100</b>	100	50	59	3	6	20	8	38	66	46	20	40	30	M6×1.0	9.5	21.5	6	6	32	14	27	M6×1.0×10 dp	28	Rc1/8
<b>MCHQ-125</b>	125	60	68	3	8	24	8	45	82	55	36	44	38	M8×1.25	10.5	22	6	8.5	40	16	30	M6×1.0×12 dp	36	Rc1/8
<b>MCHQ-160</b>	160	72	82	3.5	11	32	10	56	100	58	34	55	50	M8×1.25	12	32	8	9	50	20	40	M8×1.25×16 dp	46	Rc1/8

Code Model	UU	XA	XX	Y
<b>MCHQ-64</b>	ø4.2 thru, ø7.5×26 dp	ø4	ø4.5 thru, ø8×8 dp	2.5
<b>MCHQ-80</b>	ø4.2 thru, ø7.5×34 dp	ø4	ø5.1 thru, ø9×24 dp	3
<b>MCHQ-100</b>	ø5.0 thru, ø9.1×45 dp	ø5	ø6.8 thru, ø11×11dp	3
<b>MCHQ-125</b>	ø6.8 thru, ø11×41 dp	ø6	ø9 thru, ø15×14 dp	3.5
<b>MCHQ-160</b>	ø6.8 thru, ø11×56 dp	ø6	ø9 thru, ø15×15 dp	4

### Installation of sensor switch

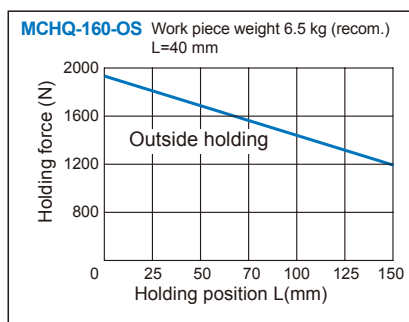
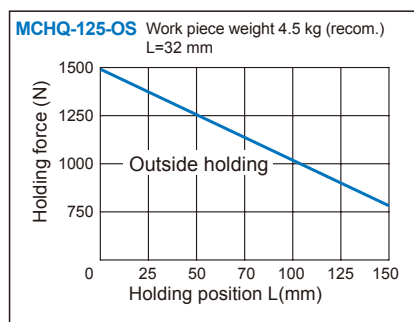
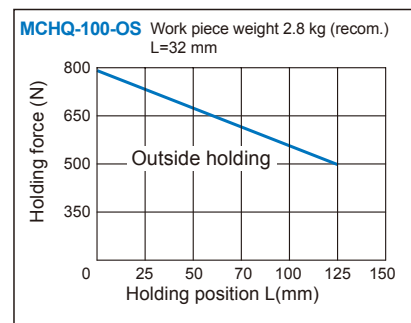
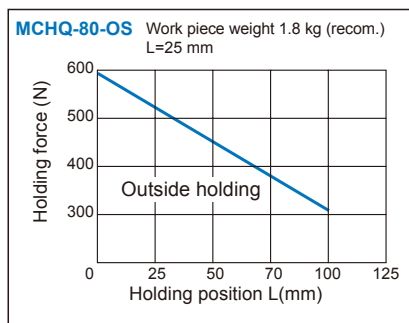
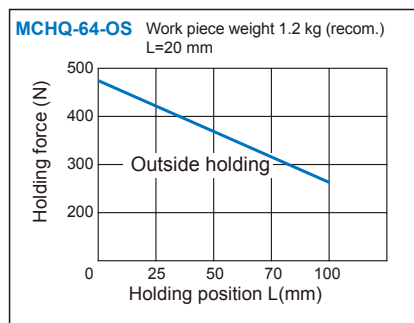


### Gripping force safety device

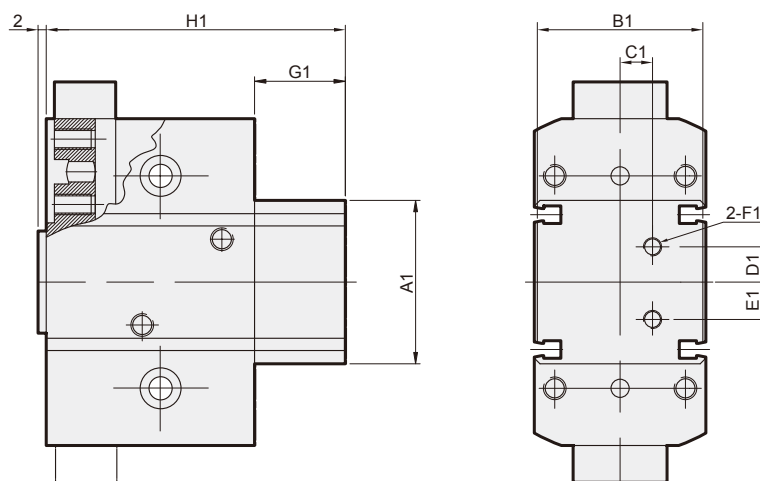
Operating pressure min.5 bars, max. 6.5 bars

Gripping force = pneum. gripping force + spring force.

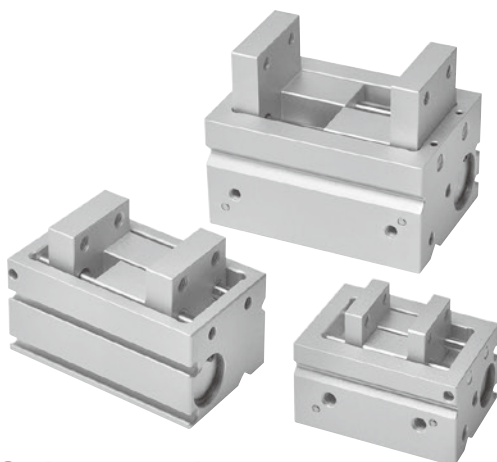
Gripping force in relation to the holding position "L" at 0.6 MPa



Gripping force safety device for O.D gripping, even with a drop in pressure.



Code Model	A1	B1	C1	D1	E1	F1	G1	H1
<b>MCHQ-64-OS</b>	36	35.5	9	7	7	M5	25	67
<b>MCHQ-80-OS</b>	45	41.5	2	12	14	M5	27	78
<b>MCHQ-100-OS</b>	54	49.5	15.5	17	12	M5	26.5	85.5
<b>MCHQ-125-OS</b>	66	59.5	10	22	22	M5	34.4	102.4
<b>MCHQ-160-OS</b>	80	71.5	12.6	26.5	25	M5	39.2	121.2



### Order example

**MCHU – 12 M**

MODEL

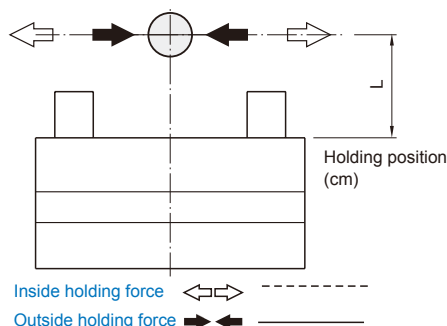
TUBE I.D.

12  
16  
20

M: Magnet

\* Magnetic as standard.

### Capacity



### Features

- Compact design, low weight with rugged construction.
- Jaws mounted to wear resistant bush guides.
- Proximity and reed switches can be used with this unit.
- Magnetic as standard.

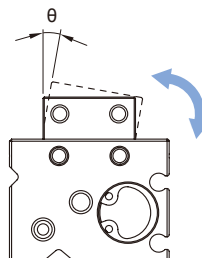
### Specification

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

\*1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

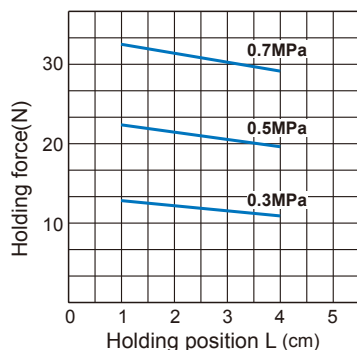
\*2. RDF specification, please refer to page 5-10.

### Non-rotating accuracy

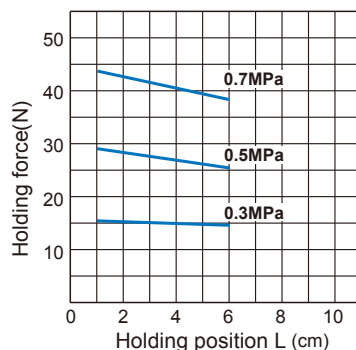


Tube I.D.	(θ)
ø12	±0.25°
ø16	±0.2°
ø20	±0.15°

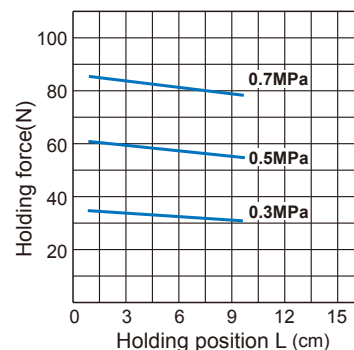
**MCHU-12**



**MCHU-16**



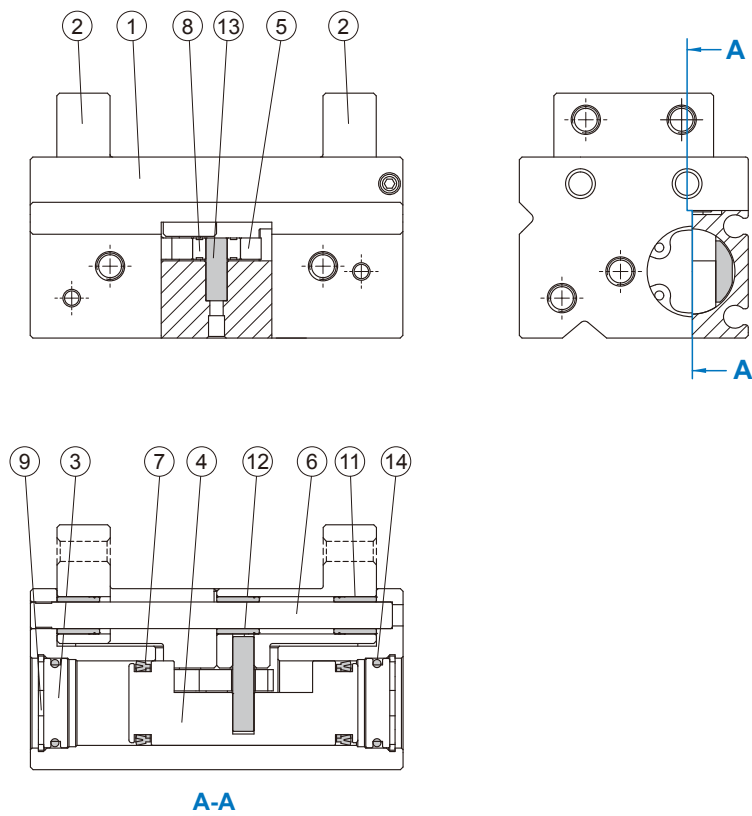
**MCHU-20**



### Model selection suggestions

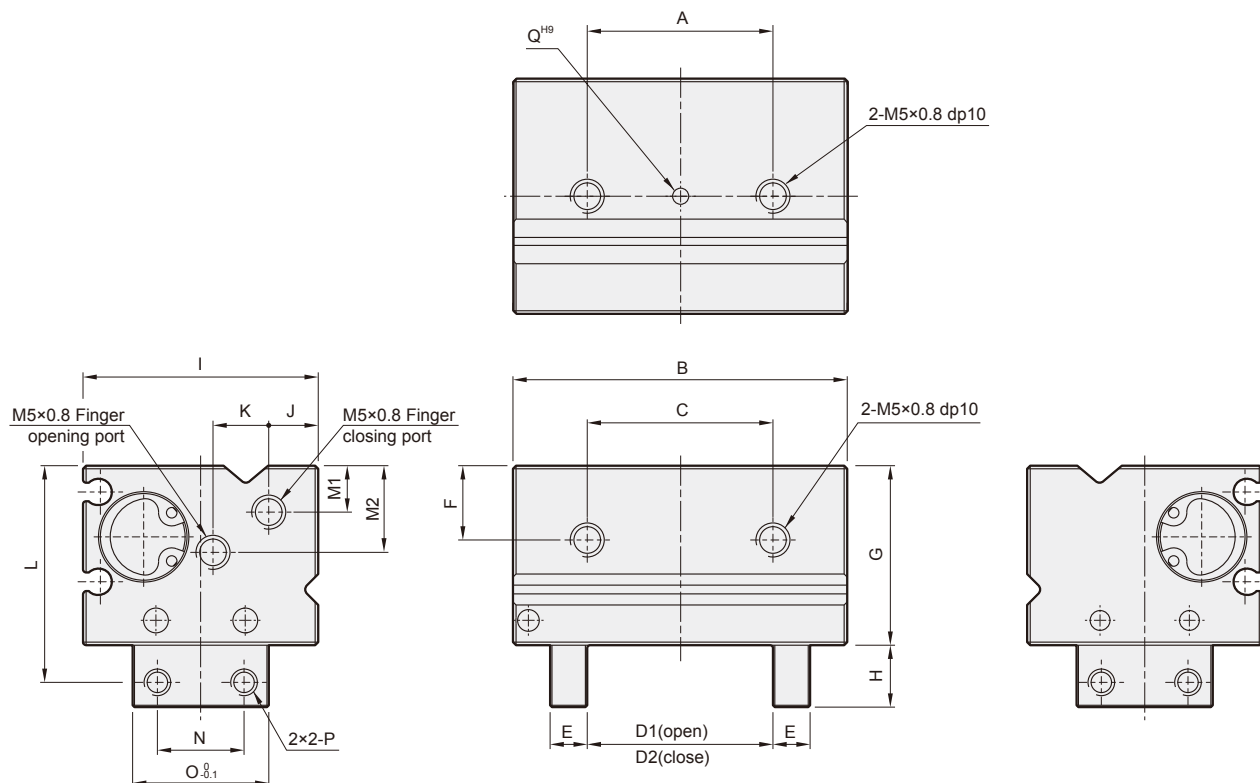
\* Finger selection please refer to page 3-2.

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.

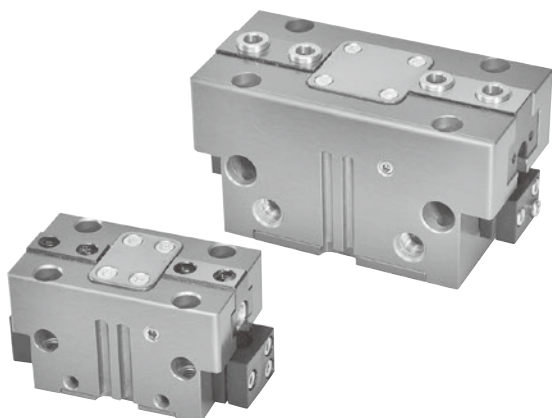


### Material

No.	Tube I.D. Part name	12	16	20	Q'y
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	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	Copper			6
12	Pin	High carbon steel			2
13	Pin	High carbon steel			1
14	O-ring	NBR			2



Code Tube I.D.	A	B	C	D1	D2	E	F	G	H	I	J	K	L	M1	M2	N	O	P	Q <sup>H9</sup>
12	30	54	30	30	15	6	12	29	10	38	8	9	35	7.5	14	14	22	M4×0.7	$\varnothing 2^{+0.025}_{-0} \times 2dp$
16	40	70	40	40	20	10	13.5	34	12	43	8	11	41	7.5	12.5	18	30	M5×0.8	$\varnothing 3^{+0.025}_{-0} \times 4dp$
20	60	82	60	50	25	10	15	43	22	56	10	15	59	9	20	20	35	M5×0.8	$\varnothing 3^{+0.025}_{-0} \times 6dp$



### Order example

**MCHS – 50**

MODEL

BODY  
SPECIFICATION  
50, 66, 80, 100,  
125, 160, 200, 300

### Features

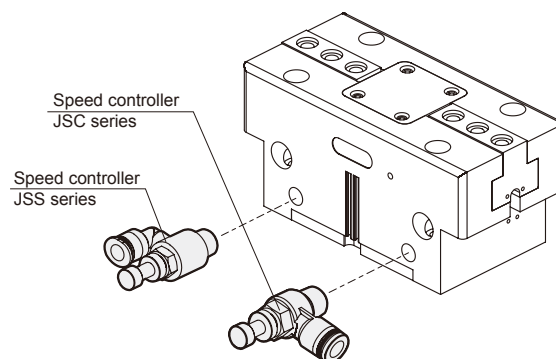
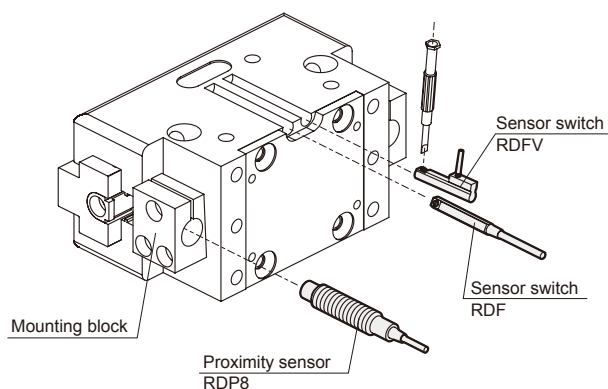
- Compact design to ensure minimum interference while operating; robust T rail design, ensure accurate gripping.
- Can reach maximum torque suitable for long jaws design.
- Oval piston-driven design ensure maximum gripping force.
- Hose-free direct connection: Air supply channel can connect directly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

### Specification

Model	MCHS							
Acting type	Double acting							
Body specification	50	66	80	100	125	160	200	300
Stroke per-jaw(mm)	4	6	8	10	12	16	20	30
Closing force(N)	170	300	550	740	1290	1860	3175	6675
Opening force(N)	185	325	590	795	1370	1960	3330	6830
Close/Open time(s)	0.02	0.03	0.04	0.07	0.1	0.1	0.35	0.4
Medium	Air							
Operating pressure range	0.3~0.8 MPa							
Compressed air consumption(cm³)	4.1	10.1	23.6	39.3	85	85	330	1000
Ambient temperature	+5°C~ +80°C							
Lubrication	Not required							
Sensor switch (*)	RDF, RDFV							
Proximity sensor	RDP8 (2 wire), RNP8 (3 wire)							
Accessories	Mounting block, Centering sleeve							
Weight (kg)	0.14	0.27	0.495	0.85	1.6	3.0	5.7	14.2
Recom. workpiece weight (kg)	0.85	1.4	2.6	3.6	6.3	9.2	15	32

\* RDF, RDFV specification, please refer to page 5-10.

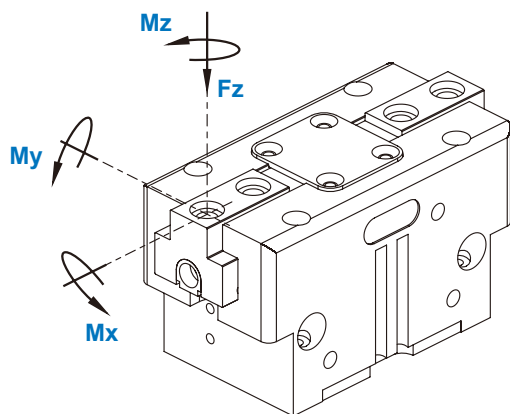
### Installation of sensor switch & speed controller



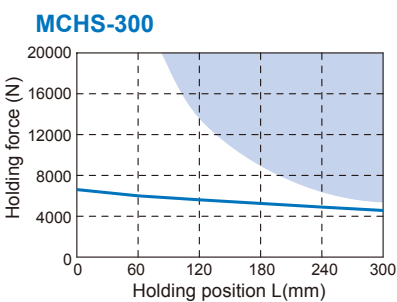
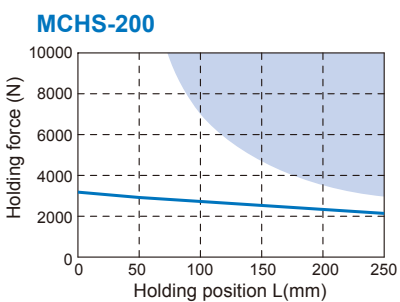
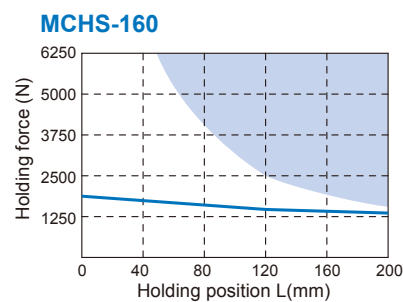
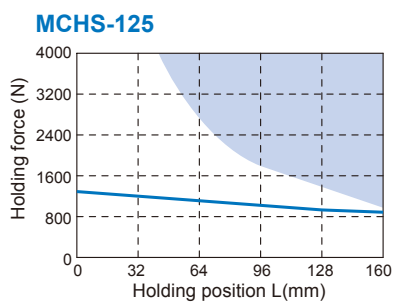
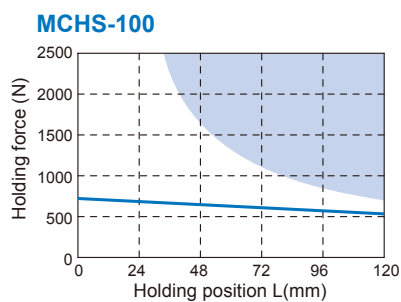
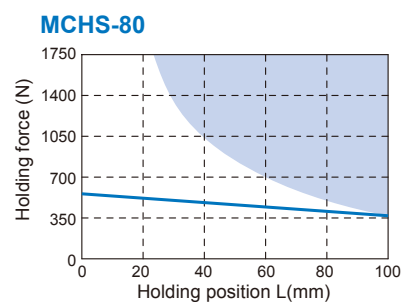
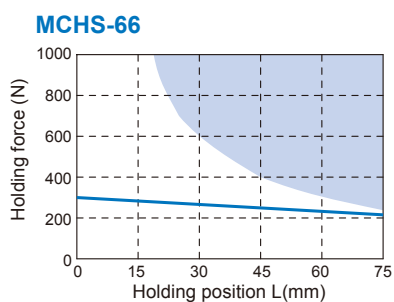
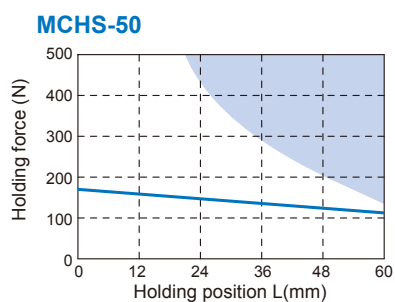
\* Each gripper needs at least two speed control valves to control speed.  
\* Speed controller specification, please refer to page 8-15~17 (Vol.1).



