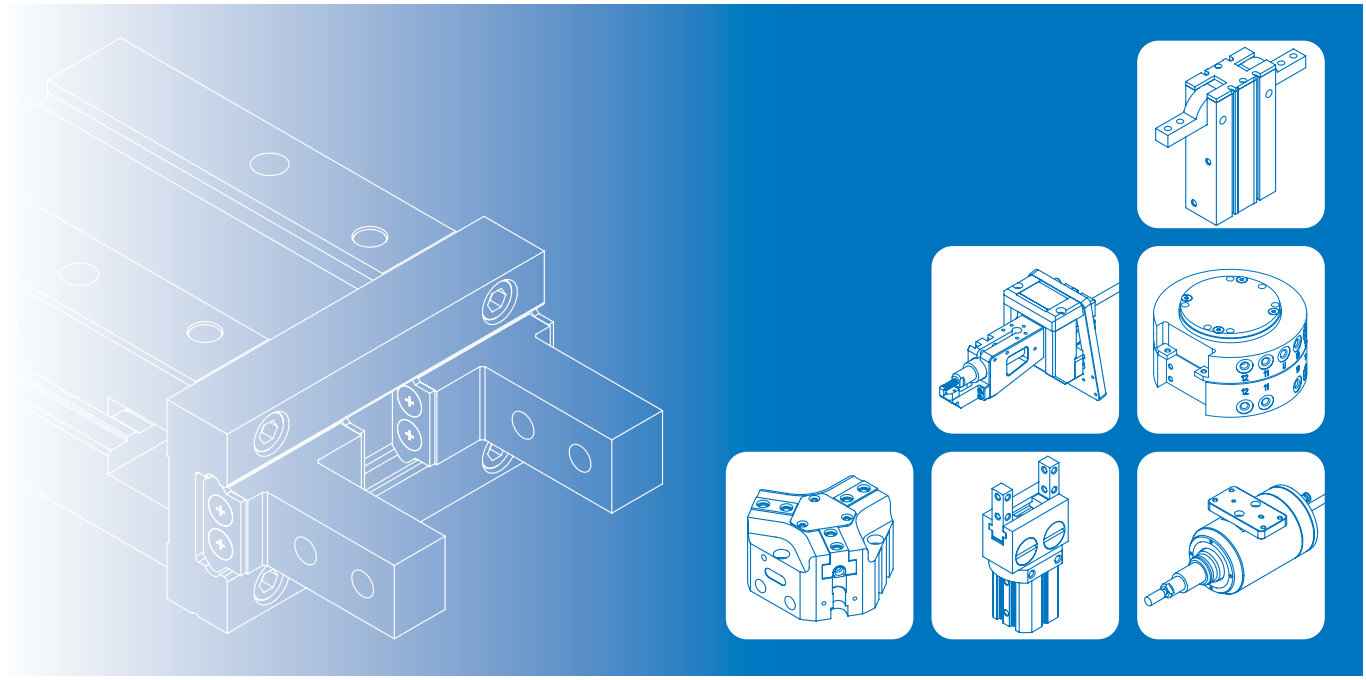
END OF ARM TOOLING (EOAT)



F Fast delivery

Our goal is to achieve 3-day lead time, if there is stock of component set. For more information, please go to our MINDMAN website (www.mindman.com.tw) and click on the "Component Set Inventory" button.

Gripper selection

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

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

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

the conditions under which the workpiece will not drop are,

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

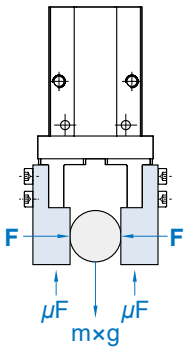
Therefore,

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

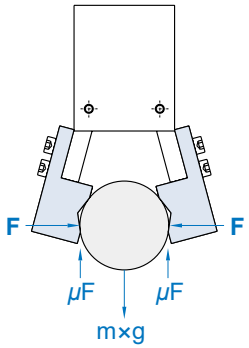
With "a" representing the extra margin, "F" is determined by the following formula:

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

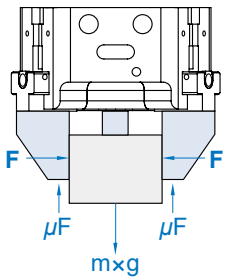
Parallel gripper (2-Finger)



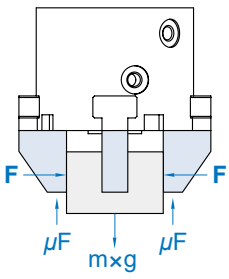
Angular gripper



Parallel gripper (3-Finger)



Parallel gripper (4-Finger)

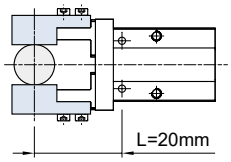


Model selection suggestions

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

Model selection example

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

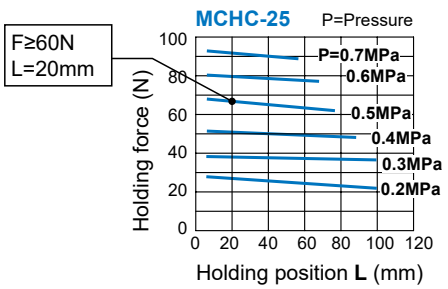


1. Based on the above formula, the required gripping force can be derived:

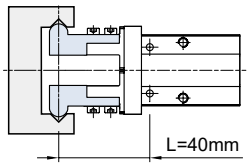
$$F \geq \frac{0.3 \times 9.8}{2 \times 0.1} \times 4$$

$$\geq 60(N)$$

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



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

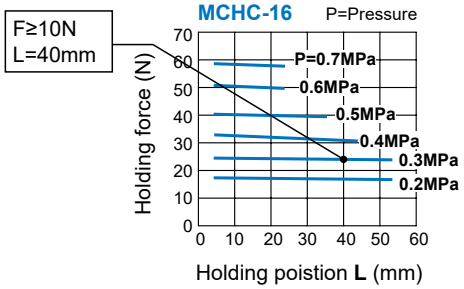


1. Based on the above formula, the required gripping force can be derived:

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

$$\geq 10(N)$$

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



MCHB series

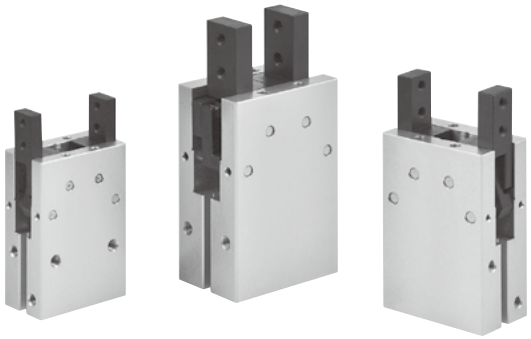
PARALLEL GRIPPER (2-Finger)

mindman

Model selection

Technical data

Caution for safety
(Read before installing)



Features

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

Specification

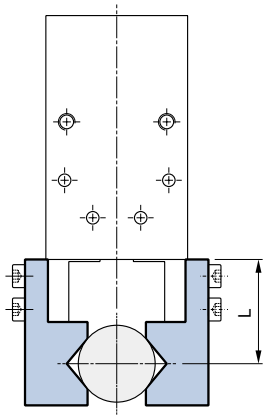
Model		MCHB				
Acting Type		Double / Single acting				
Tube I.D. (mm)		12	16	20	25	32
Port size		M3×0.5	M5×0.8			
Medium		Air				
Operating pressure range	Double acting	0.15~0.7 MPa				
	Single acting	0.2~0.7 MPa				
Ambient temperature		-5~+60°C (No freezing)				
Max. operating frequency (c.p.m)		180				
Lubrication	Cylinder	Not required				
	Lever	Grease (Actuation at)				
Volume (cm^3)	Finger open, Double acting	0.4	0.8	1.7	3.2	5.9
	Finger open, Single acting	0.5	0.9	1.8	3.8	6.5
	Finger close	0.8	1.3	2.7	4.5	9.5
Max. arm length (L) (mm)		30	40	60	70	85
Lever open / close stroke		6	8	12	14	16
Sensor switch		RDE, RDE-D: Non-contact				
Weight (g)	Double acting	66	144	255	419	719
	Single acting	66.5	145	257	422	722

Order example

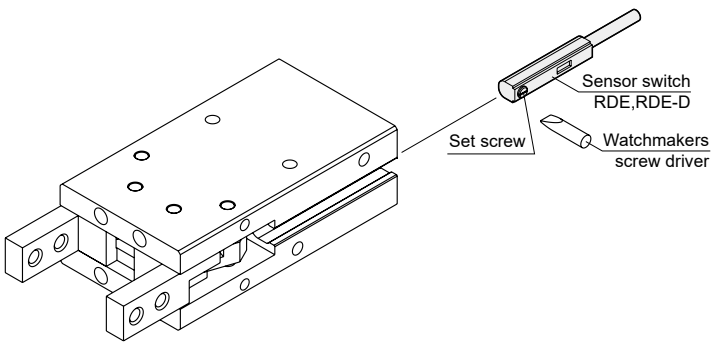
MCHB — 16 — S

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

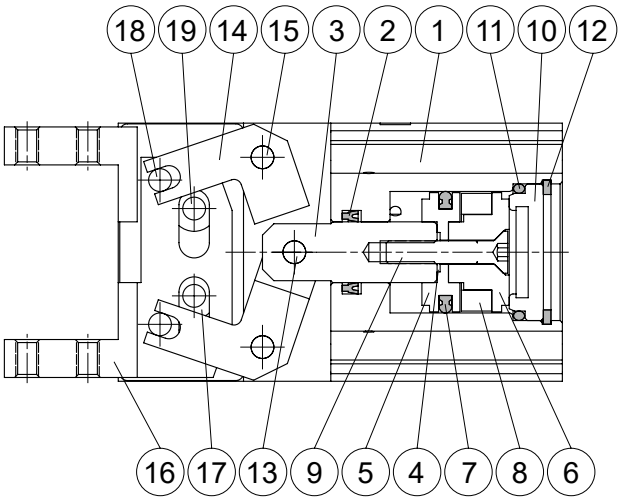
Length of gripping point



Installation of sensor switch

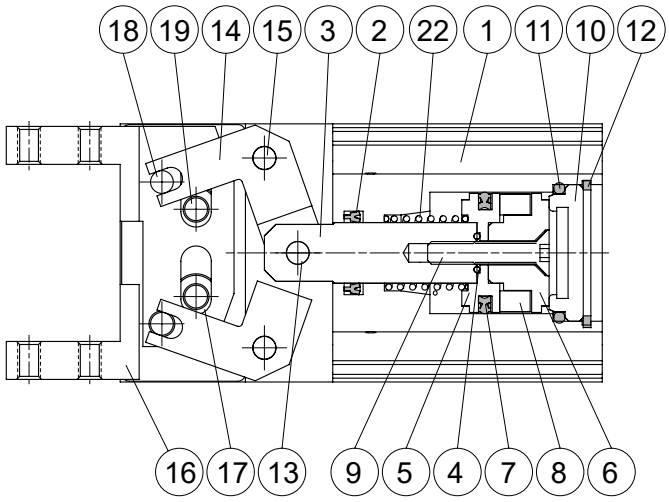


Double acting



Single acting

Normally open



Material

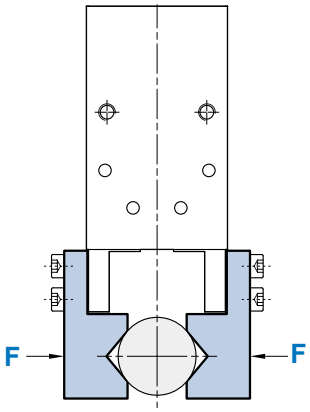
No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy	1	
2	Rod packing	NBR	1	●
3	Piston rod	Stainless steel	1	
4	Gasket	NBR	1	●
5	Piston-R	Aluminum alloy	1	
6	Piston-H	Aluminum alloy	1	
7	Piston packing	NBR	1	●
8	Magnet ring	Magnet material	1	
9	Screw	Stainless steel	1	
10	Head cover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

Order example of repair kits

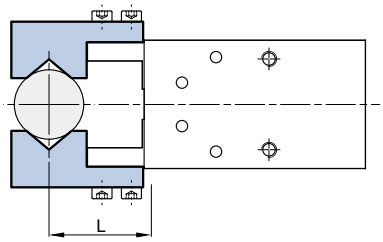
Tube I.D.	Repair kits
ø12	**PS-MCHB-12**
ø16	**PS-MCHB-16**
ø20	**PS-MCHB-20**
ø25	**PS-MCHB-25**
ø32	**PS-MCHB-32**

Effective gripping force (Double acting)

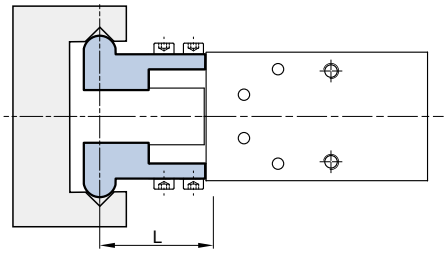
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



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

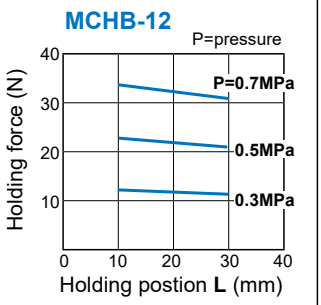


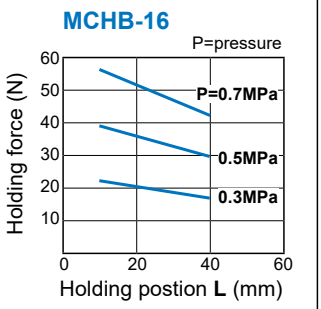
External grip

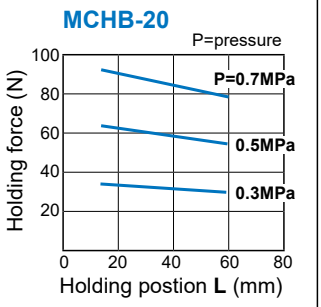


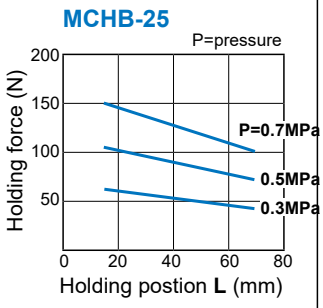
Internal grip

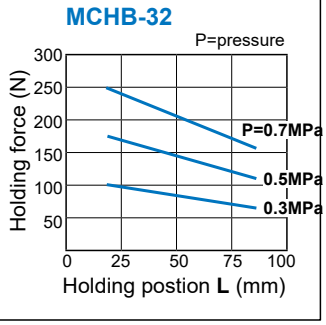
External gripping force
Double acting



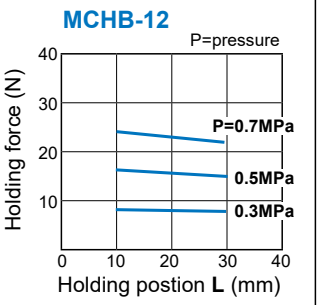


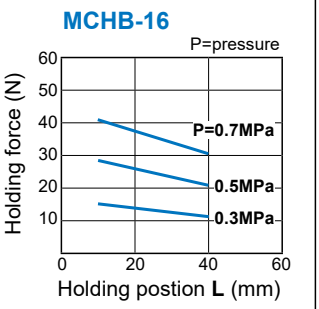


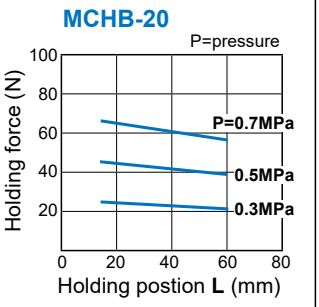


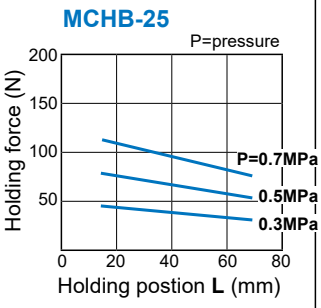


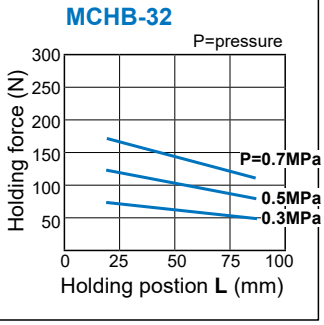
Internal gripping force
Double acting







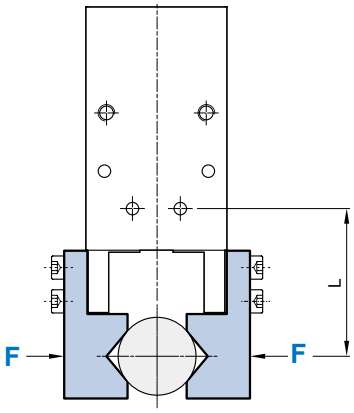




Effective gripping force (Single acting)

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

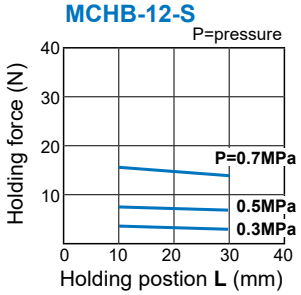
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



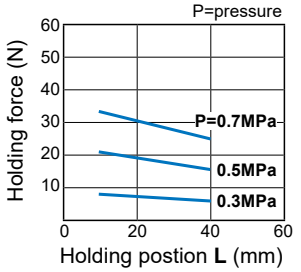
External grip
(Single acting / Normally open)

External gripping force
Single acting / N.O.

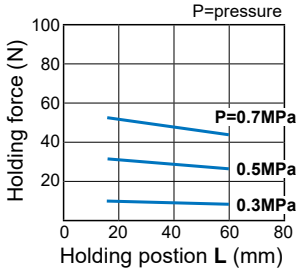
MCHB-12-S



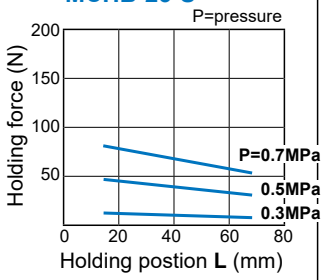
MCHB-16-S



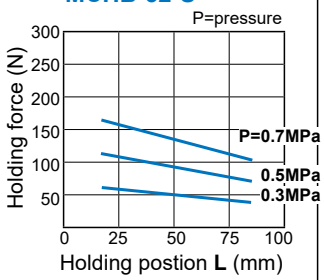
MCHB-20-S

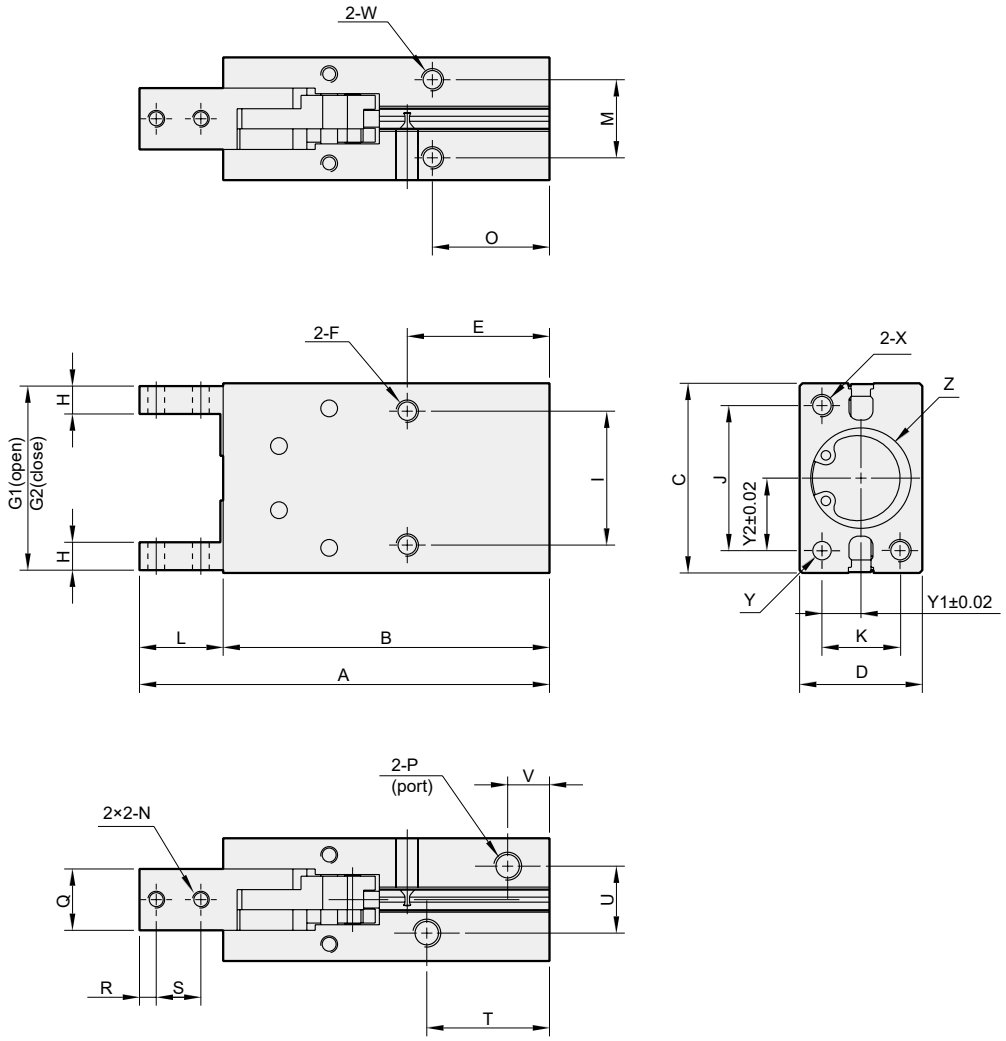


MCHB-25-S



MCHB-32-S





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

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

* Values in ( ) are for single acting.

MCHC series

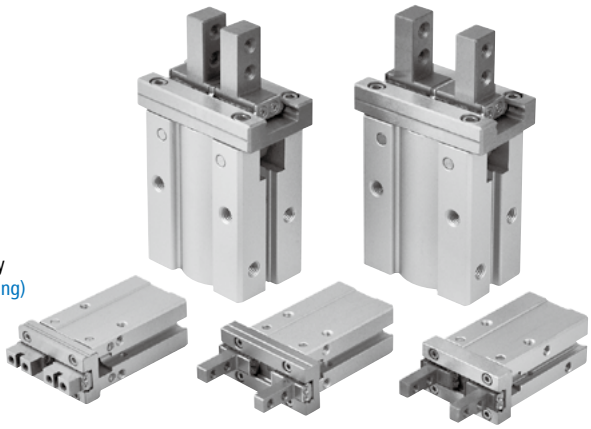
PARALLEL GRIPPER (2-Finger)

mindman

Model selection

Technical data

Caution for safety
(Read before installing)



Features

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

Specification

Model		MCHC						
Acting type		Double acting / Single acting						
Tube I.D. (mm)		6	10	16	20	25	32	40
Opening / Closing stroke (mm) (*)		4	4(8)	6(12)	10(18)	14(22)	22	30
Port size		M3×0.5		M5×0.8				
Medium		Air						
Operating pressure range (MPa)	Double acting	0.15~0.7	0.2~0.7	0.1~0.7				
	Single acting	–	0.35~0.7	0.25~0.7			–	
Ambient temperature		-10~+60°C (No freezing)						
Repeatability (mm)		± 0.01					± 0.02	
Max. operating frequency (c.p.m)		180 (120)					60	
Lubricator		Not required						
Sensor switch (*2)	ø6,32,40	RDC(V), RQC(V), RDFE(V)						
	ø10~32	RDE, RDE-D: Non-contact						
Weight (g)	Double acting Standard	27	55	124	250	461	732	1298
	Double acting Long stroke	–	56	125	252	463	–	–
	Double acting Flat type	–	53	124	244	450	760	1344
	Single acting	–	70	145	270	490	–	–

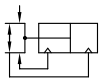
* ( ) value for long stroke.

Order example

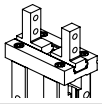
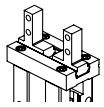
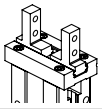
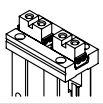
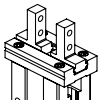
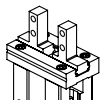
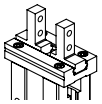
MCHC □ — 20 — □ N

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

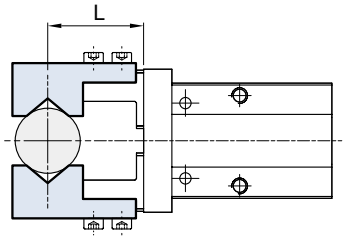
*1. STYLE

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

*2. TYPE

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

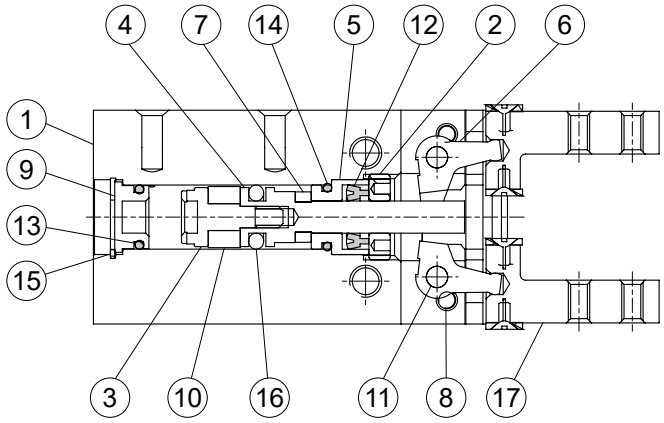
Gripping force



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

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

Double acting



Material

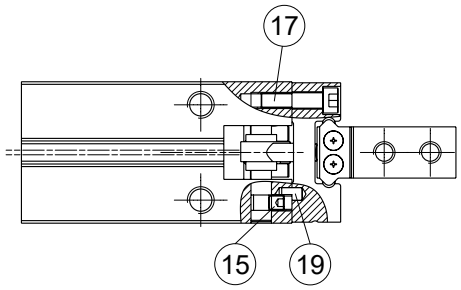
No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy	1	
2	Front cap	Stainless steel	1	
3	Magnet holder	Stainless steel	1	
4	Piston rod	Stainless steel	1	
5	Rod cover	Stainless steel	1	
6	Lever	Stainless steel	2	
7	Cushion pad	PU	1	●
8	Screw	Stainless steel	4	
9	End cover	Aluminum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

* Bearing steel balls as standard.

Order example of repair kits

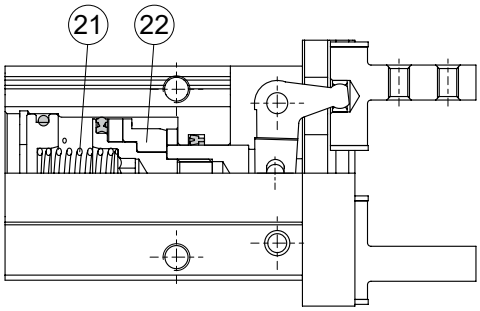
Tube I.D.	Repair kits
ø6	**PS-MCHC-6**

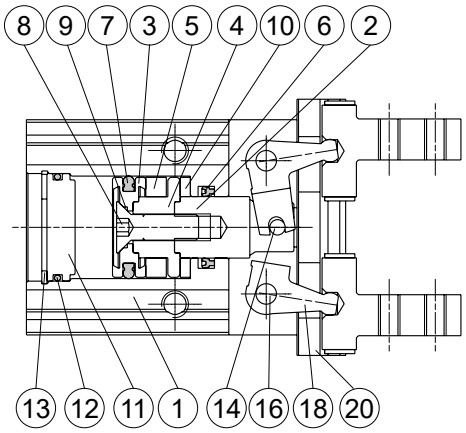
Double acting



Single acting

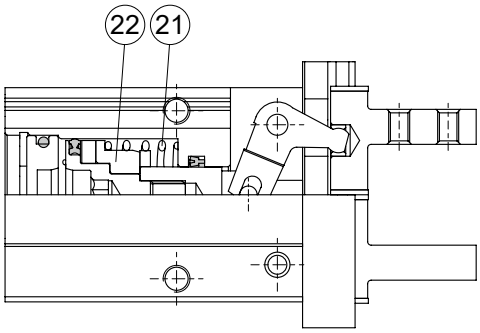
Normally open





Single acting

Normally closed



Material

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

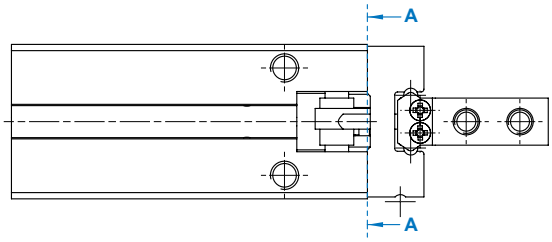
No.	Tube I.D. / Part name	10	16	20	25	32	40	Q'y	Repair kits (inclusion) Double	Single
19	Pin	Bearing steel						2		
20	Gripping set	Stainless steel *4						1		
21	Spring	Stainless steel						1		
22	Spring holder	Stainless steel						1		

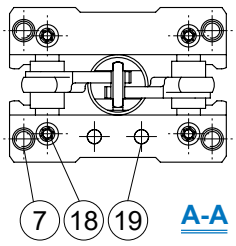
*1. Single acting: Stainless steel
*2. Stainless steel
*3. Carbon steel
*4. Bearing steel balls as standard.

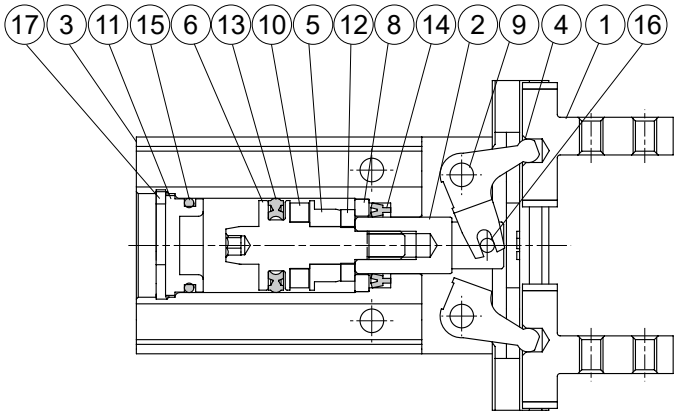
Order example of repair kits

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

Double acting







Material

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

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

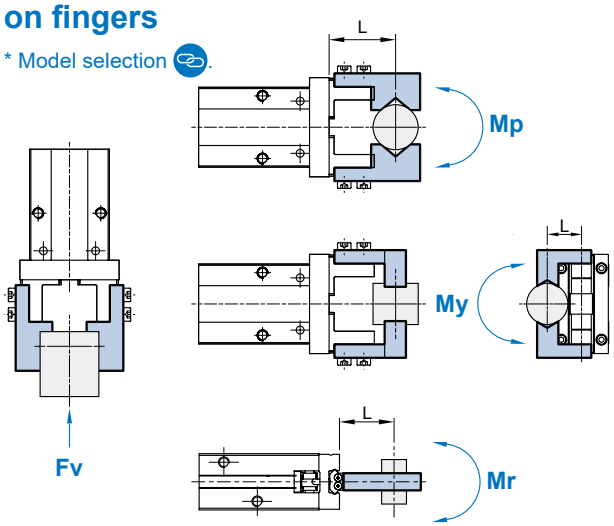
Order example of repair kits

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

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

Confirmation of external force on fingers

* Model selection .