### Holding force

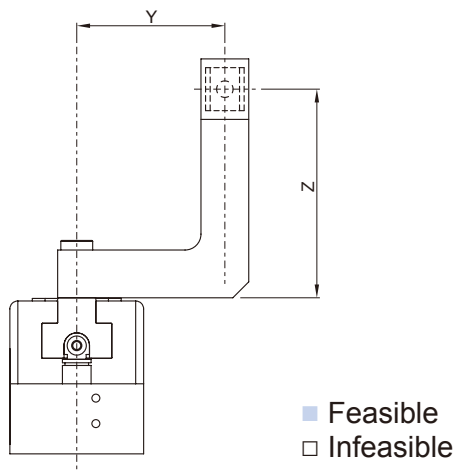


Code Model	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)	Fz max. (N)
<b>MCHS-50</b>	15	15	8	700
<b>MCHS-66</b>	50	45	35	1200
<b>MCHS-80</b>	80	60	50	1800
<b>MCHS-100</b>	100	90	75	2500
<b>MCHS-125</b>	120	120	100	3200
<b>MCHS-160</b>	160	180	140	5000
<b>MCHS-200</b>	180	220	170	7000
<b>MCHS-300</b>	275	300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

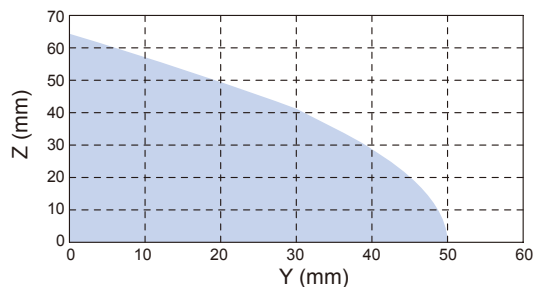


\* Blue area: Less durable performance can be expected.

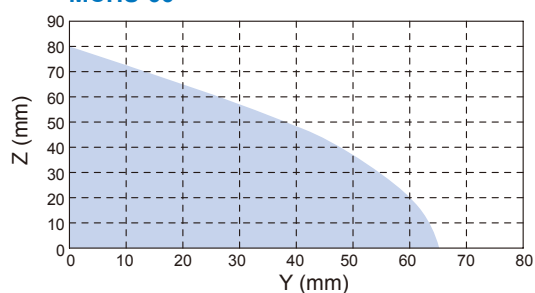
### Max. feasible centrifugal degree



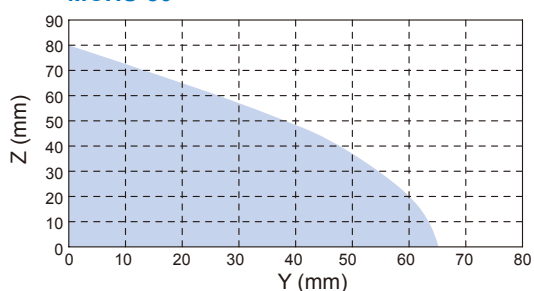
**MCHS-50**



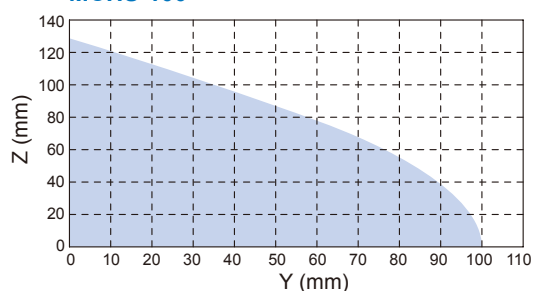
**MCHS-66**



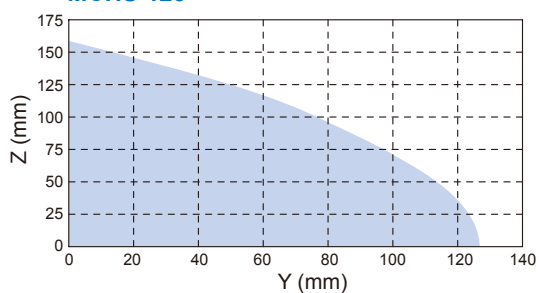
**MCHS-80**



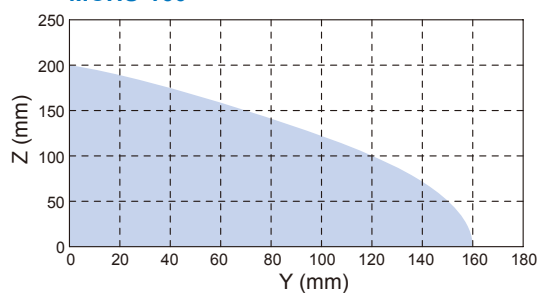
**MCHS-100**



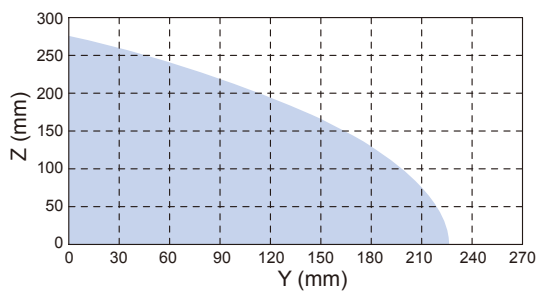
**MCHS-125**



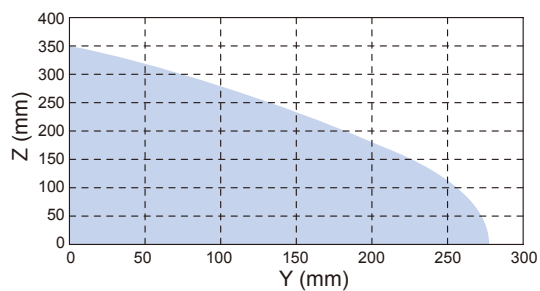
**MCHS-160**



**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.

#### Rail

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

#### Material

Anodized high rigid aluminum alloy to reduce weight.

#### Base jaw

Jaws connected to work piece.

#### Large oval piston

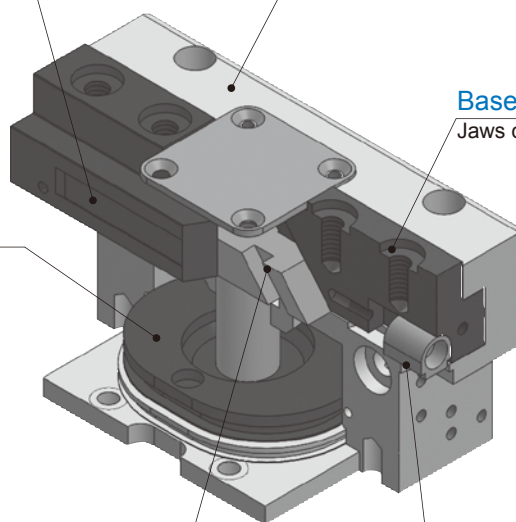
Generate larger structural strength.

#### Wedge hook

High power transmission center jaws.

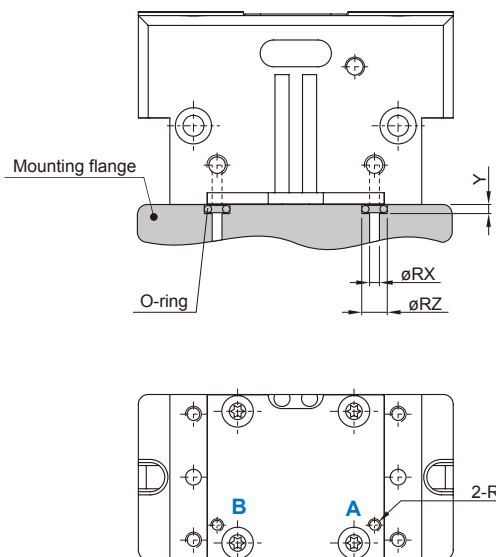
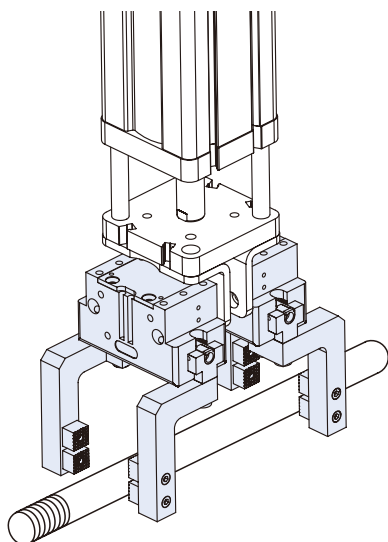
#### Sensor system

Sensor switch or proximity sensor are available.



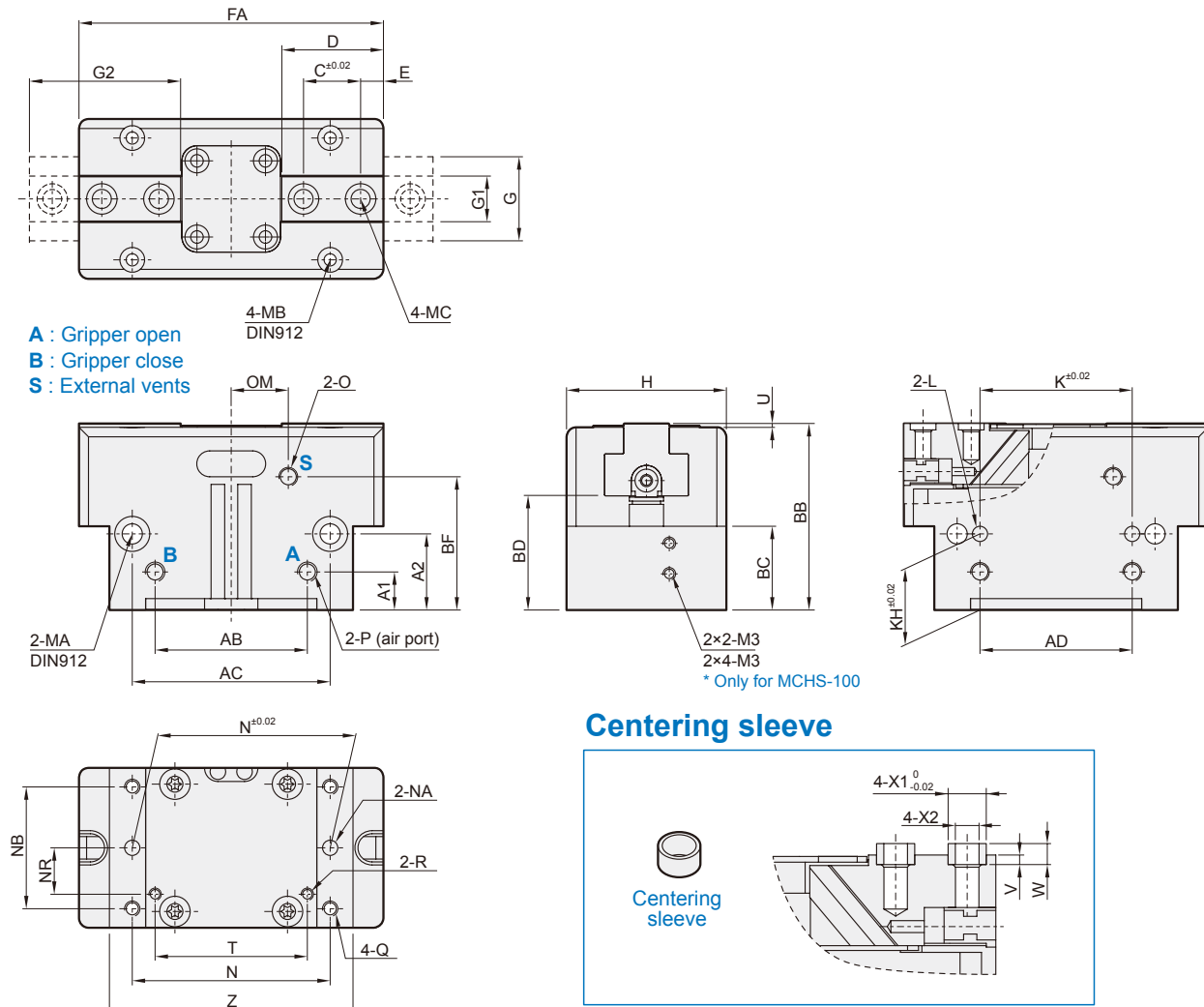
### Application examples

### Hose-free direct connection



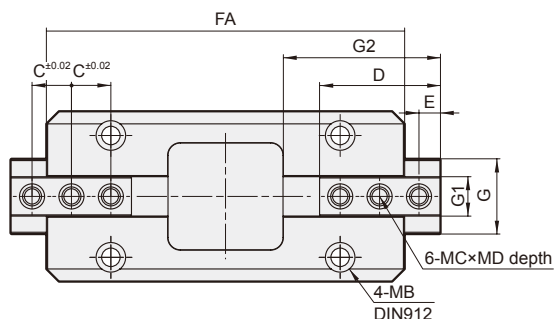
Code Model	R	RX	RZ	Y
50	M2	2	4	0.7
66	M3	3	5	0.7
80	M3	3	5	1.1
100	M5	5	8	1.1
125	M5	5	8	1.1
160	M5	5	8	1.1
200	M5	5	8	1.1
300	M5	5	8	1.1

A : Gripper open  
B : Gripper close

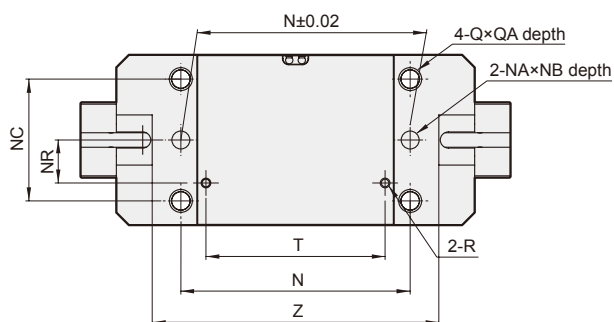
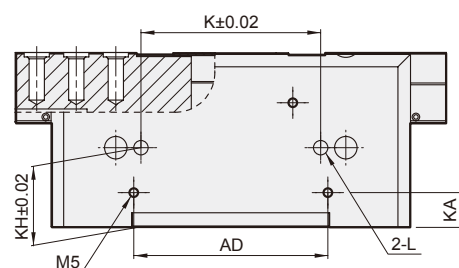
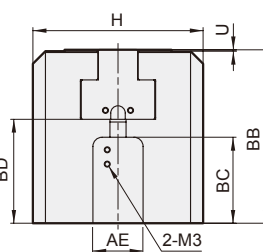
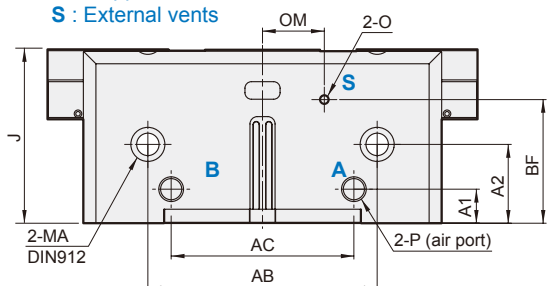


Code Model	A1	A2	AB	AC	AD	BB	BC	BD	BF	C	D	E	FA	G	G1	G2	H	K	KH	L
MCHS-50	5	15	25	35	25	31	15	19	22	8	16	4	50	12	6.5	20	27.8	25	15	ø3H7×4.5dp
MCHS-66	5	18	28	42	28	39	18.5	23	27.5	12	22	5	64	17	10	28	36	20	18	ø4H7×4dp
MCHS-80	10	20	40	52	40	49	22	30	35	15	26.7	6	80	22	12	34.7	42	40	20	ø4H7×6dp
MCHS-100	12	25	48	66	54	55	28	33	38	18	34.3	10	100	26	14	44.3	50	50	25	ø5H7×7dp

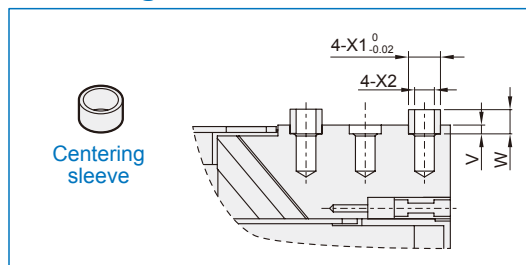
Code Model	MA	MB	MC	N	NA	NB	NR	O	OM	P	Q	R	T	U	V	W	X1	X2	Z
MCHS-50	M3	M3	M3	35	ø3H7	20	8	M3	10	M5	M4	M2	25	1	2	4	ø5	ø3	42
MCHS-66	M4	M4	M4	42	ø4H7	27	11	M5	12	M5	M5	M3	28	1	2	4	ø6	ø4	52
MCHS-80	M4	M4	M6	52	ø4H7	32	12.2	M5	15	M5	M5	M3	40	1	2	4	ø8	ø6	64
MCHS-100	M5	M5	M6	66	ø5H7	38	16	M5	16	G1/8	M6	M5	48	1	2	4	ø10	ø6	80



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

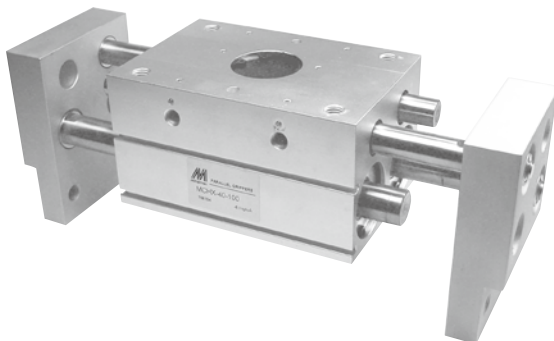


### Centering sleeve



Code Model	A1	A2	AB	AC	AD	AE	BB	BC	BD	BF	C	D	E	FA	G	G1	G2	H	J	K	KA	KH	L
MCHS-125	13	30	82	62	65.5	22	63	32	38.5	45	12.5	42.3	10	125	31	15.5	54.3	60	64	60	13	30	ø6H7×8dp
MCHS-160	15.5	28	100	78	82	26	77	39	46	53	18	54.8	10	160	39	20	70.8	72	78	76	15.5	28	ø6H7×10dp
MCHS-200	19	44	128	102	108	28	96	48	58	69	22	67.5	12	200	42	22	87.5	95	97	100	19	44	ø8H7×8dp
MCHS-300	19	66	180	150	152	30	128	67	78	92	30	91.0	15	260	66	32	121	139	130	140	19	66	ø10H7×12dp

Code Model	MA	MB	MC	MD	N	NA	NB	NC	NR	O	OM	P	Q	QA	R	T	U	V	W	X1	X2	Z
MCHS-125	M8	M6	M6	14	82	ø6H7	8	45	17.7	M5	20	G1/8	M8	12	M5	60	0.8	2	3.9	ø10h7	ø6.5	100
MCHS-160	M8	M6	M8	17	100	ø6H7	8	56	22	M5	27	G1/8	M8	12	M5	76	0.8	2	3.9	ø12h7	ø8.5	125
MCHS-200	M12	M10	M10	20	128	ø10H7	10	68	24	M5	34.5	G1/4	M12	17	M5	100	0.8	2.5	4.9	ø14h7	ø11	160
MCHS-300	M12	M10	M12	20	180	ø10H7	12	100	24	M5	43	G1/4	M12	16	M5	150	0.8	2.5	4.9	ø18h7	ø12.5	220



### 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

M: Magnet

\* Magnetic as standard.

### 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.
- Magnetic as standard.

### Specification

Model	MCHX				
Acting type	Double acting				
Tube I.D. (mm)	10	16	20	25	32
Stroke	20,40,60	30,60,80	40,80,100	50,100,120	70,120,160
Medium	Air				
Operating pressure range	0.2~0.6 MPa				
Ambient temperature	-5~+60°C (No freezing)				
Lubrication (*1)	Not required				
Repeatability	±0.1 mm				
Sensor switch (*2)	RDF(V), RNF(V): NPN, RPF(V): PNP				

\*1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

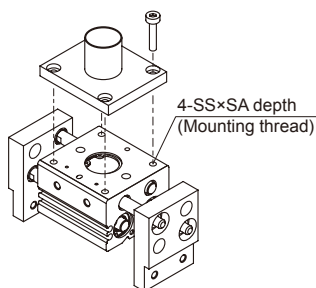
\*2. RDF specification, please refer to page 5-10.

### Weight

Model	MCHX-10			MCHX-16			MCHX-20			MCHX-25			MCHX-32		
Stroke (mm)	20	40	60	30	60	80	40	80	100	50	100	120	70	120	160
Max. operating frequency (c.p.m)	60	40	40	60	40	40	60	40	40	60	40	40	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

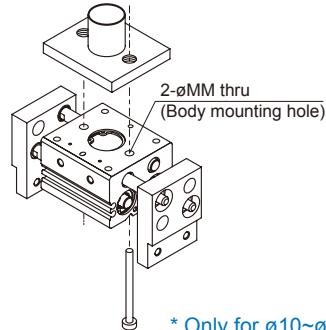
### Mounting

#### Axial mounting



Model	SA	SS	Max. tightening torque (N.m)
MCHX-10	8	M4×0.7	2.1
MCHX-16	10	M5×0.8	4.3
MCHX-20	12	M6×1.0	7.3
MCHX-25	16	M8×1.25	17.7
MCHX-32	16	M8×1.25	18

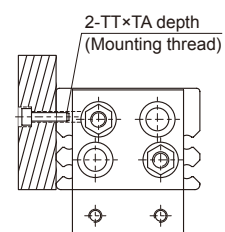
#### Axial mounting



\* Only for ø10~ø25.

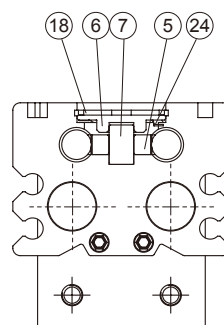
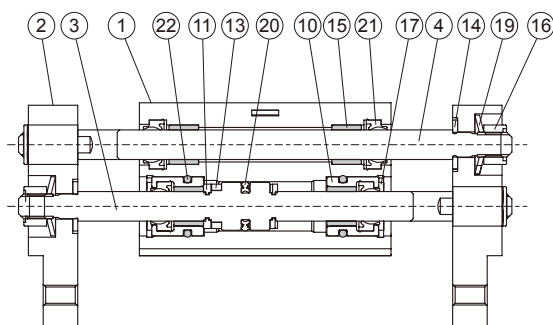
Model	MM	Bolt	Max. tightening torque (N.m)
MCHX-10	4.5	M4×0.7	2.1
MCHX-16	5.5	M5×0.8	4.3
MCHX-20	6.6	M6×1.0	7.3
MCHX-25	9	M8×1.25	17.7
MCHX-32	—	—	—

#### Lateral mounting

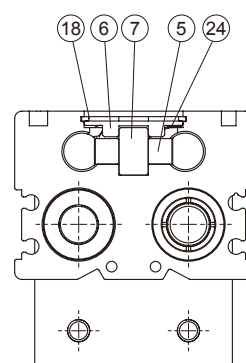
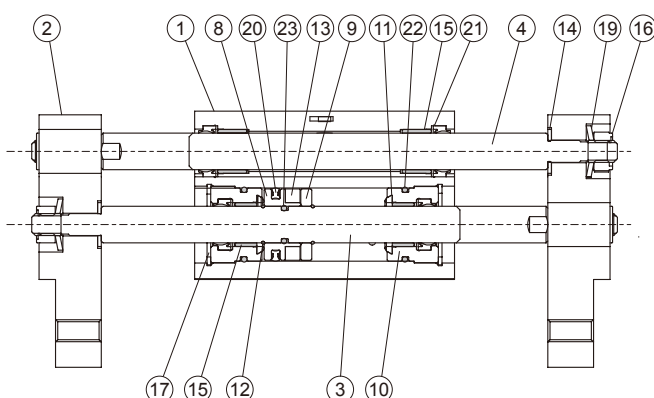


Model	TA	TT	Max. tightening torque (N.m)
MCHX-10	5	M4×0.7	1.4
MCHX-16	7	M5×0.8	2.8
MCHX-20	7	M6×1.0	4.8
MCHX-25	7	M8×1.25	12
MCHX-32	11	M8×1.25	12

ø10



ø16~ø32



### Material

No.	Tube I.D. Part name	10	16	20	25	32	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	*1	*2		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	*3	*1	Carbon steel			4	
18	C-shape snap ring	Carbon steel					1	
19	Conical spring washer	Stainless steel					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	

### 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

\*1. Stainless steel

\*2. Spring steel

\*3. Carbon steel

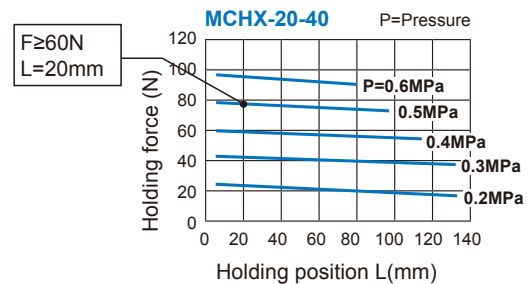
### Model selection example

\* Finger selection please refer to page 3-2.

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 ( $\mu$ ): 0.1, Holding position: L=20mm (no overhang)

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

$$F \geq \frac{0.3 \times 9.8}{2 \times 0.1} \times 4 \geq 60(N)$$
- 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.

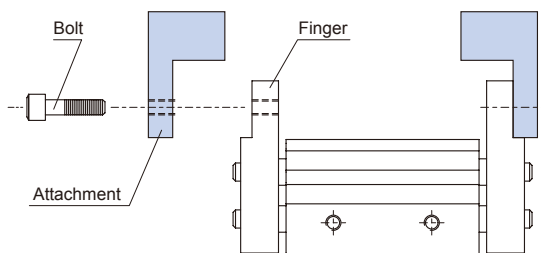


### Model selection suggestions

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

### Mounting precautions

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



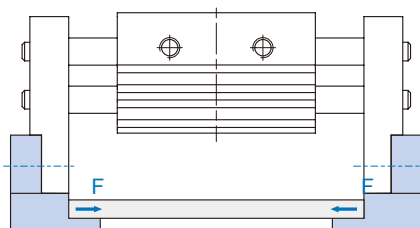
Model	Bolt	Max. tightening torque (N.m)
<b>MCHX-10</b>	M4×0.7	1.4
<b>MCHX-16</b>	M5×0.8	2.8
<b>MCHX-20</b>	M6×1.0	4.8
<b>MCHX-25</b>	M8×1.25	12
<b>MCHX-32</b>	M10×1.5	24



### Effective gripping force

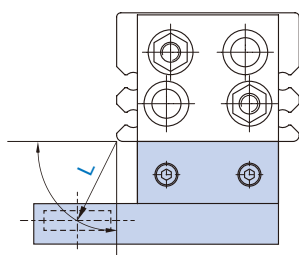
Indication of effective force.

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.

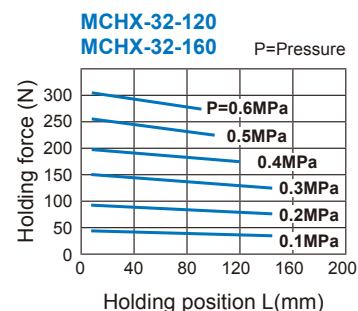
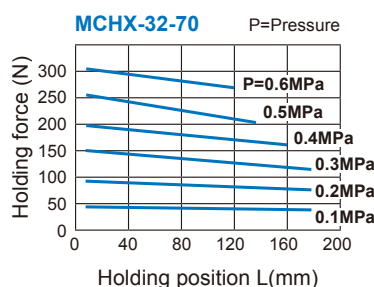
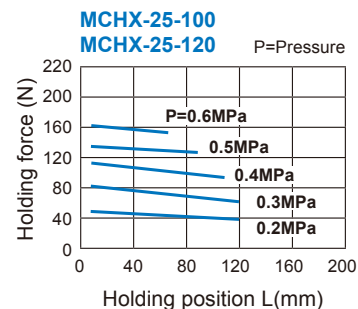
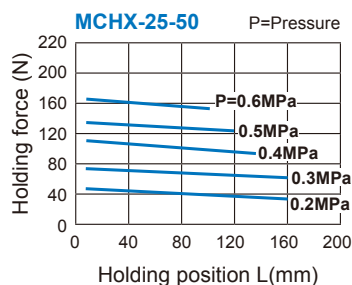
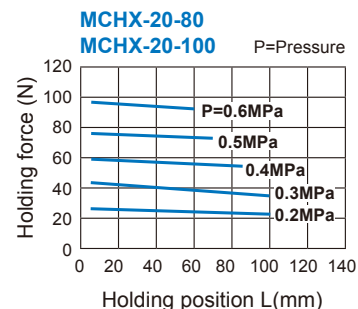
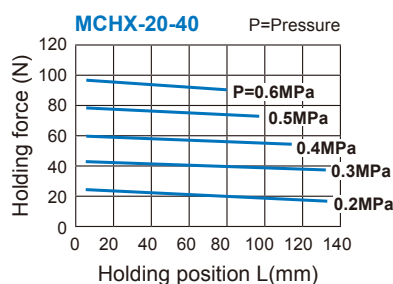
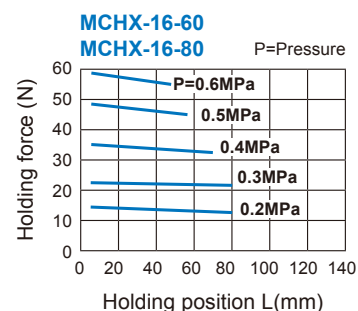
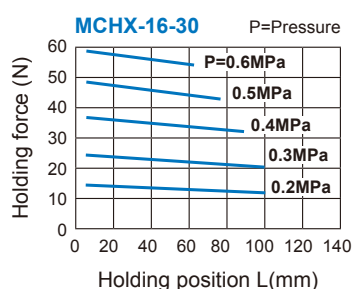
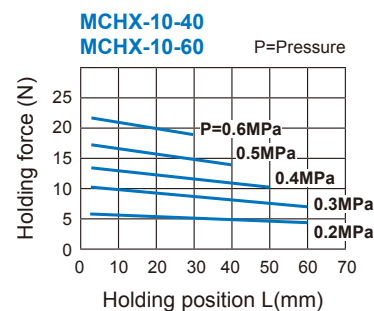
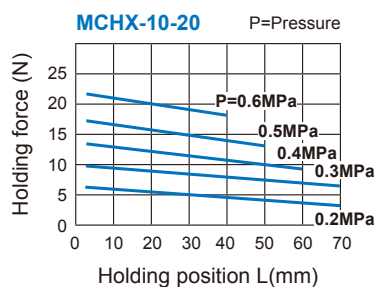


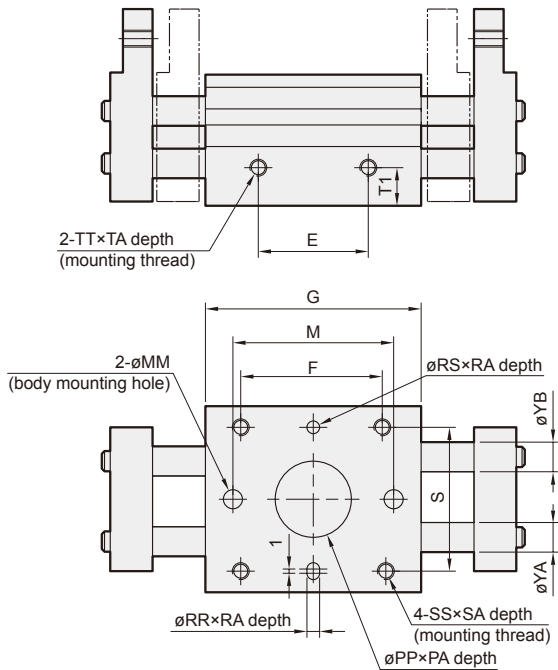
$$1\text{N} = 0.102\text{ kgf}$$

$$1\text{MPa} = 10.2\text{ kgf/cm}^2$$

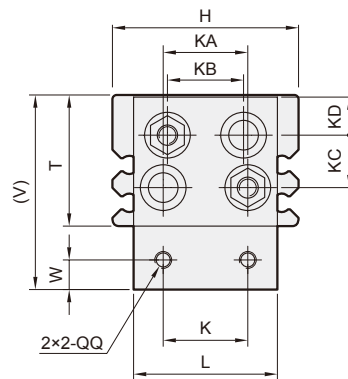
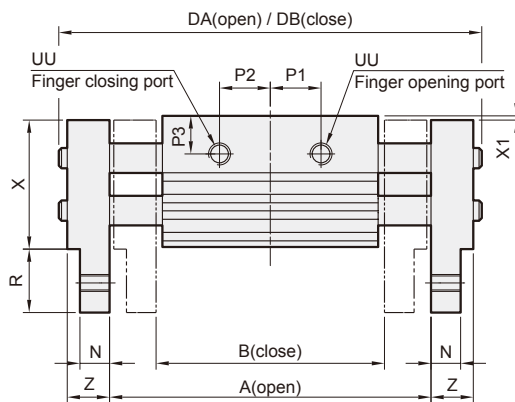


L: Holder position (mm)





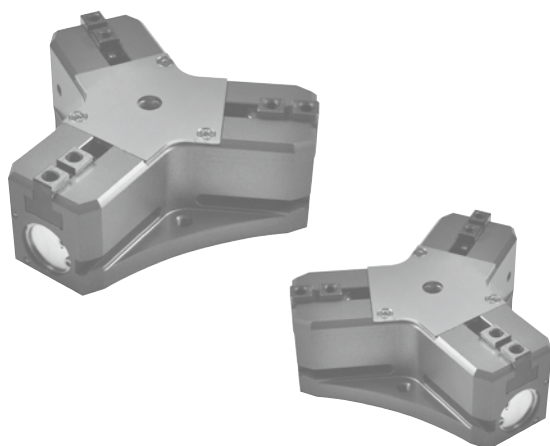
Code Model	Stroke	A	B	DA	DB	E	F	G	M	P1	P2
MCHX-10	20	76	56	100	80	26	36	51	38	11.5	11.5
	40	118	78	142	108	42	52	67	54	19.5	19.5
	60	156	96	180	146	60	70	85	72	28.5	28.5
MCHX-16	30	98	68	128	98	28	45	60	40	13	13
	60	170	110	200	152	58	75	90	70	25	25
	80	210	130	240	192	78	95	110	90	35	35
MCHX-20	40	122	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
MCHX-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
MCHX-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



Code Model	H	K	KA	KB	KC	KD	L	N	MM	PA	PP	P3	QQ	R	RA	RR	RS	S	SA	SS
MCHX-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
MCHX-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
MCHX-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
MCHX-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
MCHX-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

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



### Order example

**MCHK – 20**

MODEL

STROKE

20  
32  
50

### Features

- Three double acting pneumatic cylinder design for high power transmission and increase stroke also decrease housing thickness for space-saving design.
- Direct drive synchronized via cam disc for self-centering and high repeatability.
- Through center hole for workpiece feed.
- The housing: high-tensile aluminum and special hard-coated.
- Auto switch with indicator lamp.

### Specification

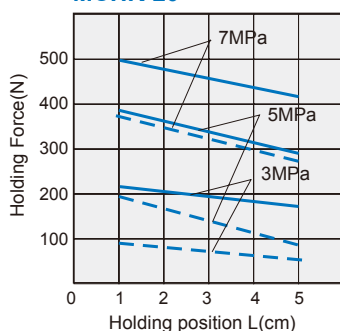
Model	MCHK		
Acting type	Double acting		
Opening / Closing stroke (mm) (dia)	20	32	50
Cylinder bore (mm)	Open	ø16×3	ø25×3
	Close	ø20×3	ø32×3
Medium	Air		
Operating pressure range	0.3~0.7 MPa		
Ambient temperature	+5~+60°C		
Repeatability	± 0.01 mm		
Lubrication	Not required		
Sensor switch (*)	RK: Reed switch, RKN: NPN, RKP: PNP		
Weight (kg)	0.7	1.9	5.8

\* RK specification, please refer to page 5-13.

### Effective holding force

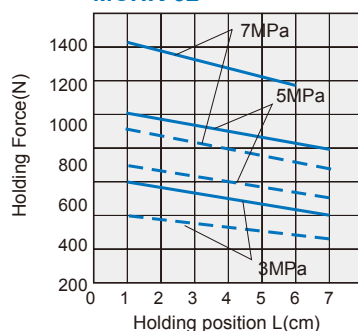
Fitness holding force: 150N~350N

**MCHK-20**



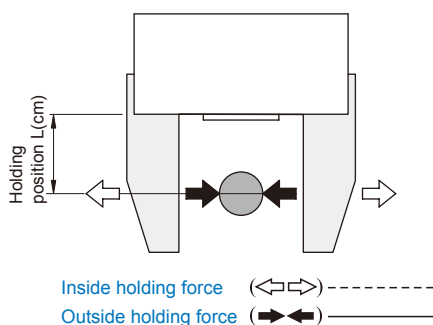
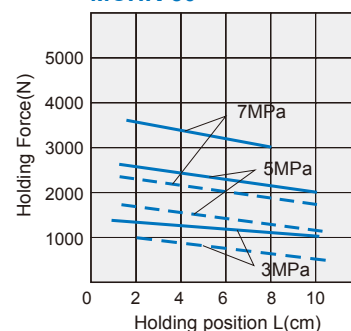
Fitness holding force: 400N~1000N

**MCHK-32**

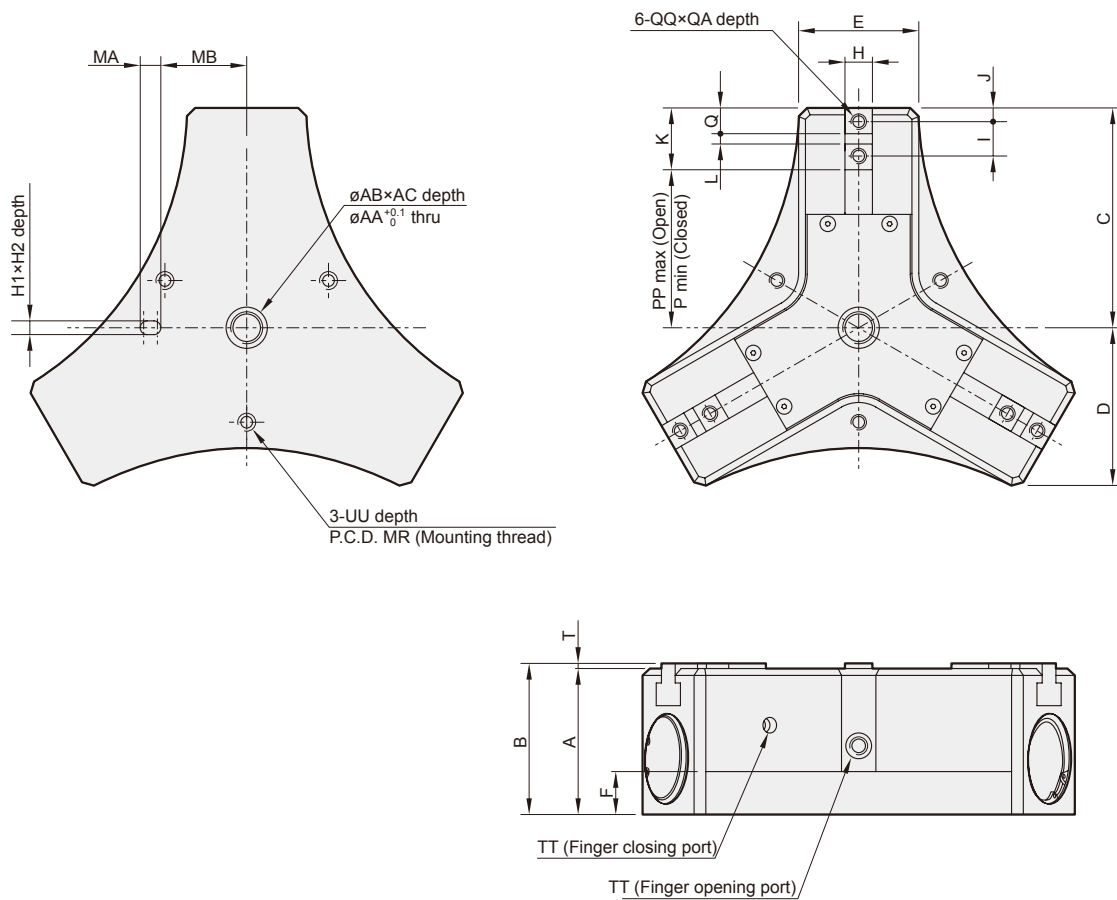


Fitness holding force: 1000N~2500N

**MCHK-50**



- \* With reference to the holding force, under the condition must be considered.
- \* Condition: Friction coefficient, great acceleration impact is expected during workplace rotate.
- \* It recommended: Select a type of arithmetic holding force that can produce 10 to 20 times for workpiece weight.



Code Model	A	AA	AB	AC	B	C	D	E	F	H	H1	H2	I	J	K	L	MA	MB	MR	P	PP	Q	QA
MCHK-20	39.5	8	8 <sup>+0.03</sup> <sub>0</sub>	1.5	42.5	58	43.9	38	9	8 <sup>+0</sup> <sub>-0.015</sub>	4 <sup>+0.03</sup> <sub>-0</sub>	4	12	4.5	21	3 <sup>+0.03</sup> <sub>-0</sub>	5	27.5	60	27	37	9	8
MCHK-32	56	12	12 <sup>+0.03</sup> <sub>0</sub>	2.5	59	83.5	62	52	12	12 <sup>+0</sup> <sub>-0.018</sub>	5 <sup>+0.03</sup> <sub>-0</sub>	5	16	5.5	27	5 <sup>+0.03</sup> <sub>-0</sub>	6	36	78	38.3	54.3	11	12
MCHK-50	85	16	24 <sup>+0.05</sup> <sub>0</sub>	5	88	128	91	70	15	16 <sup>+0</sup> <sub>-0.018</sub>	8 <sup>+0.03</sup> <sub>-0</sub>	5	20	8	36	6 <sup>+0.03</sup> <sub>-0</sub>	10	50	110	67	92	15	16

Code Model	QQ	T	TT	UU
MCHK-20	M5×0.8	3	M5×0.8	M6×1.0
MCHK-32	M6×1.0	3	M5×0.8	M8×1.25
MCHK-50	M8×1.25	3	Rc1/8	M8×1.25

# 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 – □

MODEL

TUBE I.D.  
16, 20, 25, 32, 40,  
50, 63, 80, 100, 125

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)

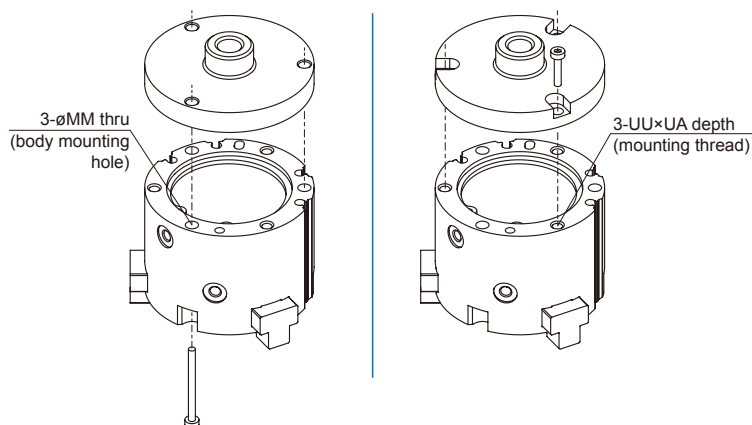


### Specification

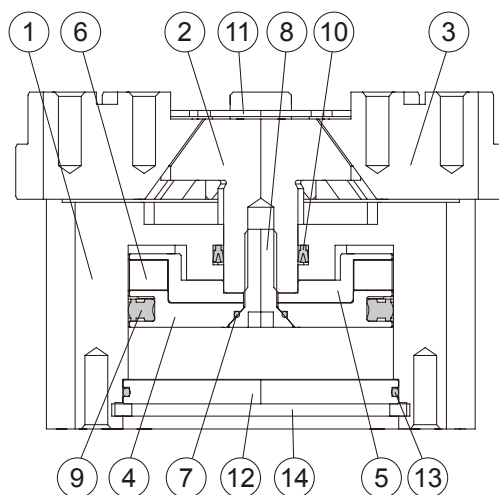
Model		MCHG2									
Acting type		Double acting									
Tube I.D. (mm)		16	20	25	32	40	50	63	80	100	125
Stroke (mm)		4	4	6	8	8	12	16	20	24	32
Port size		M3×0.5	M5×0.8						Rc1/8	Rc1/4	Rc3/8
Medium		Air									
Operating pressure (MPa)		0.2~0.6			0.1~0.6						
Ambient temperature		-10~+60°C (No freezing)									
Repeatability		±0.01 mm									
Max. operating frequency (c.p.m)		120			60				30		
Lubrication		Not required									
Effective gripping force N (lbf) at (0.5 MPa) (*)	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		RDF (Please refer to page 5-10)									
Weight (g)		80	110	150	240	400	540	1020	1880	3300	6200

\* Open and closed diameter values apply for external gripping of work pieces.