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

Tube I.D. (mm)	Allowable vertical load Fv (N)	Maximum allowable moment		
		Pitch moment Mp (N-m)	Yaw moment My (N-m)	Roll moment Mr (N-m)
6	10	0.04	0.04	0.08
10	58	0.26	0.26	0.53
16	98	0.68	0.68	1.36
20	147	1.32	1.32	2.65
25	255	1.94	1.94	3.88
32	343	3	3	6
40	490	4.5	4.5	9

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

Allowable load calculation

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

Example

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

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

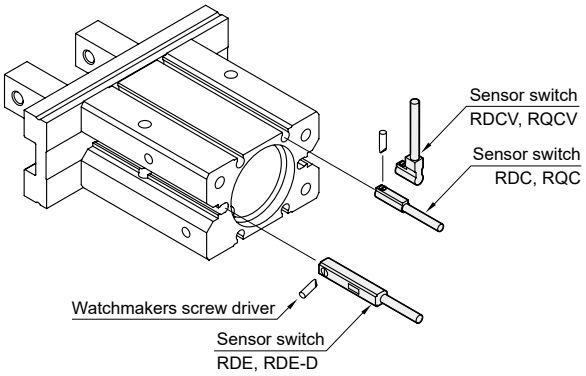
$$= 27.2\ (N)$$

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

Model selection suggestions

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

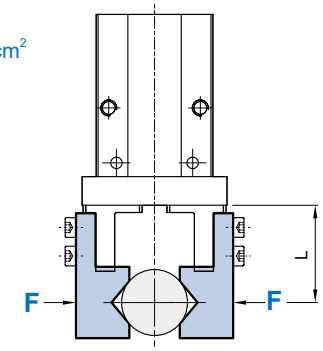
Installation of sensor switch



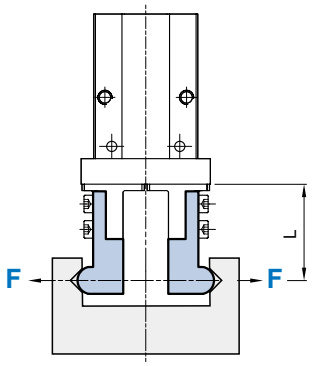
Effective gripping force (Double acting)

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

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

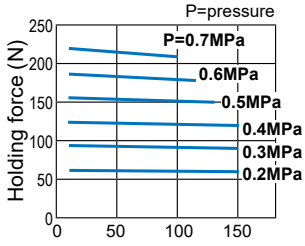


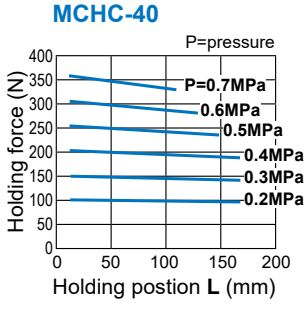
External grip



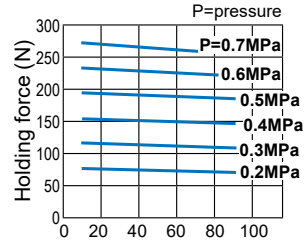
Internal grip

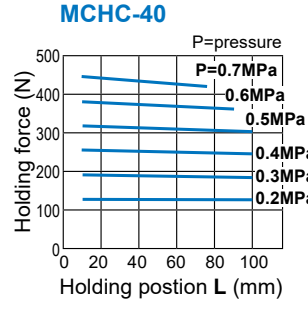
External gripping force



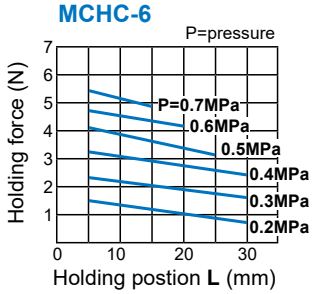


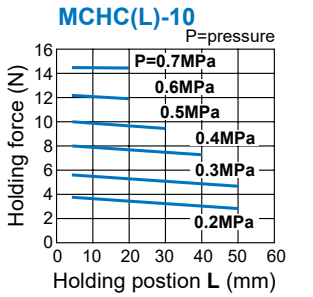
Internal gripping force

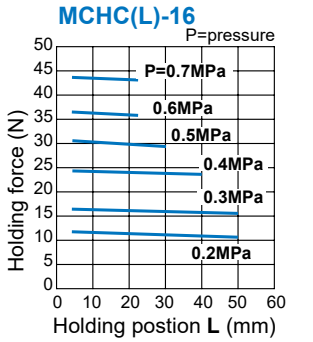


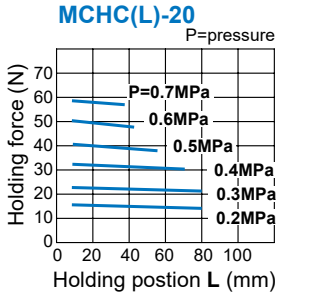


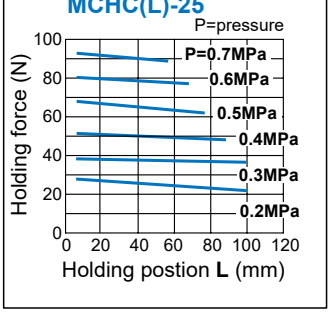
External gripping force



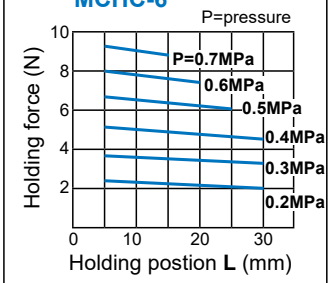


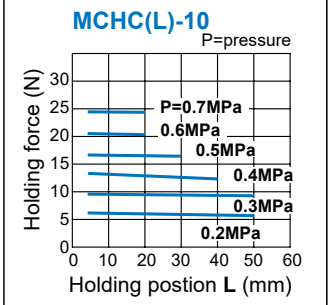


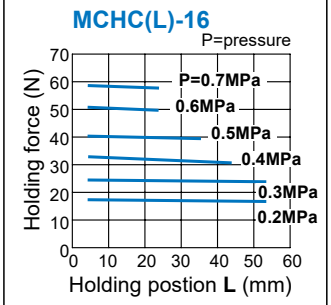


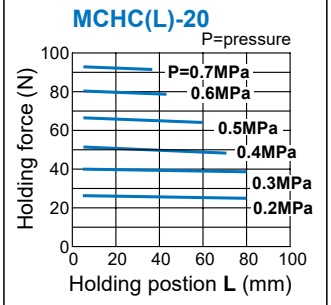


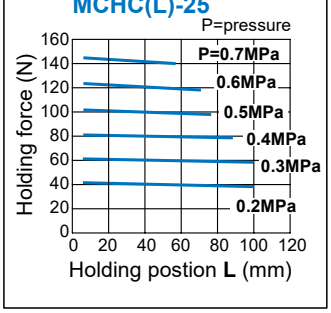
Internal gripping force







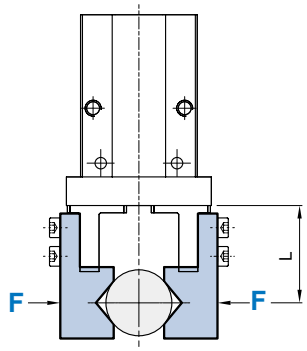




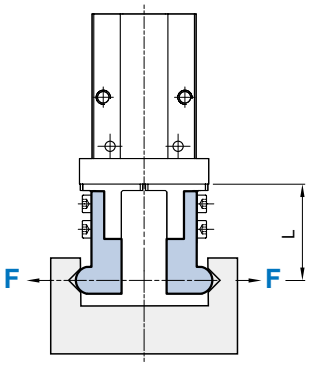
Effective gripping force (Single acting)

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

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



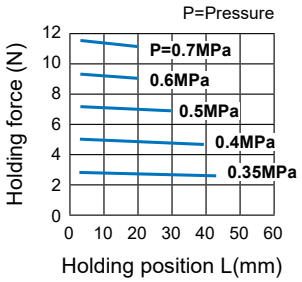
External grip
(Single acting / Normally open)



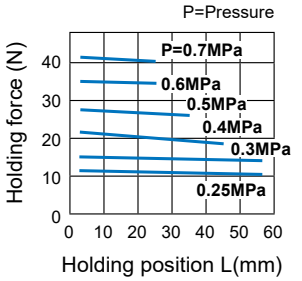
Internal grip
(Single acting / Normally closed)

External gripping force
Single acting / N.O.

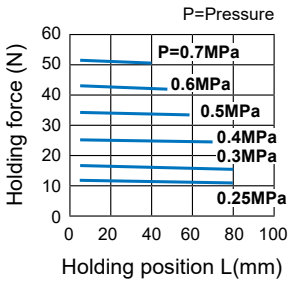
MCHC-10-S



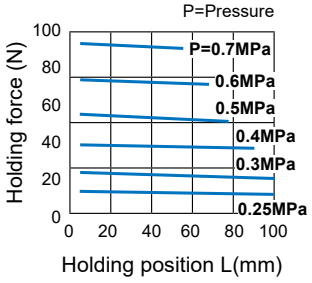
MCHC-16-S



MCHC-20-S

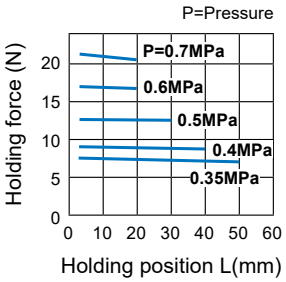


MCHC-25-S

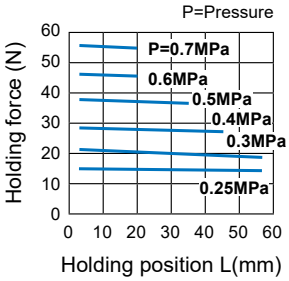


Internal gripping force
Single acting / N.C.

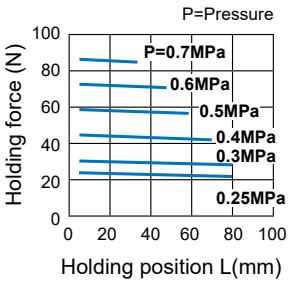
MCHC-10-C



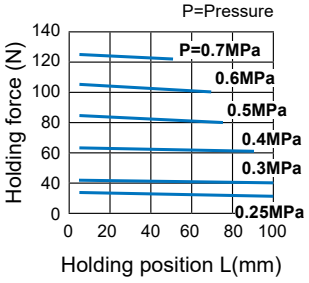
MCHC-16-C



MCHC-20-C

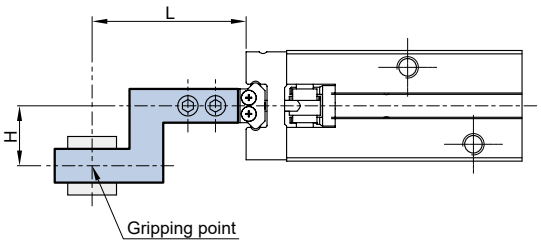


MCHC-25-C

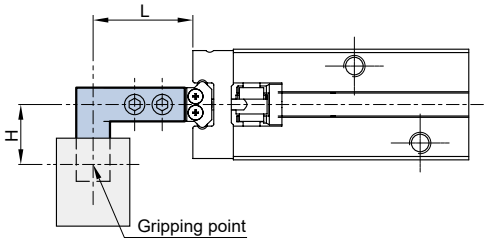


Confirmation of gripping point

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

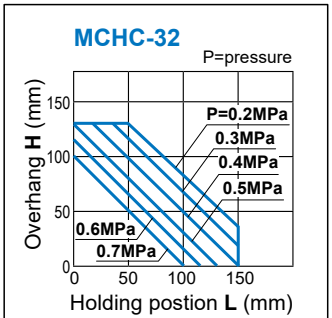


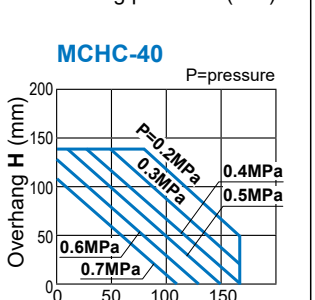
External grip



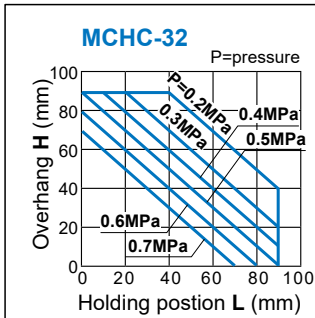
Internal grip

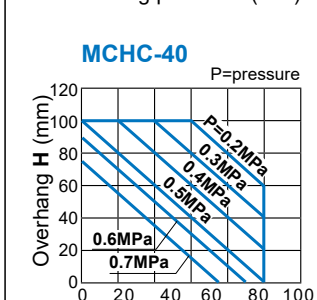
External gripping





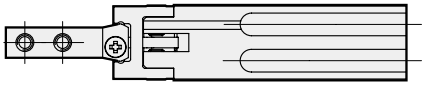
Internal gripping

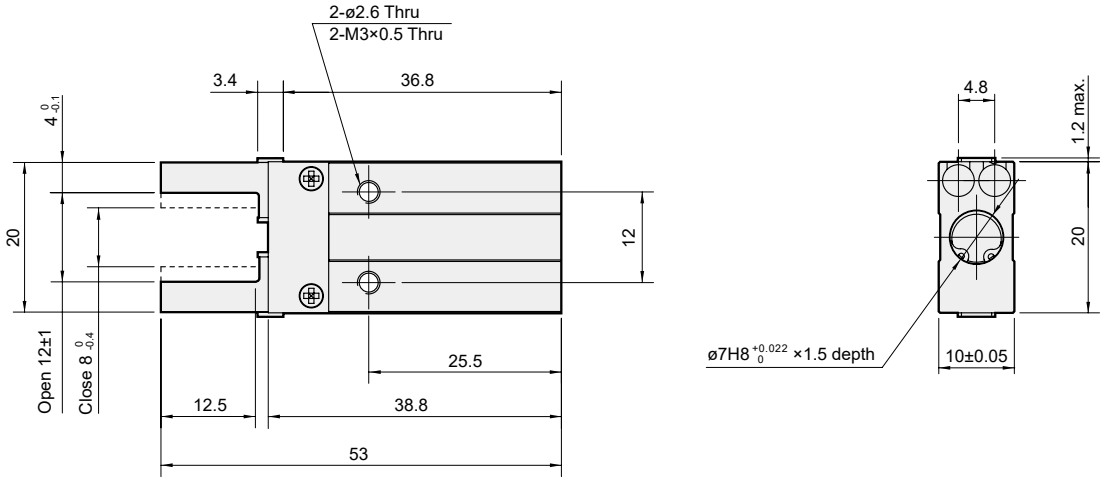


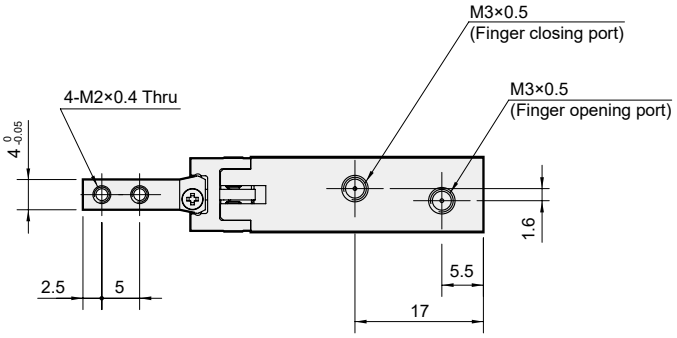


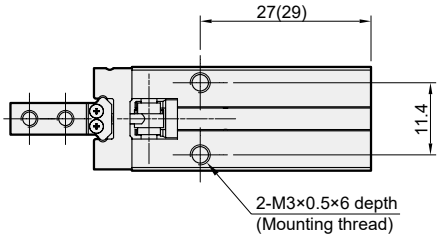
External gripping

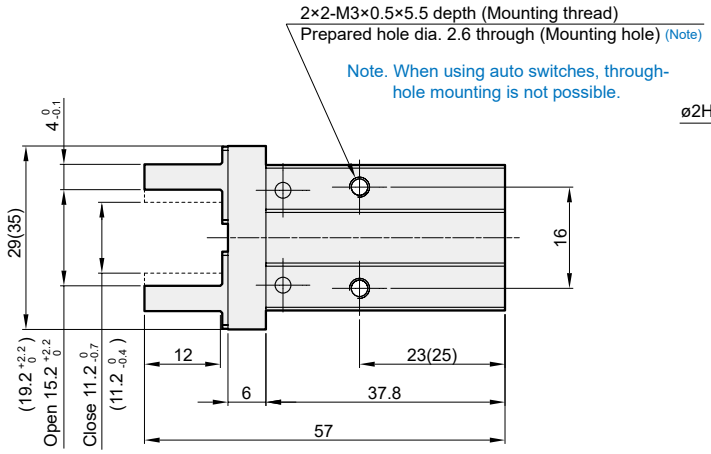
Internal gripping

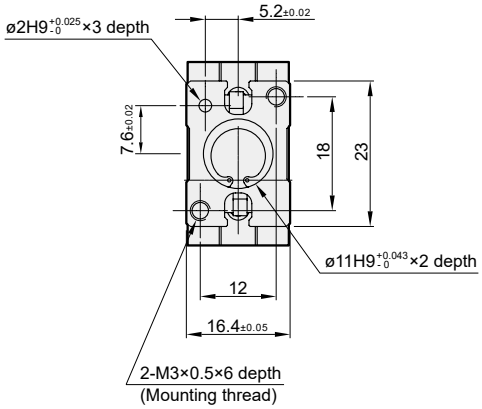


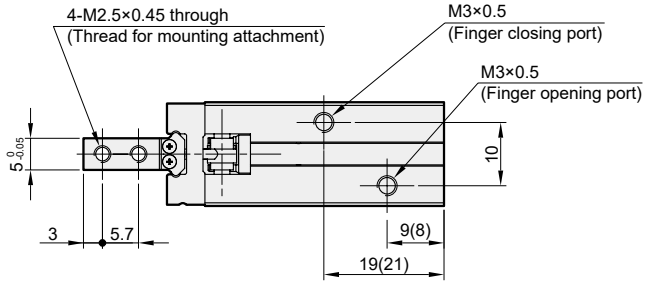

2-ø2.6 Thru
2-M3×0.5 Thru
3.4
36.8
4 0 -0.1
20
12
Open 12±1
Close 8 0 -0.4
25.5
12.5
38.8
53
4.8
1.2 max.
20
ø7H8 +0.022 0 ×1.5 depth
10±0.05


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





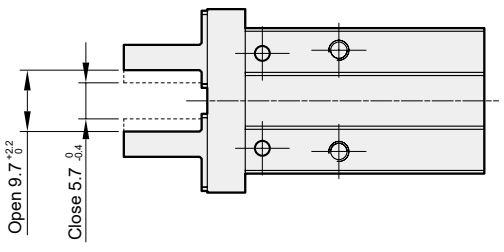


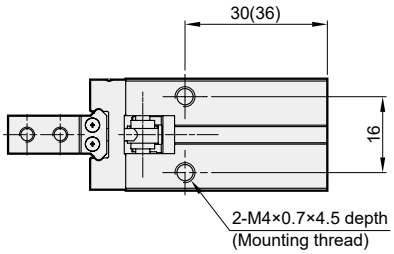


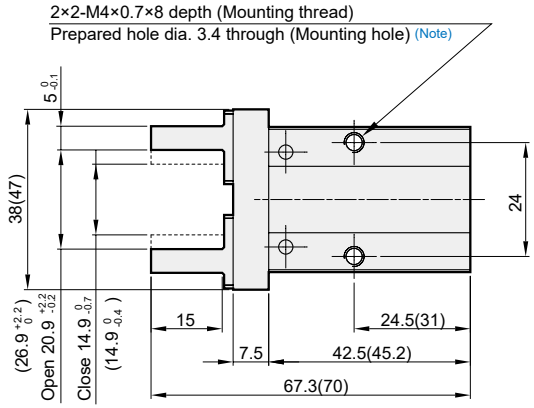
*( ) for long stroke value.

Finger position – Narrow

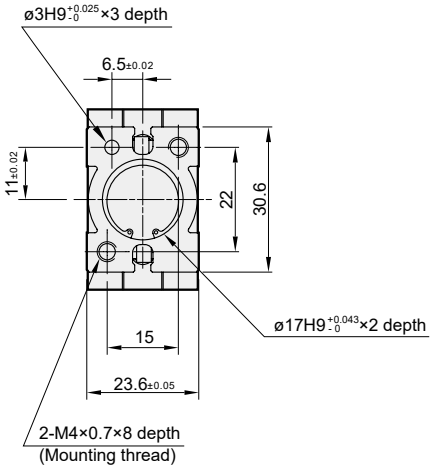
MCHC(L)-10-N

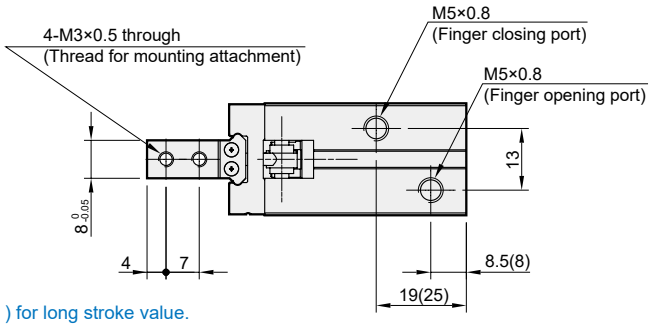






Note. Through-hole mounting is not possible when using the auto switch at the square groove.

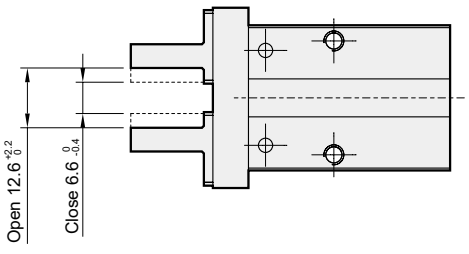


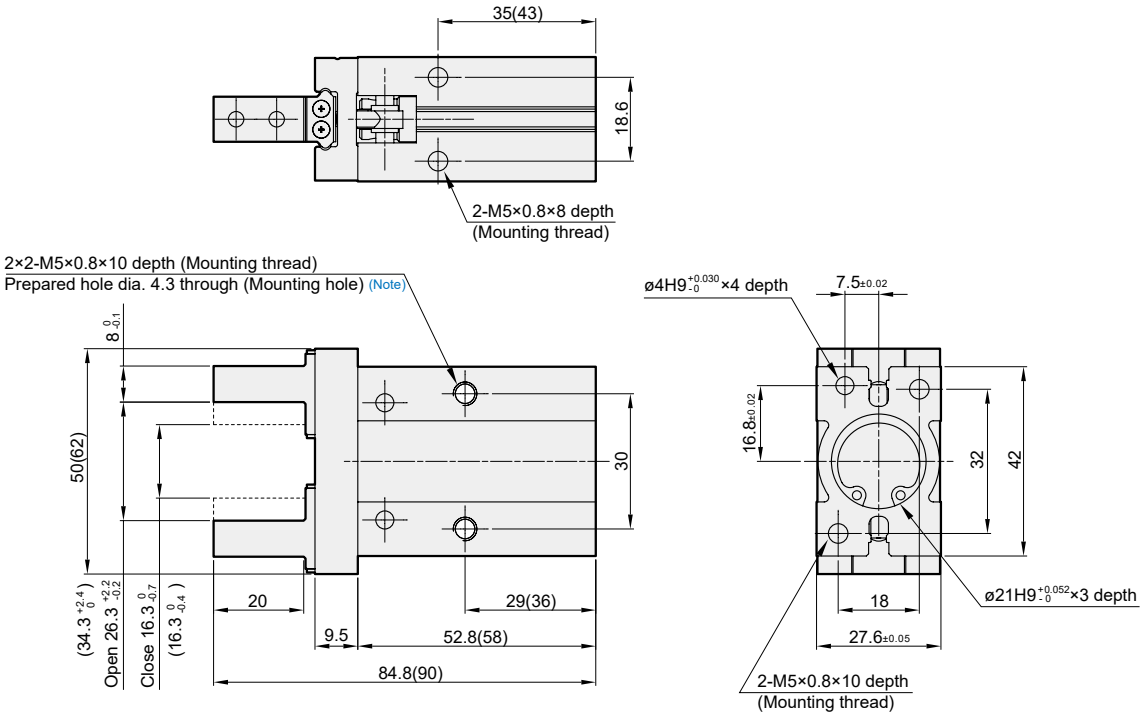


*( ) for long stroke value.

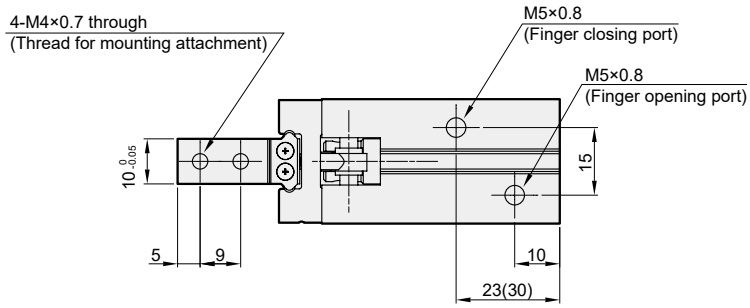
Finger position – Narrow

MCHC(L)-16-N





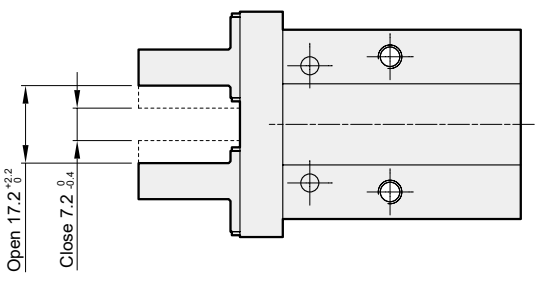
Note. Through-hole mounting is not possible when using the auto switch at the square groove.

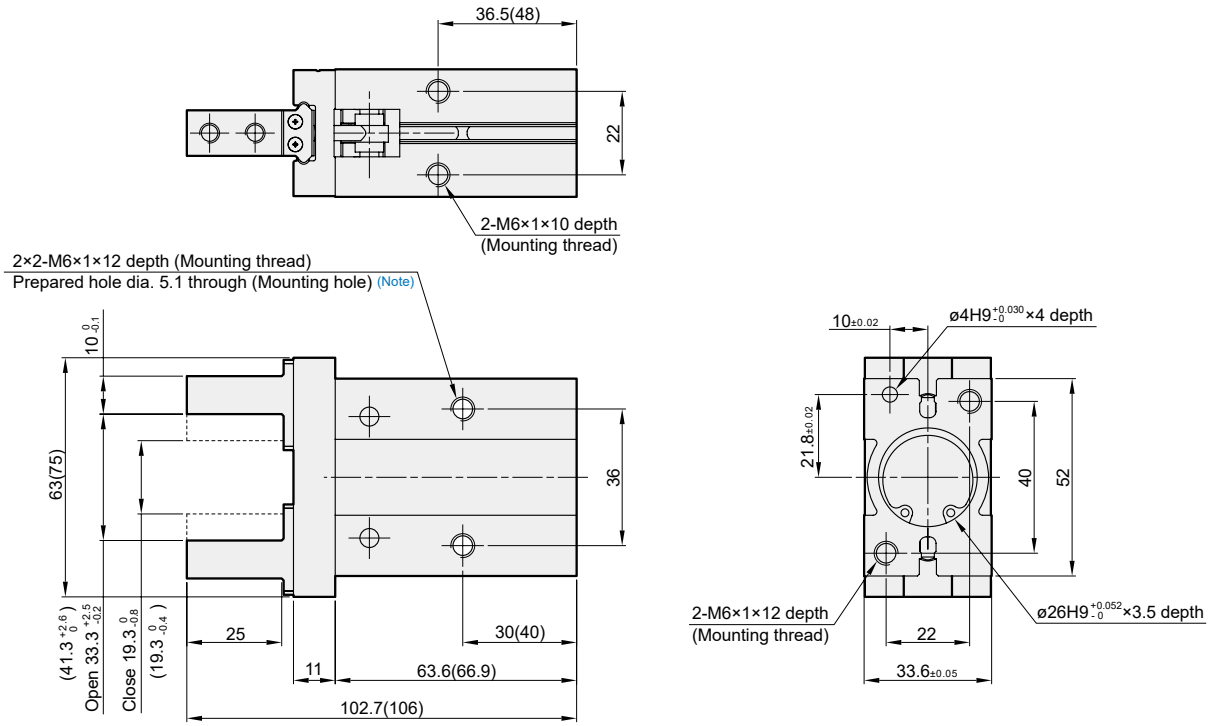


*( ) for long stroke value.

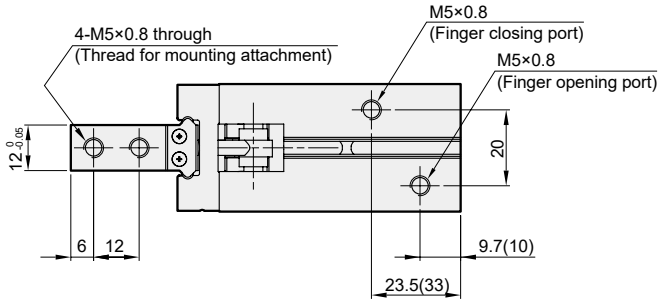
Finger position – Narrow

MCHC(L)-20-N





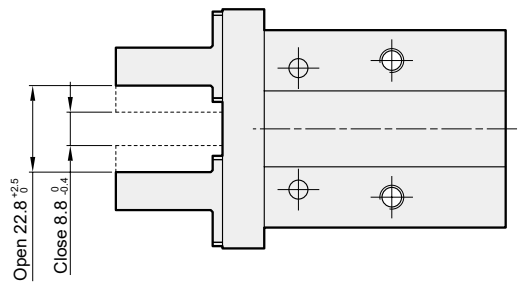
Note. Through-hole mounting is not possible when using the auto switch at the square groove.

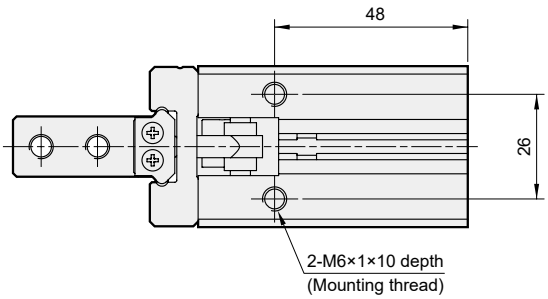


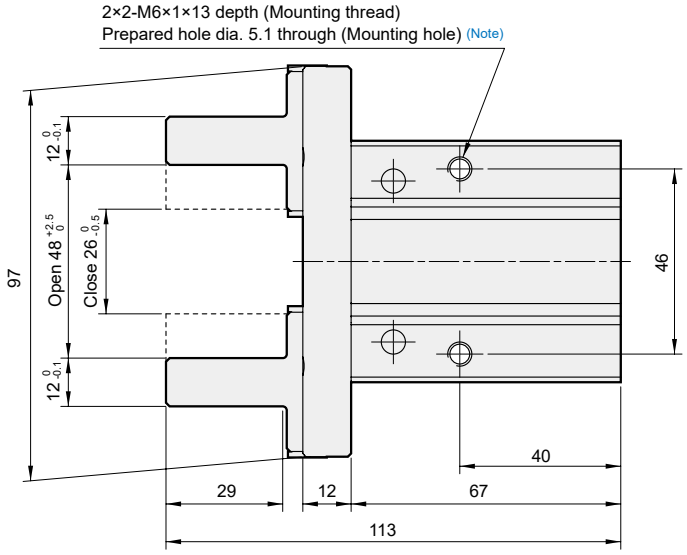
*( ) for long stroke value.

Finger position – Narrow

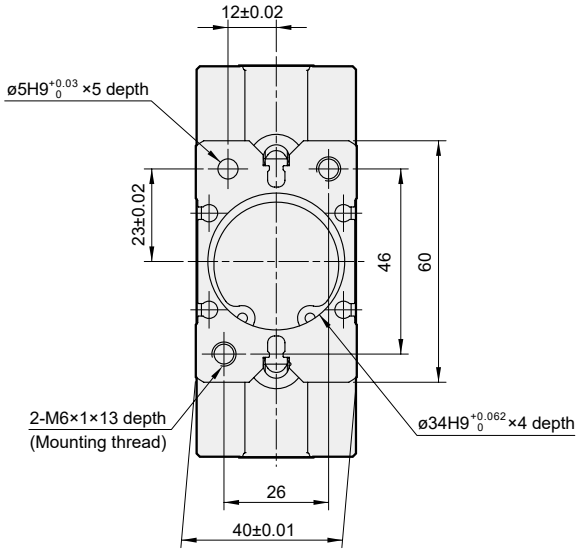
MCHC(L)-25-N

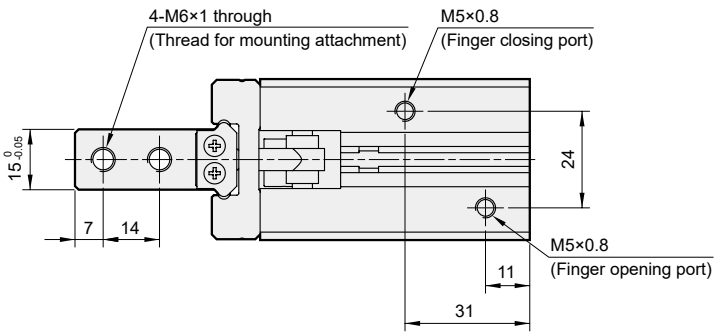


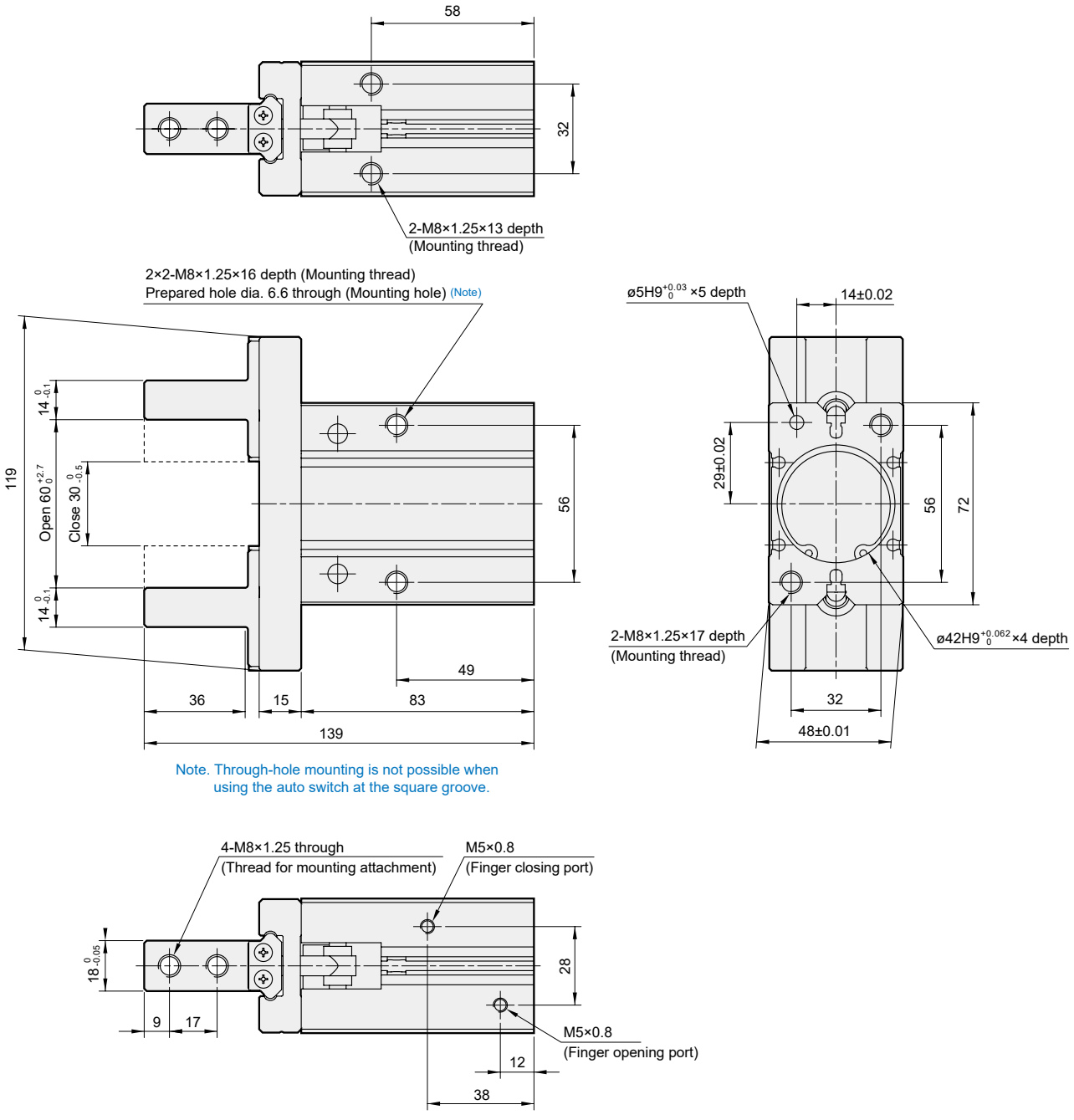




Note. Through-hole mounting is not possible when using the auto switch at the square groove.