### Installation



Model	MM	UU×UA	Bolt	Max. tightening torque (N.m)
HCHG2-16	3.4	M3×0.5×4.5	M3×0.5	0.88
HCHG2-20	3.4	M3×0.5×6	M3×0.5	0.88
HCHG2-25	4.5	M4×0.7×6	M4×0.7	2.1
HCHG2-32	4.5	M4×0.7×6	M4×0.7	2.1
HCHG2-40	5.5	M5×0.8×7.5	M5×0.8	4.3
HCHG2-50	5.5	M5×0.8×7.5	M5×0.8	4.3
HCHG2-63	6.6	M6×1.0×10	M6×1.0	7.3
HCHG2-80	6.6	M6×1.0×10	M6×1.0	7.3
HCHG2-100	9	M8×1.25×16	M8×1.25	18
HCHG2-125	11	M10×1.5×20	M10×1.5	36



### Material

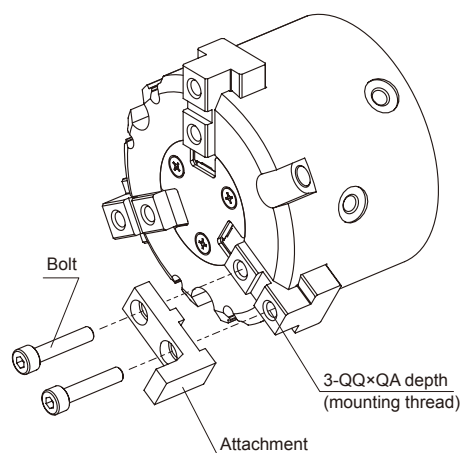
No.	Part name	Material
1	Body	Aluminum alloy
2	Lever	Carbon steel
3	Slider	Carbon steel
4	Piston	Aluminum alloy
5	Piston-R	Aluminum alloy
6	Magnet ring	Magnet material
7	O-ring	NBR

No.	Part name	Material
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

### Mounting precautions

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

Model	QQ×QA	Bolt	Max. tightening torque (N.m)
HCHG2-16	M3×0.5×5	M3×0.5	0.59
HCHG2-20	M3×0.5×6	M3×0.5	0.59
HCHG2-25	M3×0.5×6	M3×0.5	0.59
HCHG2-32	M4×0.7×8	M4×0.7	1.4
HCHG2-40	M4×0.7×8	M4×0.7	1.4
HCHG2-50	M5×0.8×8	M5×0.8	2.8
HCHG2-63	M5×0.8×8	M5×0.8	2.8
HCHG2-80	M6×1.0×12	M6×1.0	4.8
HCHG2-100	M8×1.25×16	M8×1.25	12
HCHG2-125	M10×1.5×20	M10×1.5	24



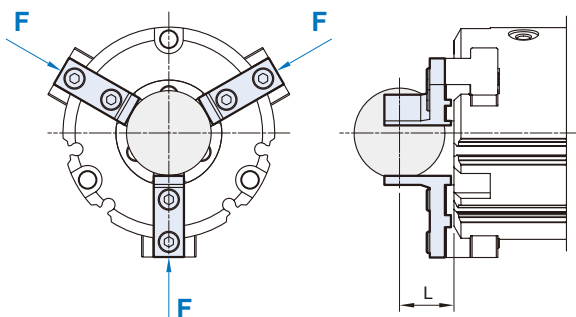
### Effective gripping force

\* Finger selection please refer to page 3-2.

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.

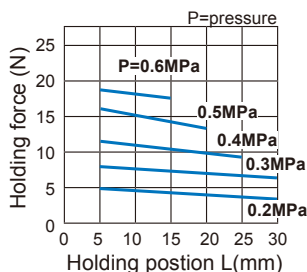
1N=0.102 kgf  
1MPa=10.2 kgf/cm<sup>2</sup>



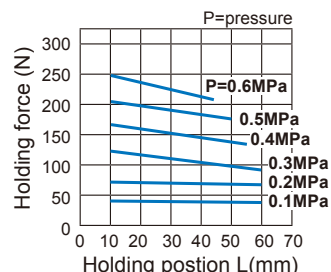
### External grip

### External gripping force

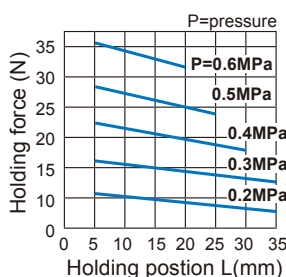
MCHG2-16



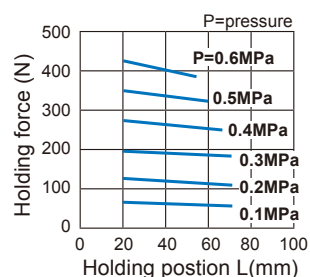
MCHG2-50



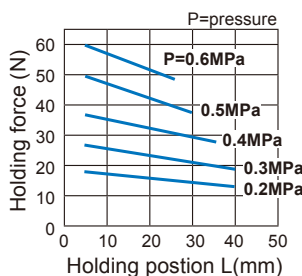
MCHG2-20



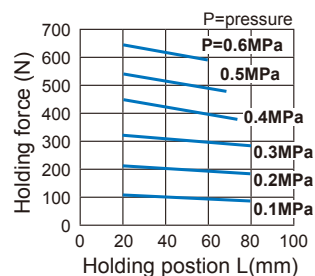
MCHG2-63



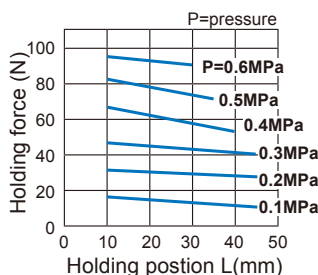
MCHG2-25



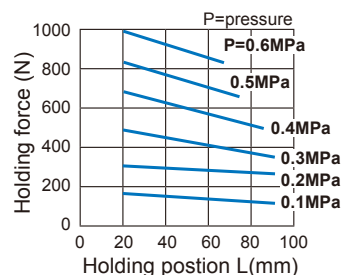
MCHG2-80



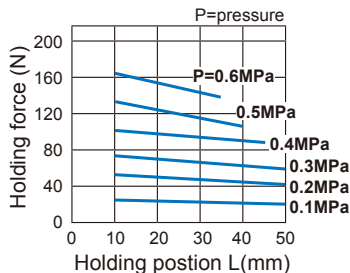
MCHG2-32



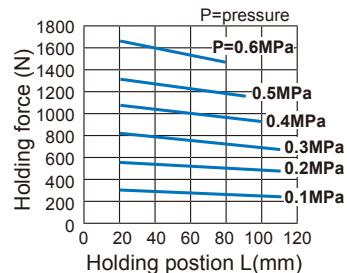
MCHG2-100



MCHG2-40



MCHG2-125



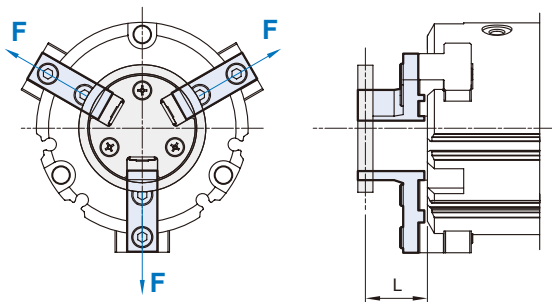
### Effective gripping force

\* Finger selection please refer to page 3-2.

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.

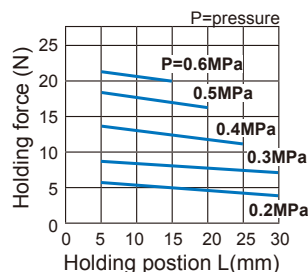
1N=0.102 kgf  
1MPa=10.2 kgf/cm<sup>2</sup>



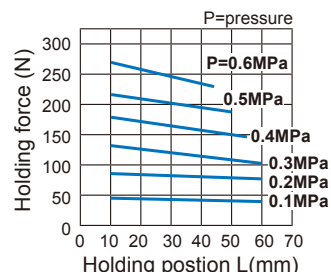
### Internal grip

### Internal gripping force

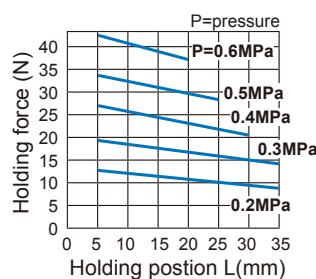
MCHG2-16



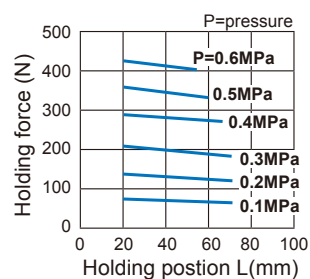
MCHG2-50



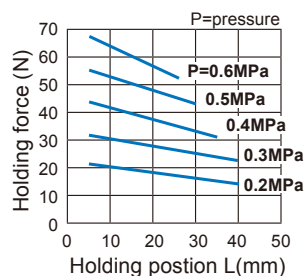
MCHG2-20



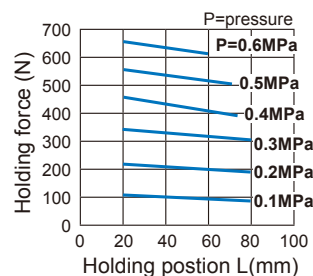
MCHG2-63



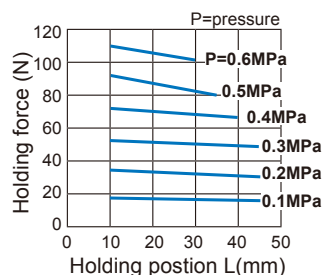
MCHG2-25



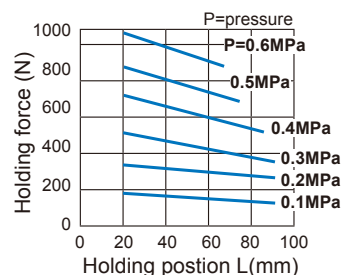
MCHG2-80



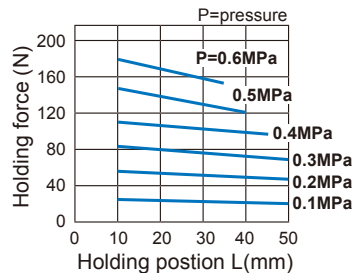
MCHG2-32



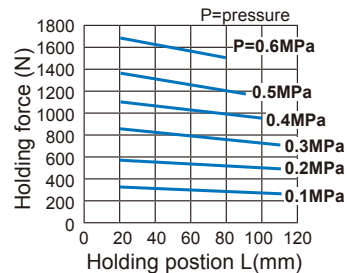
MCHG2-100



MCHG2-40



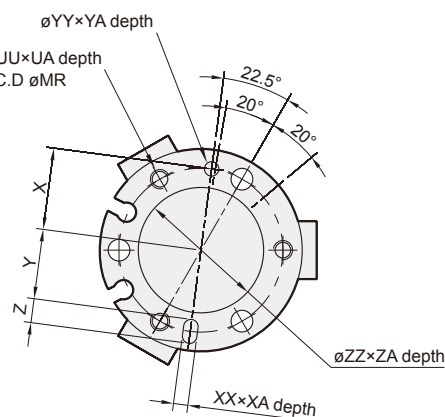
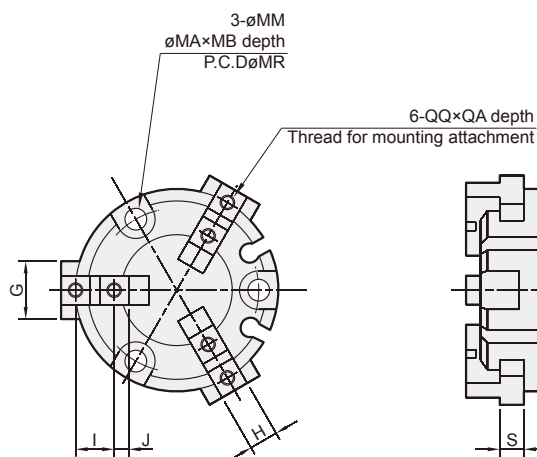
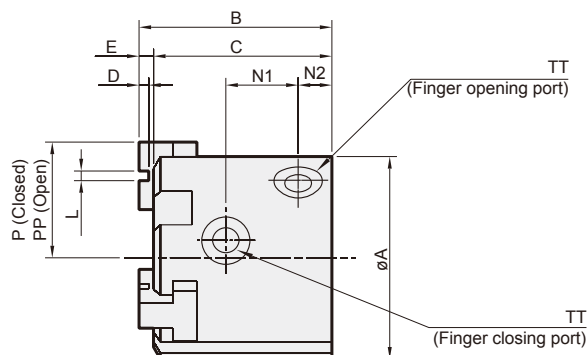
MCHG2-125





# MCHG2 Dimensions $\phi 16 \sim \phi 25$

## PARALLEL GRIPPER (3-Finger)

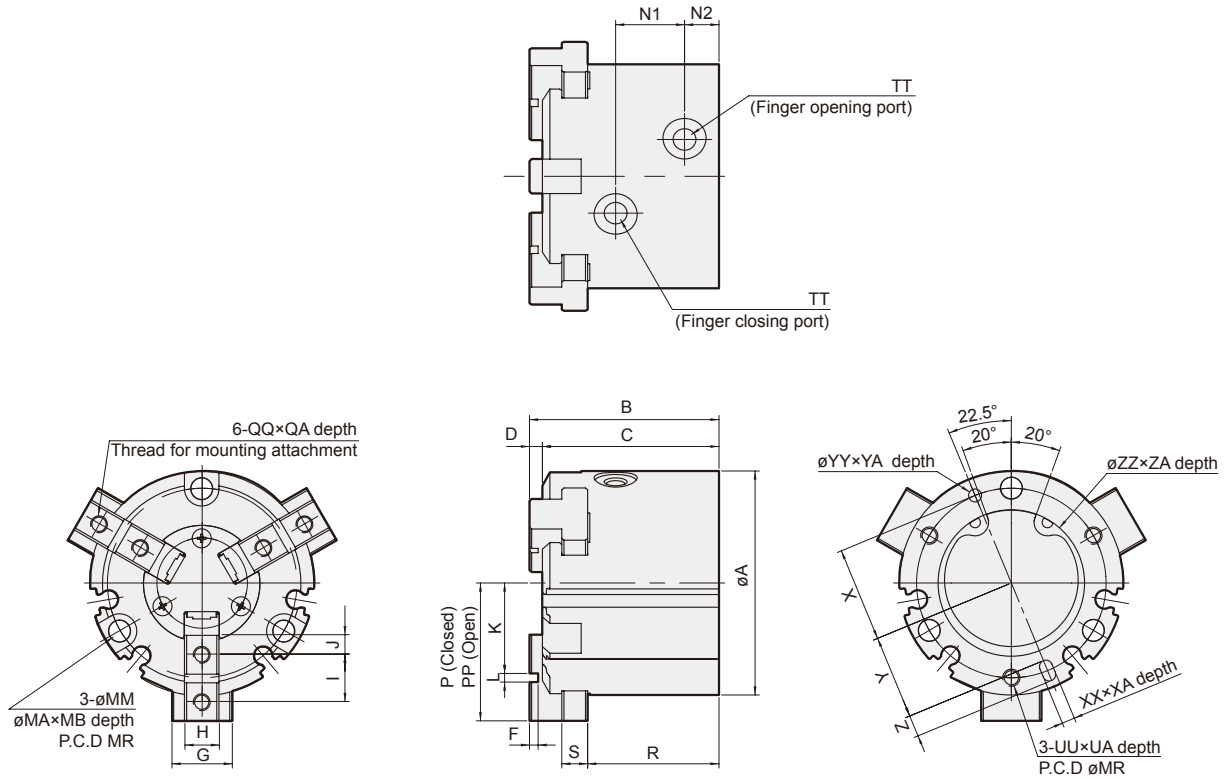


Code Tube I.D.	A	B	C	D	E	G	H	I	J	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S	TT	UA
16	30	35	32	2	3	8	5h9 <sup>+0.030</sup> <sub>-0</sub>	6	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	6	8	3.4	25	11	7	15	17	5	M3×0.5	25	4	M3×0.5	4.5
20	36	38	35	2	3	10	6h9 <sup>+0.030</sup> <sub>-0</sub>	7	2.5	2H9 <sup>+0.025</sup> <sub>-0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

Code Tube I.D.	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
16	M3×0.5	12.5	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	11	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	3	1.5	17H9 <sup>+0.043</sup> <sub>-0</sub>
20	M3×0.5	14.5	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	13	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	3	1.5	21H9 <sup>+0.050</sup> <sub>-0</sub>
25	M4×0.7	17	3	2H9 <sup>+0.025</sup> <sub>-0</sub>	14.5	3	3H9 <sup>+0.025</sup> <sub>-0</sub>	5	1.5	26H9 <sup>+0.052</sup> <sub>-0</sub>

# MCHG2 Dimensions $\phi 32 \sim \phi 63$

## PARALLEL GRIPPER (3-Finger)

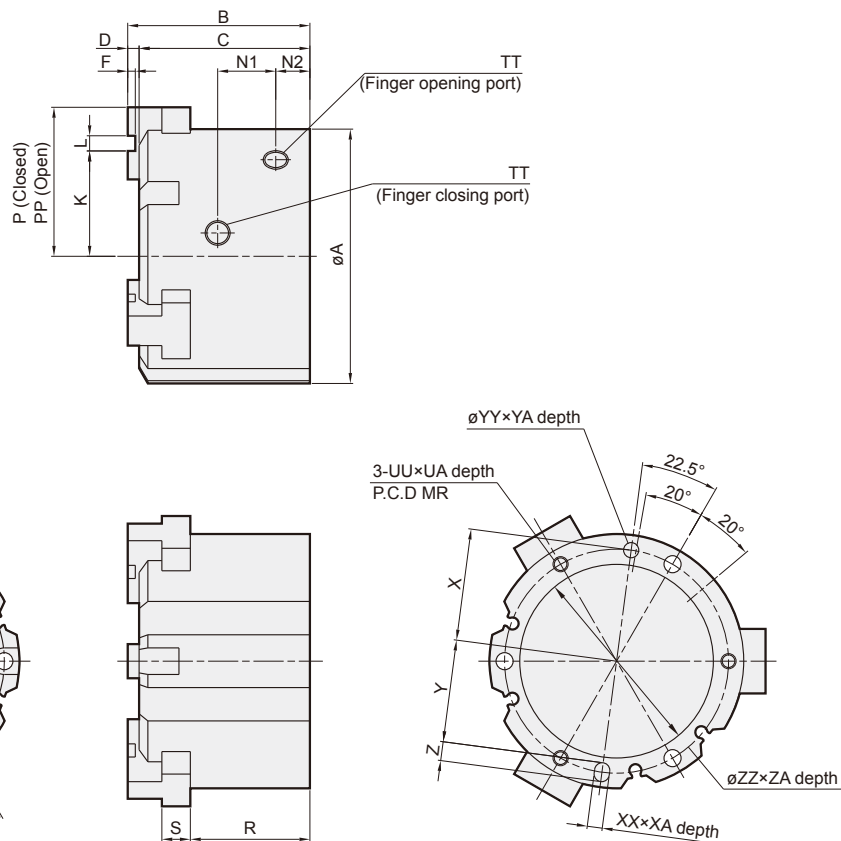


Code Tube I.D.	A	B	C	D	F	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S	TT
32	52	44	41	3	2	14	8h9 <sup>+0.025</sup> <sub>-0.036</sub>	11	4.5	17	2H9 <sup>+0.025</sup> <sub>-0</sub>	8	9	4.5	44	16	8	28	32	8	M4×0.7	30.5	6	M5×0.8
40	62	47	44	3	2	16	8h9 <sup>+0.025</sup> <sub>-0.036</sub>	12	4.5	19	3H9 <sup>+0.025</sup> <sub>-0</sub>	9.5	9	5.5	53	17	9	31	35	8	M4×0.7	32	7	M5×0.8
50	70	55	52	3	2	18	10h9 <sup>+0.030</sup> <sub>-0.036</sub>	14	5	21	4H9 <sup>+0.030</sup> <sub>-0</sub>	9.5	12	5.5	62	20	9	35	41	10	M5×0.8	37.5	9	M5×0.8
63	86	66	62	4	3	24	12h9 <sup>+0.030</sup> <sub>-0.043</sub>	17	5.5	26	6H9 <sup>+0.030</sup> <sub>-0</sub>	11	14	6.6	76	22	12	43	51	10	M5×0.8	44	11	M5×0.8

Code Tube I.D.	UA	UU	X	XA	XX	Y	YY	YA	Z	ZA	ZZ
32	6	M4×0.7	22	3	3H9 <sup>+0.025</sup> <sub>-0</sub>	19.5	3H9 <sup>+0.025</sup> <sub>-0</sub>	3	5	2	34H9 <sup>+0.062</sup> <sub>-0</sub>
40	7.5	M5×0.8	26.5	4	4H9 <sup>+0.030</sup> <sub>-0</sub>	23.5	4H9 <sup>+0.030</sup> <sub>-0</sub>	4	6	2	42H9 <sup>+0.062</sup> <sub>-0</sub>
50	9	M5×0.8	31	4	4H9 <sup>+0.030</sup> <sub>-0</sub>	28	4H9 <sup>+0.030</sup> <sub>-0</sub>	4	6	2	52H9 <sup>+0.074</sup> <sub>-0</sub>
63	10	M6×1	38	5	5H9 <sup>+0.030</sup> <sub>-0</sub>	34.5	5H9 <sup>+0.030</sup> <sub>-0</sub>	5	7	2.5	65H9 <sup>+0.074</sup> <sub>-0</sub>

# MCHG2 Dimensions $\phi 80 \sim \phi 125$

## PARALLEL GRIPPER (3-Finger)

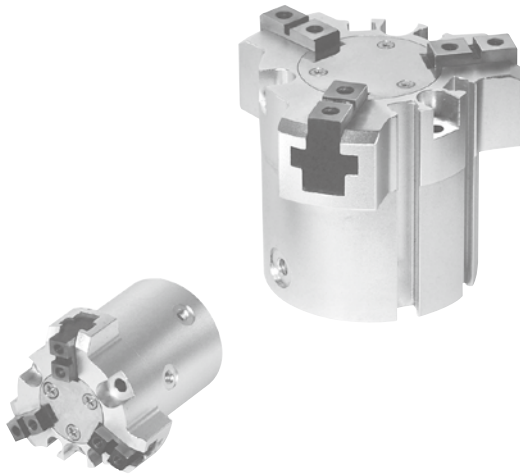


Code Tube I.D.	A	B	C	D	F	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S
80	106	82	77	5	4	28	14h9 <sup>+0.043</sup> <sub>0</sub>	20	6	33.5	8H9 <sup>+0.036</sup> <sub>0</sub>	11	19	6.6	95	27	13.5	53.5	63.5	12	M6×1	56	12
100	134	96	90	6	4	34	18h9 <sup>+0.043</sup> <sub>0</sub>	23	7.5	43	8H9 <sup>+0.036</sup> <sub>0</sub>	14	21	9	118	30.6	18	66	78	16	M8×1.25	63	15
125	166	122	114	8	6	40	22h9 <sup>+0.052</sup> <sub>0</sub>	31	10.5	50	10H9 <sup>+0.036</sup> <sub>0</sub>	17.5	34	11	148	38	23.5	82	98	20	M10×1.5	84	18

Code Tube I.D.	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
80	Rc1/8	12	M6×1	47.5	6	6H9 <sup>+0.030</sup> <sub>0</sub>	43.5	6	6H9 <sup>+0.030</sup> <sub>0</sub>	8	3	82H9 <sup>+0.087</sup> <sub>0</sub>
100	Rc1/4	16	M8×1.25	59	6	8H9 <sup>+0.036</sup> <sub>0</sub>	54	6	8H9 <sup>+0.036</sup> <sub>0</sub>	10	4	102H9 <sup>+0.087</sup> <sub>0</sub>
125	Rc3/8	20	M10×1.5	74	8	10H9 <sup>+0.036</sup> <sub>0</sub>	68	8	10H9 <sup>+0.036</sup> <sub>0</sub>	12	6	130H9 <sup>+0.100</sup> <sub>0</sub>

# MCHG2L series

LONG STROKE TYPE **PARALLEL GRIPPER** (3-Finger)



## Features

- Tube I.D. ø16, 20, 25, 32, 40, 50, 63, 80 mm.
- Opening / closing stroke move than twice the standard (MCHG2).
- Interchangeable with MCHG2 in mounting.
- Magnetic as standard.

## Order example

**MCHG2L — 16 M**

MODEL

TUBE I.D.

16  
20  
25  
32  
40  
50  
63  
80

M: Magnet

\* Magnetic as standard.

## Sensor switch

**RT × 1**

NUMBER of  
AUTO SWITCH

AUTO SWITCH TYPE

perpendicular	in-line		style
RTV	RT	RK	Reed switch
RTNV	RTN	RKN	NPN
RTPV	RTP	RKP	PNP

for ø32~80

for ø16~25

\* RT specification, please refer to page 5-14.

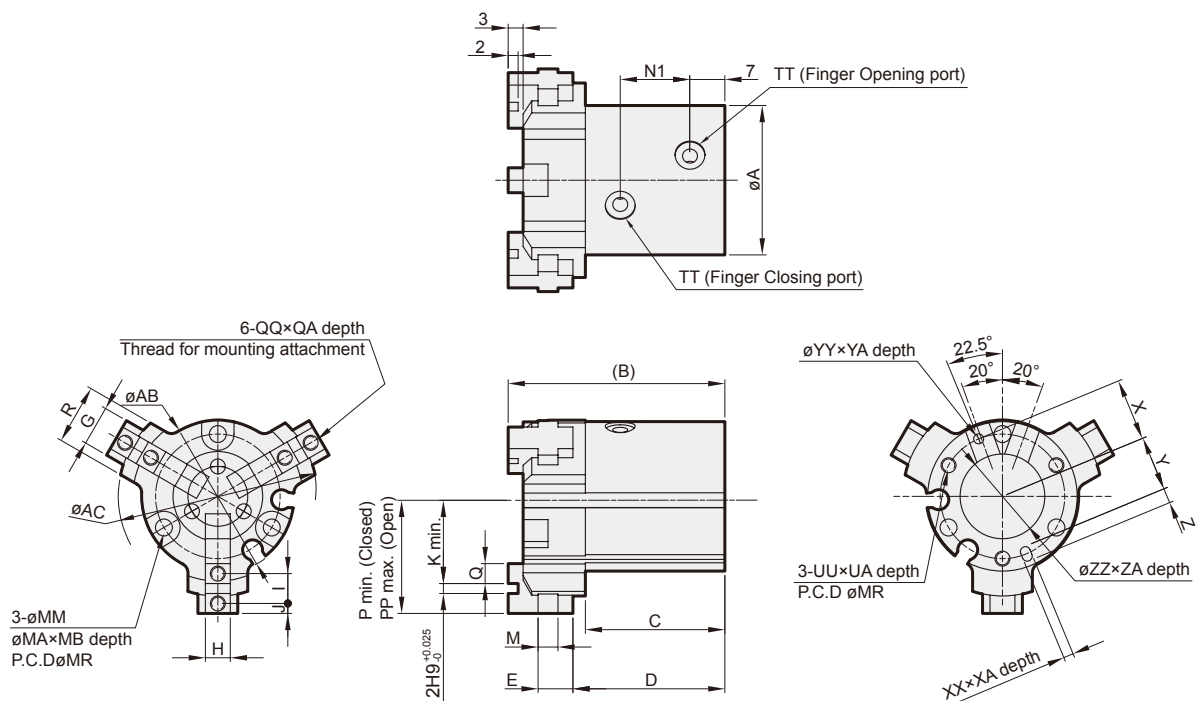
## Specification

Model		MCHG2L							
Acting type		Double acting							
Tube I.D. (mm)		16	20	25	32	40	50	63	80
Stroke (mm)		10	10	12	16	20	28	32	40
Medium		Air							
Operating pressure		0.2~0.6 MPa							
Ambient temperature		-10~+60°C (No freezing)							
Repeatability		±0.01 mm							
Max. operating frequency (c.p.m)		120			60				30
Lubrication	Cylinder	Not required							
	Lever	Grease (Actuation at)							
Effective gripping force N (lbf) at (0.5 MPa) (★)	External	14(3.1)	25(5.6)	42(9.4)	74(16.6)	118(26.5)	187(42)	335(75)	500(112)
	Internal	16(3.6)	28(6.3)	47(10.6)	82(18.4)	130(29)	204(46)	359(81)	525(118)
Weight (g)		100	150	190	373	600	930	1850	2880

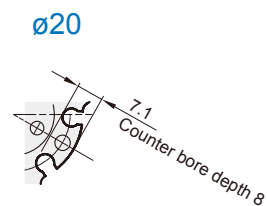
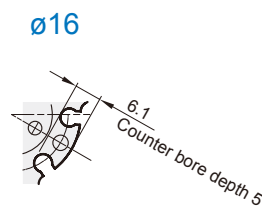
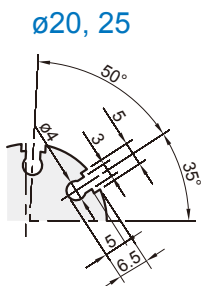
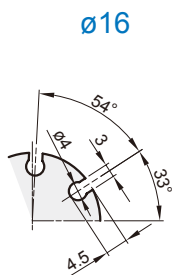
\* Open and closed diameter values apply for external gripping of work pieces.

# MCHG2L Dimensions $\varnothing 16 \sim \varnothing 25$

## LONG STROKE TYPE PARALLEL GRIPPER (3-Finger)



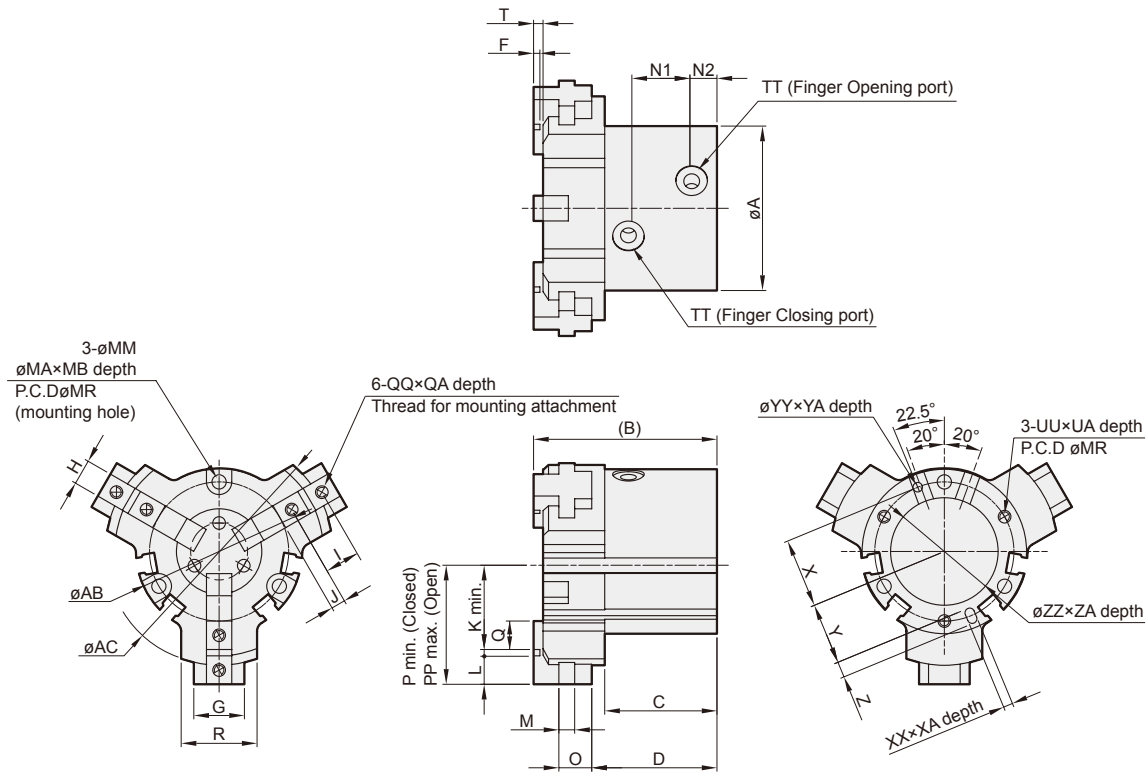
### Auto switch mounting groove position (2 places) Mounting hole counter bore dimensions



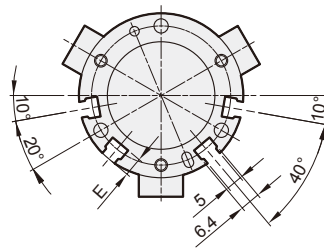
Note. The counter bore configuration differs only for the mounting hole section between the auto switch mounting grooves.

Code Tube I.D.	A	AB	AC	B	C	D	E	G	H	I	J	K	M	MA	MB	MM	MR	N1	P	PP	Q	QA	QQ
16	30	30.6	40	43.5	28	30.5	7	8	5h9 <sup>+0</sup> <sub>-0.030</sub>	6	2	12.5	4	6.5	5	3.4	25	14	18.5	23.5	4	5	M3×0.5
20	36	36.6	45	46	29	32	8	11	6h9 <sup>+0</sup> <sub>-0.030</sub>	7	2.5	14	4	6.5	8	3.4	29	14	21	26	5	6	M3×0.5
25	42	42.6	52	49	31.5	34.2	7.8	13	6h9 <sup>+0</sup> <sub>-0.030</sub>	8	3	16	4.5	8	8	4.5	34	16.5	24	30	6	6	M3×0.5

Code Tube I.D.	R	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
16	12	M3×0.5	1.5	M3×0.5	12.5	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	11	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	3	1.5	17H9 <sup>+0.043</sup> <sub>-0</sub>
20	16	M5×0.8	1.5	M3×0.5	14.5	2	2H9 <sup>+0.025</sup> <sub>-0</sub>	13	3	2H9 <sup>+0.025</sup> <sub>-0</sub>	3	1.5	21H9 <sup>+0.052</sup> <sub>-0</sub>
25	19	M5×0.8	1.5	M4×0.7	17	3	3H9 <sup>+0.025</sup> <sub>-0</sub>	14.5	3	3H9 <sup>+0.025</sup> <sub>-0</sub>	5	1.5	26H9 <sup>+0.052</sup> <sub>-0</sub>

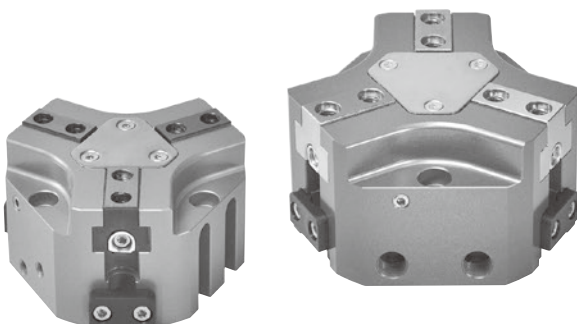


### Auto switch mounting groove position (2 places)



Code Tube I.D.	A	AB	AC	B	C	D	E	F	G	H	I	J	K	L	M	MA	MB	MM	MR	N1	N2	O	P	PP	Q
32	52	52.6	72	58	35.5	39.6	6	2	16	8h9 <sup>+0.036</sup> <sub>-0</sub>	11	4.5	23	2H9 <sup>+0.025</sup> <sub>-0</sub>	5	8	8	4.5	44	20	8	10.4	34	42	9
40	62	62.6	82	64	38.5	42.5	8	2	18	8h9 <sup>+0.036</sup> <sub>-0</sub>	12	4.5	25.5	3H9 <sup>+0.025</sup> <sub>-0</sub>	7	9.5	11	5.5	53	22	9	13.5	37.5	47.5	9
50	70	70.6	104	77.5	46.5	51.3	7	2	20	10h9 <sup>+0.036</sup> <sub>-0</sub>	14	5	32	4H9 <sup>+0.030</sup> <sub>-0</sub>	8	9.5	14.5	5.5	62	29	9	17.7	46	60	10
63	86	86.6	120	89	51	58.5	7.5	3	26	12h9 <sup>+0.043</sup> <sub>-0</sub>	17	5.5	37	6H9 <sup>+0.030</sup> <sub>-0</sub>	10	11	17	6.6	76	30.5	12	19.5	54	70	11
80	106	106.6	140	116	70	78.5	9	4	30	14h9 <sup>+0.043</sup> <sub>-0</sub>	20	6	40.5	8H9 <sup>+0.036</sup> <sub>-0</sub>	11	11	23	6.6	95	37.5	14	23.5	60.5	80.5	12

Code Tube I.D.	QA	QQ	R	T	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
32	8	M4×0.7	24	3	M5×0.8	6	M4×0.7	22	3	3H9 <sup>+0.025</sup> <sub>-0</sub>	19.5	3	3H9 <sup>+0.025</sup> <sub>-0</sub>	5	2	34H9 <sup>+0.062</sup> <sub>-0</sub>
40	8	M4×0.7	30	3	M5×0.8	10	M5×0.8	26.5	4	4H9 <sup>+0.030</sup> <sub>-0</sub>	23.5	4	4H9 <sup>+0.030</sup> <sub>-0</sub>	6	2	42H9 <sup>+0.062</sup> <sub>-0</sub>
50	10	M5×0.8	32	3	M5×0.8	10	M5×0.8	31	4	4H9 <sup>+0.030</sup> <sub>-0</sub>	28	4	4H9 <sup>+0.030</sup> <sub>-0</sub>	6	2	52H9 <sup>+0.074</sup> <sub>-0</sub>
63	10	M5×0.8	40	4	M5×0.8	12	M6×1	38	5	5H9 <sup>+0.030</sup> <sub>-0</sub>	34.5	5	5H9 <sup>+0.030</sup> <sub>-0</sub>	7	2.5	65H9 <sup>+0.074</sup> <sub>-0</sub>
80	12	M6×1	50	5	Rc1/8	12	M6×1	47.5	6	6H9 <sup>+0.030</sup> <sub>-0</sub>	43.5	6	6H9 <sup>+0.030</sup> <sub>-0</sub>	8	3	82H9 <sup>+0.087</sup> <sub>-0</sub>



### Order example

**MCHJ – 50**

MODEL

BODY  
SPECIFICATION  
50, 66, 80, 100,  
125, 160, 200, 300

### Features

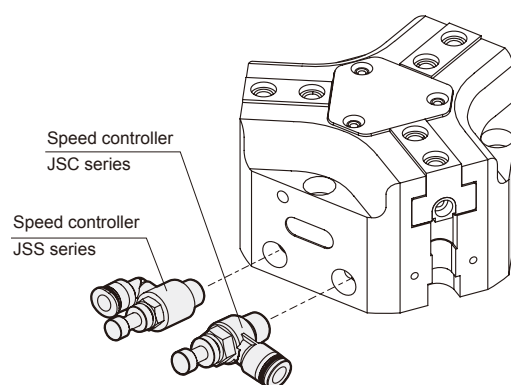
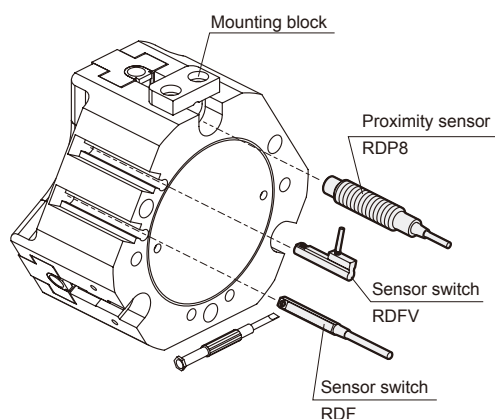
- Compact design to ensure minimum interference while operating; robust T rail design, ensure accurate gripping.
- Can reach maximum torque suitable for long jaws design.
- Circular piston-driven design ensure maximum clamping force.
- Hose-free direct connection: Air supply channel can connect directly without piping or through tread to assure the flexibility of supplying compressed air on any kind of automation system.

### Specification

Model	MCHJ							
Acting type	Double acting							
Body specification	50	66	80	100	125	160	200	300
Stroke per-jaw (mm)	4	6	8	10	12	16	20	30
Closing force(N)	450	750	1200	2000	3500	6500	8200	15300
Opening force(N)	500	800	1300	2100	3600	6600	8450	15550
Close/Open time (1/s)	0.025	0.03	0.05	0.1	0.2	0.25	0.35	0.8
Medium	Air							
Operating pressure range	0.2~0.8 MPa							
Compressed air consumption (cm <sup>3</sup> )	9.2	21.5	47	100	195	485	850	2300
Ambient temperature	+5°C~ +80°C							
Lubrication	Not required							
Sensor switch (*)	RDF, RDFV							
Proximity sensor	RDP8 (2 wire), RNP8 (3 wire)							
Accessories	Mounting block, Centering sleeve							
Weight (kg)	0.22	0.5	0.85	1.6	2.8	5.2	10.8	26.5
Recom. work piece weight (kg)	2.2	3.8	6.1	10.2	17.8	33.1	41.8	78

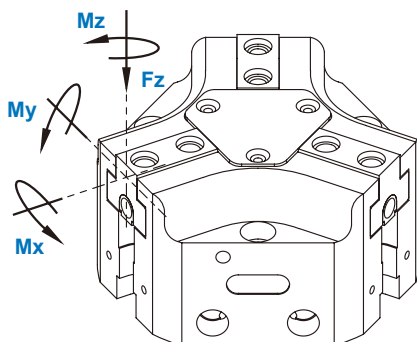
\* RDF, RDFV specification, please refer to page 5-10.

### Installation of sensor switch & speed controller



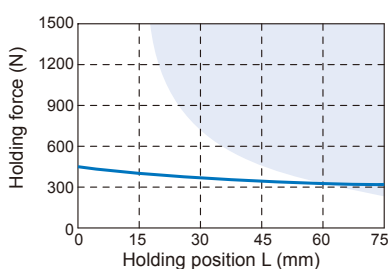
\* Each gripper needs at least two speed control valves to control speed.  
\* Speed controller specification, please refer to page 8-15~17 (Vol.1).

### Holding force

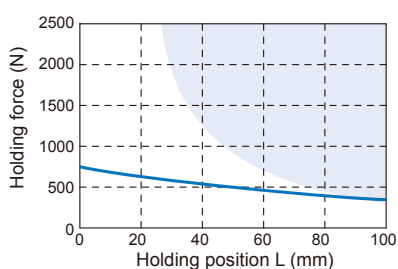


Code Model	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)	Fz max. (N)
MCHJ-50	15	15	8	700
MCHJ-66	50	45	35	1200
MCHJ-80	80	60	50	1800
MCHJ-100	100	90	75	2500
MCHJ-125	120	120	100	3200
MCHJ-160	160	180	140	5000
MCHJ-200	180	220	170	7000
MCHJ-300	275	300	200	9000

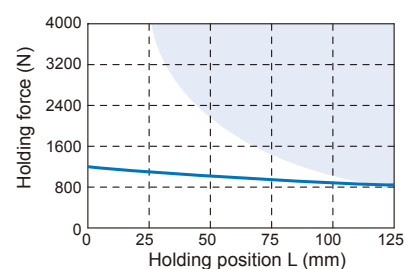
**MCHJ-50**



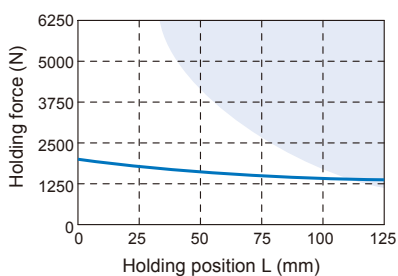
**MCHJ-66**



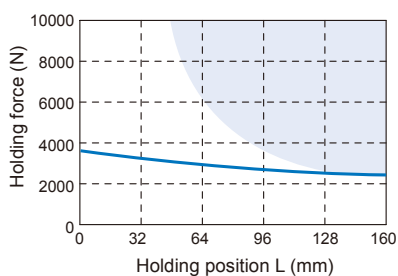
**MCHJ-80**



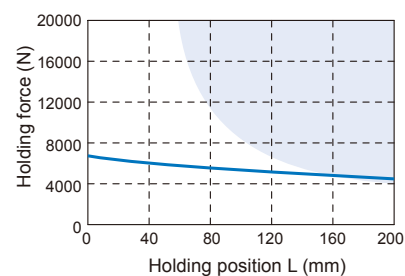
**MCHJ-100**



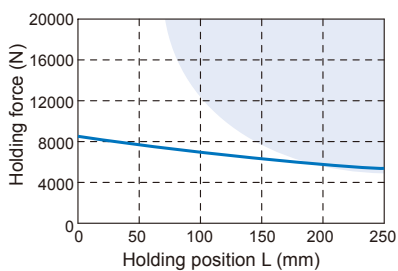
**MCHJ-125**



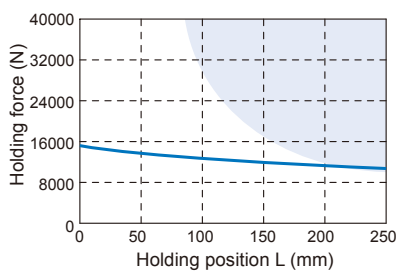
**MCHJ-160**



**MCHJ-200**



**MCHJ-300**



\* Blue area: Less durable performance can be expected.



### 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.

#### Rail

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

#### Sensor system

Sensor switch or proximity sensor are available.

#### Material

Anodized high rigid aluminum alloy to reduce weight.

#### Base jaw

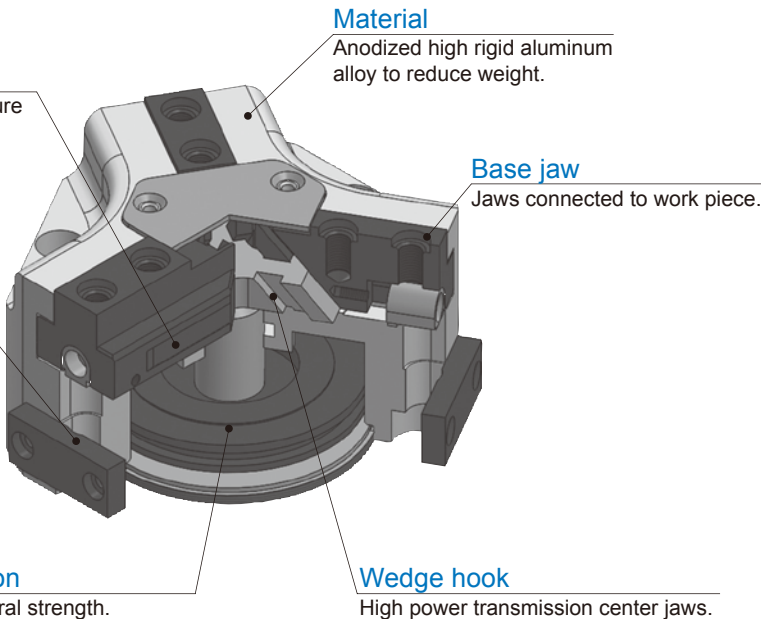
Jaws connected to work piece.

#### Large circular piston

Generate larger structural strength.