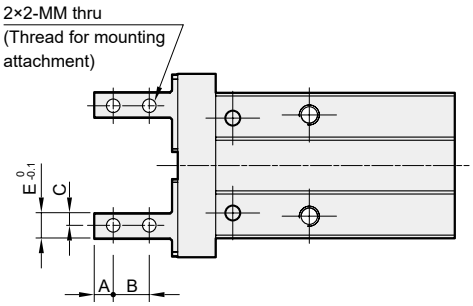






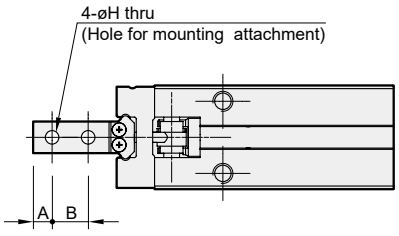
Note. Through-hole mounting is not possible when using the auto switch at the square groove.

MCHC*-1, N1 Side tapped



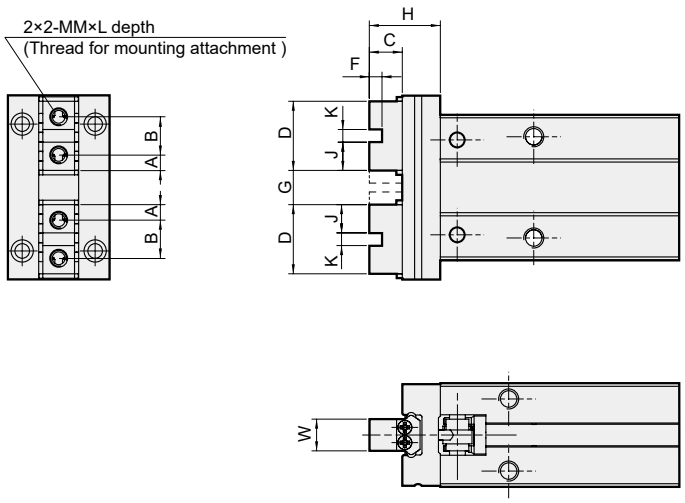
Code / Tube I.D.	A	B	C	E	MM
6	2.5	5	2	4	M2×0.4
10	3	5.7	2	4	M2.5×0.45
16	4	7	2.5	5	M3×0.5
20	5	9	4	8	M4×0.7
25	6	12	5	10	M5×0.8
32	7	14	6	12	M6×1.0
40	9	17	7	14	M8×1.25

MCHC*-2, N2 Through hole



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

MCHC*-3 Flat



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

Model selection

Technical data

Caution for safety
(Read before installing)

Features

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

Specification

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

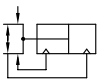
Order example

MCHCJ — 16 — □

MODEL

TUBE I.D.
16

STYLE

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

Order example of dust cover

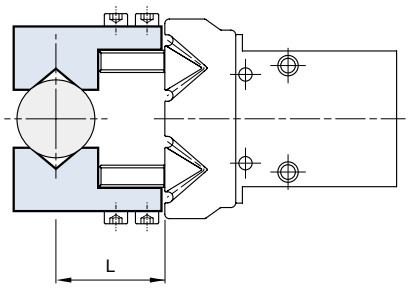
JD — MCHCJ — 16

DUST COVER

MODEL

TUBE I.D.

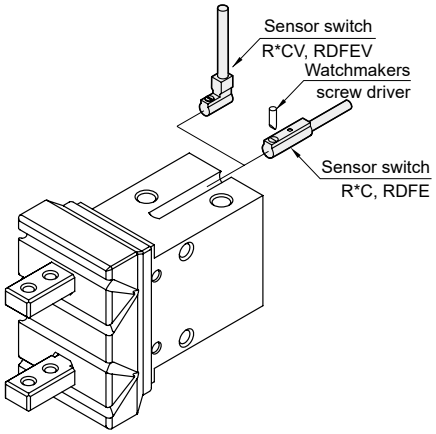
Gripping force

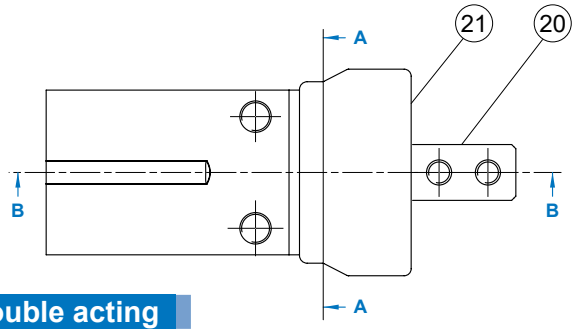


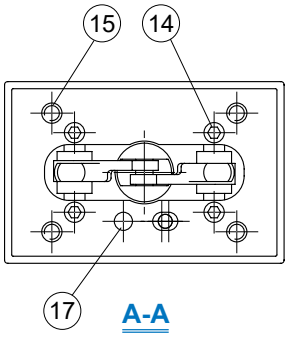
Tube I.D. (mm)		**16**
Double acting	External	30 (3.1)
	Internal	40 (4.1)
Single acting / Normally open	External	24 (2.5)
Single acting / Normally closed	Internal	31 (3.2)

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

Installation of sensor switch

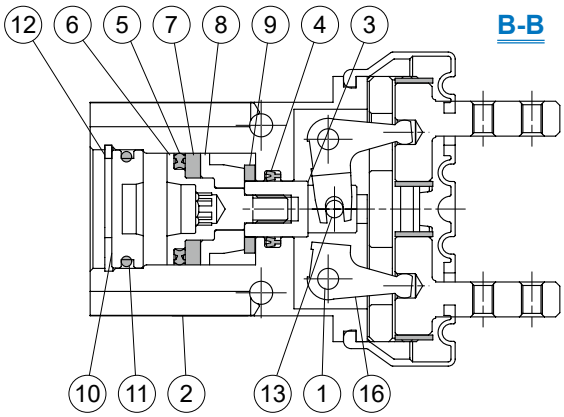






A-A

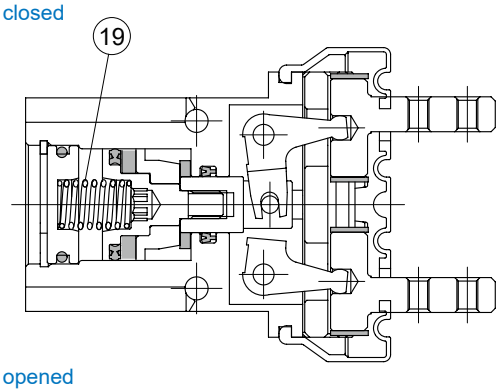
Double acting



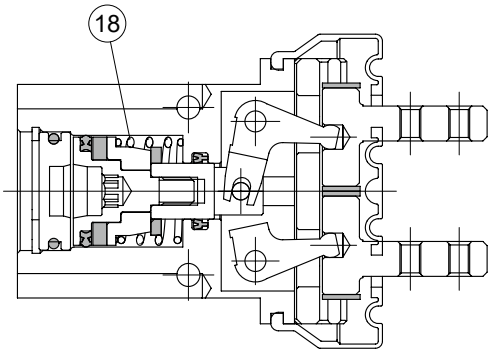
B-B

Single acting

Normally closed



Normally opened



Material

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

* Bearing steel balls as standard.

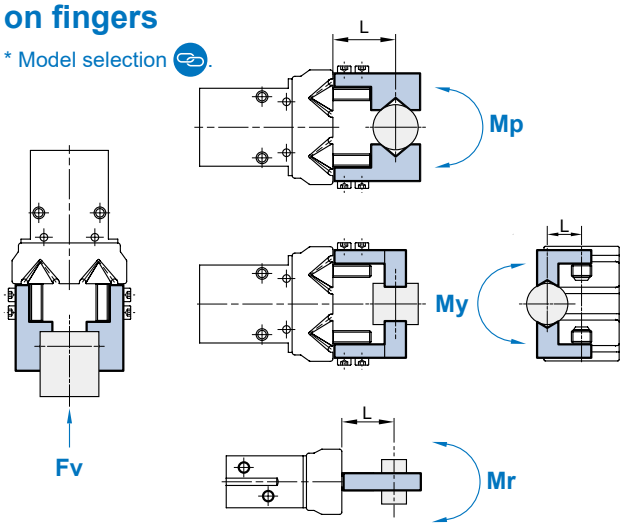
Order example of repair kits

* Use the same repair kits with MCHC.

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

Confirmation of external force on fingers

* Model selection .



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

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

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

Allowable load calculation

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

Example

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

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

$$= 27.2\ (N)$$

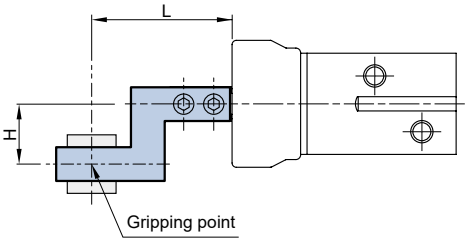
Load f=20 (N) < 27.2 (N), so can be used.

Model selection suggestions

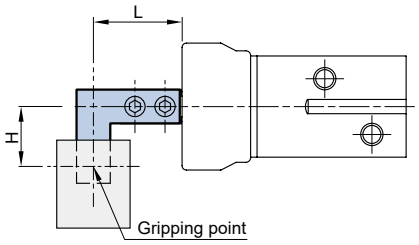
1. For normal gripping and carrying usage, the recommended safe factor (a) is 4.
2. The value of gripping force of single finger can be found at the gripping force table.
3. The safe factor (a) have to be higher if the gripper is using with a great accelerated velocity or impaction condition.

Confirmation of gripping point

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

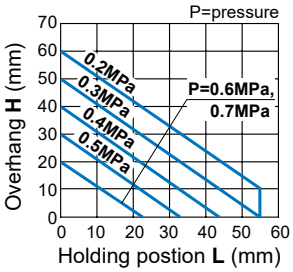


External grip

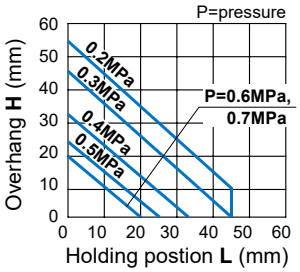


Internal grip

External gripping

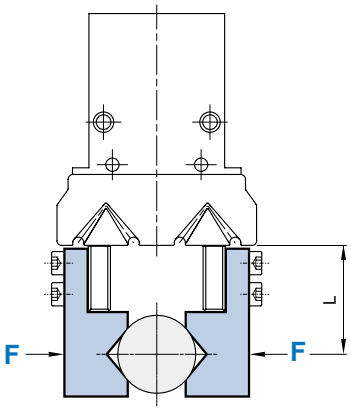


Internal gripping

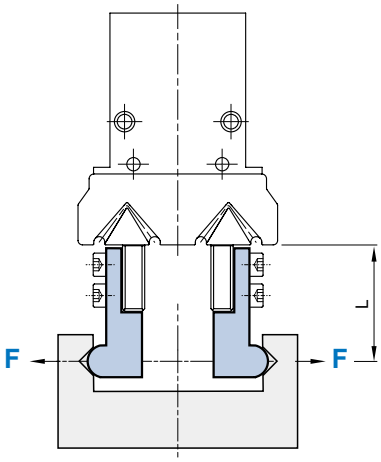


Effective gripping force

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

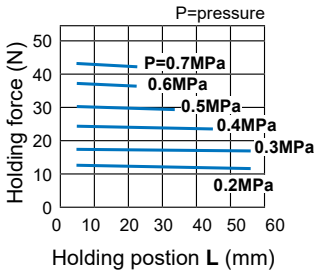


External grip
(Double acting,
Single acting / Normally open)

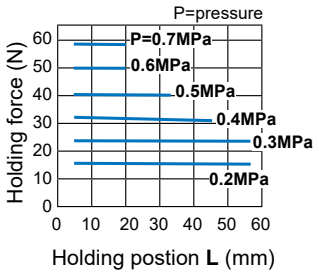


Internal grip
(Double acting,
Single acting / Normally closed)

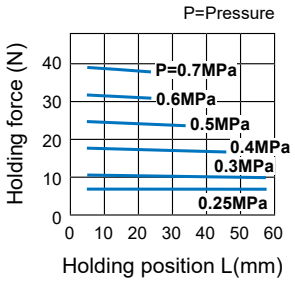
External gripping force



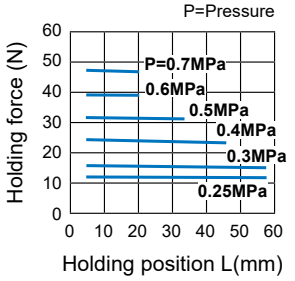
Internal gripping force

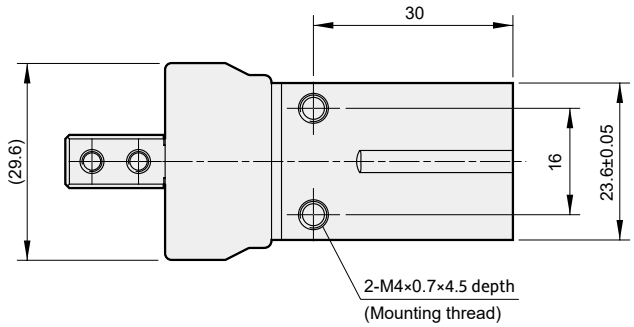


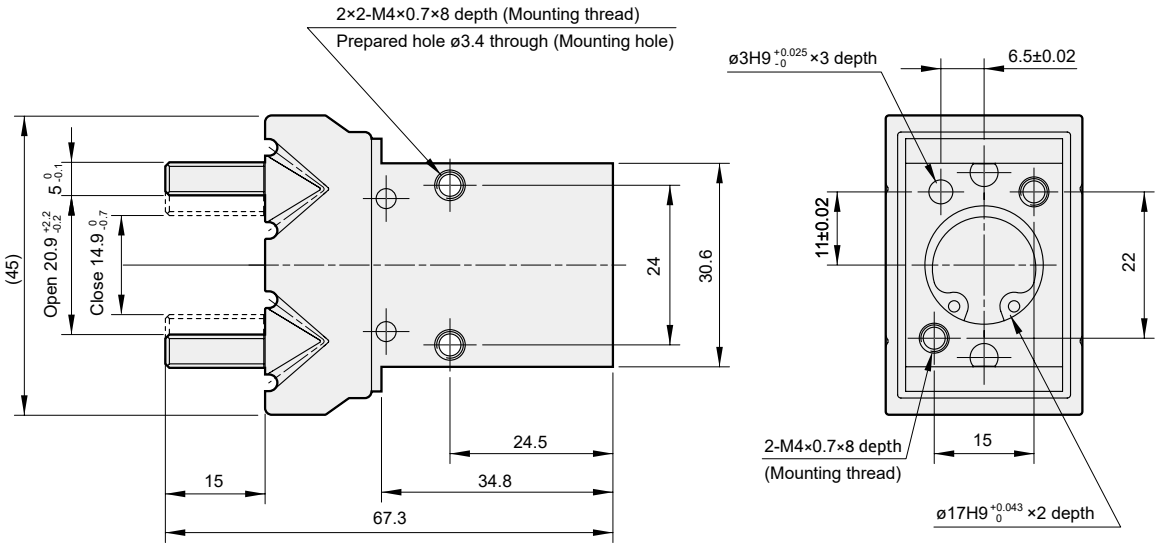
External gripping force
Single acting / N.O.

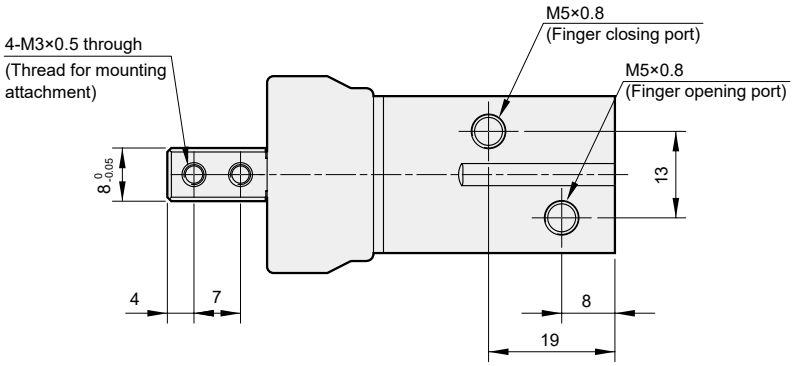


Internal gripping force
Single acting / N.C.




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


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

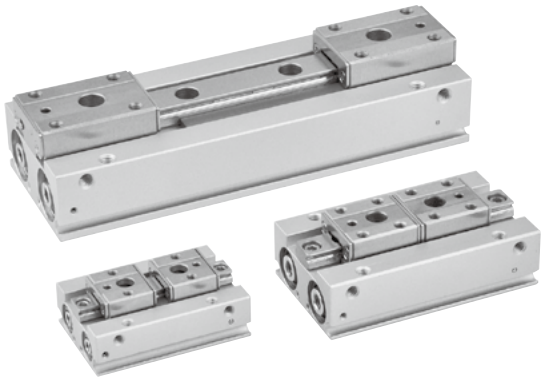

4-M3×0.5 through
(Thread for mounting
attachment)
M5×0.8
(Finger closing port)
M5×0.8
(Finger opening port)
8 0 -0.05
13
4
7
8
19

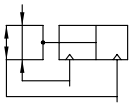
MCHD series

PARALLEL GRIPPER (2-Finger)

mindman

Model selection
Technical data
Caution for safety
(Read before installing)





Features

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

Specification

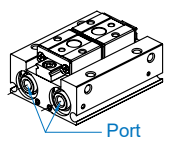
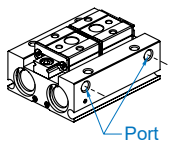
Model		MCHD			
Acting type		Double acting			
Tube I.D. (mm)		8	12	16	20
Port size		M3×0.5	M5×0.8		
Medium		Air			
Operating pressure range		0.15~0.7	0.1~0.7 MPa		
Ambient temperature		-10~+60°C (No freezing)			
Repeatability		± 0.05 mm (*1)			
Max. operating frequency (c.p.m)	Short	120			
	Medium	120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

* 1. This is the value when no offset load is applied to the finger. When an offset load is applied to the finger, the maximum value is ±0.15mm due to the influence of backlash of the rack and pinion.

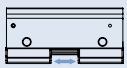
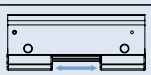
Order example

MCHD — 20R — □

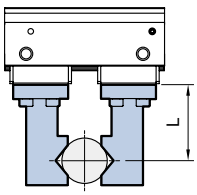
- MODEL
- TUBE I.D. **8, 12, 16, 20**
- STROKE * Blank: Short **1**: Medium **2**: Long
- PIPING TYPE

Blank: Axial piping	**R**: Side piping
 Port	 Port

* Stroke selection

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

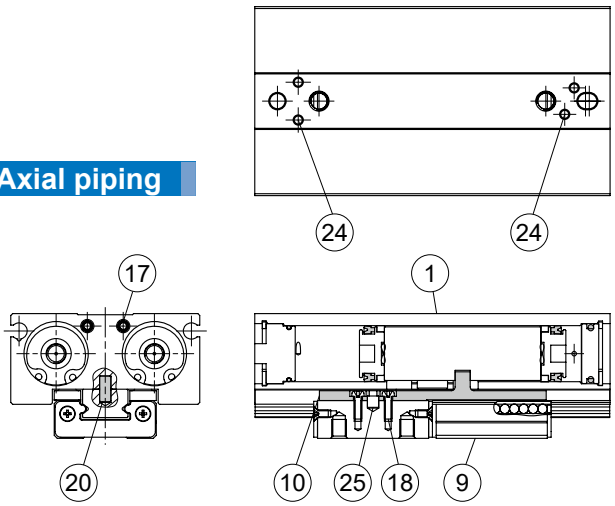
Gripping force



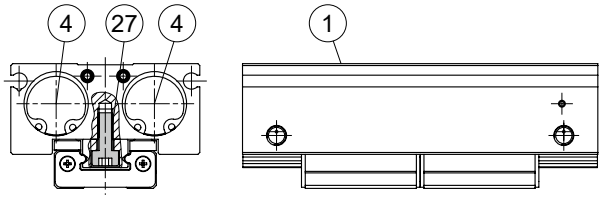
Model	Gripping force per finger effective value (N) (*)	Weight (g)
MCHD-8	19	65
MCHD-8-1		79.1
MCHD-8-2		113.3
MCHD-12	48	150
MCHD-12-1		191.3
MCHD-12-2		291.2
MCHD-16	90	350
MCHD-16-1		454.2
MCHD-16-2		678.3
MCHD-20	141	660
MCHD-20-1		869
MCHD-20-2		1310.6

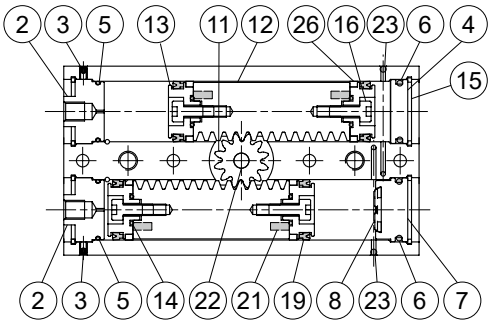
* Values based on pressure of 0.5 MPa, gripping point L=20mm, at center of stroke.

Axial piping



Side piping





Order example of repair kits

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

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

Material

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

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

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

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

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

Model selection

Please select your model according to the weight of workpiece

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

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

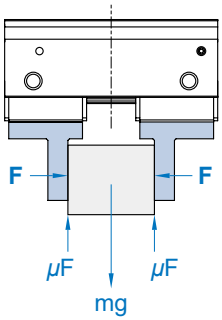
F: Gripping force (N)
μ: Coefficient of friction between the attachments and the workpiece
m: Workpiece mass (kg)
g : Gravitational acceleration (=9.8m/s^2)
mg : Workpiece weight (N)
the conditions under which the workpiece will not drop are,

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

(Number of fingers)

Therefore,

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



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

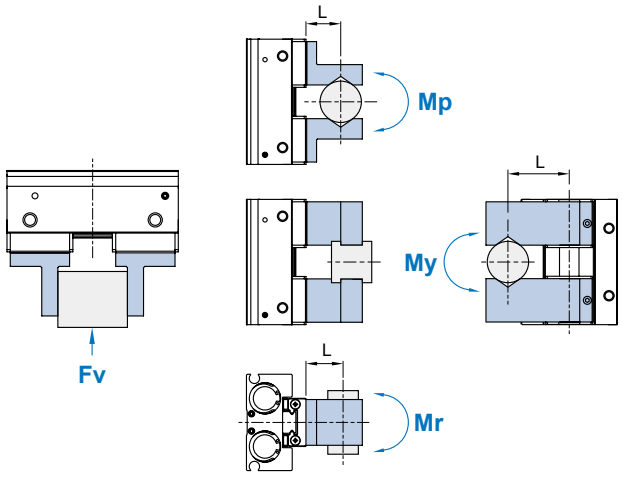
$$F = \frac{mg}{2\times\mu} \times a$$

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

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

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

Confirmation of external force on fingers



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

Tube I.D. (mm)	Allowable vertical load Fv(N)	Maximum allowable moment		
		Pitch moment Mp(N-m)	Yaw moment My(N-m)	Roll moment Mr(N-m)
8	58	0.26	0.26	0.53
12	98	0.68	0.68	1.4
16	176	1.4	1.4	2.8
20	294	2	2	4

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

Allowable load calculation

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

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

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

$$= 56\ (N)$$

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

Model selection example

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

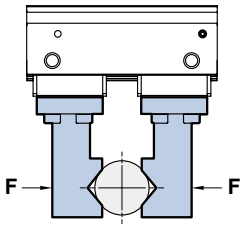
1. The conditions under which the workpiece will not drop are,

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

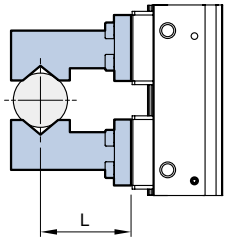
2. From Effective Gripping Force Fig,
Operating pressure: 0.5 MPa; Holding position: 20 mm
Effective gripping force is greater than 60 (N)
So selected **MCHD-16** grippers.

Effective gripping force (Double acting)

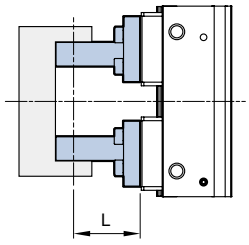
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



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

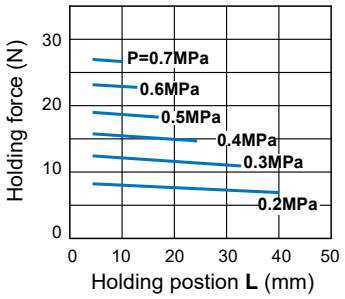


External grip

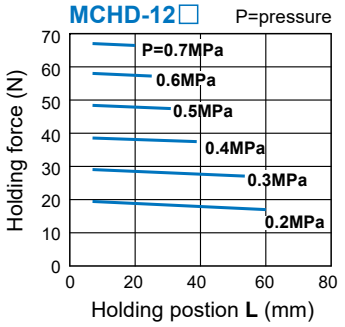


Internal grip

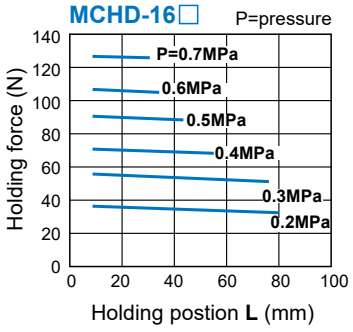
MCHD-8□ P=pressure



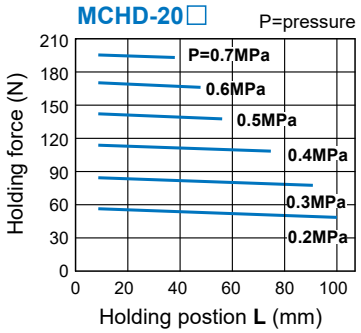
MCHD-12□ P=pressure



MCHD-16□ P=pressure

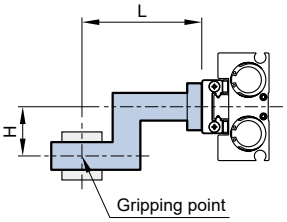


MCHD-20□ P=pressure

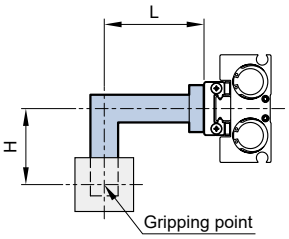


Confirmation of gripping point

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

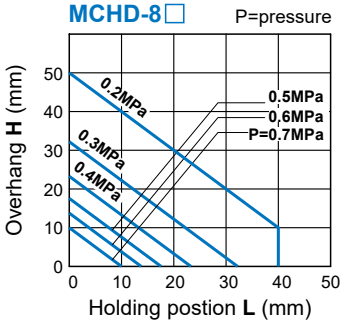


External grip

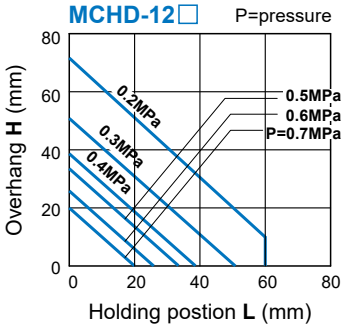


Internal grip

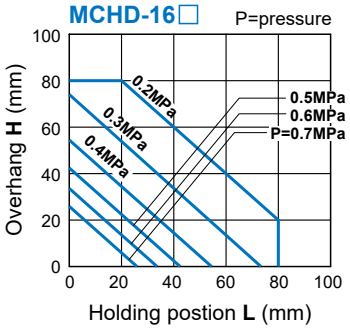
MCHD-8□ P=pressure



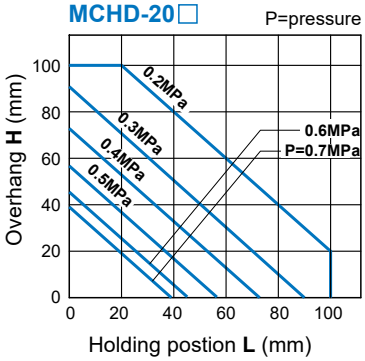
MCHD-12□ P=pressure



MCHD-16□ P=pressure



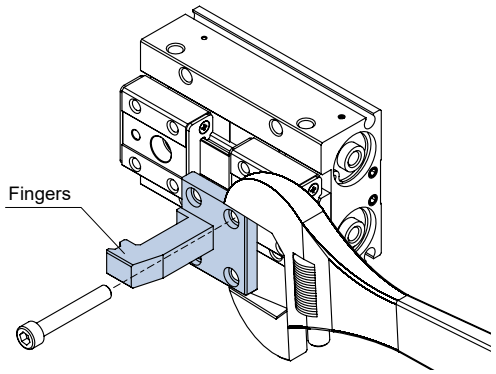
MCHD-20□ P=pressure



Product precautions

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

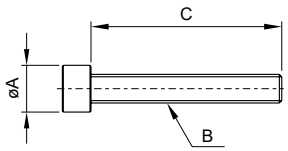
Tube I.D. (mm)	Bolt	Max. tightening torque (N.m)
8	M2.5×0.45	0.36
12	M3×0.5	0.63
16	M4×0.7	1.5
20	M4×0.7	1.5



Order example of attached bolt

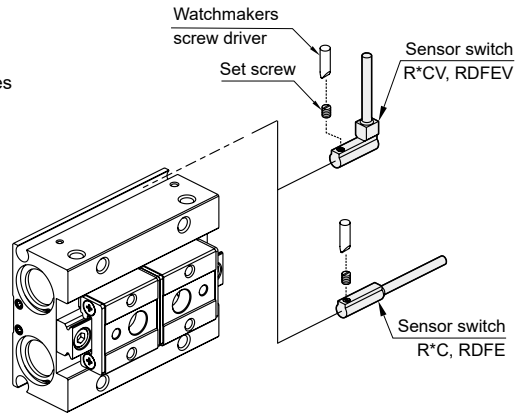
BOLT — MCHD — 8 — 1

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



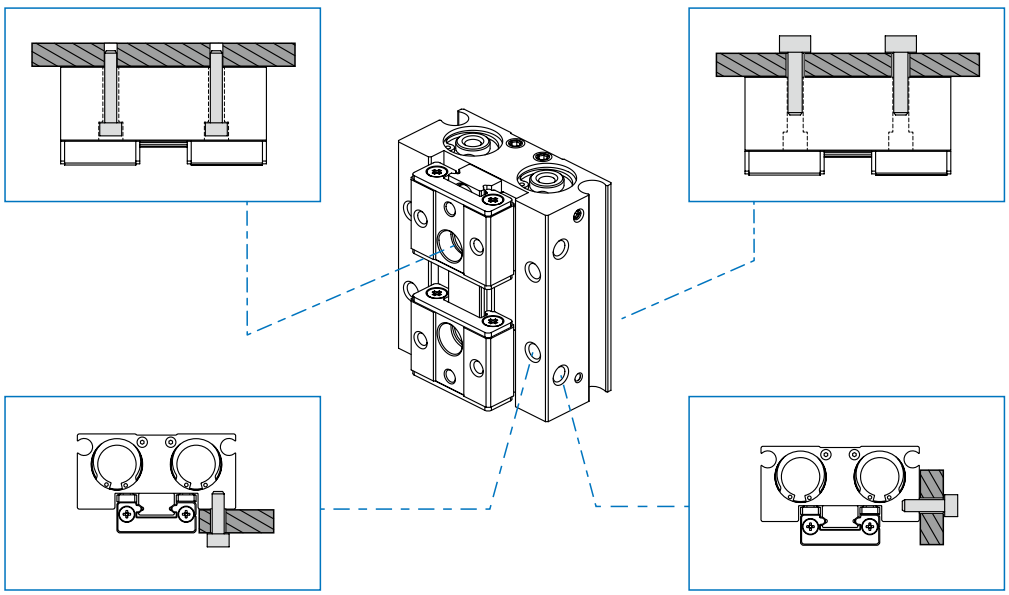
Code / Specification	A	B	C	Quantity
8-1 / 8-2	3.8	M2.5×0.45	15	2 / 4
12-1 / 12-2	4.9	M3×0.5	20	2 / 4

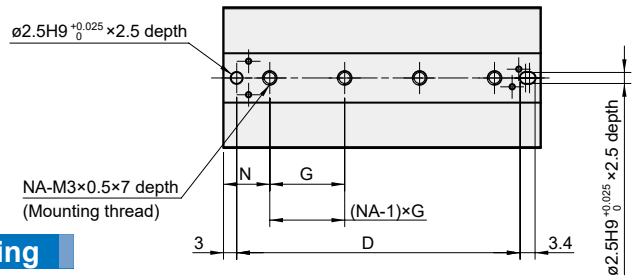
Installation of sensor switch

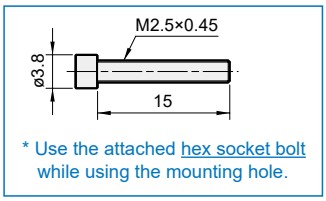


High degree of mounting flexibility

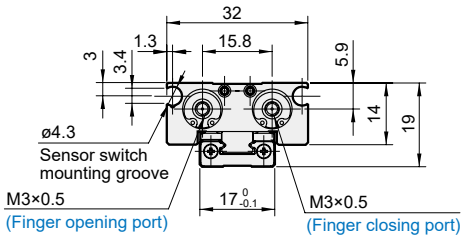
* Use the attached bolt for mounting in tube I.D. ø8, ø12.