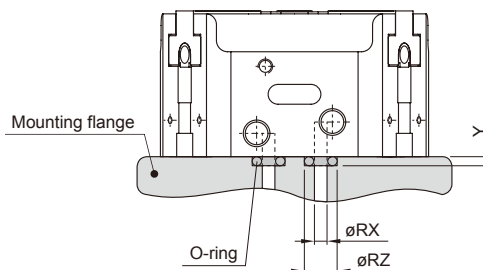
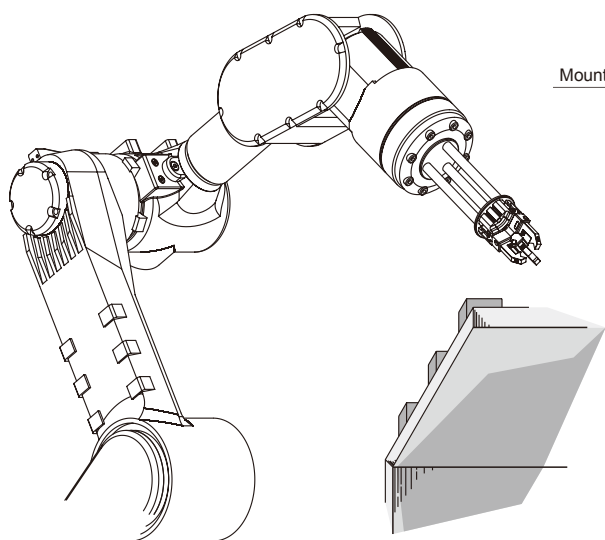
#### Wedge hook

High power transmission center jaws.

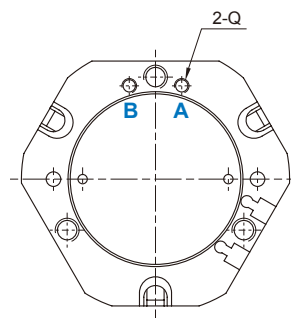


### Application examples

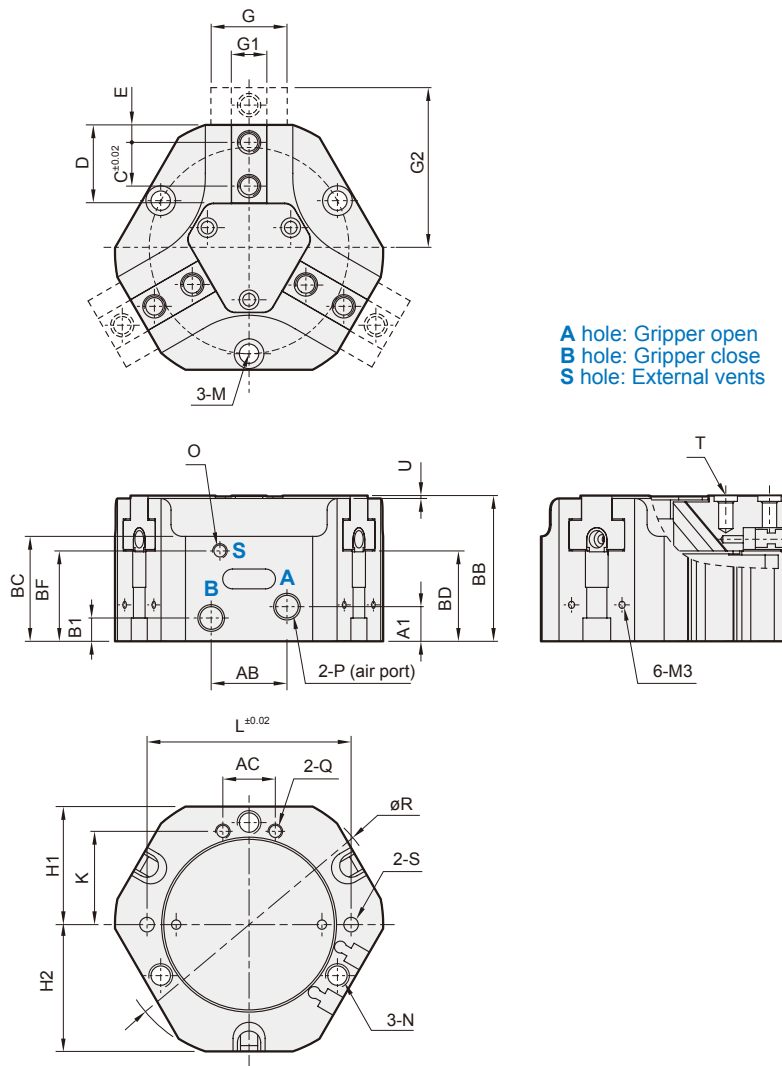
### Hose-free direct connection



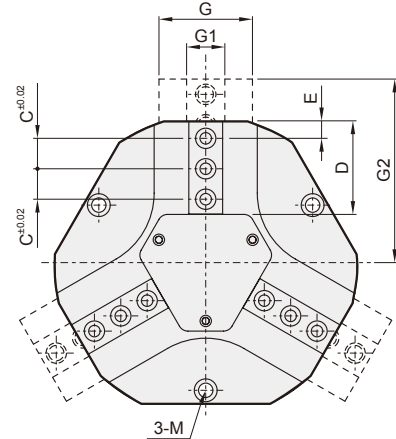
Code Model	Q	RX	RZ	Y
50	M3	3	5	0.7
66	M5	5	8	1.2
80	M5	5	8	1.2
100	M5	5	8	1.2
125	M5	5	8	1.2
160	M5	5	8	1.2
200	M6	6	9	1.2
300	G1/8	8.5	12.1	1.8



A hole: Gripper open  
B hole: Gripper close

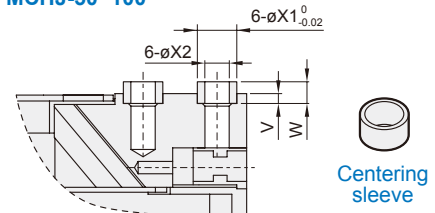


**MCHJ-125~300**

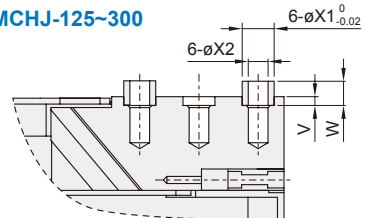


**Centering sleeve**

**MCHJ-50~100**



**MCHJ-125~300**



Code Model	A1	AB	AC	B1	BB	BC	BD	BF	C	D	E	G	G1	G2	H1	H2	K	L	M	N
<b>MCHJ-50</b>	5	12	12	5	35	26	23	23	8	16	4	12	6.5	31	26	27	19	45	M4 DIN912	M5
<b>MCHJ-66</b>	11.5	12	18	5	43	32	27	27	12	22	5	17	10	41	33	35	25	56	M5 DIN912	M6
<b>MCHJ-80</b>	8	26	18	8	50	36	31	31	15	26.7	6	22	12	51.5	40.5	43.5	32	70	M6 DIN912	M8
<b>MCHJ-100</b>	13.5	24	24	10	60	41	38	34	18	34.2	10	26	14	64	51	54	42	90	M6 DIN912	M8
<b>MCHJ-125</b>	17	30	30	10	68	49	42.5	37	12.5	42.3	10	31	15.5	79	64	67	53	112	M8 DIN912	M10
<b>MCHJ-160</b>	20	44	38	10.5	80	55	48	43.8	18	54.8	10	39	20	102	81	86	67.5	146	M8 DIN912	M10
<b>MCHJ-200</b>	22	54	54	12.5	100	75	61	57	22	67.5	12	42	22	126	100	106	75	180	M10 DIN912	M12
<b>MCHJ-300</b>	35	80	80	14	138	90	86	72	30	91	15	66	32	172	132.5	142	105	240	M12 DIN912	M16

Code Model	O	P	Q	R	S	T	U	V	W	X1	X2
<b>MCHJ-50</b>	M3	M5	M3	57	ø4H7	6-M3	1	2	4	5	3
<b>MCHJ-66</b>	M5	M5	M5	74	ø4H7	6-M4	1	2	4	6	4
<b>MCHJ-80</b>	M5	G1/8	M5	92	ø5H7	6-M6	1	2	4	8	6
<b>MCHJ-100</b>	M5	G1/8	M5	114	ø5H7	6-M6	1	2	4	10	6
<b>MCHJ-125</b>	M5	G1/8	M5	139	ø6H7	9-M6	1	1.9	3.9	10	6
<b>MCHJ-160</b>	M5	G1/8	M5	179	ø6H7	9-M8	1	1.9	3.9	12	8
<b>MCHJ-200</b>	M5	G1/4	M6	218	ø10H7	9-M10	1	1.4	3.9	14	10
<b>MCHJ-300</b>	M5	G1/4	G1/8	292	ø10H7	9-M12	2	2.4	4.9	18	12



### Order example

**MCHGH — 64M**

MODEL

BODY  
DIAMETER

64  
80  
100  
125  
160

M: Magnet

\* Magnetic as standard.

### Features

- Through center hold for workpiece feed.
- Compact, yet rugged design enables high clamping force from the jaws.
- Body manufactured from high tensile, anodised aluminum giving good resistance to corrosion.
- Available with sensors
- Magnetic as standard..

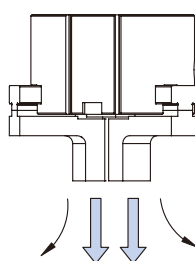
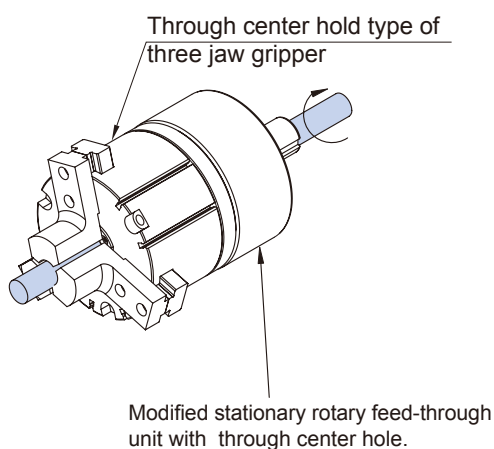
### Specification

Model	MCHGH				
Acting type	Double acting				
Body diameter (mm)	64	80	100	125	160
Stroke (mm)	8	12	16	20	26
Medium	Air				
Operating pressure range	0.2~0.8 MPa				
Repeatability	±0.05 mm				
Ambient temperature	-10°C~+60°C (No freezing)				
Lubrication (*1)	Not required				
Sensor switch (*2)	RH: Reed switch, RHN: NPN, RHP: PNP				
Weight (kg)	0.52	0.82	1.51	2.1	3.8

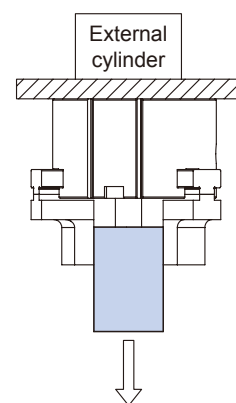
\*1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

\*2. RH specification, please refer to page 5-12.

### Application example

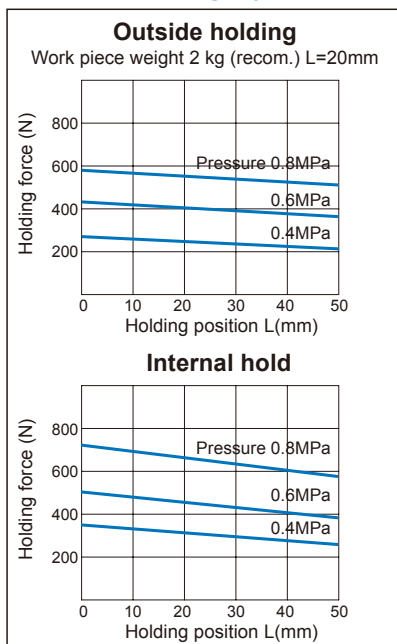


Air blowing

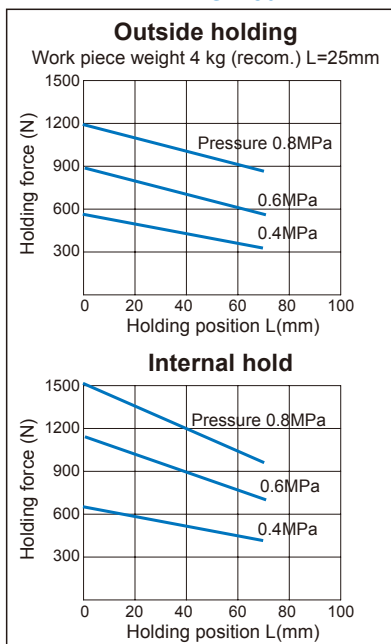


Pushing out workpiece with external cylinder

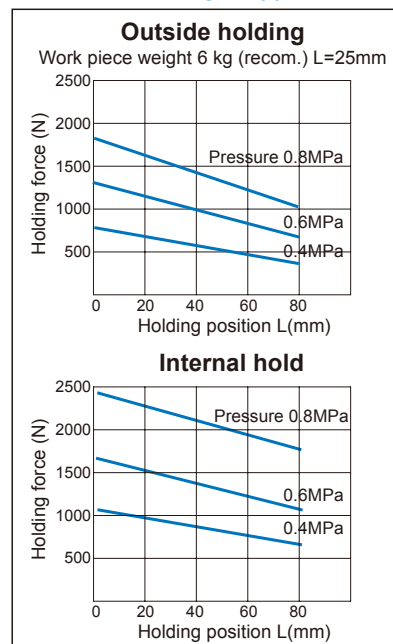
### MCHGH-64



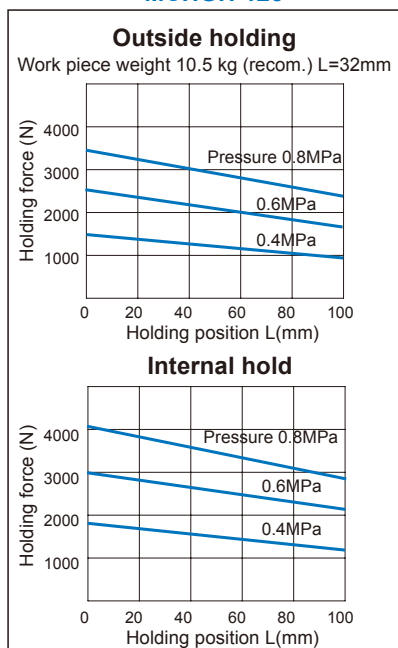
### MCHGH-80



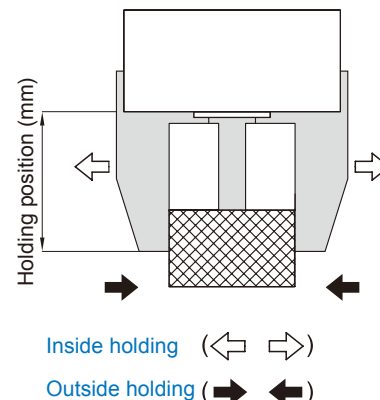
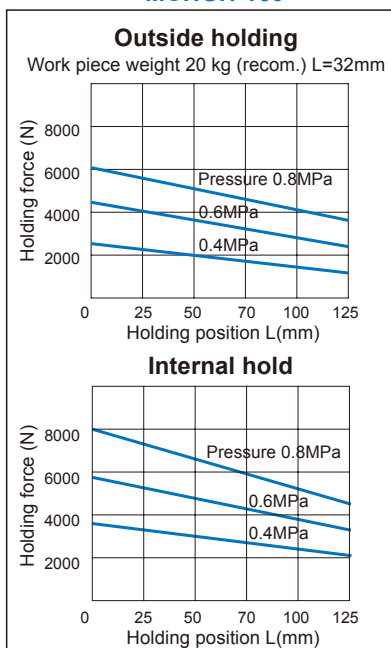
### MCHGH-100



### MCHGH-125

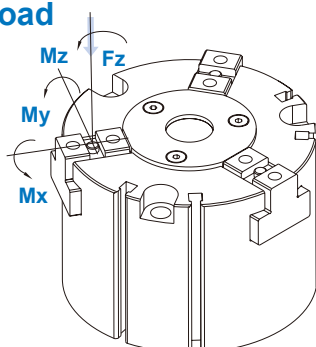


### MCHGH-160

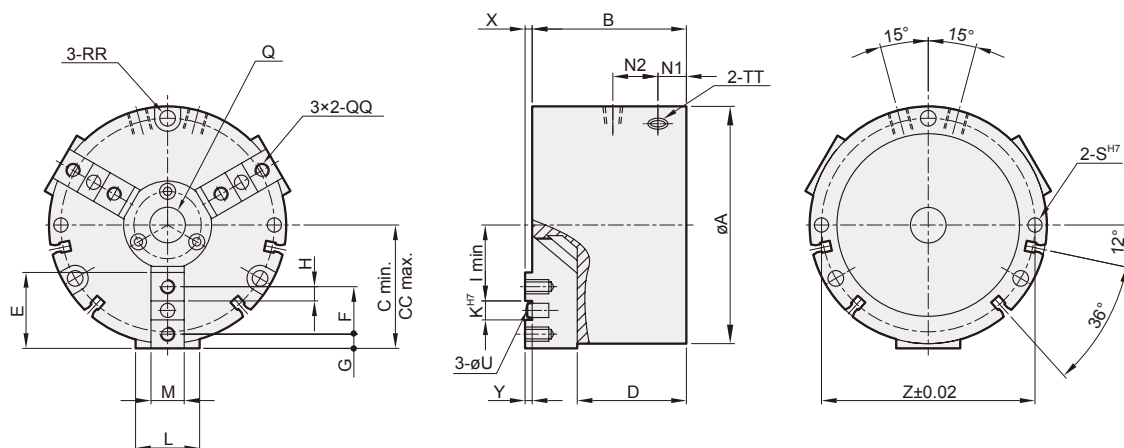


- With reference to the holding force, under the condition must be considered.
- Condition: friction coefficient, great acceleration impact is expected during work piece rotate.
- It recommend: select a type of arithmetic holding force that can produce 10 to 20 times for work piece weight.

### Finger load



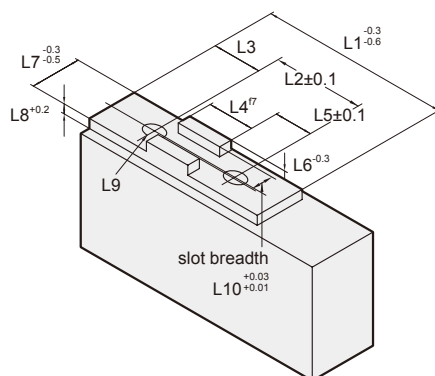
Code Model	Mx (Nm)	My (Nm)	Mz (Nm)	Fz (N)
MCHGH-64	12	10	10	500
MCHGH-80	15	30	25	1400
MCHGH-100	30	90	35	1800
MCHGH-125	45	95	45	2300
MCHGH-160	60	100	70	2500



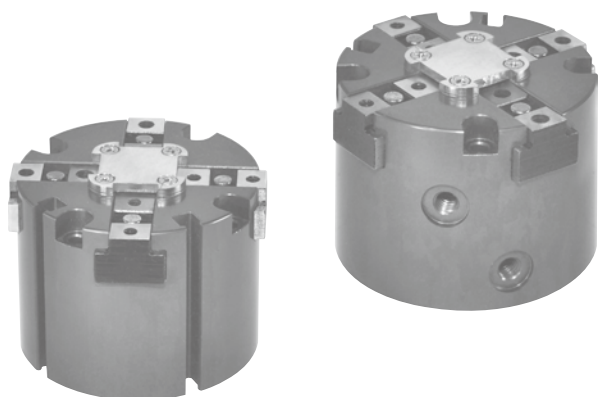
Code Model	A	B	C	CC	D	E	F	G	H	I	K	L	M	N1	N2	Q	QQ
<b>MCHGH-64</b>	64	47.5	33	37	32	18	12	3	3.5	22	5	17	10.2	10	16.5	7.5	M3×0.5 DP 8
<b>MCHGH-80</b>	80	56.5	42	48	39.5	21	13	4	4	29	5	23	12.2	10	22	15	M4×0.7 DP 9
<b>MCHGH-100</b>	100	65	52	60	46	25	16	5	5	36	6	27	14.2	12	24	20	M5×0.8 DP 12
<b>MCHGH-125</b>	125	76	65	75	53.5	32	20	6	6	45	8	30	16.2	13.5	28.5	25	M6×1.0 DP 12
<b>MCHGH-160</b>	160	94	84	97	67	40	24	8.5	8	59	8	40	20.2	17	36.5	36.5	M6×1.0 DP 12

Code Model	P	RR	S	TT	U	X	Y	Z
<b>MCHGH-64</b>	0.5	Ø4.5 thru, Ø8 C/B DP 6 P.C.D 56	Ø4 DP 10	M5	4	1	2.5	56
<b>MCHGH-80</b>	1.2	Ø6.6 thru, Ø11 C/B DP 7 P.C.D 70	Ø5 DP 10	M5	4	2	3	70
<b>MCHGH-100</b>	1.2	Ø6.6 thru, Ø11 C/B DP 7 P.C.D 90	Ø5 DP 12	M5	5	2	3	90
<b>MCHGH-125</b>	1.2	Ø9 thru, Ø15 C/B DP 9 P.C.D 112	Ø6 DP 16	Rc1/8	6	2	3.5	112
<b>MCHGH-160</b>	—	Ø9 thru, Ø15 C/B DP 9 P.C.D 146	Ø6 DP 20	Rc1/8	6	2	4	146

### Finger blanks



Code Model	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
<b>MCHGH-64</b>	18	12	3	5	3.5	2	10	—	Ø3.4	4
<b>MCHGH-80</b>	21	13	4	5	4	2.5	12	4.5	Ø4.5	4
<b>MCHGH-100</b>	25	16	5	6	5	3	14	5.5	Ø5.5	5
<b>MCHGH-125</b>	32	20	6	8	6	3	16	5.5	Ø6.6	6
<b>MCHGH-160</b>	40	24	8.5	8	8	3.5	20	5.5	Ø6.6	6



### Order example

#### MCHGF — 64M

MODEL

BODY  
DIAMETER  
50, 64, 80  
100, 125

M: Magnet

\* Magnetic as standard.

### Features

- Positioning of Square work pieces.
- The housing: high-tensile aluminum and special hard-coated.
- The 4-jaw grippers is designed in lower height with long stroke.
- Magnetic as standard.

### Specification

Model	MCHGF				
Acting type	Double acting				
Body diameter(mm)	50	64	80	100	125
Stroke (mm)	8	12	16	20	26
Medium	Air				
Operating pressure range	0.2~0.8 MPa				
Repeatability	±0.05 mm				
Ambient temperature	-10°C~+60°C (No freezing)				
Lubrication (*1)	Not required				
Sensor switch (*2)	RH: Reed switch, RHN: NPN, RHP: PNP				
Weight (kg)	0.24	0.42	0.85	1.51	2.45

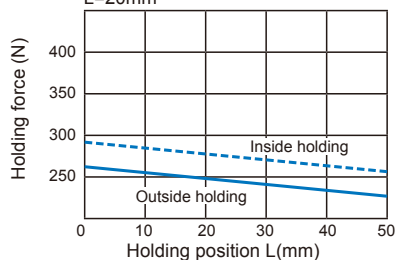
\*1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

\*2. RH specification, please refer to page 5-12.

Gripping force in relation to the holding position "L" at 0.6 MPa

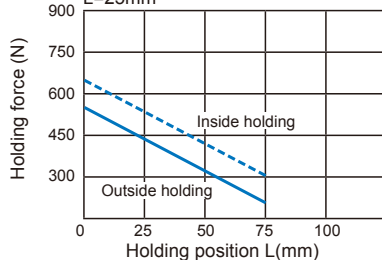
#### MCHGF-50

Work piece weight 1.3kg (recom.)  
L=20mm



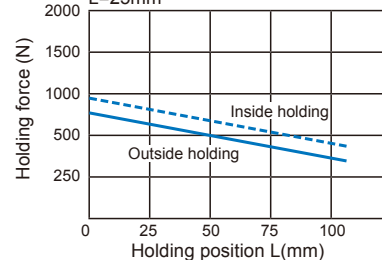
#### MCHGF-64

Work piece weight 3kg (recom.)  
L=25mm



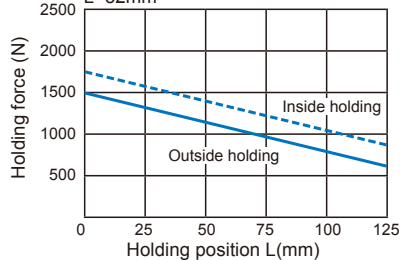
#### MCHGF-80

Work piece weight 5.3kg (recom.)  
L=25mm



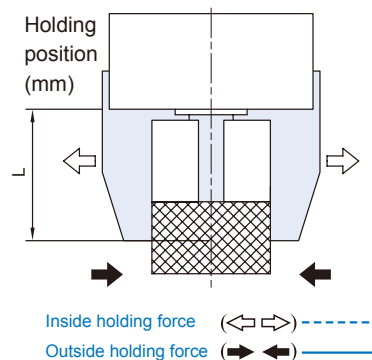
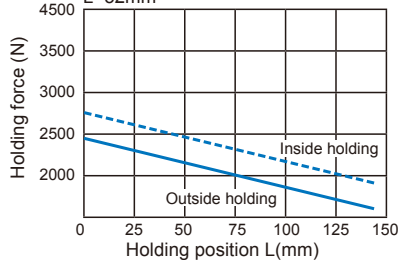
#### MCHGF-100

Work piece weight 9kg (recom.)  
L=32mm



#### MCHGF-125

Work piece weight 15.5kg (recom.)  
L=32mm



- With reference to the holding force, under the condition must be considered.
- Condition: friction coefficient, great acceleration impact is expected during work piece rotate.
- It recommend: select a type of arithmetic holding force that can produce 10 to 20 times for work piece weight.





### Order example

MCHA — 20 — □

MODEL

TUBE I.D.

ACTING TYPE

Blank: Double acting  
S: Single acting (Normally open)

12  
16  
20  
25  
32

### Features

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

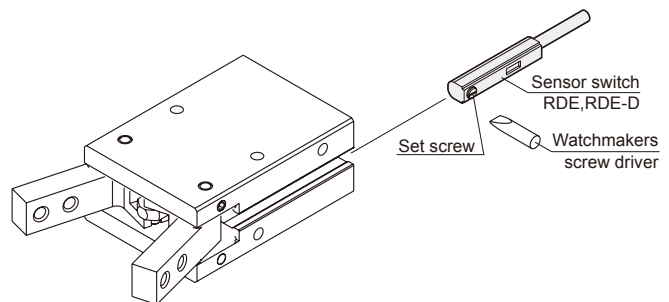
### Specification

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. frequency		180 Cycles/min				
Lubrication	Cylinder	Not required				
	Lever	Grease (Joint parts)				
Max. arm length (L) (*1)		30	40	60	70	85
Clamp / Release angle		-10~+30°				
Sensor switch (*2)		RDE, RDE-D				
Weight (g)		53	103	193	327	525

\*1. L: Arm length (mm)

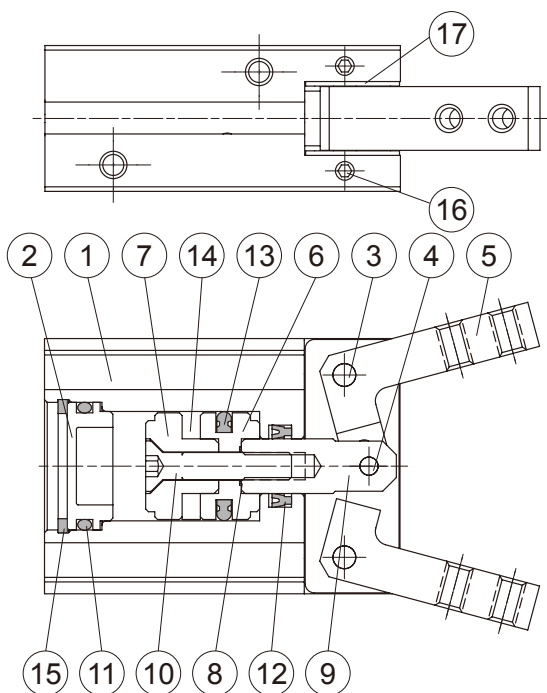
\*2. RDE, RDE-D specification, please refer to page 5-6.

### Installation of sensor switch



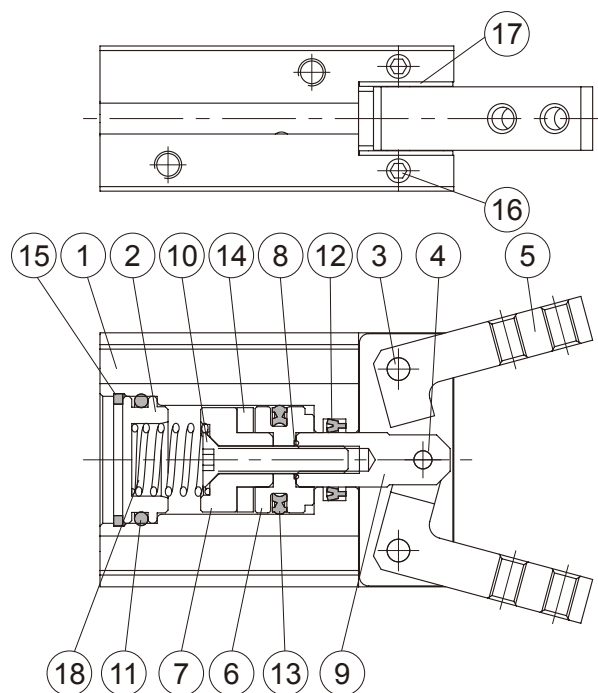


### Double acting



### 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	Washer	Stainless steel	2	
18	Spring	SWB-P	1	

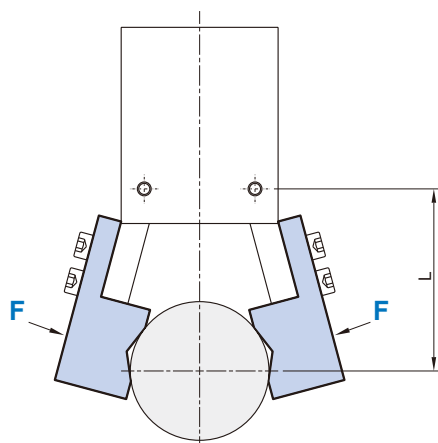
### Order example of repair kits

Tube I.D.	Repair kits
ø12	<b>PS-MCHA-12</b>
ø16	<b>PS-MCHA-16</b>
ø20	<b>PS-MCHA-20</b>
ø25	<b>PS-MCHA-25</b>
ø32	<b>PS-MCHA-32</b>

### 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.

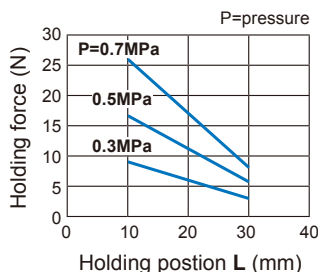


$$1\text{N} = 0.102 \text{ kgf}$$

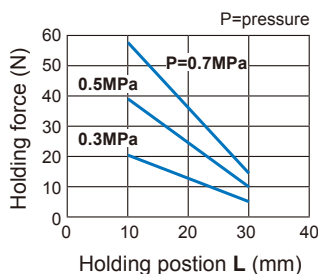
$$1\text{MPa} = 10.2 \text{ kgf/cm}^2$$

### Double acting

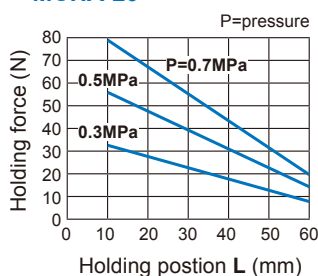
#### MCHA-12



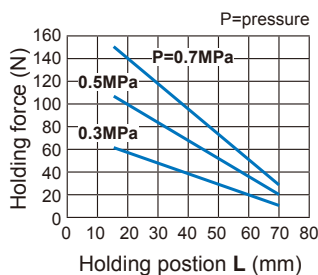
#### MCHA-16



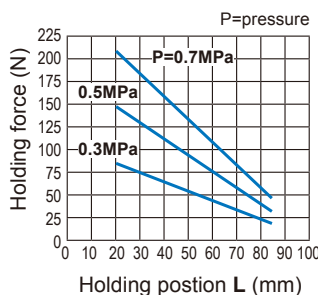
#### MCHA-20



#### MCHA-25

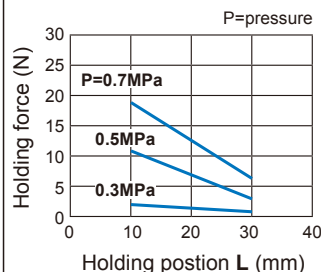


#### MCHA-32

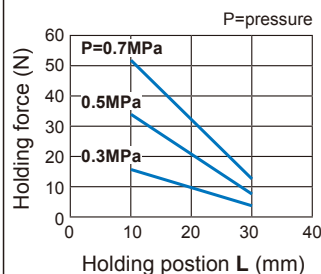


### Single acting (Normally open)

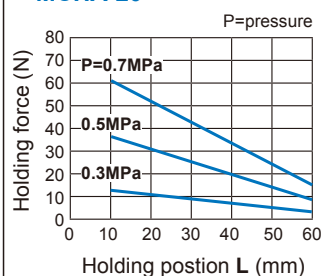
#### MCHA-12



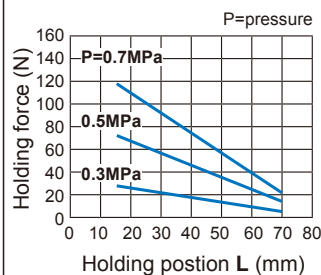
#### MCHA-16



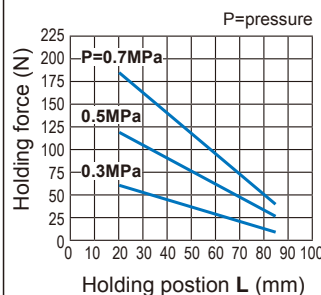
#### MCHA-20

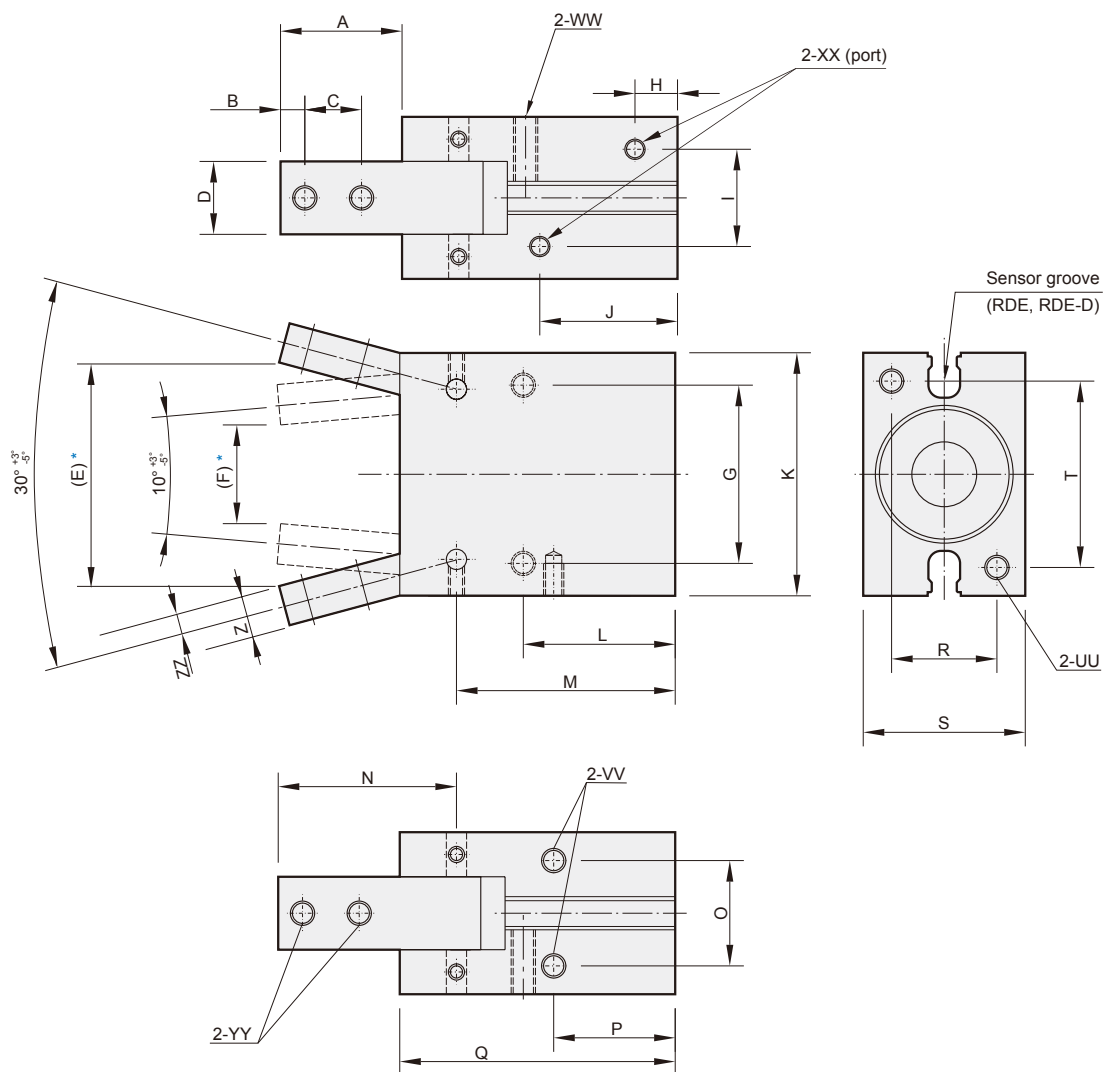


#### MCHA-25



#### MCHA-32

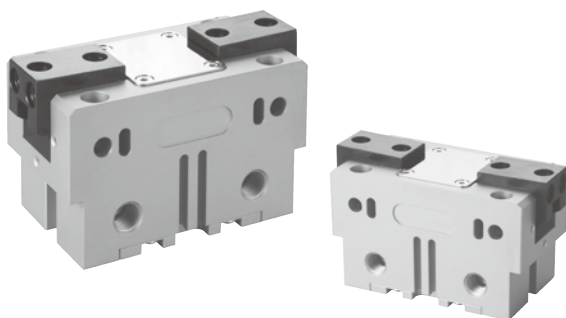




\* Reference value.

Code Tube I.D.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	UU	VV
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	22	M3×5depth	M3×5depth
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	26	M4×7depth	M4×7depth
20	22	4	10	12	40.1	18	30	8.0	13	25	45	25	39.5	32.5	16	19	50	16	26	35	M5×8depth	M5×8depth
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	40	M6×10depth	M6×8depth
32	30	6	14	18	55.1	24	44	10.5	24	34	60	37.5	54	44	26	30	68	26	40	46	M6×10depth	M6×8depth

Code Tube I.D.	WW	XX	YY	Z	ZZ
12	M3×8depth	M3×5 depth	M3	5	2.5
16	M4×11depth	M5×5 depth	M3	6	3
20	M5×12depth	M5×5 depth	M4	7	3.5
25	M6×16depth	M5×5 depth	M5	9	4
32	M6×20depth	M5×5 depth	M6	10	5



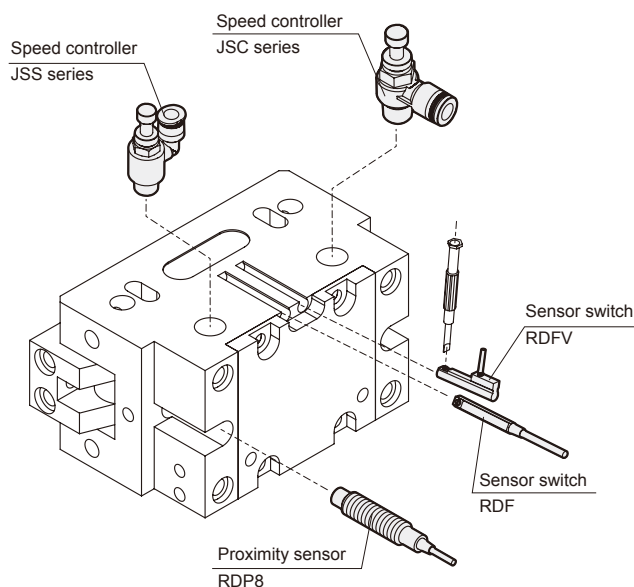
### Order example

**MCHT — 80**

MODEL

BODY  
SPECIFICATION  
80  
100  
125  
160  
200

### Installation of sensor switch & speed controller



### Features

- Slider design with drawbar mechanism enable larger operating angle.
- Compact design, ensure minimum interference while operating.
- Oval piston-driven design ensure maximum clamping 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.

### Specification

Model	MCHT				
Acting type	Double acting				
Body specification	80	100	125	160	200
Operating angle	40°				
Max. permitted finger length(mm)	80	100	100	150	150
Closing force(N)	240	650	1420	2740	4500
Close/Open time(s)	0.04/0.02	0.05/0.1	0.2/0.3	0.2/0.5	0.2/0.5
Medium	Air				
Operating pressure range	0.2~0.8 MPa				
Nominal operating pressure	0.6 MPa				
Compressed air consumption(cm³)	8.1	22	65	166	345
Ambient temperature	+5°C~ +80°C				
Repeatability(±mm)	0.02	0.05			
Lubrication	Not required				
Enclosure classification	IEC60529 IP40				
Sensor switch (*)	RDF, RDFV				
Proximity sensor	RDP8 (2 wire), RNP8 (3 wire)				
Accessories	Centering sleeve				
Weight (kg)	0.4	0.9	1.9	3.5	8.6
Recom. work piece weight (kg)	1.2	3	6.4	12.8	20

\* RDF, RDFV specification, please refer to page 5-10.

\* Each gripper needs at least two speed control valves to control speed.  
\* Speed controller specification, please refer to page 8-15~17 (Vol.1).

# MCHT Capacity 80~200

## 40° ANGULAR GRIPPER



Rotary Actuator

Clamp Cylinder

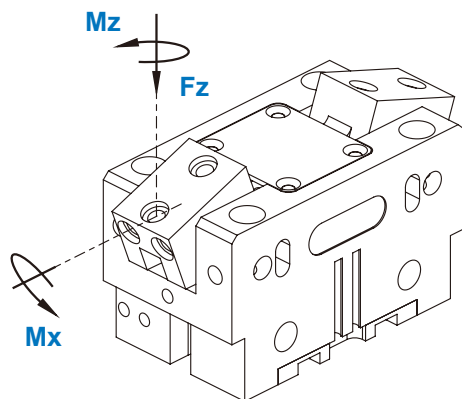
Gripper

Electric Actuator

Auxiliary Equipment

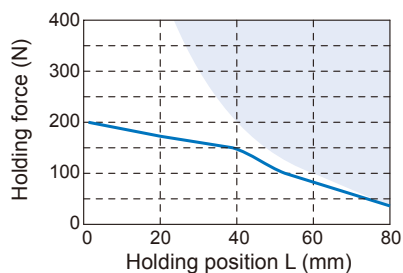
Hydraulic Cylinder

### Holding force

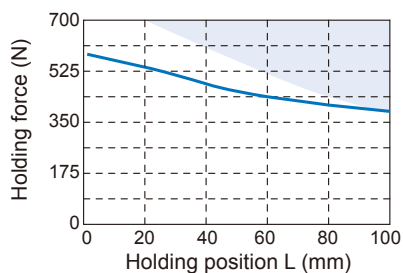


Code Model	Mx max. (Nm)	Mz max. (Nm)	Fz max. (N)
MCHT-80	11	12	180
MCHT-100	13	17	270
MCHT-125	16	28	280
MCHT-160	36	57	450
MCHT-200	36	57	450

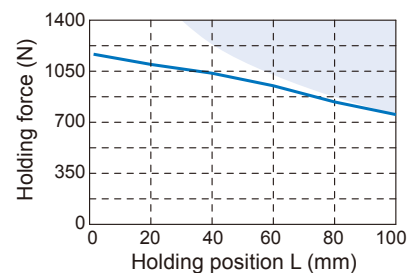
MCHT-80



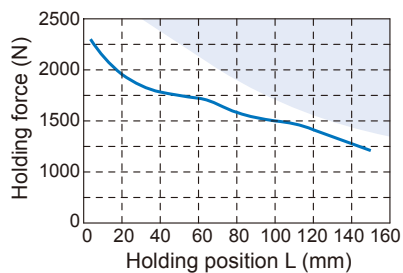
MCHT-100



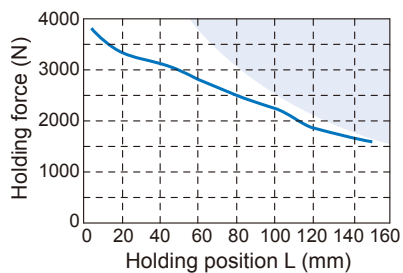
MCHT-125



MCHT-160



MCHT-200



\* Blue area: Less durable performance can be expected.

### Internal structure & Movement description

Compressed air will push or press the oval piston. With the linkage mechanism between base jaw and drawbar, the movement of piston can initiate the action of the two base jaws simultaneously.

#### Base jaw

Jaws connected to work piece

#### Gripper rivet

The connected interface of piston and gripper mechanism.

#### Material

Anodized high rigid aluminum alloy to reduce weight.

#### Drawbar

The connected interface for high power transmission.

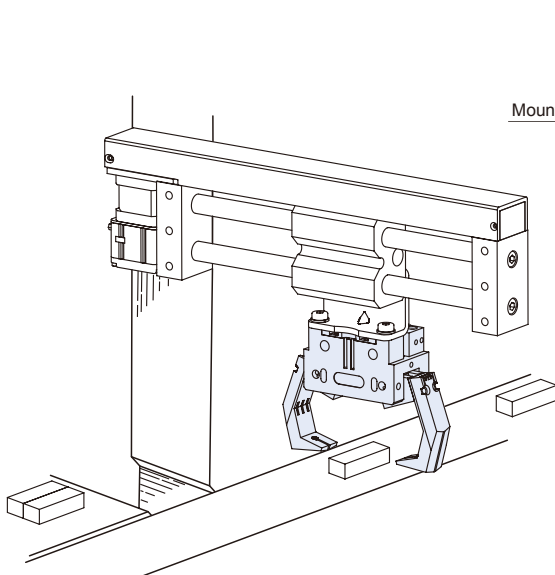
#### Large oval piston

Generate larger structural strength.