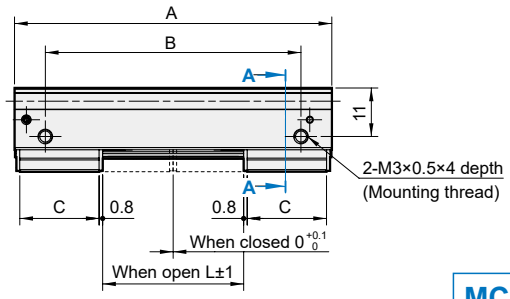


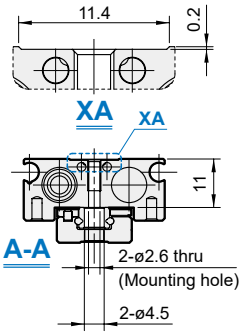


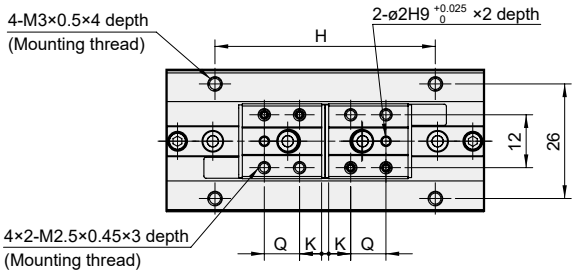


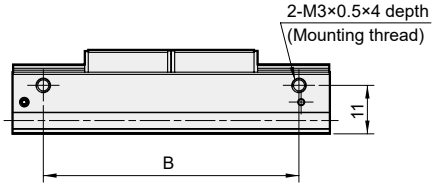
Axial piping



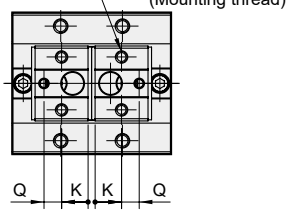




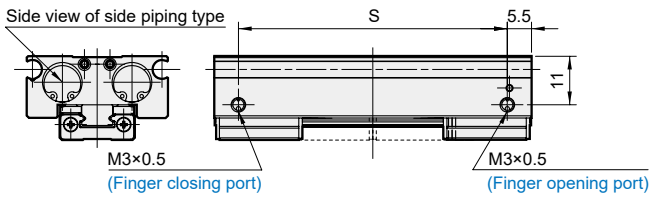




MCHD-8(R)
MCHD-8(R)-1

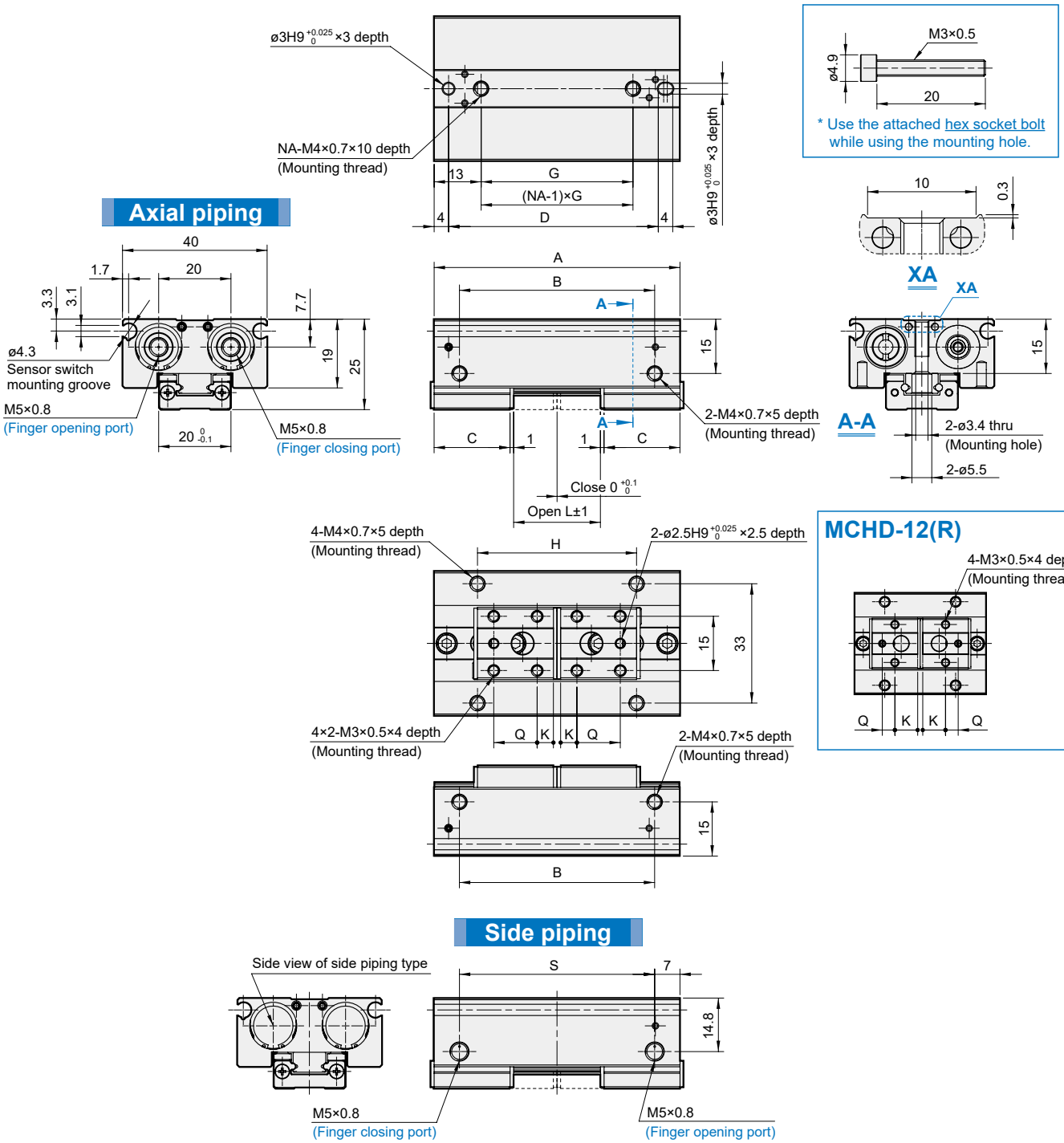


Side piping



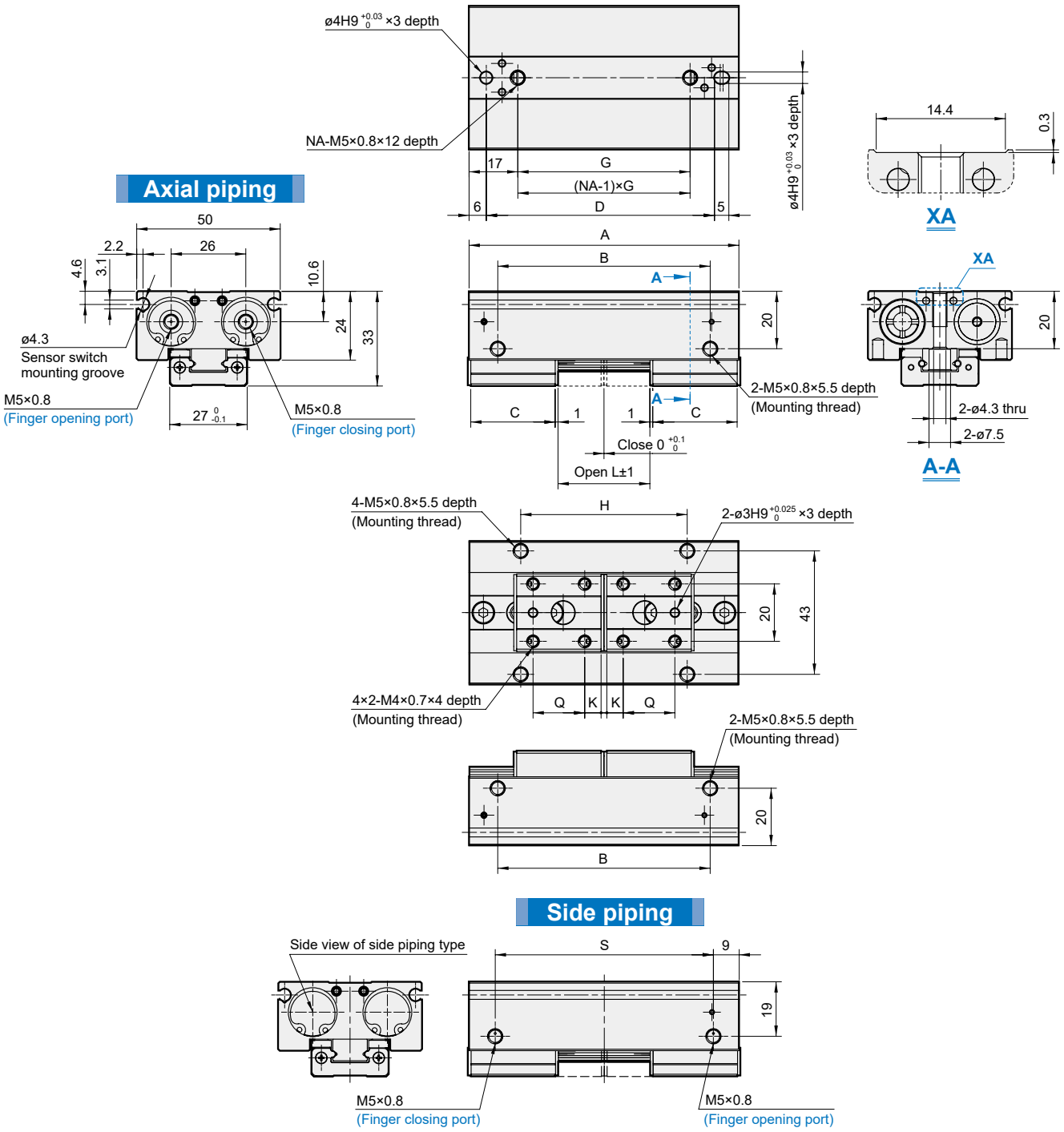
Unit: mm

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



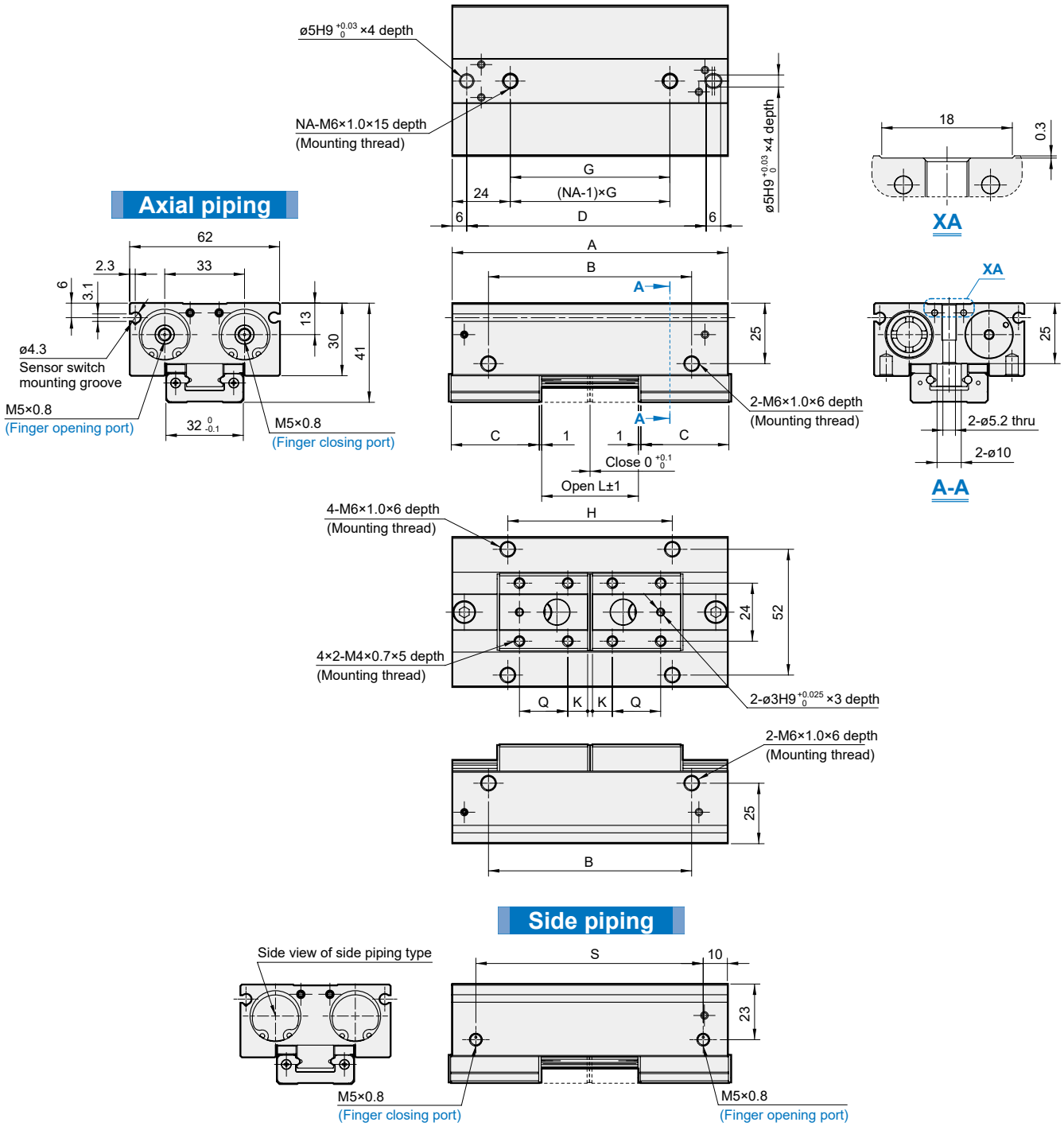
Unit: mm

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



Unit: mm

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



Unit: mm

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

Model selection

Technical data

Caution for safety
(Read before installing)

Features

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

Specification

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

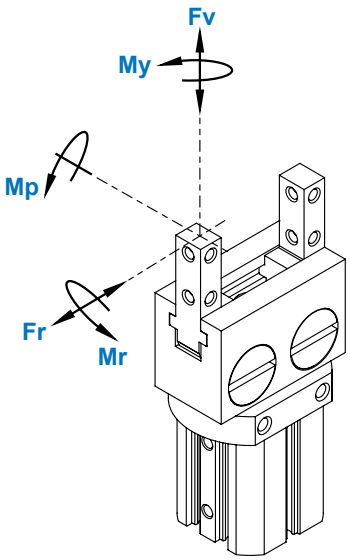
* Sliding area of jaws need scheduled relubrication.

Order example

MCHH — 25 M

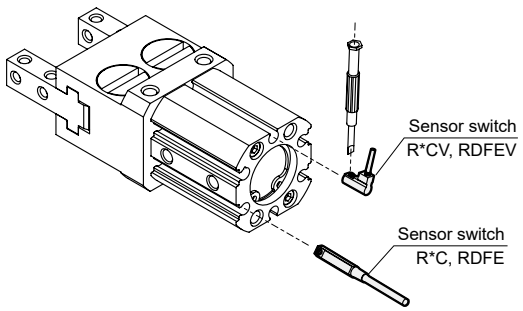
- MODEL
- TUBE I.D.: **20**, **25**, **40**
- **M**: Magnet
  * Magnetic as standard.

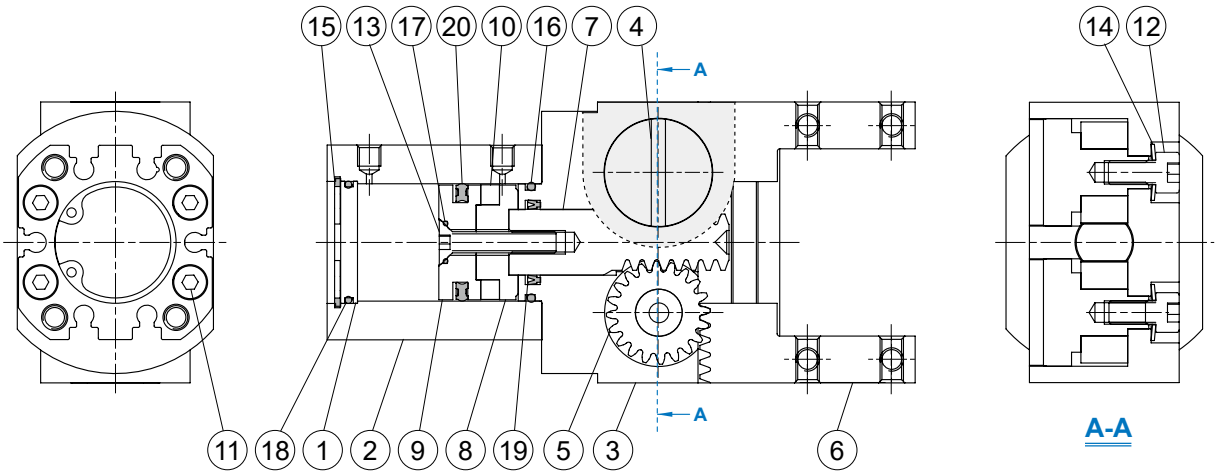
Load limit



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

Installation of sensor switch





Material

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

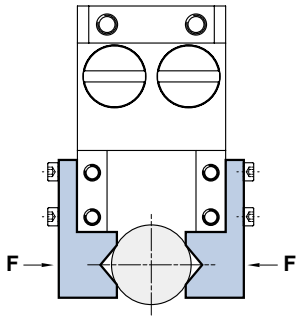
* ø20 Q'y: 2 pcs, ø25 & ø40 Q'y: 4 pcs

Order example of repair kits

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

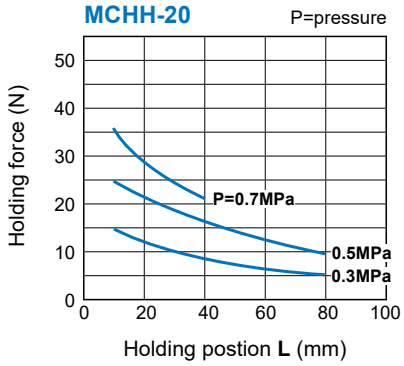
Effective gripping force

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

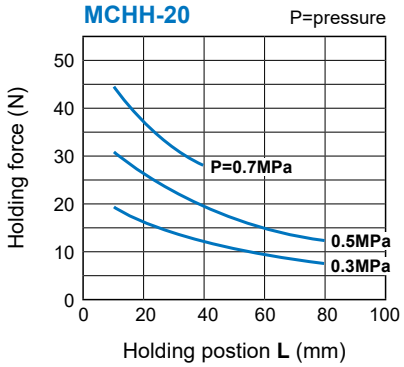


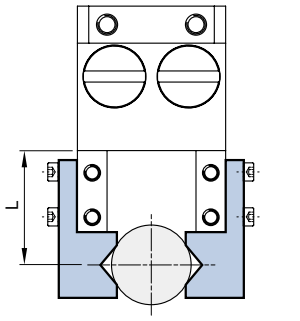
1N=0.102 kgf
1MPa=10.2 kgf/cm^2

External grip

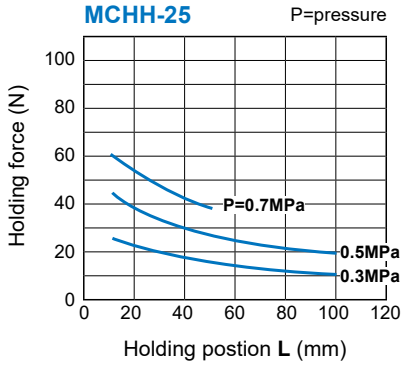


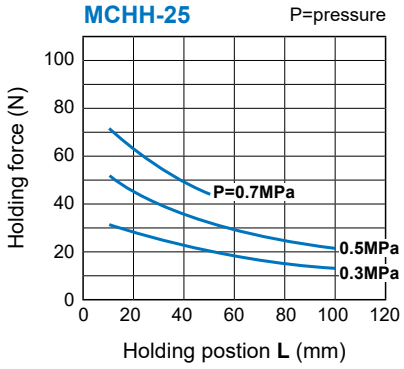
Internal grip

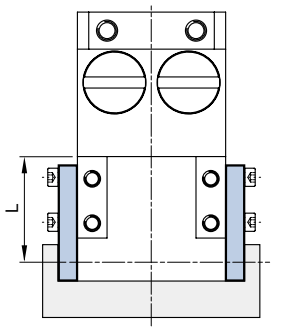




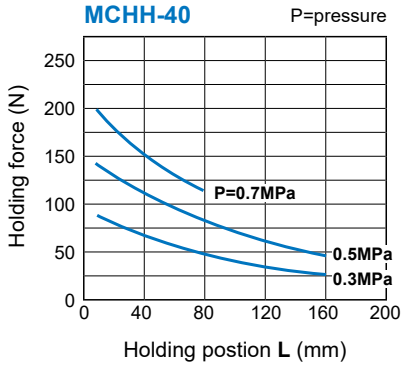
External grip

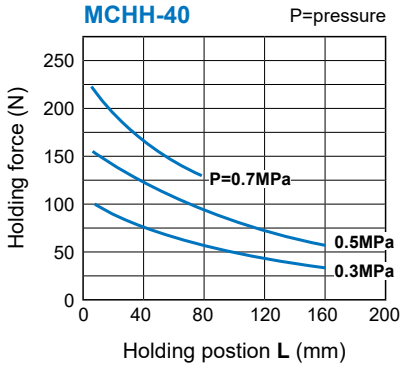




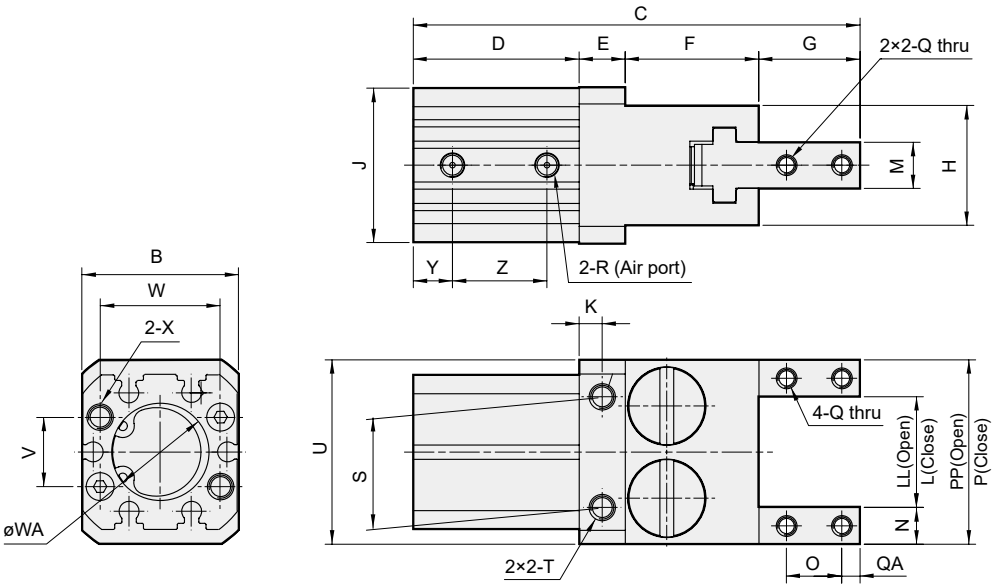


Internal grip

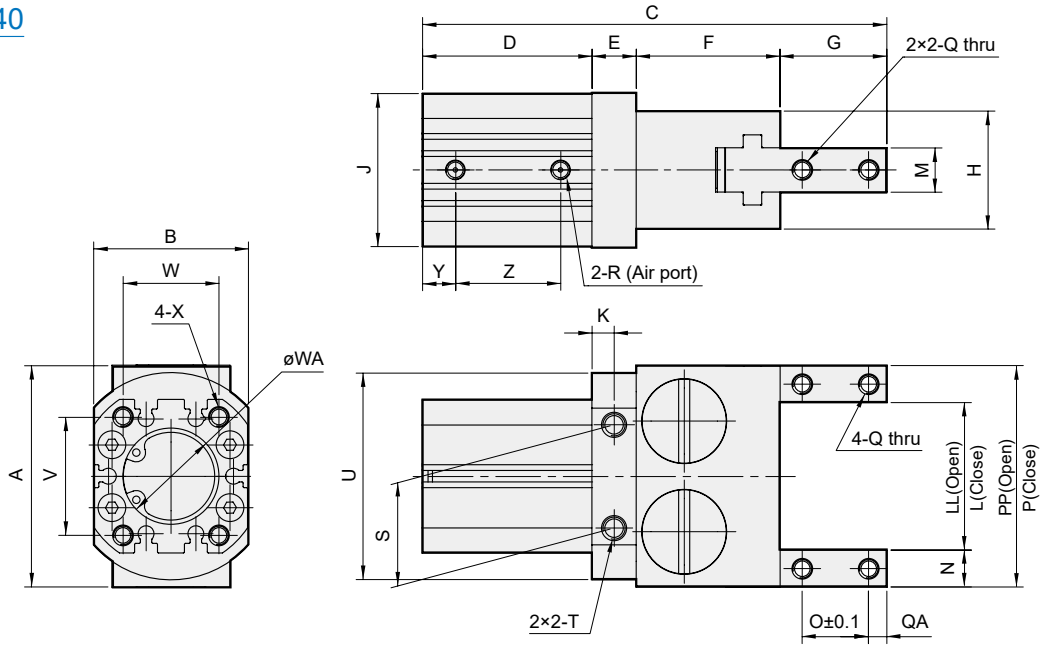




ø20



ø25, ø40



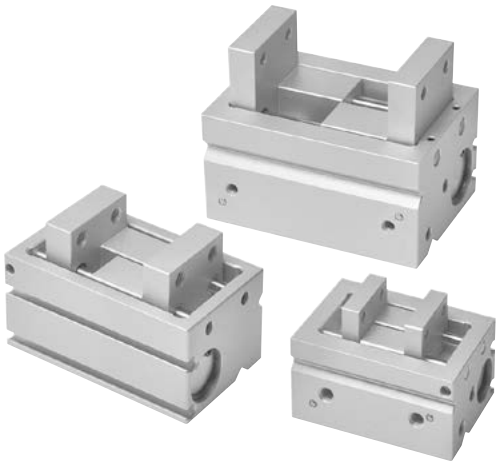
Code / Model	A	B	C	D	E	F	G	H	J	K	L	LL	M	N	O	P	PP	Q	QA	R	S	T	U
MCHH-20	–	34	97	36	10	29	22	26	33.5	5	8	24	10 $^{-0.01}_{-0.06}$	8	12	24	40	M4×0.7	4	M5×0.8	24	M5×0.8×12 dp	40
MCHH-25	60	42	126	46	12	39	29	32	41.5	6	14	40	12 $^{-0.01}_{-0.06}$	10	18	34	60	M5×0.8	5	M5×0.8	28	M6×1.0×14 dp	ø56
MCHH-40	92	60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

Code / Model	V	W	WA	X	Y	Z
MCHH-20	15	26	ø22 $^{+0.05}_{0}$ ×1.5 dp	M5×0.8×10 dp	8.5	20.5
MCHH-25	32	26	ø26 $^{+0.05}_{0}$ ×1.5 dp	M5×0.8×10 dp	9	28.5
MCHH-40	44	34	ø42 $^{+0.05}_{0}$ ×2 dp	M6×1.0×12 dp	11	28.5

MCHU series

PARALLEL GRIPPER (2-Finger)

Model selection
Technical data
Caution for safety
(Read before installing)



Features

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

Specification

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

* Sliding area of jaws need scheduled relubrication.

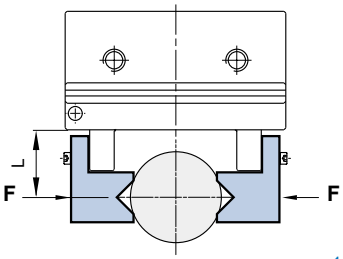
Order example

MCHU — 12 M

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

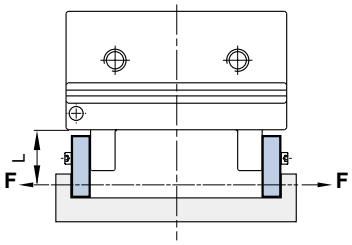
Model selection suggestions

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 at high acceleration or impact condition.



External grip

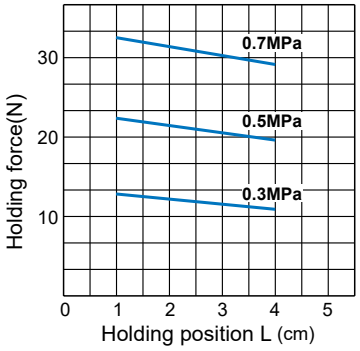
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



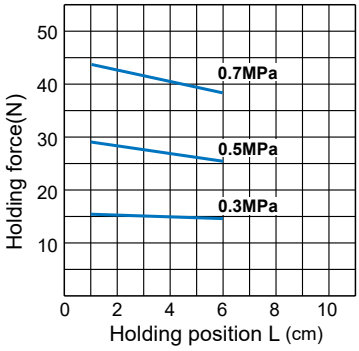
Internal grip

Capacity

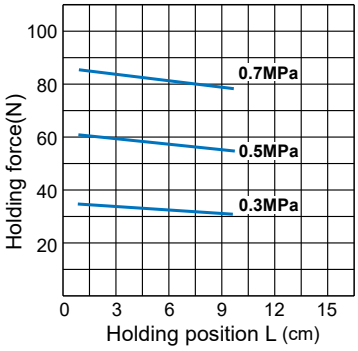
MCHU-12

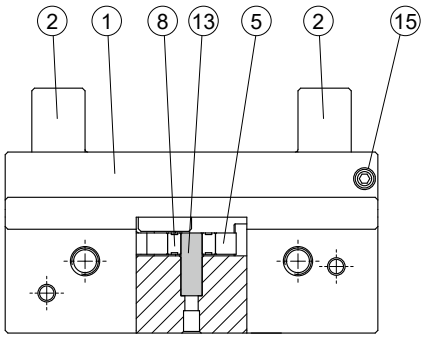


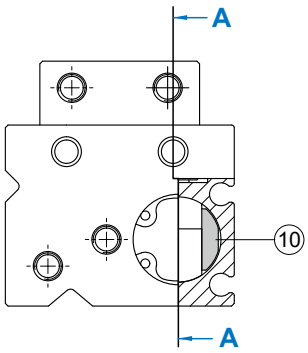
MCHU-16

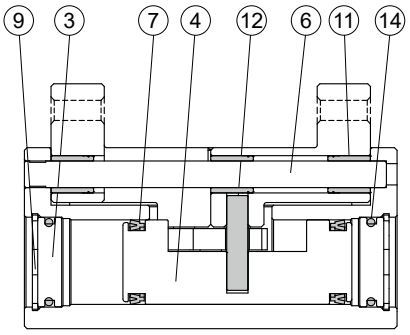


MCHU-20









A-A

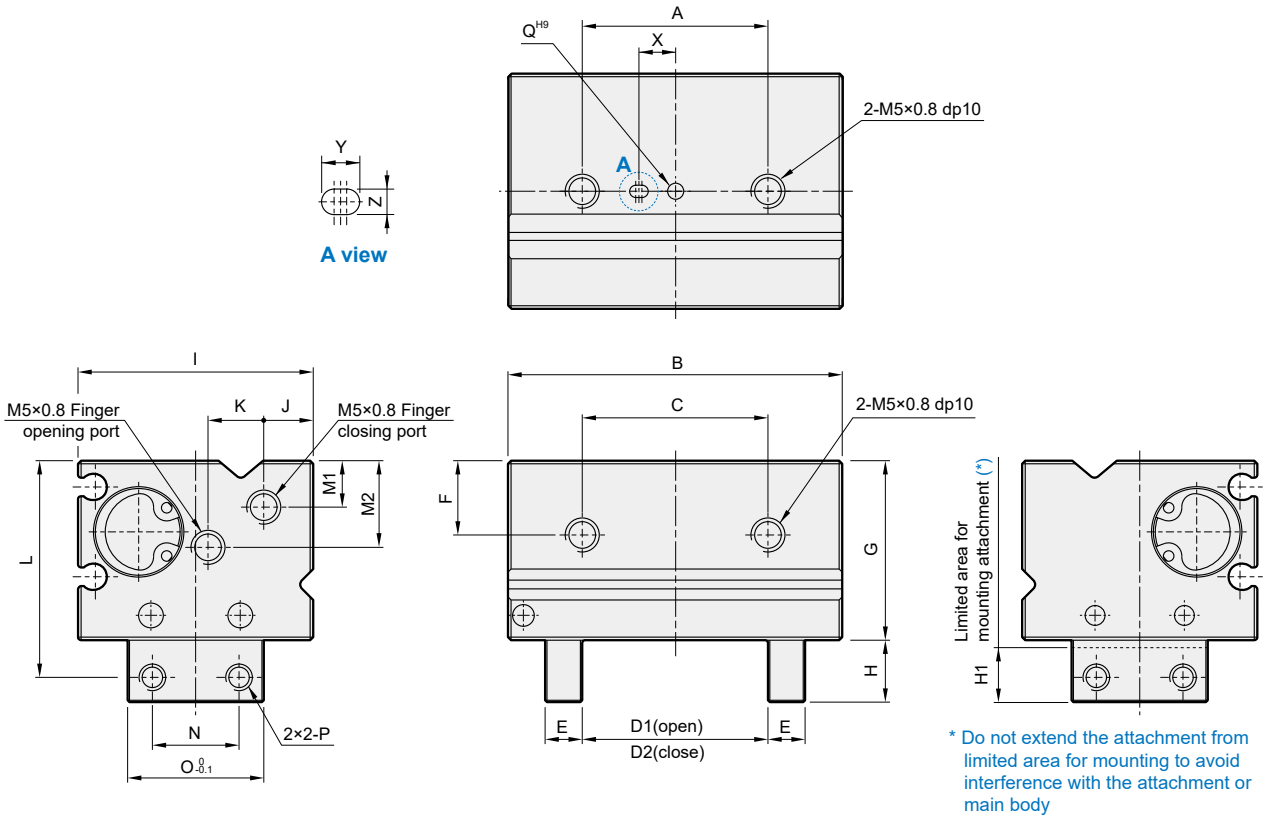
Material

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

Order example

Repair kits

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



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

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

MCHS series

PARALLEL GRIPPER (2-Finger)

Features
Safety device
Model selection
Technical data
Caution for safety
(Read before installing)

Features

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

Specification

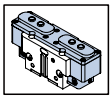
Model	MCHS							
Acting type	Double acting							
Size	50	66	80	100	125	160	200	300
Stroke per-jaw(mm)	4	6	8	10	12	16	20	30
Effective external gripping force (N) (*1)	69	122	225	315	505	842	1417	3283
Close / Open time(s)	0.02	0.03	0.04	0.07	0.1	0.2	0.35	0.45
Medium	Air							
Operating pressure range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

*1. Under the condition of clamping length 40mm and operation pressure 0.6 MPa.
*2. Regularly relubricate the finger to increase the service life. Please contact us for grease info.

Order example

MCHS — 50 — SD

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



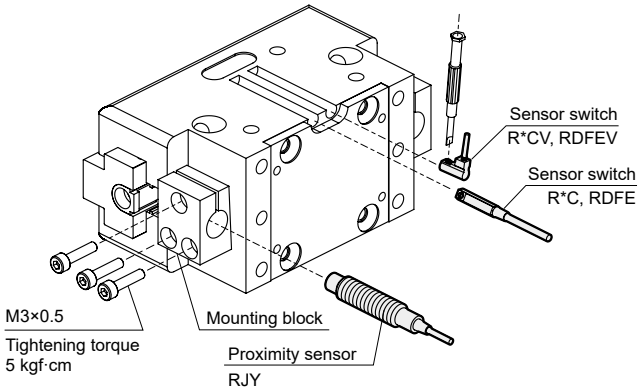
* When the size 50 is assembled with the dust-proof module, the proximity sensor cannot be used.

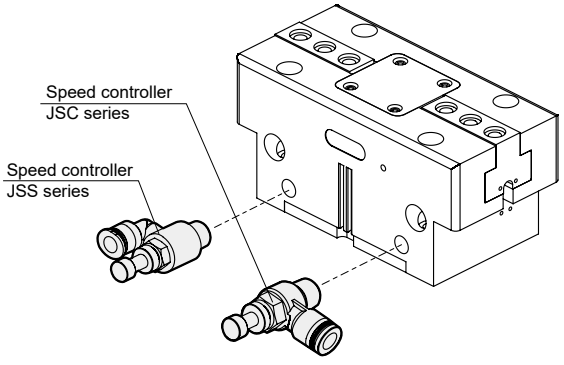
Dust-proof Module

SD — MCHS — 50

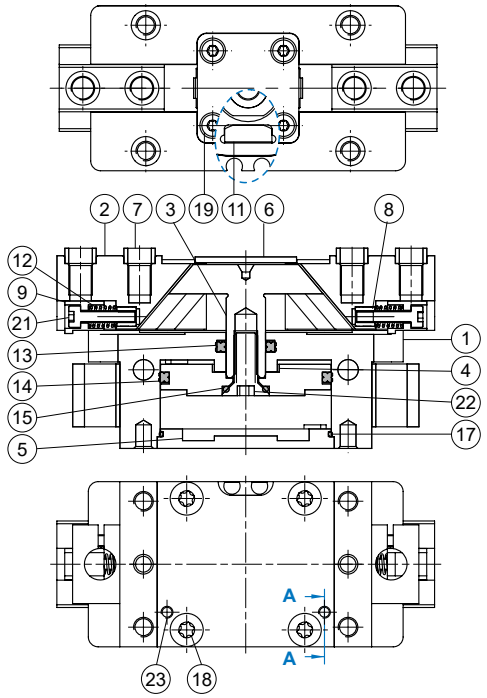
- SD: DUST-PROOF MODULE
- MCHS: MODEL
- 50: SIZE — 50 ~ 300

Installation of sensor switch & speed controller

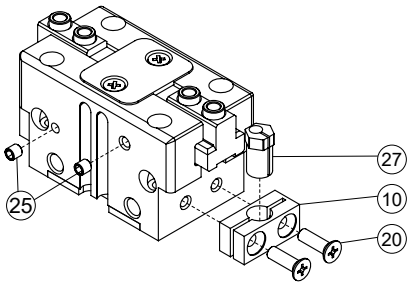




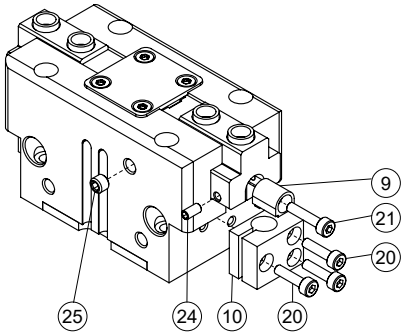
* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification.

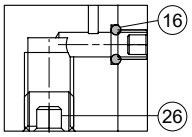


50



66~300





A-A

Material

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

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

Order example of repair kits

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

Order example of accessory kits

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

O-ring (×2)
Material: NBR

Iron plug (×2)
Stainless steel + NBR

PIN (×2)*
Bearing steel

Centering sleeve (×4)
Stainless steel

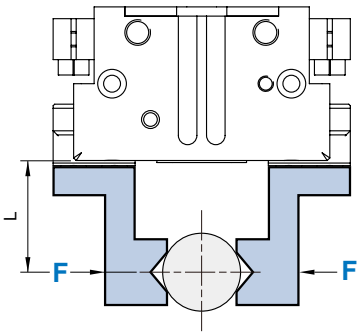
* Size 200 Q'y: 4 pcs

Effective gripping force

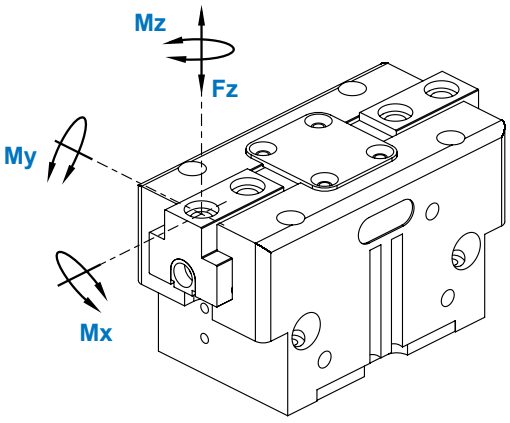
* Model selection .

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

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



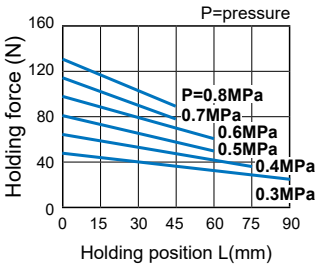
External grip



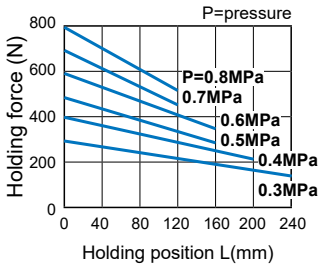
Code / Model	**Mx** max. (Nm)	**My** max. (Nm)	**Mz** max. (Nm)	**Fz** max. (N)
MCHS-50	15	15	8	700
MCHS-66	50	45	35	1200
MCHS-80	80	60	50	1800
MCHS-100	100	90	75	2500
MCHS-125	120	120	100	3200
MCHS-160	160	180	140	5000
MCHS-200	180	220	170	7000
MCHS-300	275	300	200	9000

External gripping force

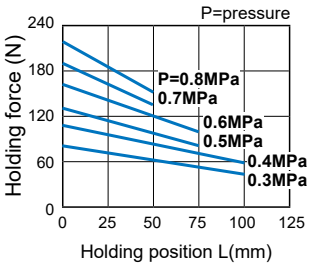
MCHS-50



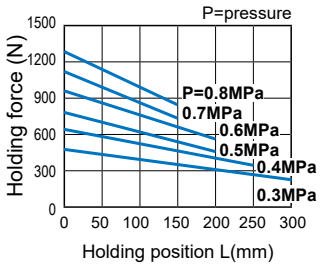
MCHS-125



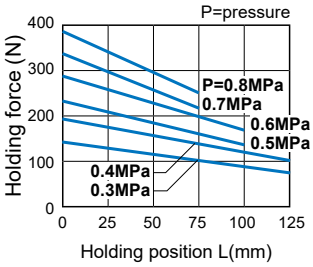
MCHS-66



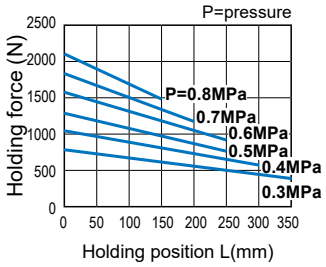
MCHS-160



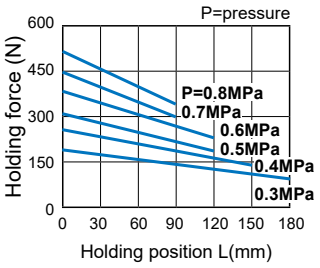
MCHS-80



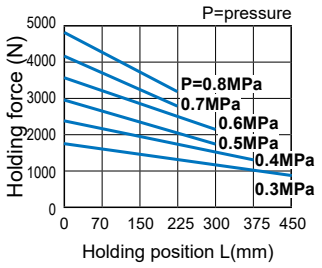
MCHS-200



MCHS-100



MCHS-300

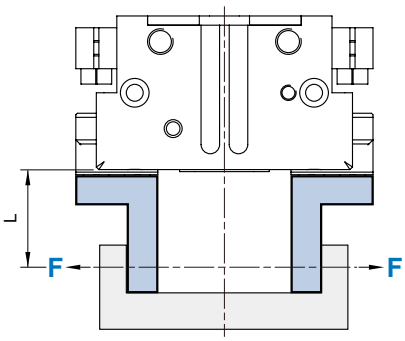


Effective gripping force

* Model selection .

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

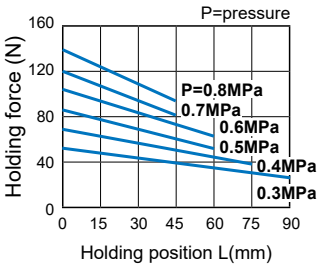
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



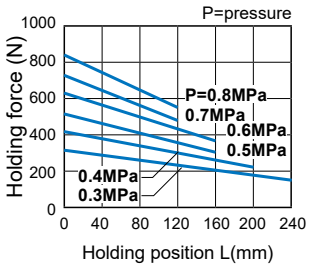
Internal grip

Internal gripping force

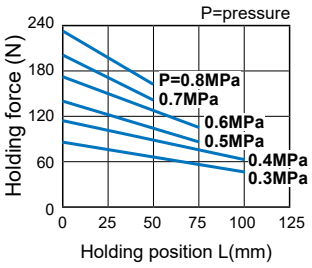
MCHS-50



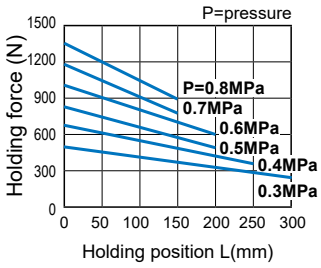
MCHS-125



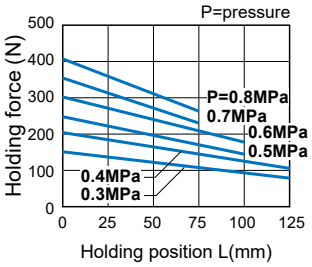
MCHS-66



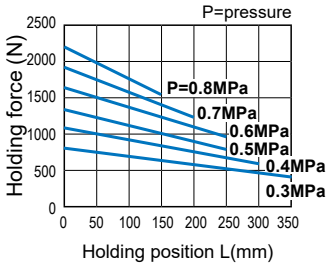
MCHS-160



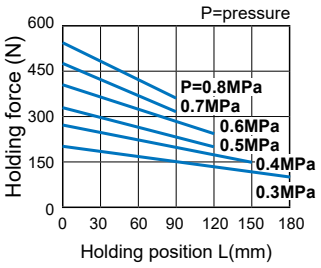
MCHS-80



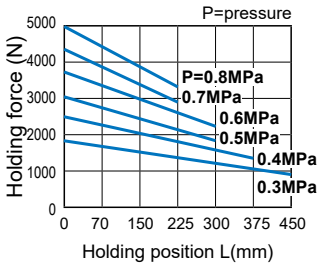
MCHS-200



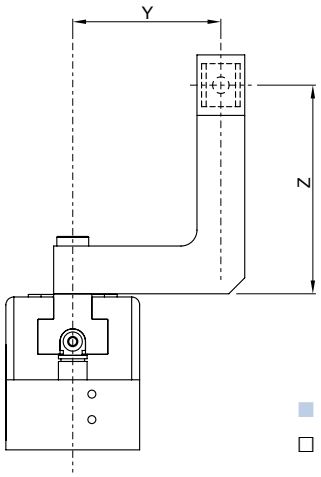
MCHS-100



MCHS-300

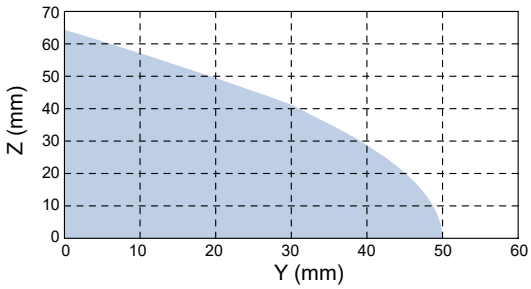


Max. feasible centrifugal degree

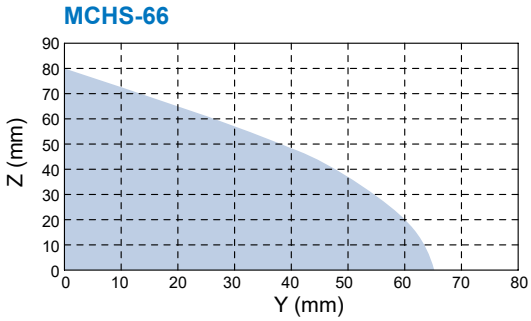


■ Feasible
□ Infeasible

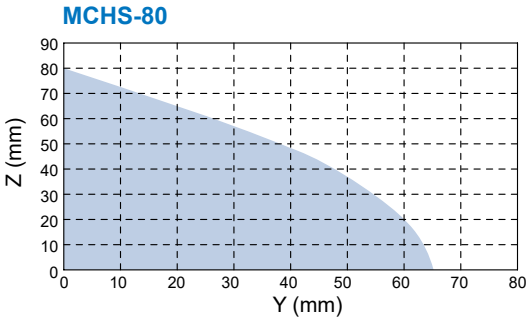
MCHS-50



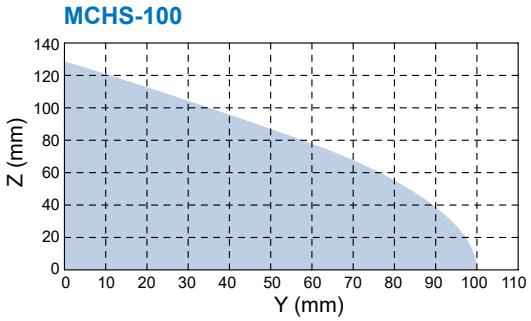
MCHS-66



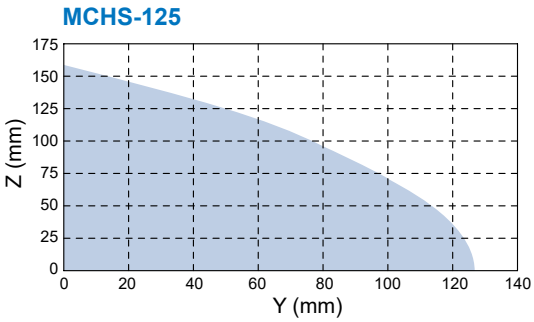
MCHS-80



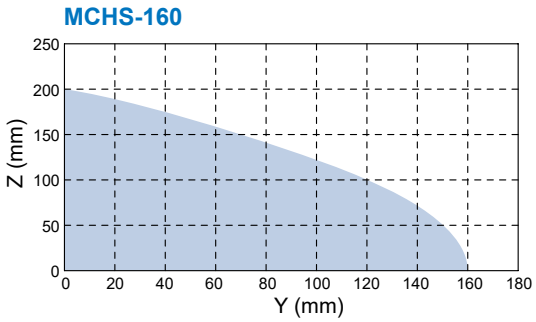
MCHS-100



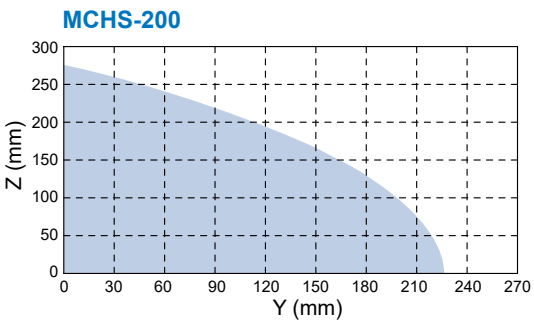
MCHS-125



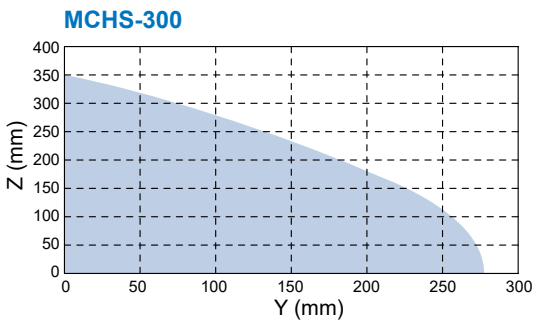
MCHS-160



MCHS-200

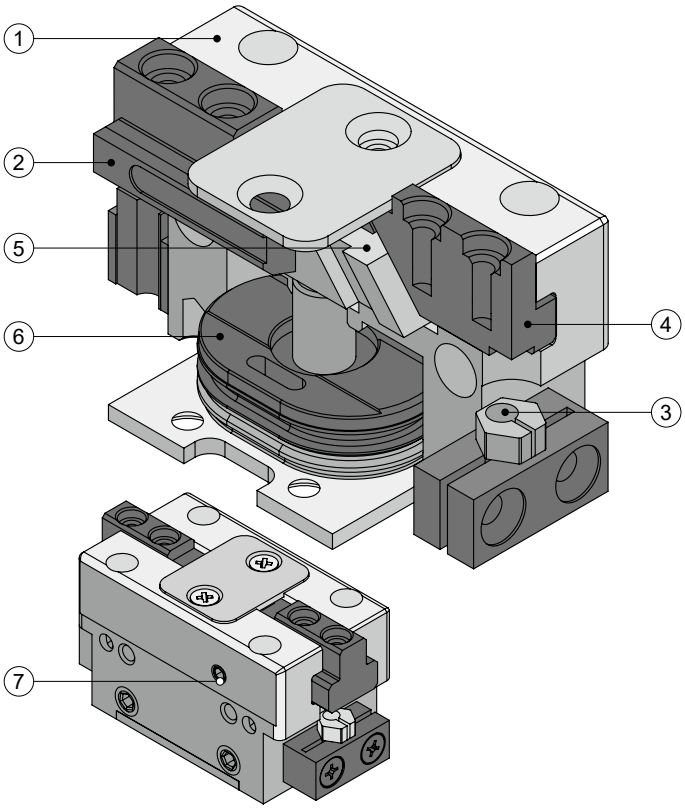


MCHS-300



Internal structure & Movement description

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



① Material
Anodized high rigid aluminum alloy to reduce weight.

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

③ Sensor system
Sensor switch or proximity sensor are available.

④ Base jaw
Jaws connected to work piece.

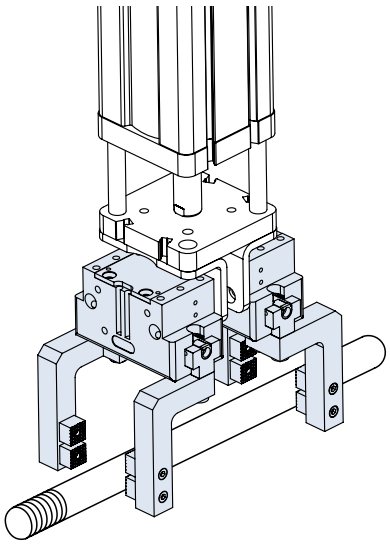
⑤ Wedge hook
High power transmission center jaws.

⑥ Large circular piston
Generate larger structural strength.

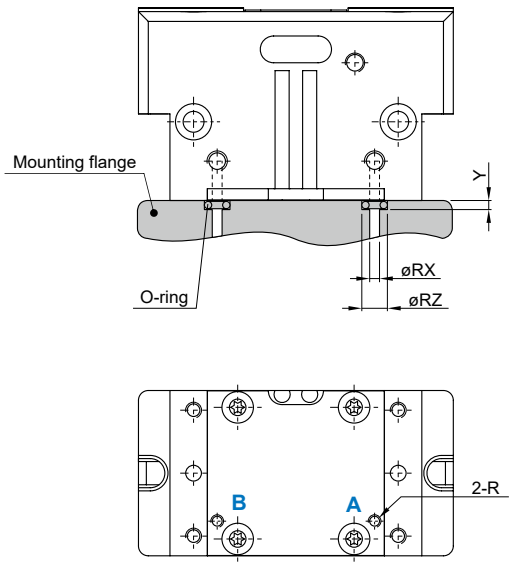
⑦ Air purge connection (External vents)
The air purge is used in order to make it more difficult for dirt and dust to penetrate into the product and the guiding areas.

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

Application examples

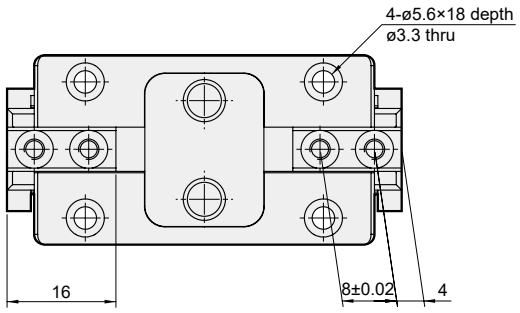


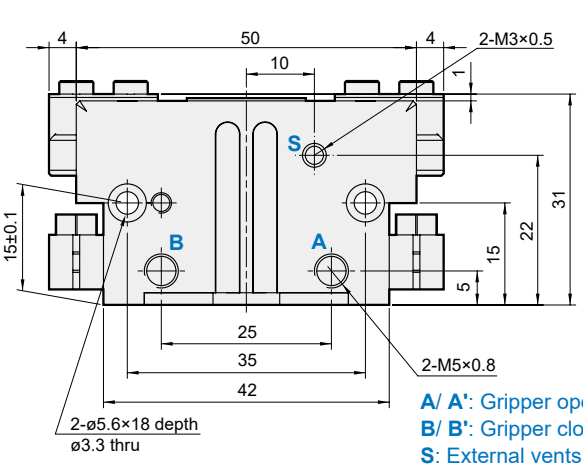
Hose-free direct connection



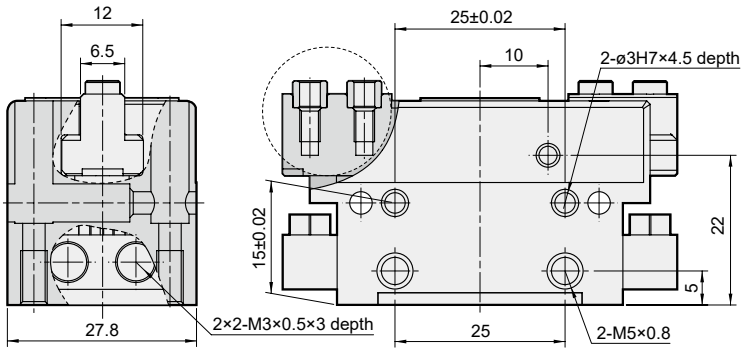
Code / Model	R	RX	RZ	Y
MCHS-50	M2	2	4	0.7
MCHS-66	M3	3	5	0.7
MCHS-80	M3	3	5	0.7
MCHS-100	M5	5	8	1.1
MCHS-125	M5	5	8	1.1
MCHS-160	M5	5	8	1.1
MCHS-200	M5	5	8	1.1
MCHS-300	M5	5	8	1.1

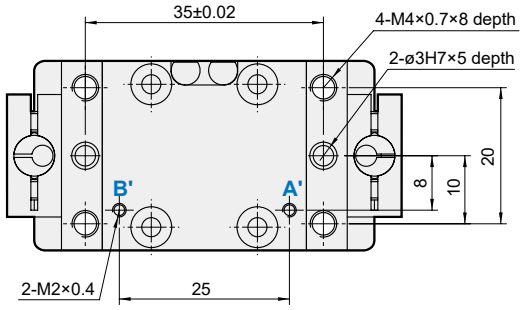
A : Gripper open
B : Gripper close



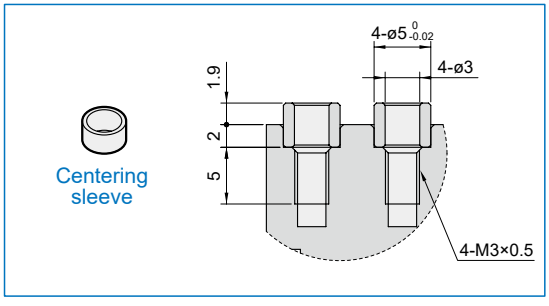


A/ A': Gripper open
B/ B': Gripper close
S: External vents

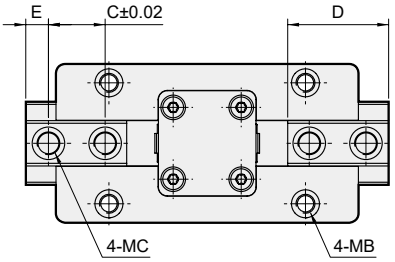


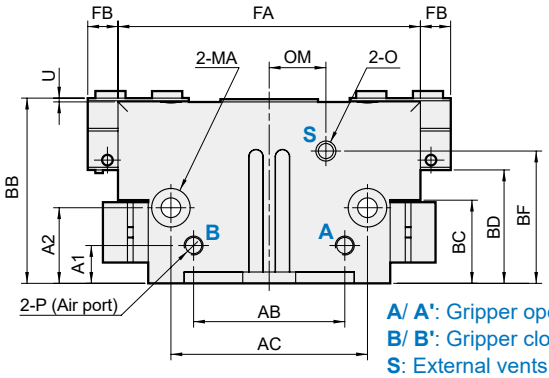


Centering sleeve

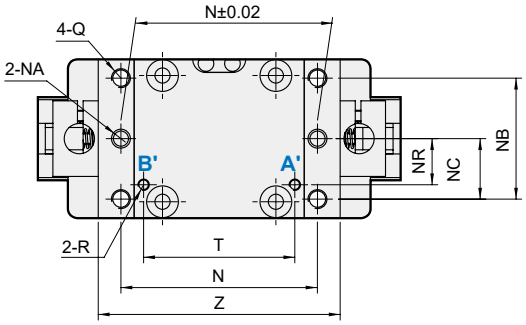


66~100

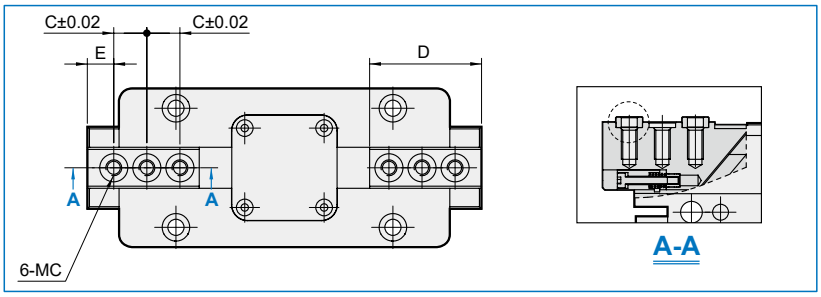


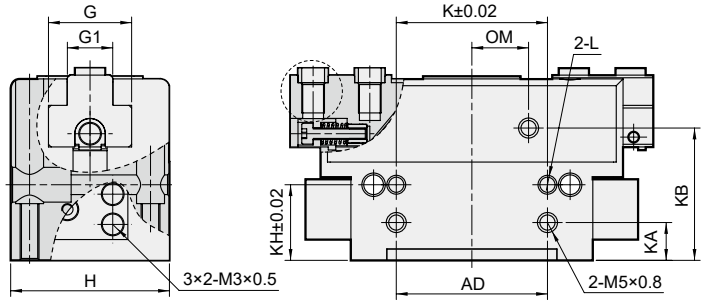


A/ A': Gripper open
B/ B': Gripper close
S: External vents

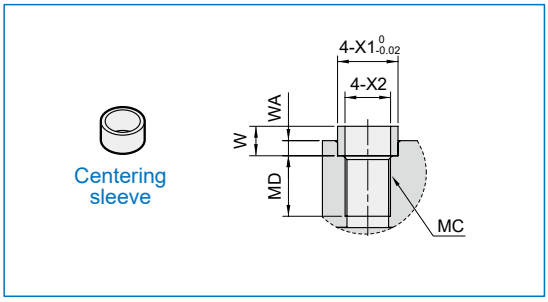


125~300





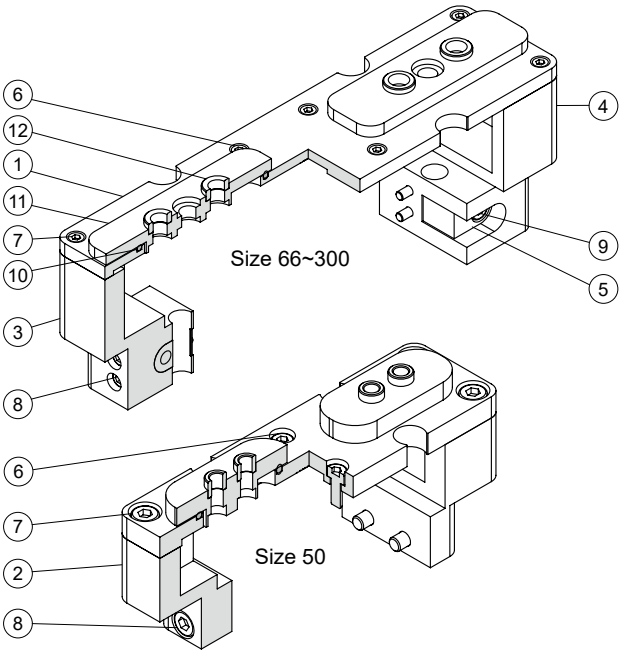
Centering sleeve



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

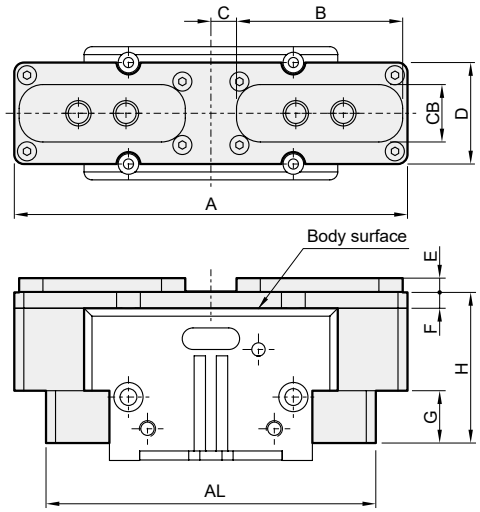
Code / Size	MB	MC	MD	N	NA	NB	NC	NR	O	OM	P	Q	R	T	U	W	WA	X1	X2	Z
66	ø7.4×24dp, ø4.3 thru	M4×0.7	6	42	ø4H7×6dp	27	13.5	11	M5×0.8	12	M5×0.8	M5×0.8×10dp	M3×0.5	28	1	3.9	2	ø6	ø4	52
80	ø7.4×33dp, ø4.3 thru	M6×1.0	8	52	ø4H7×6dp	32	16	12.2	M5×0.8	15	M5×0.8	M5×0.8×10dp	M3×0.5	40	1	3.9	2	ø8	ø6	64
100	ø9×21.5dp,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