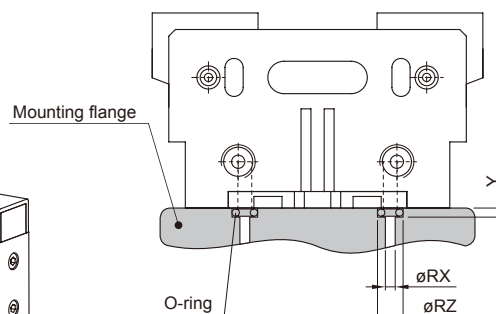
#### Sensor systems

Sensor switch or proximity sensor are available

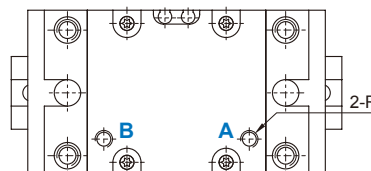
### Application examples

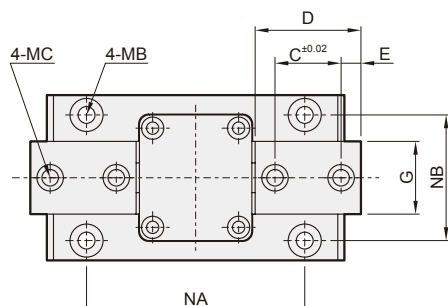


### Hose-free direct connection

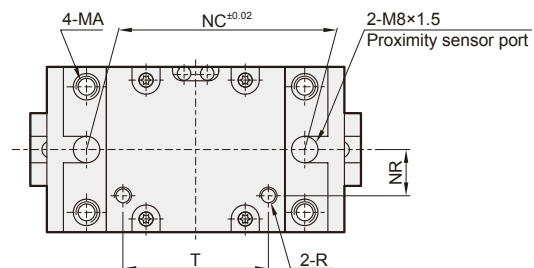
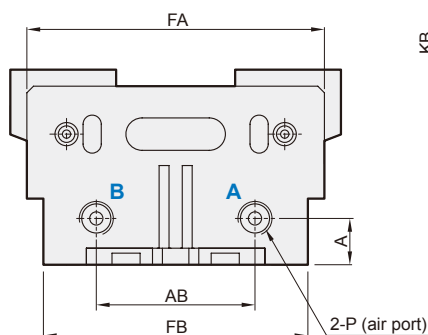


Code Model	R	RX	RZ	Y
80	M5×0.8	5	8	1.2
100	Rc1/8	8.2	12.1	1.8
125	Rc1/8	8.2	12.1	1.8
160	Rc1/8	8.2	12.1	1.8
200	Rc1/4	10.9	14.8	1.8

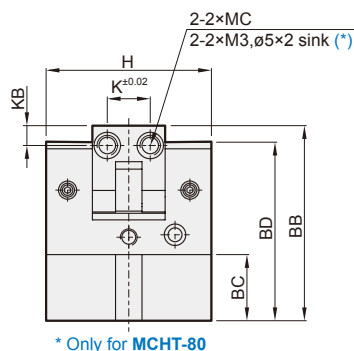
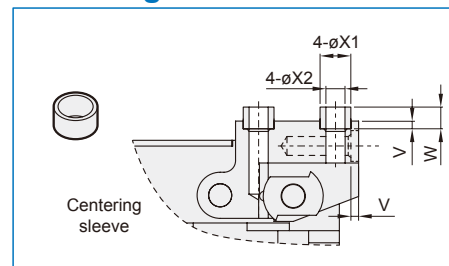




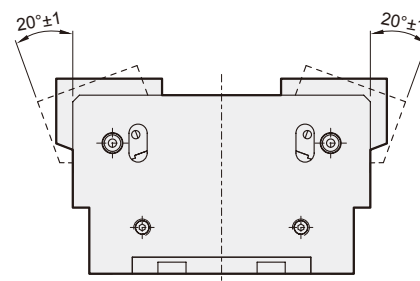
A hole: Gripper open  
B hole: Gripper close



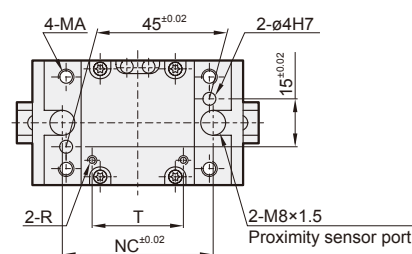
### Centering sleeve



\* Only for MCHT-80

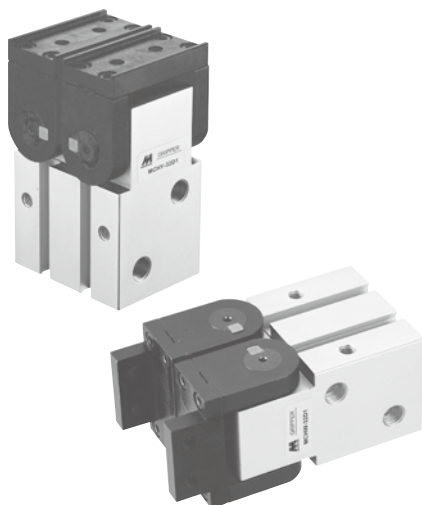


### MCHT-80



Code Model	A	AB	BB	BC	BD	C	D	E	FA	FB	G	H	K	KB	MA	MB
MCHT-80	7	30	47	18	42	14	24	5	60	52	16	36	10	5	M5×0.8	ø4.3 thru, ø8×4.2 sink
MCHT-100	14	48	59	23	54	20	32	6	90	80	22	50	13	6	M6×1.0, ø8H7 sink	ø5.1 thru, ø9.1×5.4 sink
MCHT-125	18	74	75	31.5	70	22	40	9	130	120	28	72	15	9	M8×1.25, ø10H7 sink	ø6.6 thru, ø11×50 sink
MCHT-160	22	98	89.5	40	85	30	50	10	160	150	34	90	19	10	M10×1.5, ø12H7 sink	ø8.5 thru, ø14×66 sink
MCHT-200	32.5	136	120	57	115	46	70	12	220	210	40	120	23	12	M16×2.0, ø20f7×3 sink	ø14 thru, ø20×67.5 sink

Code Model	MC	NA	NB	NC	NR	P	R	T	V	W	X1	X2
MCHT-80	M4, ø6×2 sink	45	27	46	11.5	Rc1/8	M5×0.8	31	2	4	6	4
MCHT-100	M6, ø8×2 sink	66	38	66	12	Rc1/8	Rc1/8	44	2	4	8	6
MCHT-125	M6, ø10×2 sink	100	56	100	20	Rc1/8	Rc1/8	70	2	4	10	6
MCHT-160	M8, ø12×2 sink	130	70	130	24.5	Rc1/8	Rc1/8	94	2	5	12	8
MCHT-200	M10, ø14×2.5 sink	180	96	180	27	Rc1/4	Rc1/4	128	2.5	4.9	14	10



### Order example

**MCHW – 25 D 1**

MODEL

TUBE I.D.

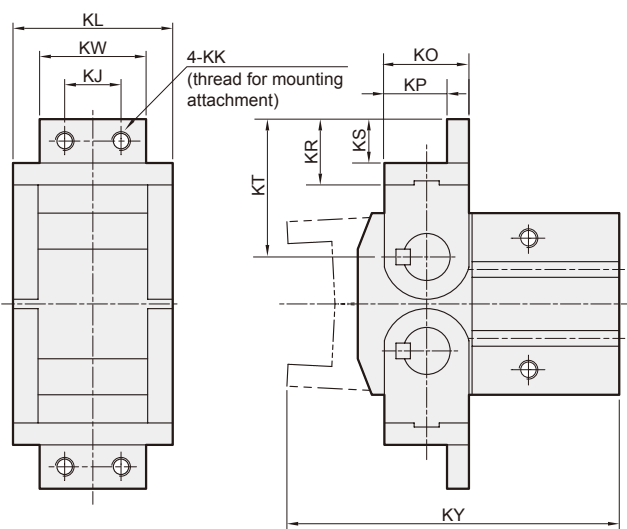
FINGER OPTION

20  
25  
32  
40  
50

D: Double acting

	Flat finger (standard)
1	Right angle finger tap mounting.

### Right angle finger



### Features

- Extremely compact design saves operating space.
- Synchronisation of gripping fingers.
- Dust seals protect all internal parts from ingress of dirt.
- Proximity and reed switches can be used with this unit.

### Specification

Model		MCHW				
Acting Type		Double acting				
Tube I.D. (mm)		20	25	32	40	50
Medium		Air				
Operating pressure range		0.2~0.7 MPa				
Ambient temperature		-10~+60℃ (No freezing)				
Repeatability		±0.2 mm				
Max. operating frequency (c.p.m)		60		30		
Lubrication (*1)		Not required				
Effective force (Nm) at (0.5 MPa)		0.3	0.73	1.61	3.7	8.27
Operating angle (both sides)	Opened side	180°				
	Closed side	-5°	-6°	-5°	-5°	-4°
Sensor switch (*2)		RK: Reed switch, RKN: NPN, RKP: PNP				
Weight (kg)		0.30	0.53	1	2.2	5.15

\*1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

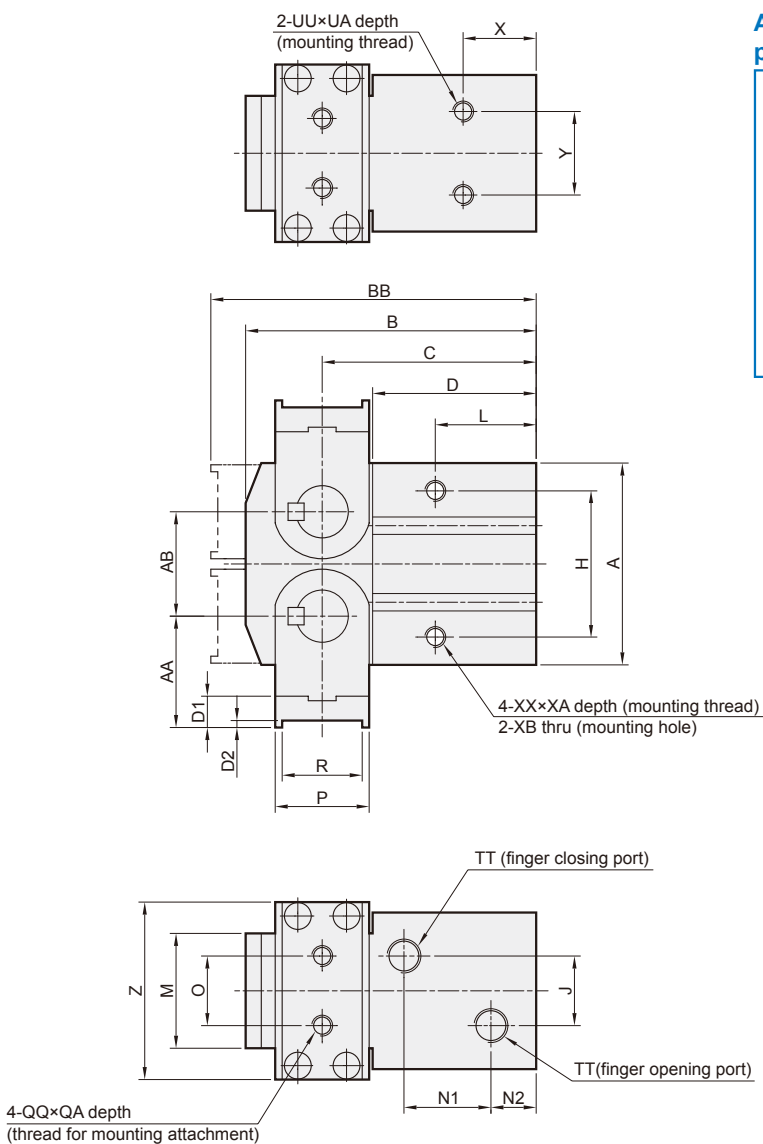
\*2. RK specification, please refer to page 5-13.

Code Tube I.D.	KA	KJ	KK	KL	KO	KP	KR	KS
20	5	14	M4×0.7	41	16	11	15	10
25	6	16	M5×0.8	45	21	15	18	12
32	7	18	M6×1	51	27	20	21	14
40	10	24	M8×1.25	67	36	26	30	21
50	12	30	M10×1.5	85	52	39	37	24

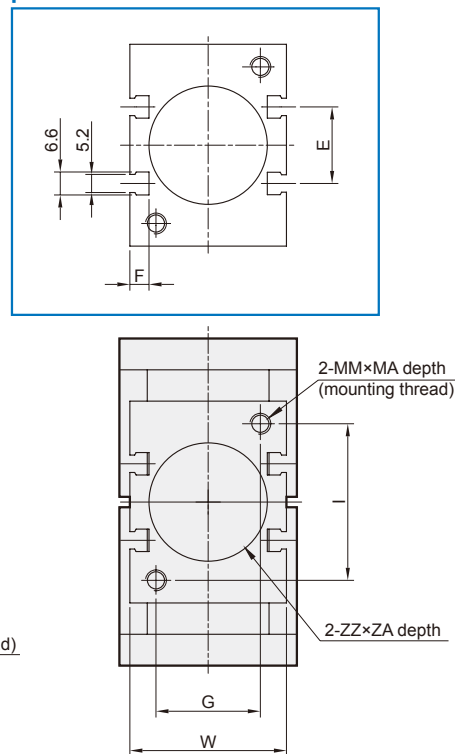
Code Tube I.D.	KT	KW	KY
20	31	28	76
25	37	30	88
32	44	34	105.5
40	60	44	135.5
50	78	58	175



### Flat finger (standard)



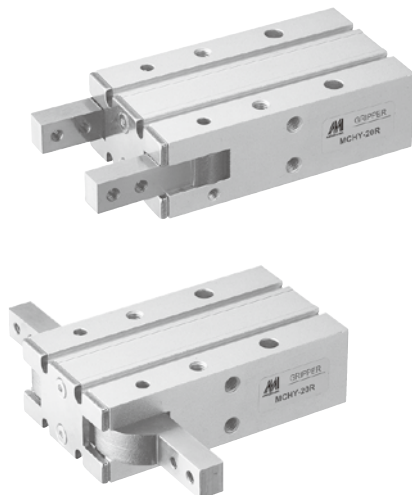
### Auto switch mounting groove position



Code Tube I.D.	A	AA	AB	B	BB	C	D	D1	D2	E	F	G	H	I	J	L	M	MA	MM	N1	N2	O	P
20	36	23	18	60	68	45	35	7	2	8	6	26	27	26	12	23	30	10	M5×0.8	20	9	18	16
25	45	27	24	69	78	51	40	8	2	9	5.5	30	34	30	16	27	30.3	12	M6×1	23	10	20	21
32	58	32	30	83.5	93.5	61.5	47	9	2	22	5.5	30	42	45	20	29	32.9	12	M6×1	25	13	20	27
40	80	42	40	104.5	117.5	75.5	56.5	12	3	20	6	36	54	60	20	37.5	45	15	M8×1.25	33.5	14	28	36
50	112	58	56	136	154	96	69	17	4	26	6	40	70	80	30	48	58.6	20	M10×1.5	22	16	38	52

Code Tube I.D.	R	QA	QQ	TT	UA	UU	W	X	XA	XB	XX	Y	Z	ZA	ZZ
20	12 <sup>+0.2</sup> <sub>+0.1</sub>	5	M4×0.7	M5×0.8	7	M5×0.8	36	17	10	4.2	M5×0.8	20	41	3	ø21H9 <sup>+0.052</sup> <sub>+0</sub>
25	17 <sup>+0.2</sup> <sub>+0.1</sub>	6	M5×0.8	M5×0.8	10	M6×1	40	20	12	5.1	M6×1	24	45	3	ø26H9 <sup>+0.052</sup> <sub>+0</sub>
32	23 <sup>+0.2</sup> <sub>+0.1</sub>	7	M6×1	Rc1/8	10	M6×1	45	21	12	5.1	M6×1	24	51	4	ø34H9 <sup>+0.062</sup> <sub>+0</sub>
40	30 <sup>+0.3</sup> <sub>+0.1</sub>	9	M8×1.25	Rc1/8	15	M8×1.25	56	27.5	16	6.8	M8×1.25	30	67	4	ø42H9 <sup>+0.062</sup> <sub>+0</sub>
50	44 <sup>+0.4</sup> <sub>+0.1</sub>	13	M10×1.5	Rc1/4	20	M10×1.5	66	36	20	8.5	M10×1.5	40	85	5	ø52H9 <sup>+0.074</sup> <sub>+0</sub>



### Features

- Compact design and lightweight construction.
- High gripping forces achieved via internal cams.
- Reference points on gripping fingers are standard.
- Sensors can be mounted in any one of four positions.
- Dust seals protect all internal parts from ingress of dirt.

### 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			
Lubrication (*1)	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 (*2)	RT: Reed switch, RTN: NPN, RTP: PNP			
Weight (g)	80	150	320	600

\*1. Maintenance: Re-Lubrication after appr. 1.5 million cycles recommended.

\*2. RT specification, please refer to page 5-14.

### Order example

**MCHY — 16 D 1**

MODEL

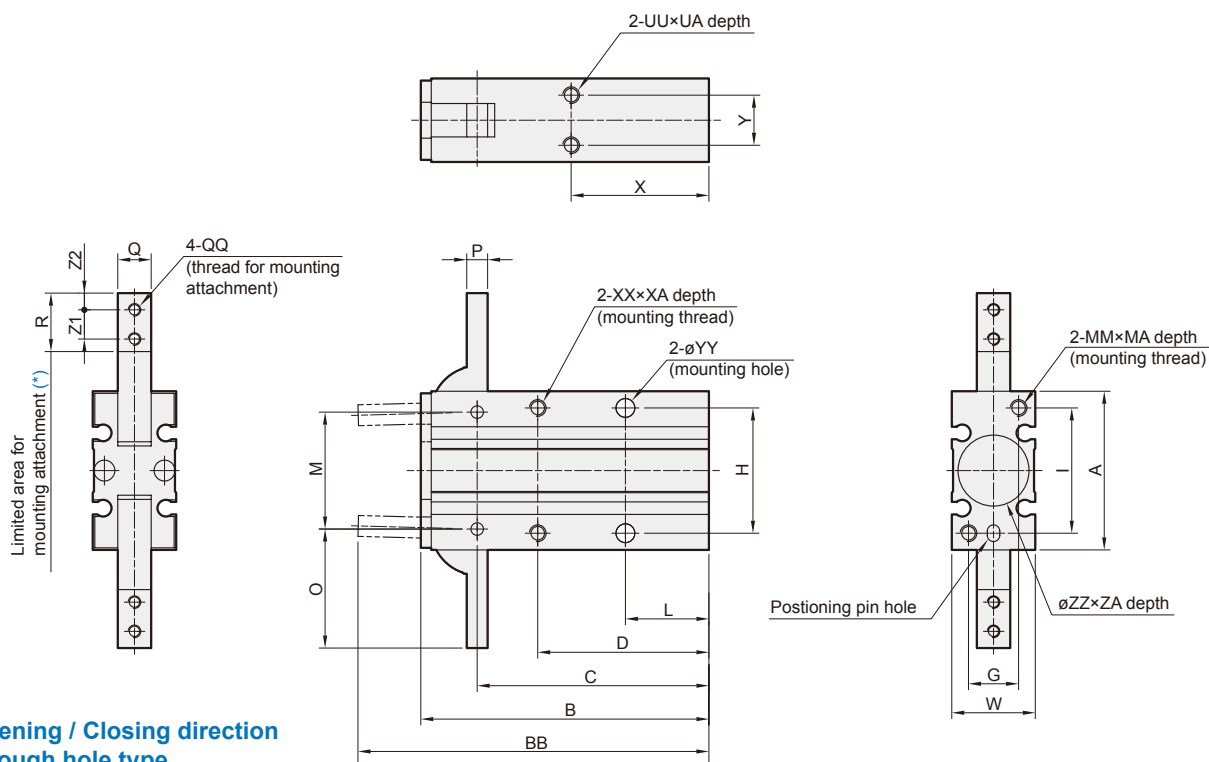
TUBE I.D.

D: Double acting

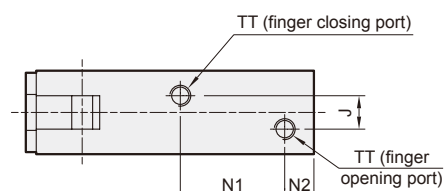
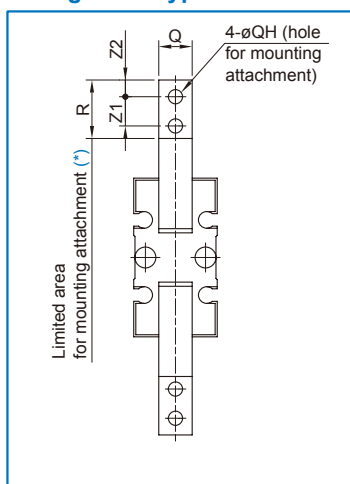
FINGER OPTION

10  
16  
20  
25

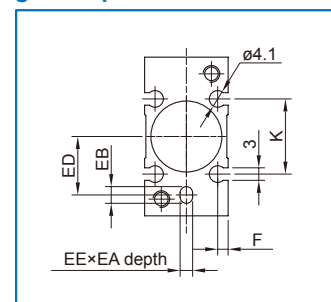
—	Standard tap mounting
1	Opening / closing direction through hole.



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 <sup>+0.025</sup> <sub>-0</sub>	3	4	9	2	9	24	24	3	13	18	22	6	M3×0.5	23	7	23.5	4	6 <sup>-0.005</sup> <sub>-0.025</sub>	3.4	M3×0.5
16	38	69	84	55.5	41	3H9 <sup>+0.025</sup> <sub>-0</sub>	3	4	15	2.5	12	30	30	8	18	20	28	8	M4×0.7	25	7	28.5	5	8 <sup>-0.005</sup> <sub>-0.025</sub>	3.4	M3×0.5
20	48	86	106	69	50	4H9 <sup>+0.030</sup> <sub>-0</sub>	4	5	19	3	16	36	38	12	20	25	36	10	M5×0.8	32	8	37	8	10 <sup>-0.005</sup> <sub>-0.025</sub>	4.5	M4×0.7
25	58	107	131	86	60	4H9 <sup>+0.030</sup> <sub>-0</sub>	4	5	23	3	18	42	46	14	24	30	45	12	M6×1	42	8	45	10	12 <sup>-0.005</sup> <sub>-0.025</sub>	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 <sup>+0.043</sup> <sub>-0</sub>	6	3
16	14	M5×0.8	5	M4×0.7	20	33	8	M4×0.7	12	4.5	1.5	17H9 <sup>+0.043</sup> <sub>-0</sub>	7	4
20	18	M5×0.8	8	M5×0.8	26	42	10	M5×0.8	14	5.5	1.5	21H9 <sup>+0.052</sup> <sub>-0</sub>	9	5
25	22.5	M5×0.8	10	M6×1	30	50	12	M6×1	16	6.6	1.5	26H9 <sup>+0.052</sup> <sub>-0</sub>	12	6