Inside structure & Parts list



Dimensions

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



Material

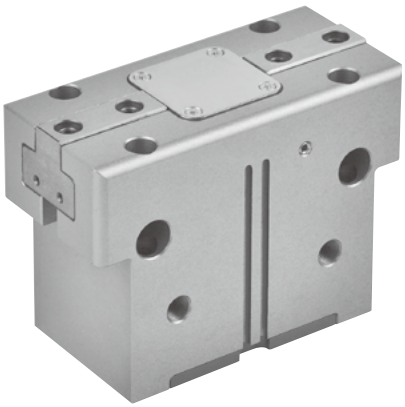
No.	Part name	Material	Q'y	
			50	66~300
1	Dust cover	Aluminum alloy	1	1
2	Mounting block	Aluminum alloy	2	0
3	Mounting block L	Aluminum alloy	0	1
4	Mounting block R	Aluminum alloy	0	1
5	Sensor mounting block	Aluminum alloy	0	2
6	Bolt	Alloy steel	2	4
7	Bolt	Alloy steel	4	4
8	Bolt	Alloy steel	4	4
9	Hexagon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

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

MCHS-OS series

PARALLEL GRIPPER (2-Finger)

Features
Standard
Model selection
Technical data
Caution for safety
(Read before installing)



Features

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

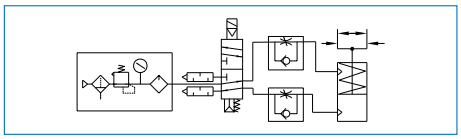
Order example

MCHS – 100 – □ – OS

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

Piping diagram

Double acting with spring



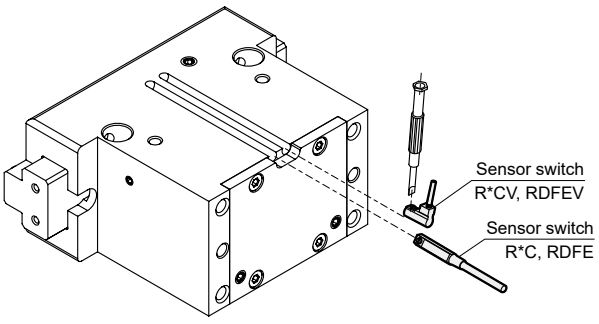
* To prevent the failure of the clamping safety device, the "Closed center (C), Pressure center (P)" type should not be used when employing a 3way solenoid valve.

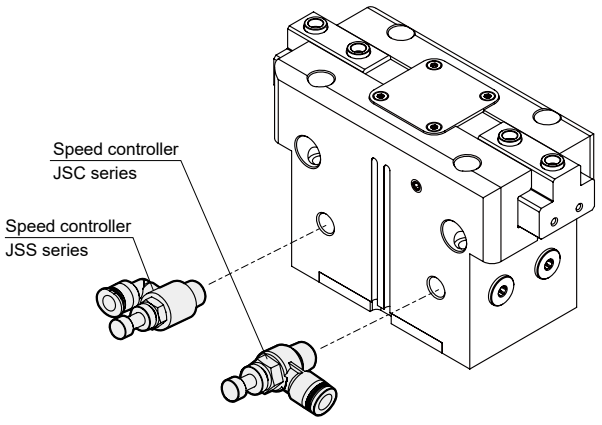
Specification

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

* Under the condition of clamping length 40mm and operation pressure 0.6 MPa.

Installation of sensor switch & speed controller

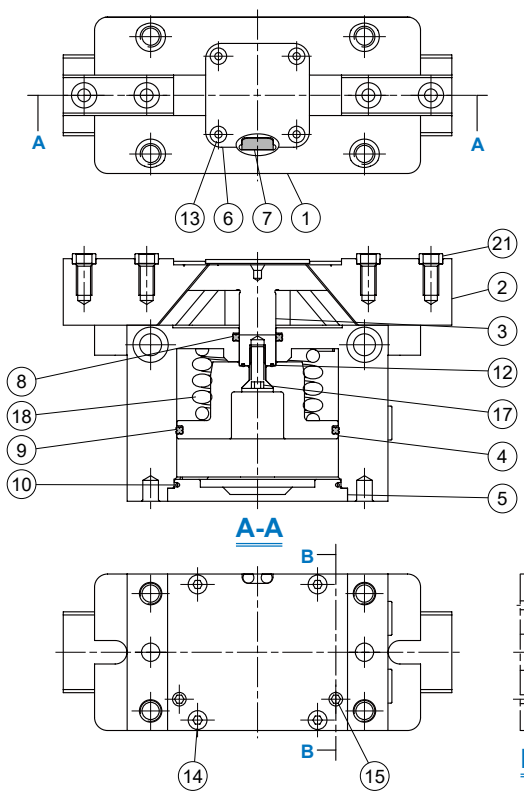


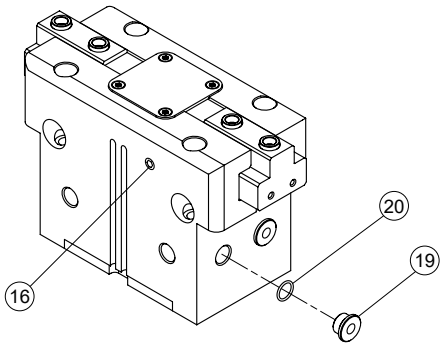


* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification.

MCHS-OS Inside structure & Parts list

PARALLEL GRIPPER (2-Finger)





Material

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

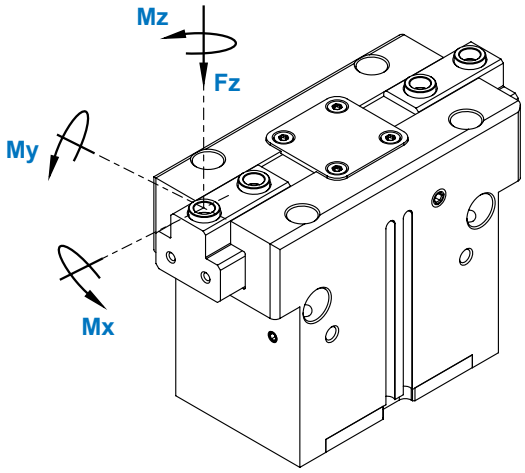
Order example of repair kits

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

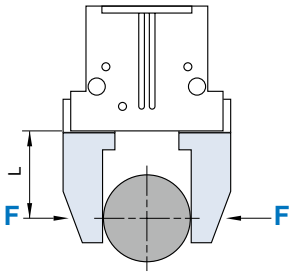
Order example of accessory kits

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

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



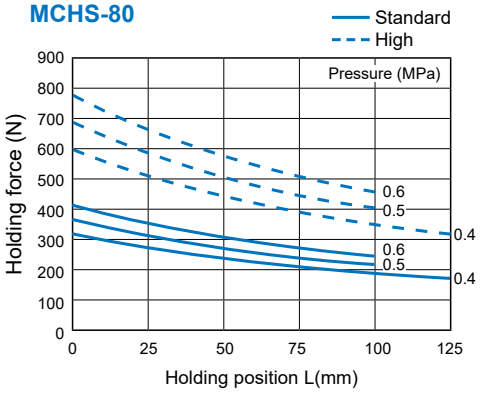
Code / Size	**Mx** max. (Nm)	**My** max. (Nm)	**Mz** max. (Nm)	**Fz** max. (N)
80	80	60	50	1800
100	100	90	75	2500
125	120	120	100	3200



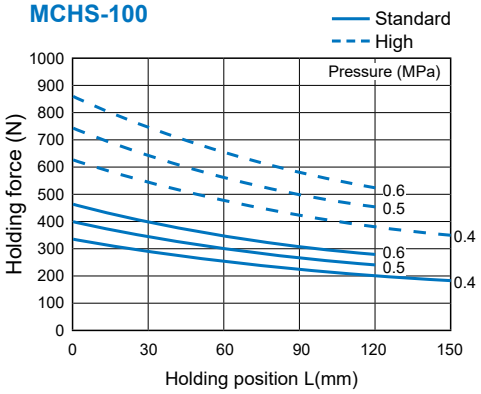
* Clamping force = pneumatic clamping force + spring holding force

External gripping force

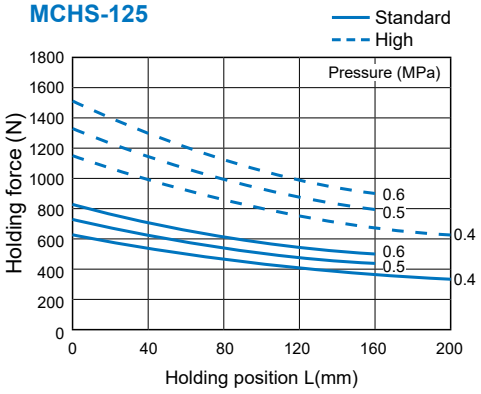
MCHS-80



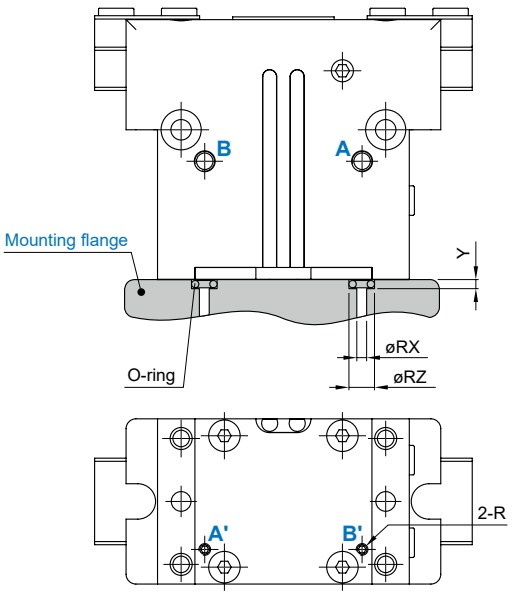
MCHS-100



MCHS-125

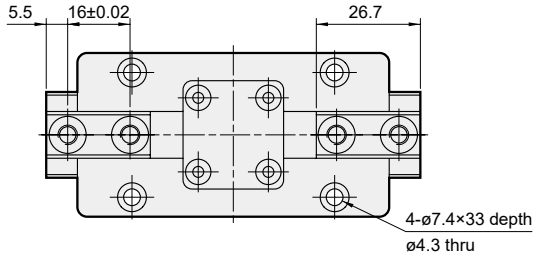


Hose-free direct connection

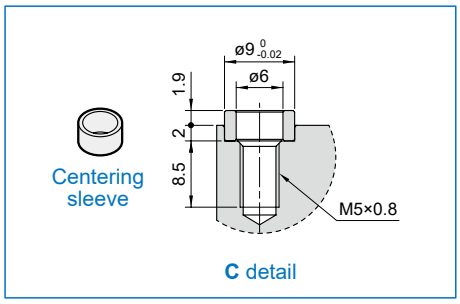


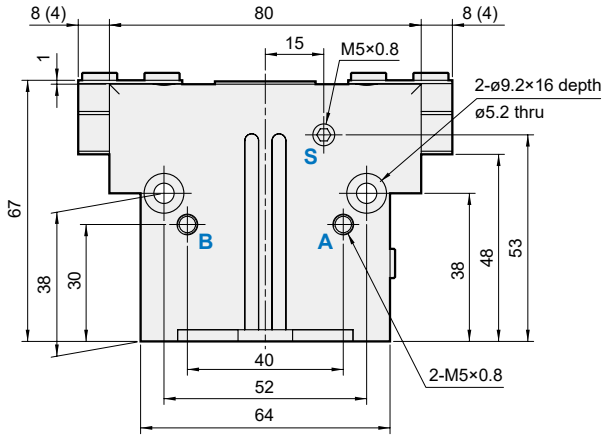
A/ A' : Gripper open
B/ B' : Gripper close

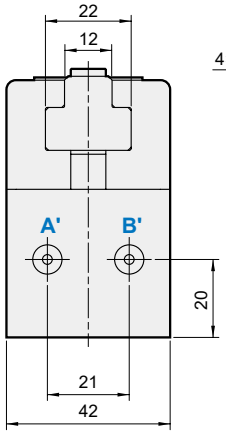
Code / Size	R	RX	RZ	Y
80	M3	3	5	0.7
100	M5	5	8	1.1
125	M5	5	8	1.1

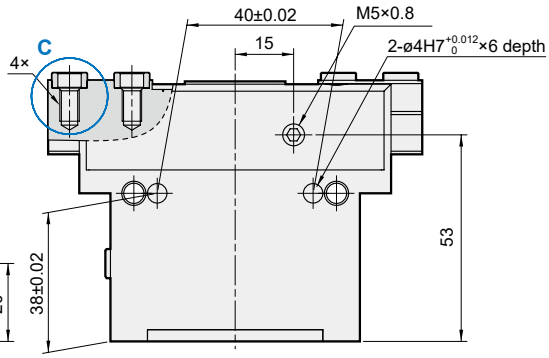


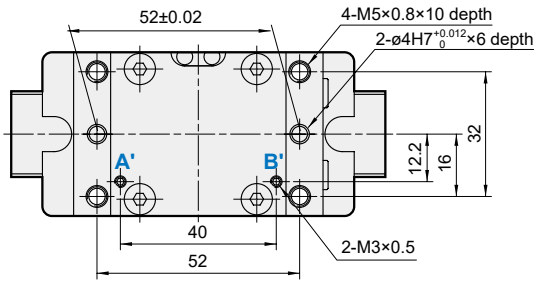
Centering sleeve



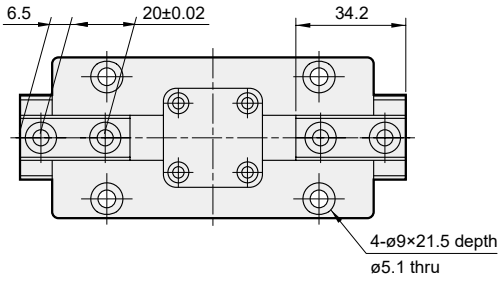




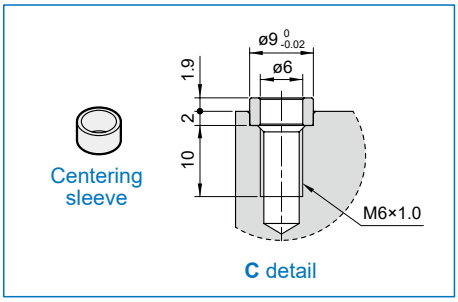


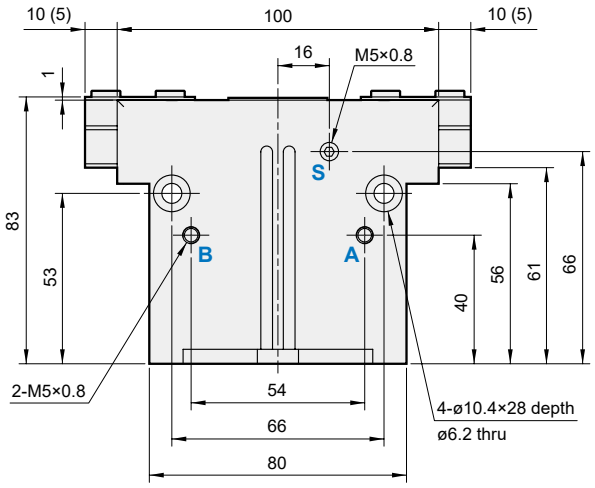


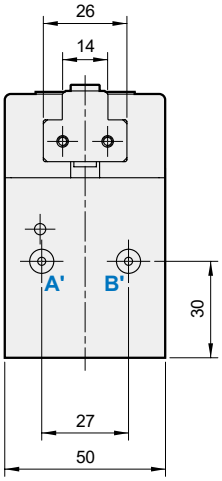
A/ **A'**: Gripper open
B/ **B'**: Gripper close
S: External vents
( ) for high gripping force

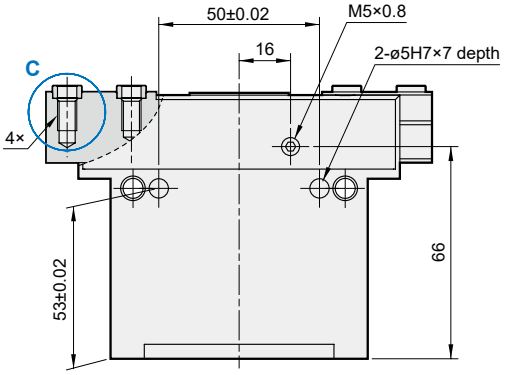


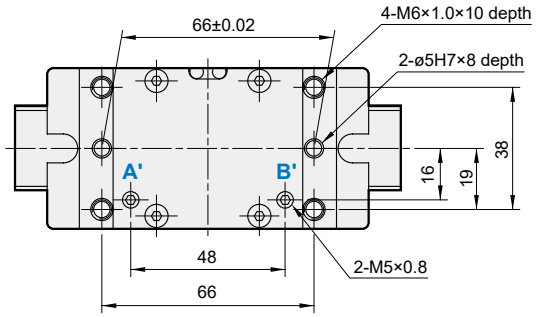
Centering sleeve



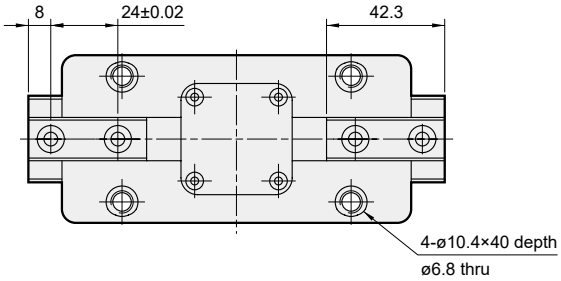




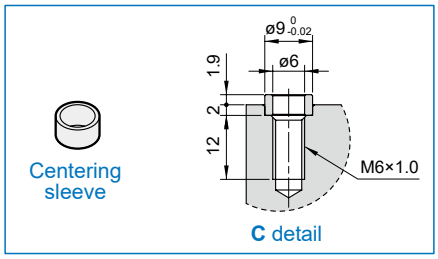


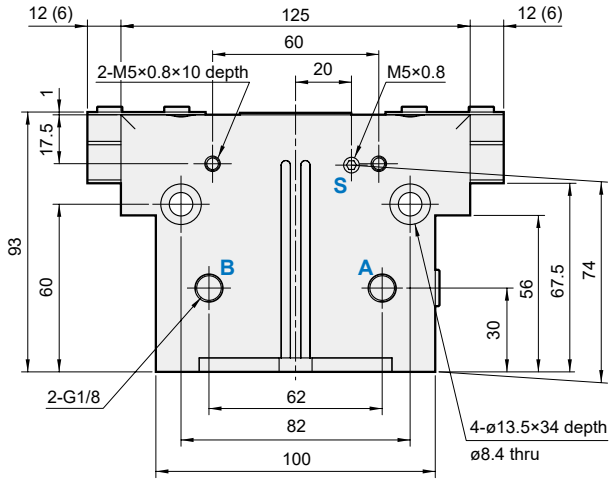


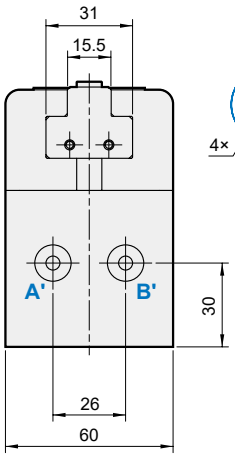
A/ **A'**: Gripper open
B/ **B'**: Gripper close
S: External vents
( ) for high gripping force

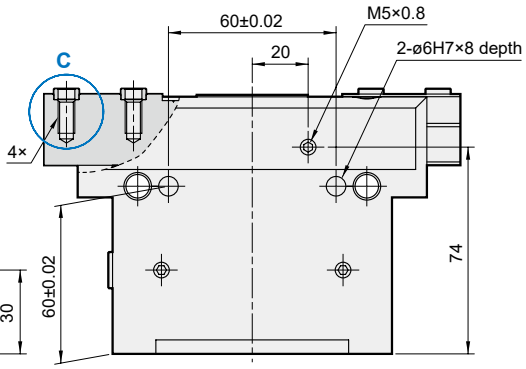


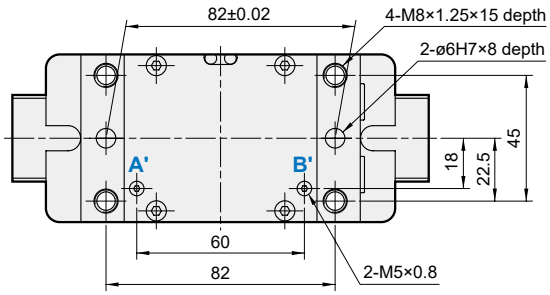
Centering sleeve











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

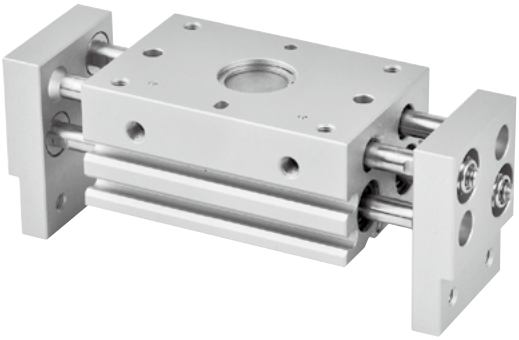
MCHX series

PARALLEL GRIPPER

Model selection

Technical data

Caution for safety
(Read before installing)



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	40
Medium	Air					
Operating pressure range	0.2~0.6 MPa					
Ambient temperature	-5~+60°C (No freezing)					
Lubrication	Not required					
Repeatability	±0.1 mm					
Sensor switch	RDFE(V)					

Order example

MCHX — 16 — 30 M

MODEL

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

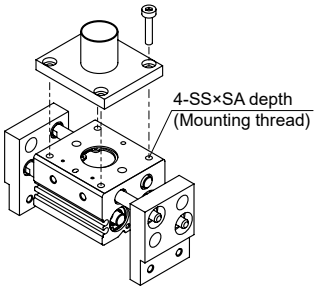
M: Magnet
* Magnetic as standard.

Weight

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

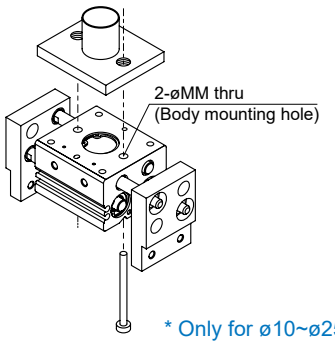
Mounting

Axial mounting



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

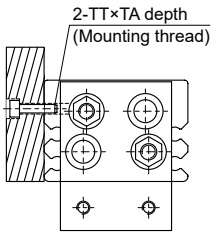
Axial mounting



* Only for ø10~ø25.

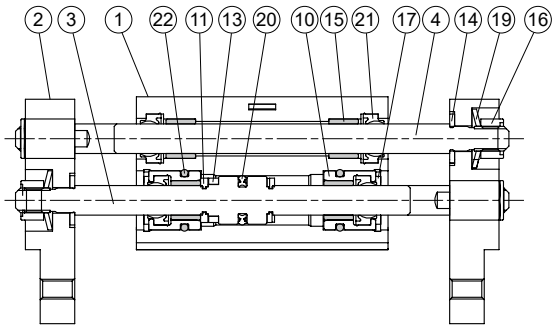
Tube I.D.	MM	Bolt	Max. tightening torque (N.m)
10	4.5	M4×0.7	2.1
16	5.5	M5×0.8	4.3
20	6.6	M6×1.0	7.3
25	9	M8×1.25	17.7
32	–	–	–
40	–	–	–

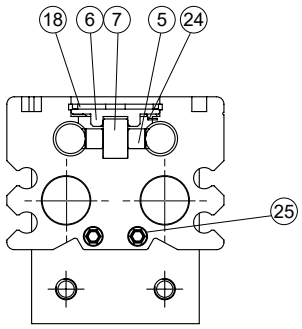
Lateral mounting



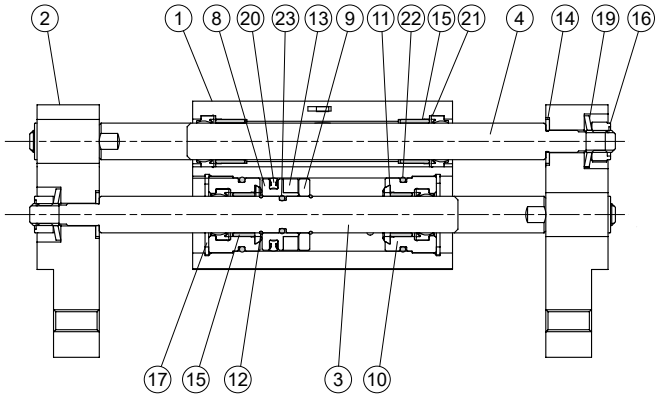
Tube I.D.	TA	TT	Max. tightening torque (N.m)
10	5	M4×0.7	1.4
16	7	M5×0.8	2.8
20	7	M6×1.0	4.8
25	7	M8×1.25	12
32	11	M8×1.25	12
40	12	M10×1.5	24

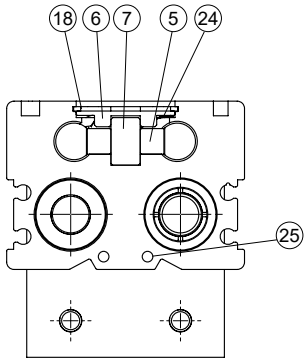
ø10





ø16~ø40





Material

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

Order example of repair kits

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

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

Model selection example

* Model selection .

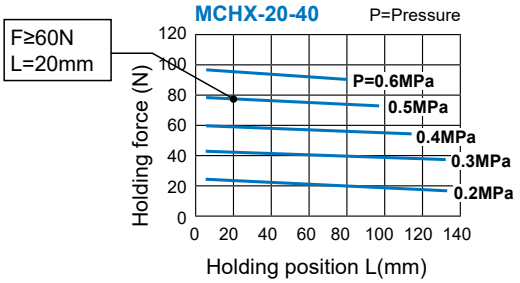
In the motion process did not produce high acceleration, deceleration or impact forces, Workpiece mass: 0.3kg , Gripping method: External gripping, Operating pressure: 0.5 MPa, Coefficient of friction (μ): 0.1, Holding position: L=20mm (no overhang)

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

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

$$\geq 60(N)$$

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

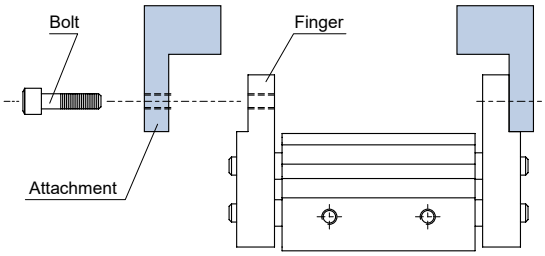


Model selection suggestions

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

Mounting precautions

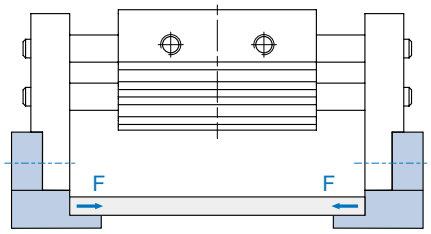
1. To prevent bending the piston rod, please mount the attachment when finger is closing.
2. Do not scratch or dent the sliding portion of the piston rod, or it may cause air leaks or faulty operation.
3. Refer to the table below for the proper tightening torque on the bolt used for securing the attachment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



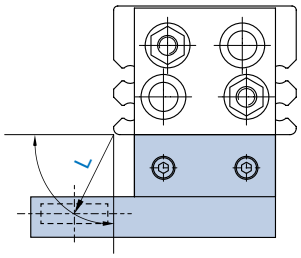
Tube I.D.	Bolt	Max. tightening torque (N.m)
10	M4×0.7	1.4
16	M5×0.8	2.8
20	M6×1.0	4.8
25	M8×1.25	12
32	M10×1.5	24
40	M12×1.75	42.2

Effective gripping force

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

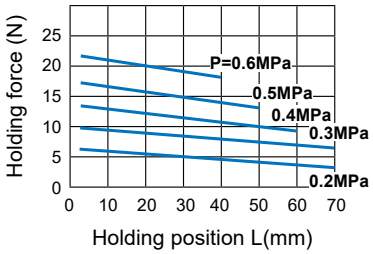


1N=0.102 kgf
1MPa=10.2 kgf/cm^2

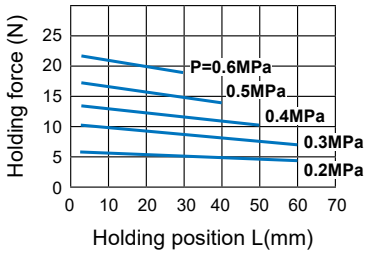


L: Holder position (mm)

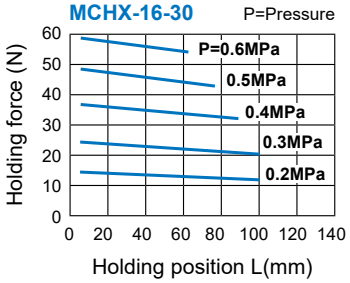
MCHX-10-20 P=Pressure



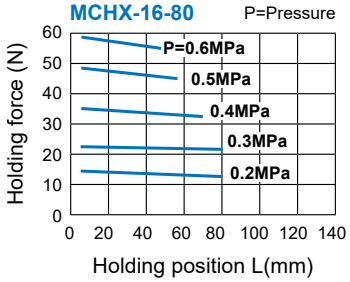
MCHX-10-40
MCHX-10-60 P=Pressure



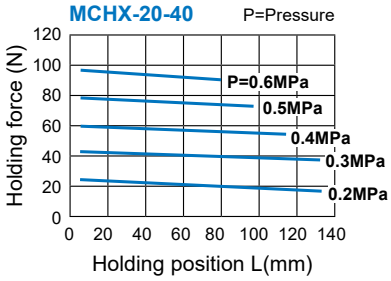
MCHX-16-30 P=Pressure



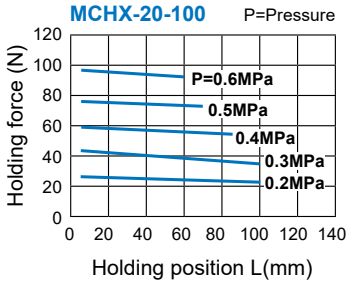
MCHX-16-60
MCHX-16-80 P=Pressure



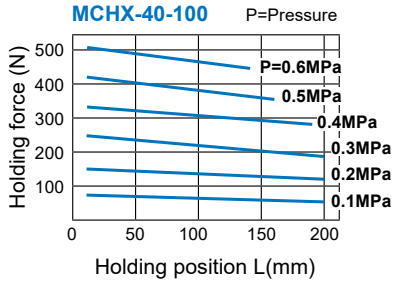
MCHX-20-40 P=Pressure



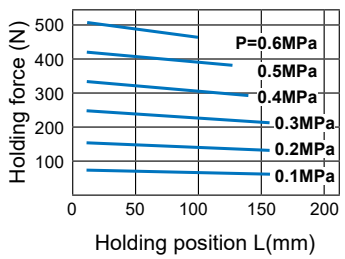
MCHX-20-80
MCHX-20-100 P=Pressure



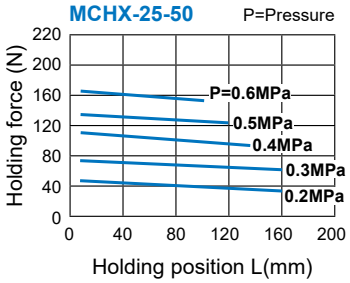
MCHX-40-100 P=Pressure



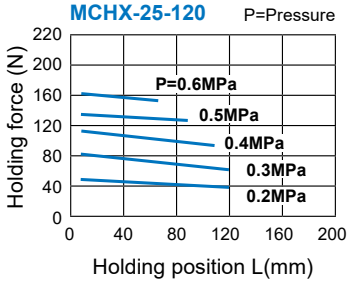
MCHX-40-160
MCHX-40-200 P=Pressure



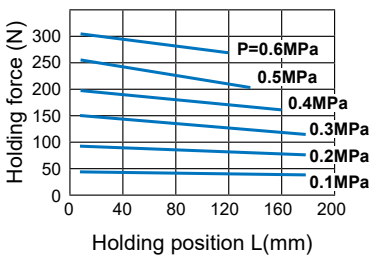
MCHX-25-50 P=Pressure



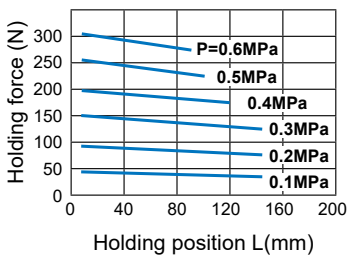
MCHX-25-100
MCHX-25-120 P=Pressure

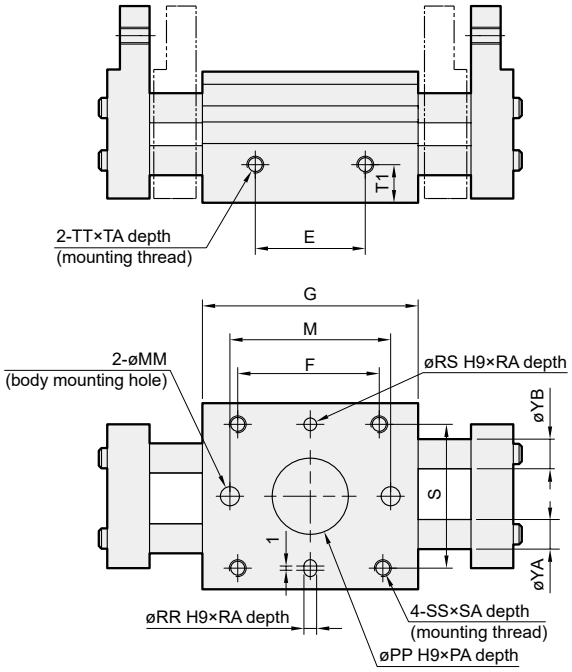


MCHX-32-70 P=Pressure

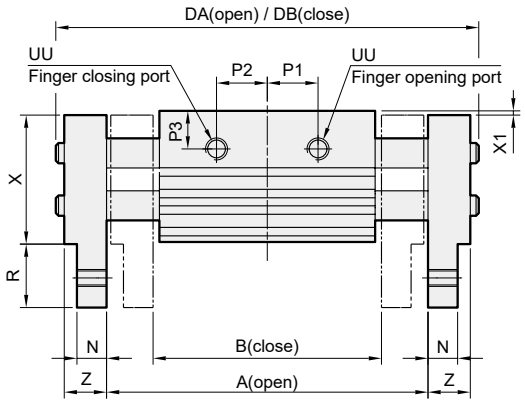


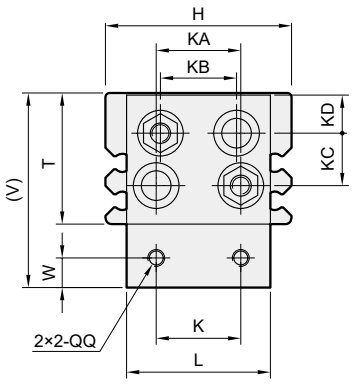
MCHX-32-120
MCHX-32-160 P=Pressure





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





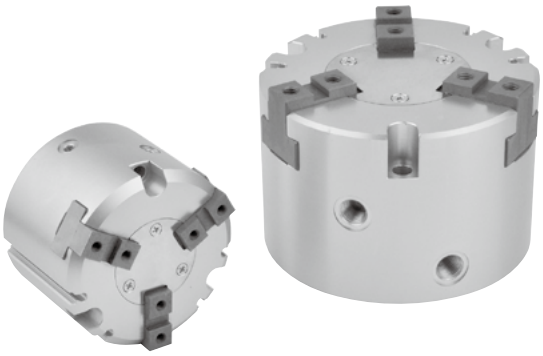
Code / Tube I.D.	H	K	KA	KB	KC	KD	L	N	MM	PA	PP	P3	QQ	R	RA	RR	RS	S	SA	SS
10	44	20	20	18.2	12.5	8	34	7	4.5	1.5	18	9	M4×0.7	15	3	3	3	34	8	M4×0.7
16	55	25	25	22.6	16.5	9	43	9	5.5	1.5	23	10	M5×0.8	19	3	3	3	42	10	M5×0.8
20	65	30	30	28.2	20	10	54	12.5	6.6	1.5	27	11	M6×1.0	24	4	4	4	52	12	M6×1.0
25	76	40	38	33.2	23.5	11.5	64	14	9	1.5	32	16	M8×1.25	29	4.5	4	4	62	16	M8×1.25
32	82	50	40	32.2	30	14.5	70	15	–	2.5	35	16	M10×1.5	32	8	6	6	64	16	M8×1.25
40	98	60	48	40.2	37	16	86	18	–	2.5	40	18	M12×1.75	38	8	6	6	76	20	M10×1.5

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

MCHG2 series

PARALLEL GRIPPER (3-Finger)

mindman



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 — □

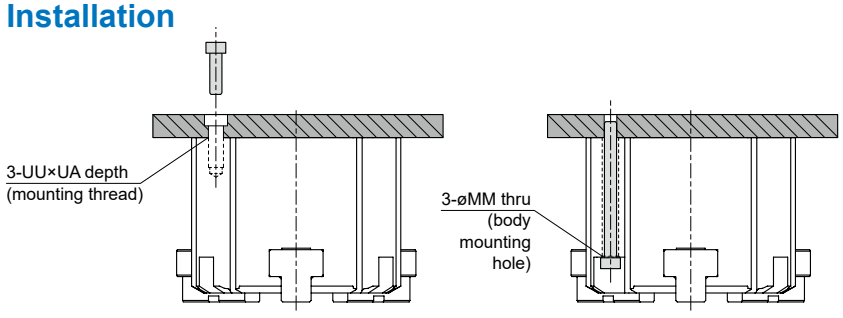
- MODEL
- TUBE I.D.: **16, 20, 25, 32, 40, 50, 63, 80, 100, 125**
- **M**: Magnet (* Magnetic as standard.)
- PORT THREAD: Blank: M thread (only for ø16~ø63); Blank: Rc thread; **G**: G thread; **NPT**: NPT thread (only for ø80~ø125)

Specification

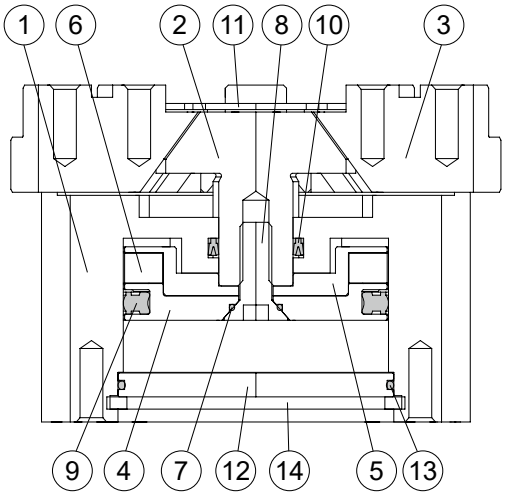
Model		MCHG2									
Acting type		Double acting									
Tube I.D. (mm)		16 (*2)	20	25	32	40	50	63 (*2)	80	100	125
Stroke (mm)		4	4	6	8	8	12	16	20	24	32
Port size		M3×0.5	M5×0.8						Rc1/8	Rc1/4	Rc3/8
Medium		Air									
Operating pressure (MPa)		0.2~0.6			0.1~0.6						
Ambient temperature		-10~+60°C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

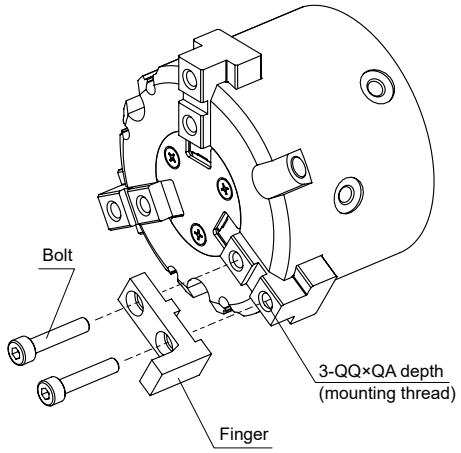
*1. Values for ø16~ø25 are with gripping length(L) = 20 mm, for ø32~ø63 with gripping length(L) = 30 mm, and for ø80~ø125 with gripping length(L) = 50 mm.
*2. ø16, ø63 are available with 2-finger type (Made to order). Please contact us if other size is needed.

Installation



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





* The bolts and fingers are prepared by the customers.

Material

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

Order example of repair kits

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

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

Mounting precautions

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

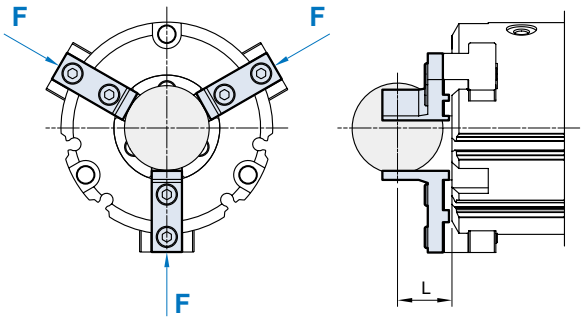
Model	QQ×QA	Bolt	Max. tightening torque (N.m)
MCHG2-16	M3×0.5×5	M3×0.5	0.59
MCHG2-20	M3×0.5×6	M3×0.5	0.59
MCHG2-25	M3×0.5×6	M3×0.5	0.59
MCHG2-32	M4×0.7×8	M4×0.7	1.4
MCHG2-40	M4×0.7×8	M4×0.7	1.4
MCHG2-50	M5×0.8×8	M5×0.8	2.8
MCHG2-63	M5×0.8×8	M5×0.8	2.8
MCHG2-80	M6×1.0×12	M6×1.0	4.8
MCHG2-100	M8×1.25×16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

Effective gripping force

* Model selection .

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

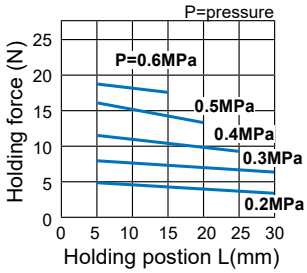
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



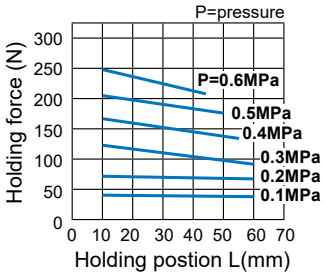
External grip

External gripping force

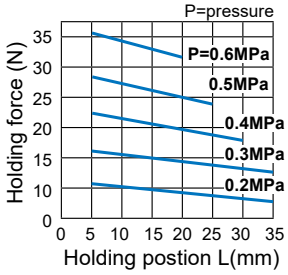
MCHG2-16



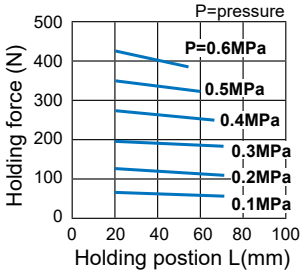
MCHG2-50



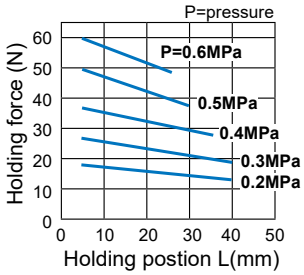
MCHG2-20



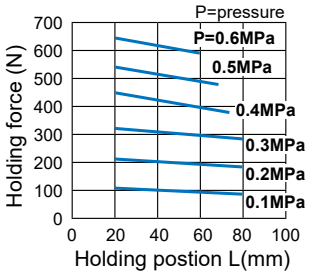
MCHG2-63



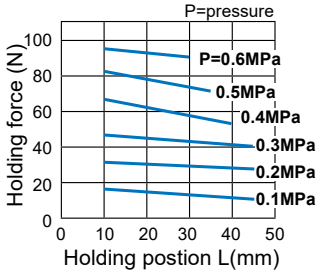
MCHG2-25



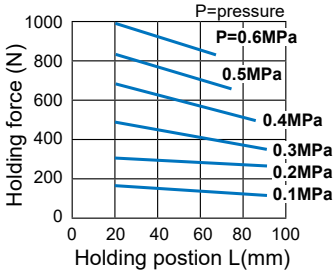
MCHG2-80



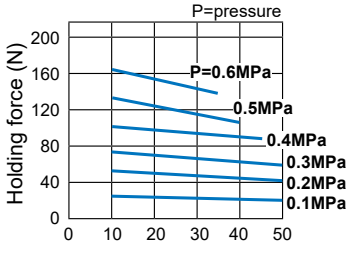
MCHG2-32



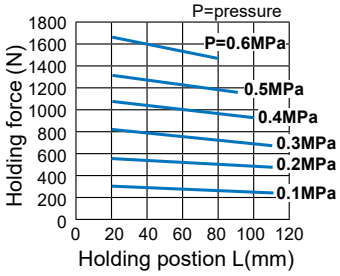
MCHG2-100



MCHG2-40



MCHG2-125

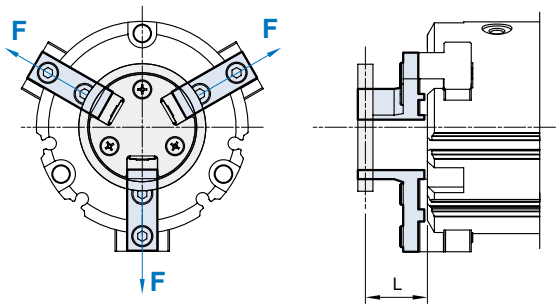


Effective gripping force

* Model selection .

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

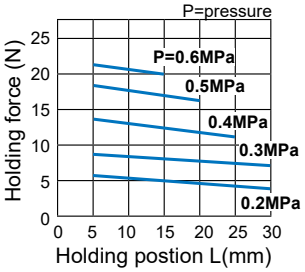
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



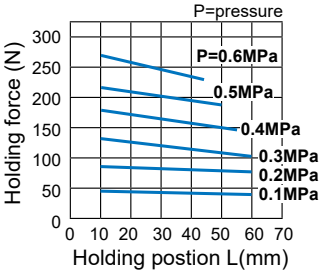
Internal grip

Internal gripping force

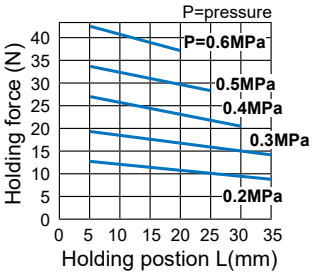
MCHG2-16



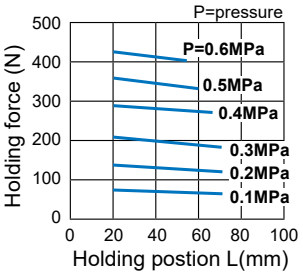
MCHG2-50



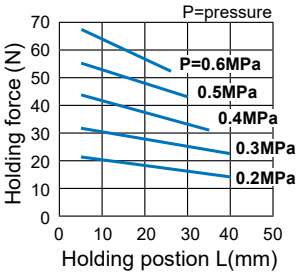
MCHG2-20



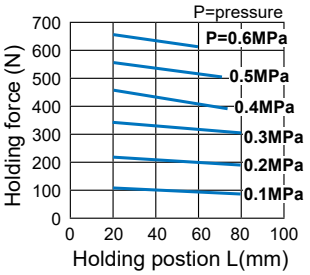
MCHG2-63



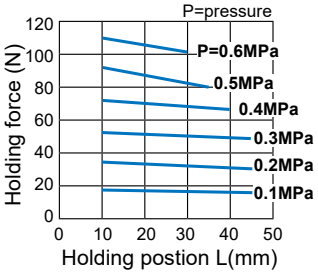
MCHG2-25



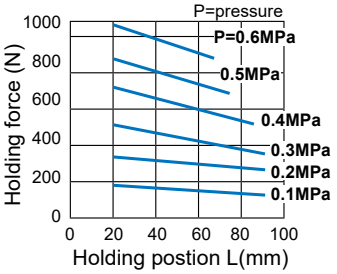
MCHG2-80



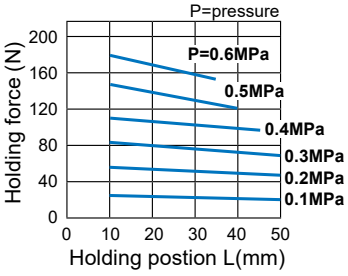
MCHG2-32



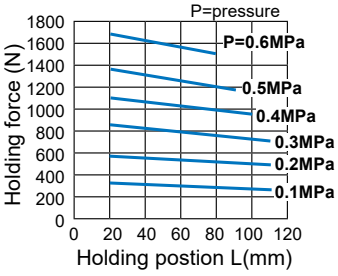
MCHG2-100

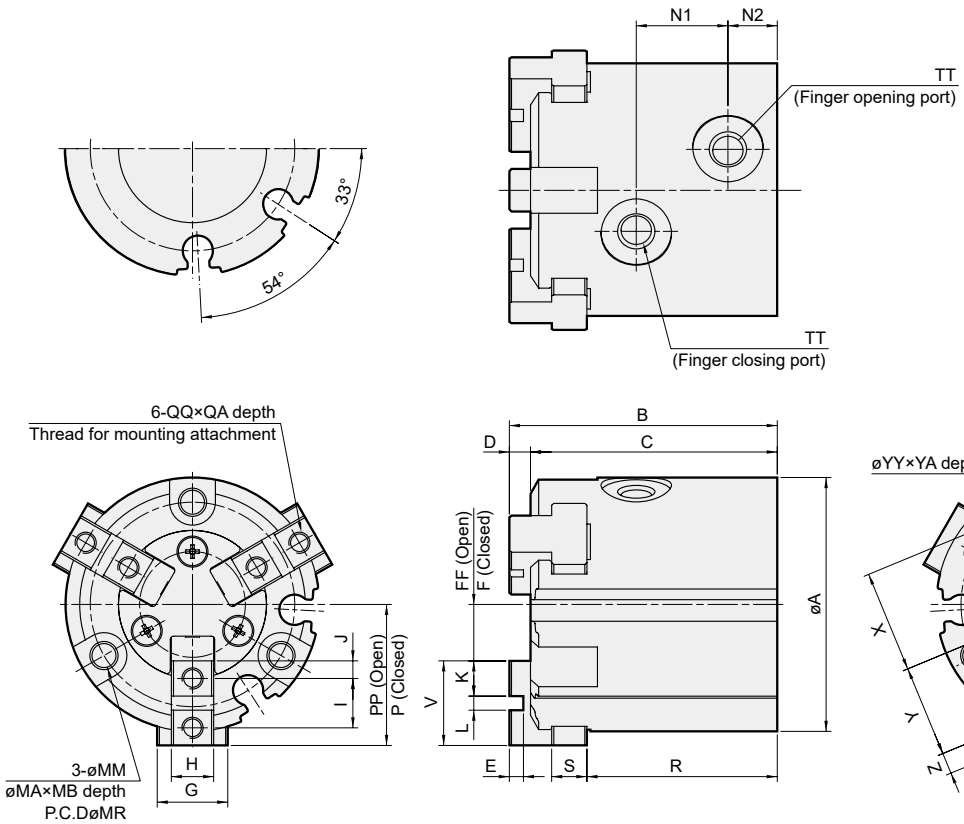


MCHG2-40



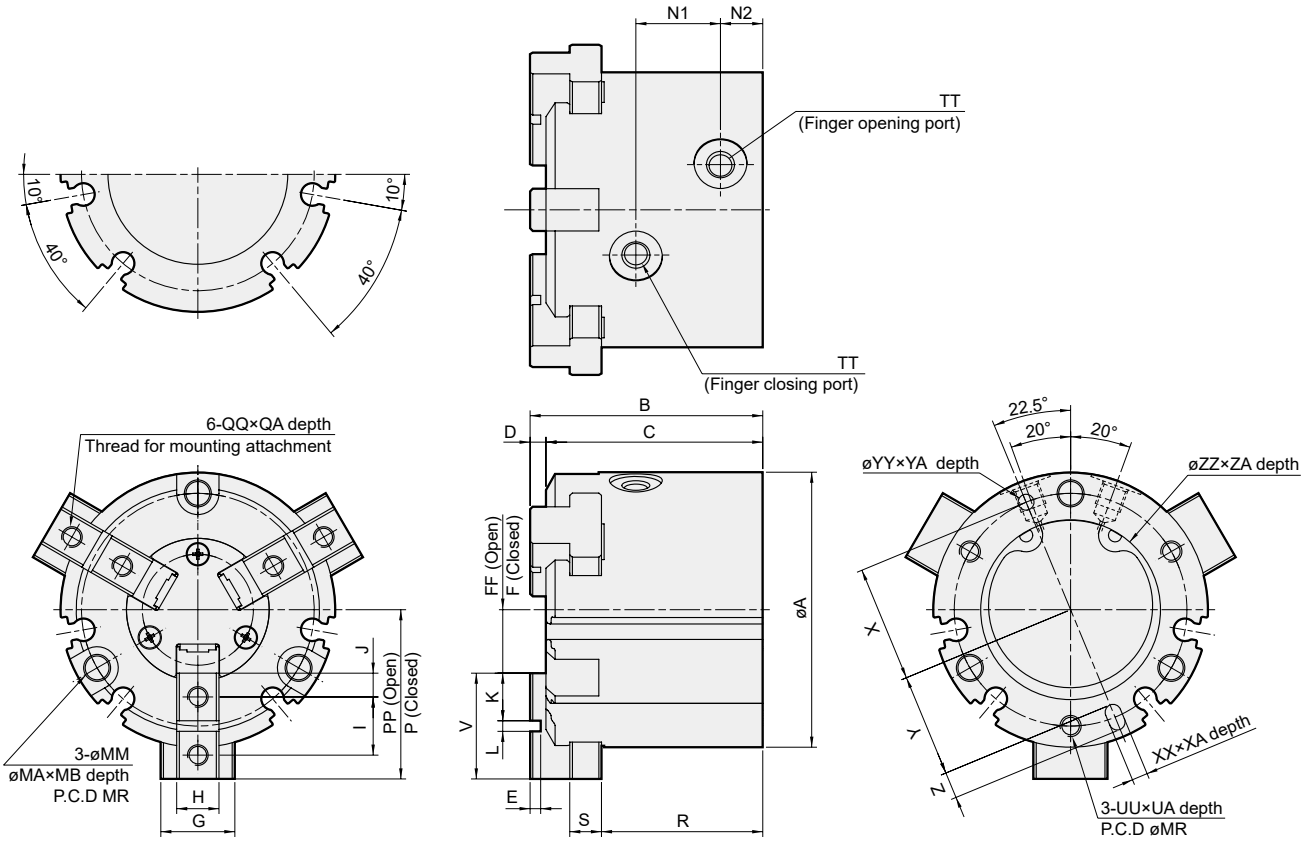
MCHG2-125





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

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



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

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

COMING SOON
Compatible with R*C(V) series sensor
Update information

MCHJ series

PARALLEL GRIPPER (3-Finger)

Features

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

Dust-proof module

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

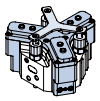
Pressure piece

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

Order example

MCHJ — 50 — SD

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

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

*1. Only for size 50~100.
*2. When the size 50 is assembled with the dust-proof module, the proximity sensor cannot be used.

Accessories

SD — MCHJ — 50

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

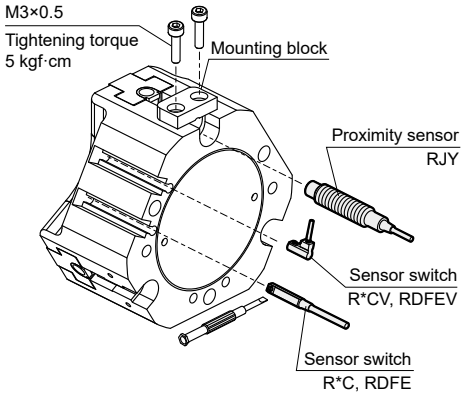
* Pressure piece (P) only for size 50~100.

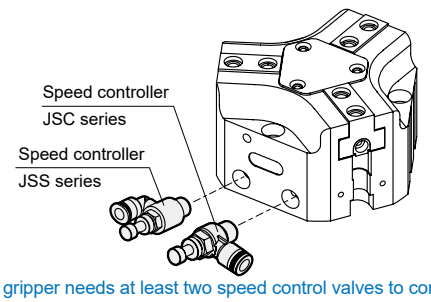
Specification

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

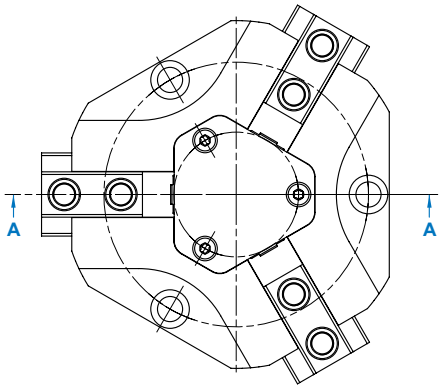
* Under the condition of clamping length 40mm and operation pressure 0.6 MPa.

Installation of sensor switch & speed controller

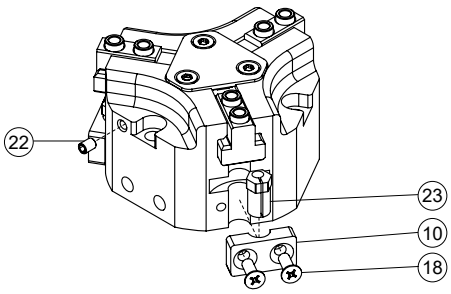




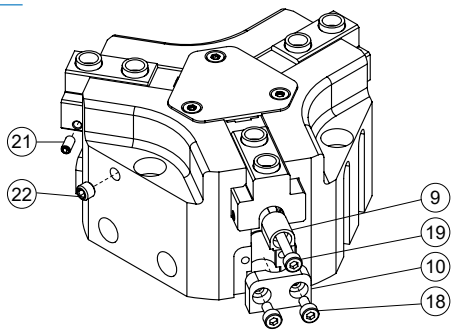
* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification.

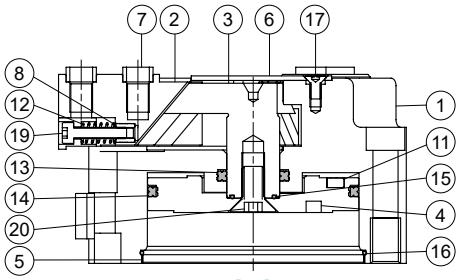


50



66~160





A-A

Material

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

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

Order example of repair kits

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

Order example of accessory kits

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

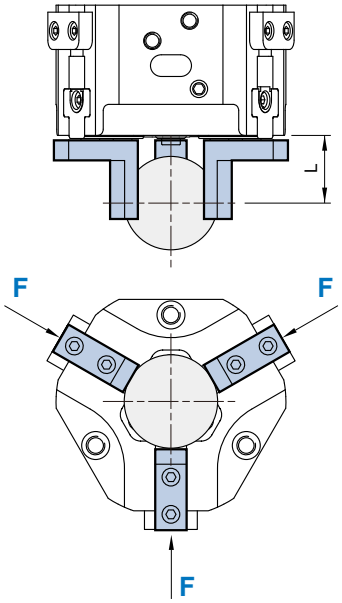
	
O-ring (×2) Material: NBR	Iron plug (×2) Stainless steel + NBR
	
PIN (×2) Bearing steel	Centering sleeve (×6) Stainless steel

Effective gripping force

* Model selection .

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

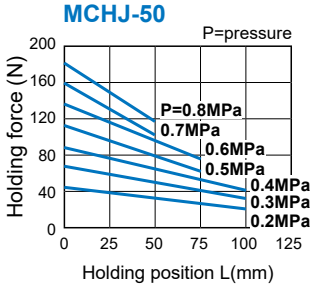
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



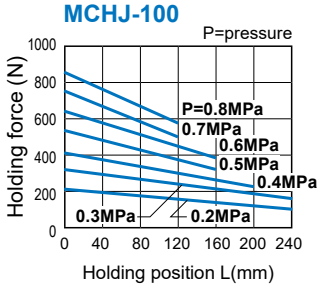
External grip

External gripping force

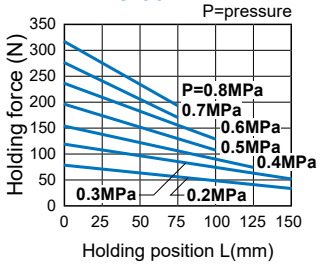
MCHJ-50



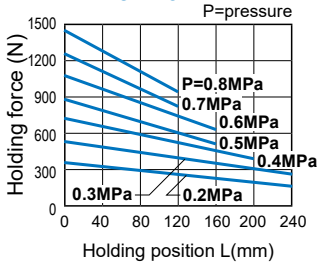
MCHJ-100



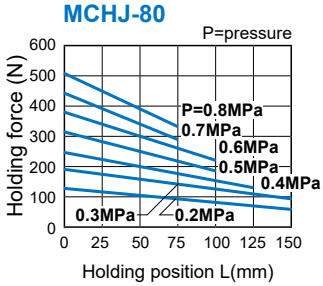
MCHJ-66



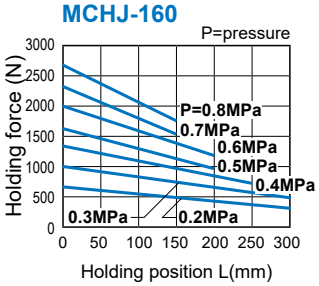
MCHJ-125

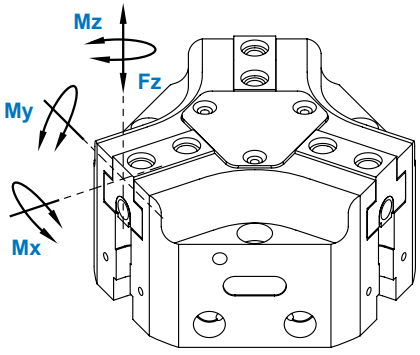


MCHJ-80



MCHJ-160





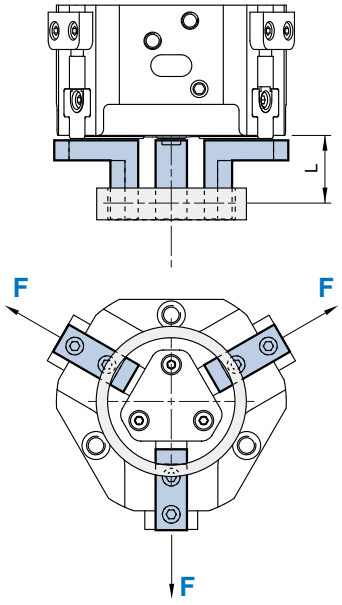
Code / Model	**Mx** max. (Nm)	**My** max. (Nm)	**Mz** max. (Nm)	**Fz** max. (N)
MCHJ-50	15	15	8	700
MCHJ-66	50	45	35	1200
MCHJ-80	80	60	50	1800
MCHJ-100	100	90	75	2500
MCHJ-125	120	120	100	3200
MCHJ-160	160	180	140	5000

Effective gripping force

* Model selection .

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

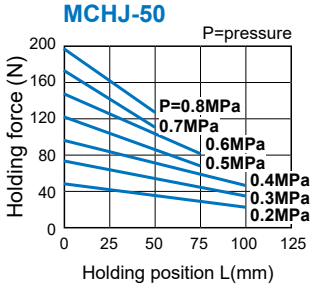
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



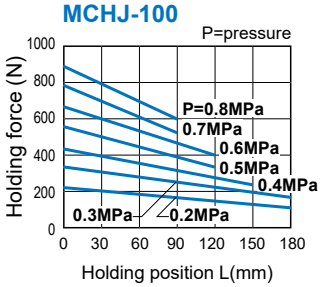
Internal grip

Internal gripping force

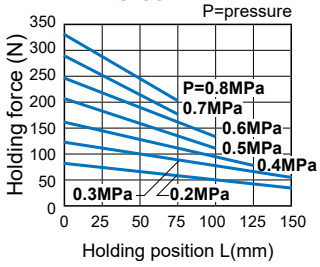
MCHJ-50



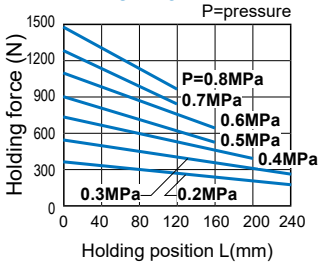
MCHJ-100



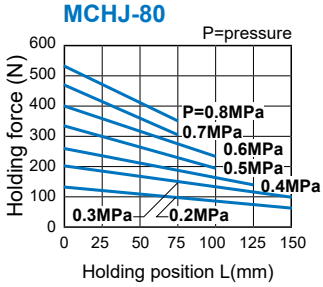
MCHJ-66



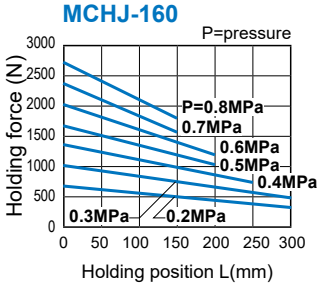
MCHJ-125



MCHJ-80

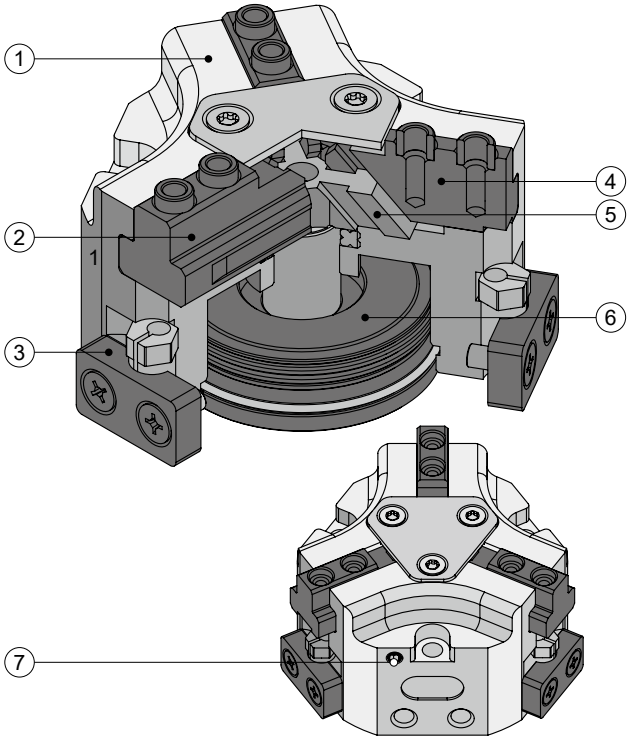


MCHJ-160



Internal structure & Movement description

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



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

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

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

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

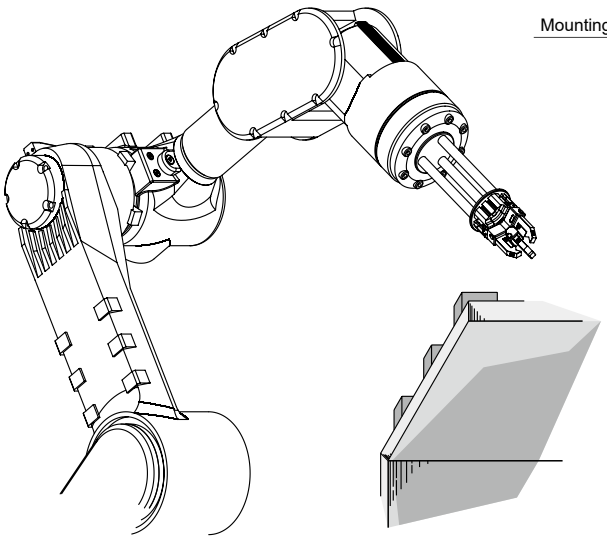
⑤ **Wedge hook**
High power transmission center jaws.

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

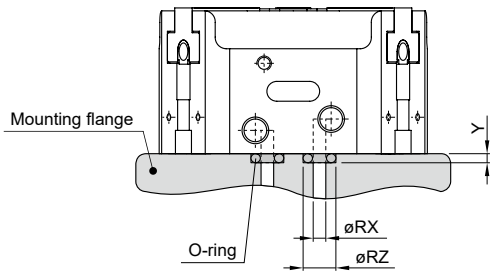
⑦ **Air purge connection** (External vents)
The air purge is used in order to make it more difficult for dirt and dust to penetrate into the product and the guiding areas.
* The air purge is effective only when the gripper is opened.
* Install a valve to control the air purge.

Application examples

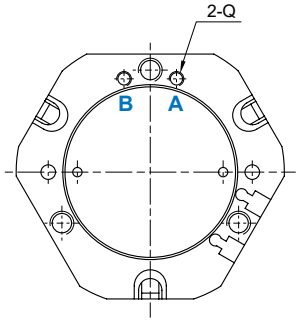
The wedge hook can pass through the inclined working surface, change the action to sideways and simultaneously actuate the three-jaw clamping movement.
It can be used in the robot arm system environment when matched with various accessory.



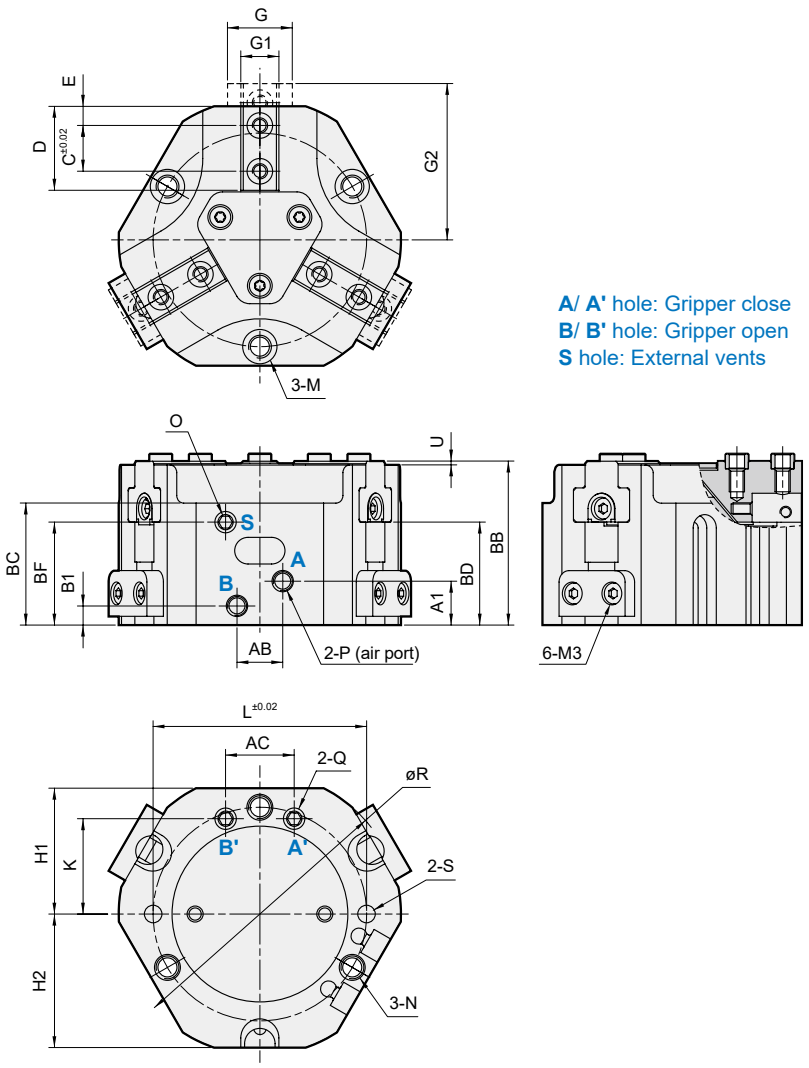
Hose-free direct connection



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

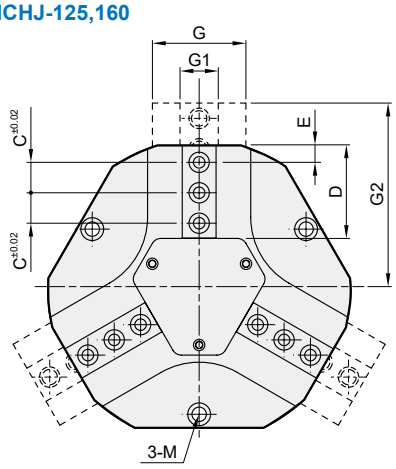


A hole: Gripper close
B hole: Gripper open



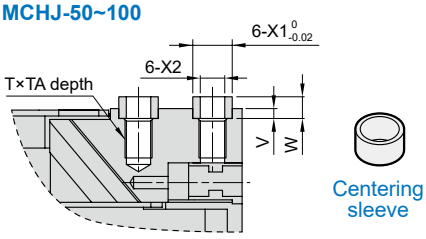
A/ A' hole: Gripper close
B/ B' hole: Gripper open
S hole: External vents

MCHJ-125,160

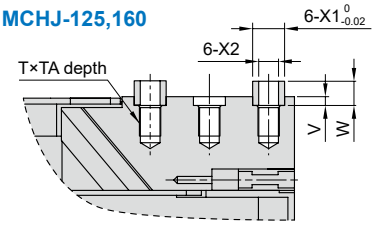


Centering sleeve

MCHJ-50~100



MCHJ-125,160

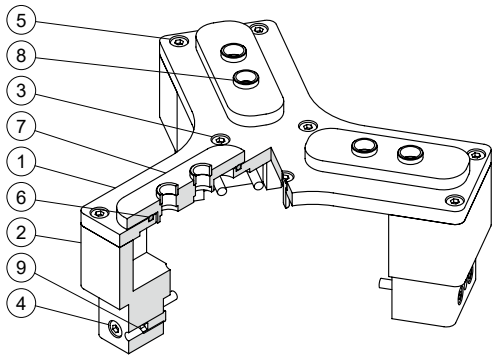


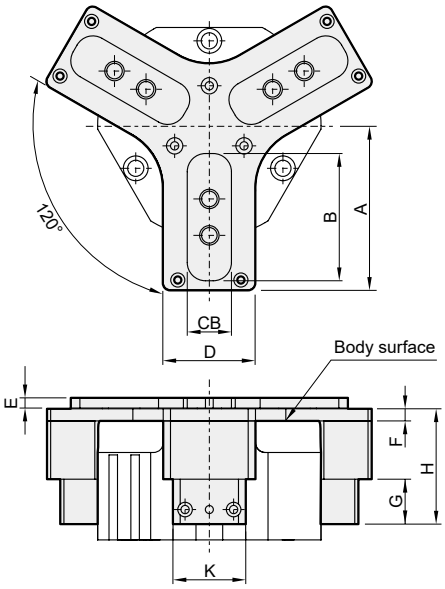
Code / Size	A1	AB	AC	B1	BB	BC	BD	BF	C	D	E	G	G1	G2	H1	H2	K	L
50	5	12	12	5	35	26	23	23	8	16	4	12	6.5	31	26	27	19	45
66	11.5	12	18	5	43	32	27	27	12	22	5	17	10	41	33	35	25	56
80	8	26	18	8	50	36	31	31	15	26.7	6	22	12	51.5	40.5	43.5	32	70
100	13.5	24	24	10	60	41	38	34	18	34.2	10	26	14	64	51	54	42	90
125	17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

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

Inside structure & Parts list / Dimensions

Dust cover 50~160



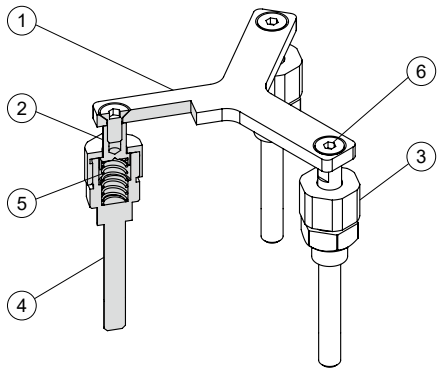


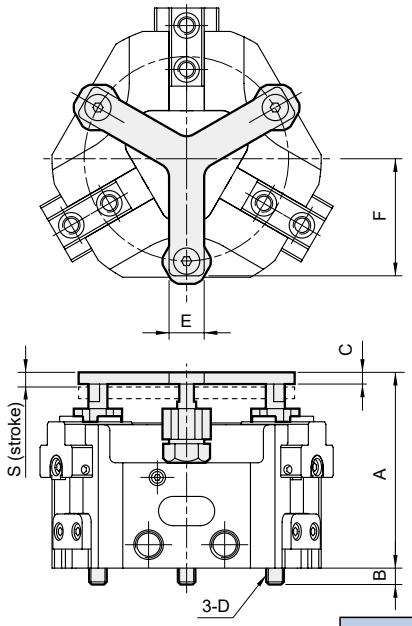
Material

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

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

Pressure piece 50~100





Material

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

Code / Spec.	A	B	C	D	E	F	S	Weight (g)	Ejection force (kgf)	
									Retracted Min.	Extended Max.
50	55.5	5	2	M4×0.7	8	30	6	63	1	3.9
66	60.9	5.6	2	M5×0.8	10	35	5	93	2	3.8
80	66.9	5.6	4	M6×1.0	12	40	5	149	1.5	2.4
100	71.6	7.9	4	M6×1.0	14	50	5	180	4.1	6.3

Model selection

Technical data

Caution for safety
(Read before installing)

Features

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

Specification

Model		MCHA				
Acting type		Double acting / Single acting (N.O.)				
Tube I.D. (mm)		12	16	20	25	32
Port size		M3×0.5	M5×0.8			
Medium		Air				
Operating pressure range	Double acting	0.15~0.7 MPa				
	Single acting	0.3~0.7	0.2~0.7 MPa			
Ambient temperature		-5~+60°C (No freezing)				
Max. operating frequency (c.p.m)		180 (*1)				
Lubrication	Cylinder	Not required				
	Lever	Grease (Joint parts)				
Volume (cm^3) Finger open	Double acting	0.7	1.2	2.3	4.0	6.7
	Single acting	0.6	1.3	2.4	4.4	7.9
Finger close		0.4	0.8	1.4	2.7	4.9
Max. arm length (L) (*2)		30	40	60	70	85
Clamp / Release angle		-10~+30°				
Sensor switch		RDE, RDE-D: Non-contact				
Weight (g)		53	103	193	327	525

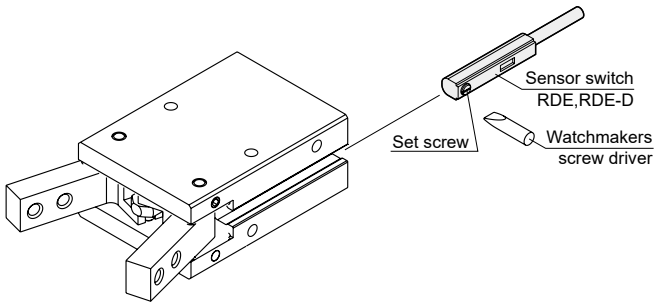
*1. Use tube I.D. 12 at max operating frequency will affect the service life.
*2. L: Arm length (mm)

Order example

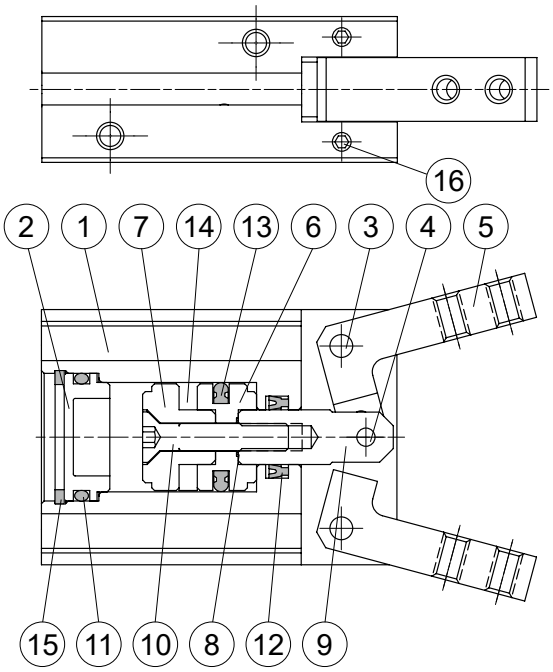
MCHA — 20 — □

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

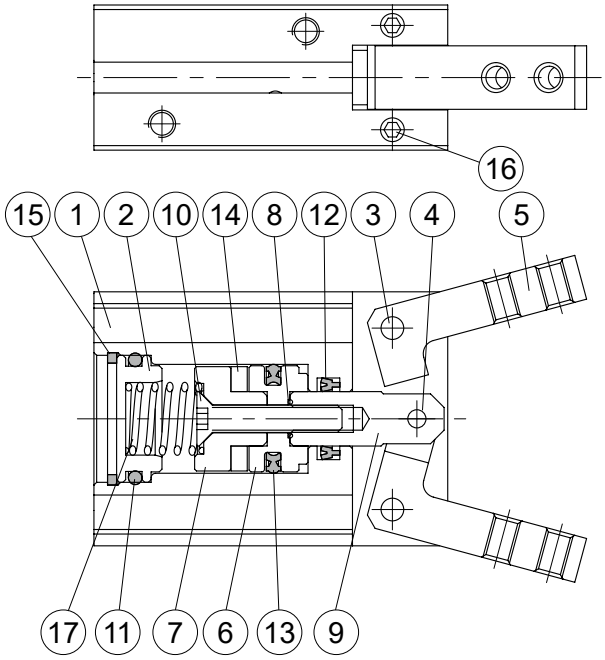
Installation of sensor switch



Double acting



Single acting Normally Open



Material

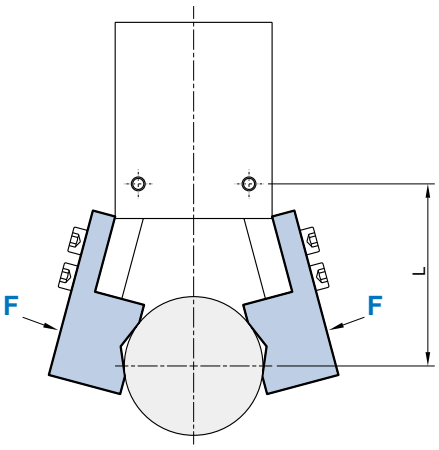
No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy	1	
2	Head cover	Aluminum alloy	1	
3	Grip rivet	Carbon steel	2	
4	Spindle rivet	Bearing steel	1	
5	Y-finger	Medium carbon steel	2	
6	Piston-R	Aluminum alloy	1	
7	Piston-H	Aluminum alloy	1	
8	Gasket	NBR	1	●
9	Piston rod	Stainless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

Order example of repair kits

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

Effective gripping force

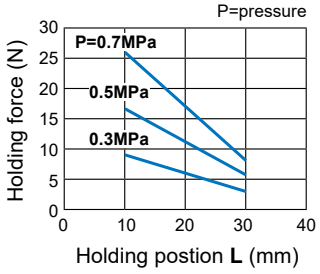
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



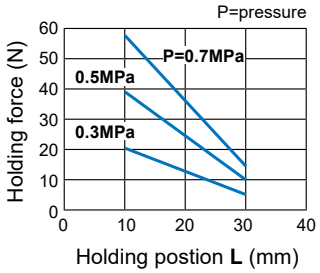
1N=0.102 kgf
1MPa=10.2 kgf/cm^2

Double acting

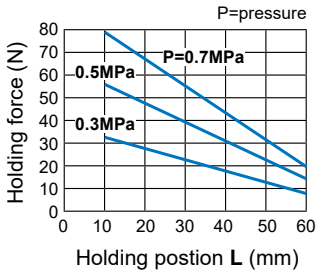
MCHA-12



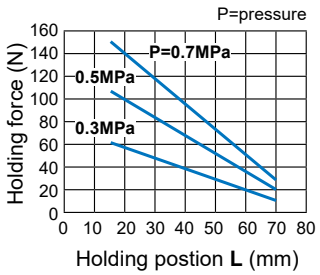
MCHA-16



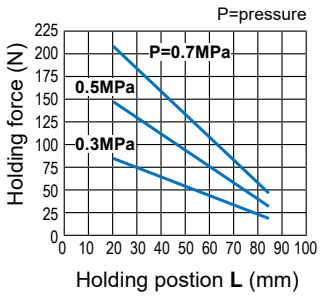
MCHA-20



MCHA-25

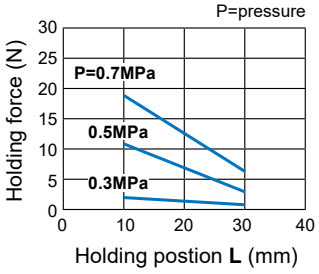


MCHA-32

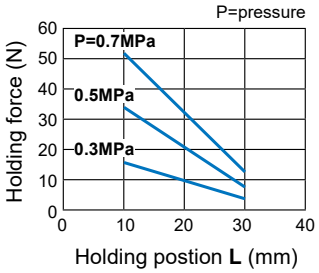


Single acting (Normally open)

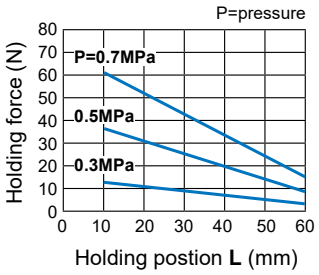
MCHA-12-S



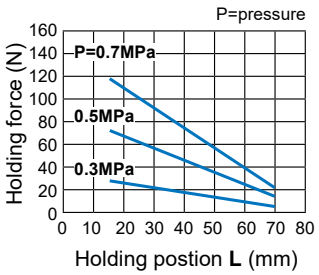
MCHA-16-S



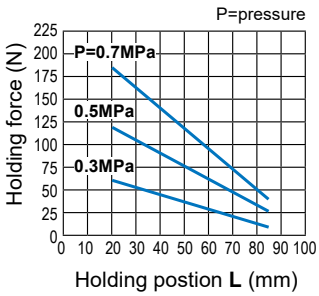
MCHA-20-S

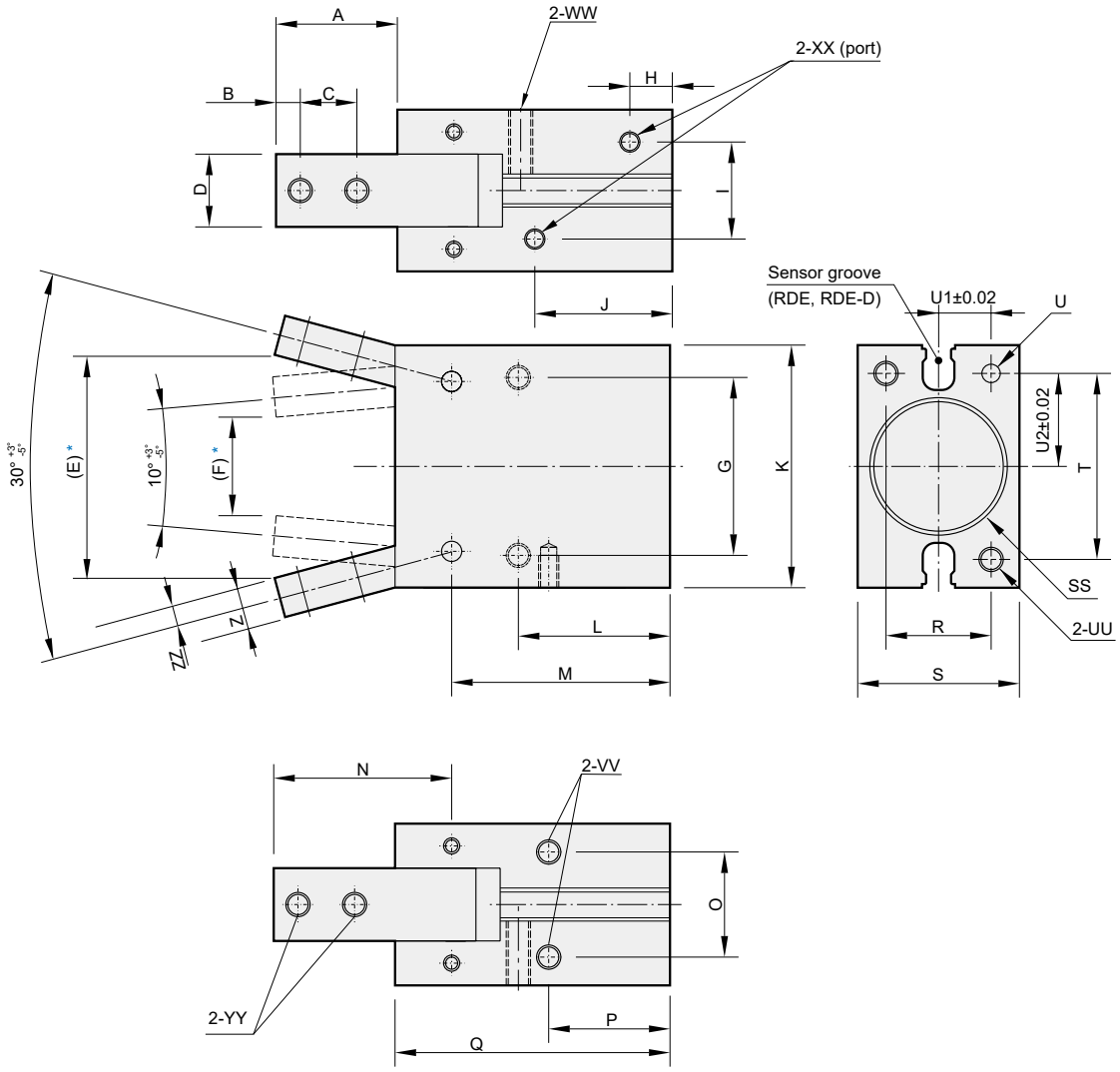


MCHA-25-S



MCHA-32-S





* Reference value.

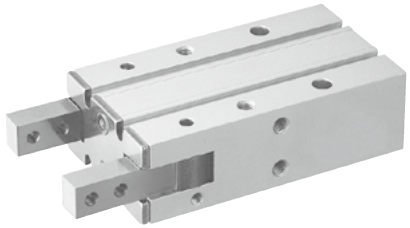
Code / Tube I.D.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	SS	T
12	15.4	3	6	7	26.3	9	20	7.5	10.2	23	28	20	32.9	21.5	10.2	16	39	10	16	ø14H9$^{+0.043}_{0}$×1.5 depth	22
16	17.5	3	8	9	31.1	14	24	7.5	12	22	34	22.5	35	25	14	18	42.5	14	22	ø18H9$^{+0.043}_{0}$×1.5 depth	26
20	22	4	10	12	40.1	18	30	8.0	13	25	45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

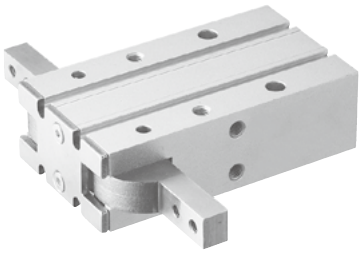
Code / Tube I.D.	U	U1	U2	UU	VV	WW	XX	YY	Z	ZZ
12	ø2H9$^{+0.025}_{0}$×3 depth	5	11	M3×0.5×5 depth	M3×0.5×5 depth	M3×0.5×8 depth	M3×0.5×5 depth	M3×0.5	5	2.5
16	ø3H9$^{+0.025}_{0}$×3 depth	7	13	M4×0.7×7 depth	M4×0.7×7 depth	M4×0.7×11 depth	M5×0.8×5 depth	M3×0.5	6	3
20	ø4H9$^{+0.03}_{0}$×4 depth	8	17.5	M5×0.8×8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

Model selection

Technical data

Caution for safety
(Read before installing)





Features

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

Specification

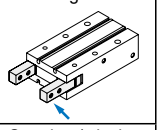
Model	MCHY2			
Acting Type	Double acting			
Tube I.D. (mm)	10	16	20	25
Medium	Air			
Operating pressure range	0.2~0.6 MPa			
Ambient temperature	-10~+60°C (No freezing)			
Repeatability	±0.2 mm			
Max. operating frequency (c.p.m)	60 (*1)			
Lubrication (*2)	Not required			
Effective force (Nm) at (0.5 MPa)	0.16	0.54	1.1	2.28
Operating angle (both sides) Opened side	180°~182°			
Operating angle (both sides) Closed side	-3°			
Sensor switch	RDC(V), RQC(V)			
Weight (g)	80	150	320	600

*1. Speed controllers are required.
*2. Sliding area of jaws need scheduled relubrication.

Order example

MCHY2 — 16 D 1

- MODEL: MCHY2
- TUBE I.D.: 10, 16, 20, 25
- D: Double acting
- FINGER OPTION:
  - — : Standard tap mounting
  - 1 : Opening / closing direction through hole.



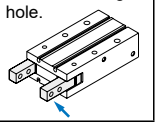
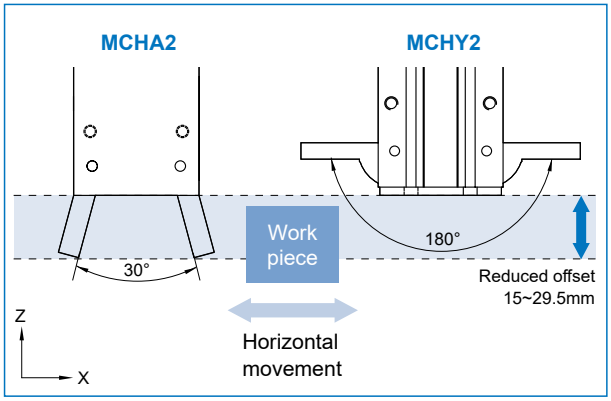
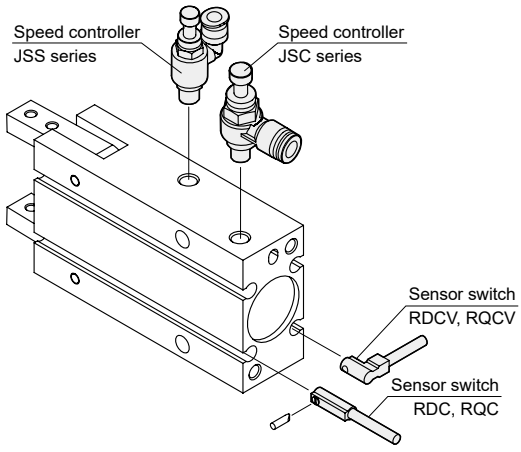


Fig1. Reduced required offset while moving gripper



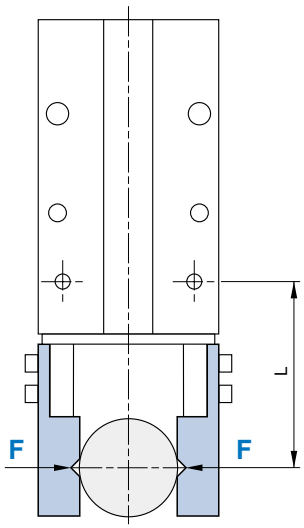
Installation of sensor switch & speed controller



* Each gripper needs at least two speed control valves to operate.
* Speed controller specification .

Effective gripping force

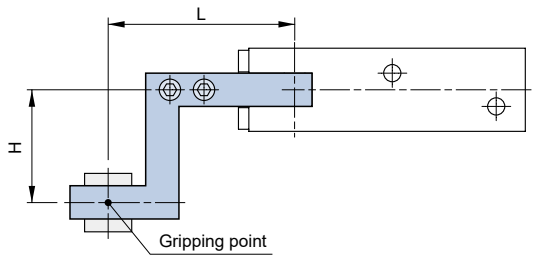
Indication of effective force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.

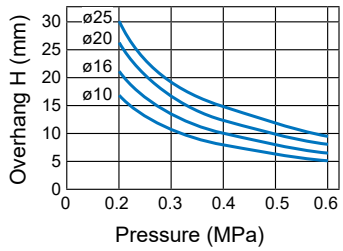


1N=0.102 kgf
1MPa=10.2 kgf/cm^2

Confirmation of gripping point

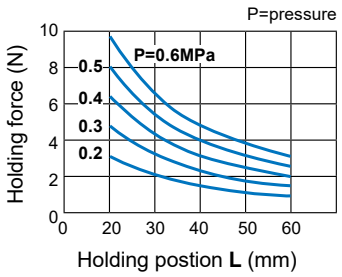
- The air gripper should be operated so that the workpiece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs to the right.
- If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the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



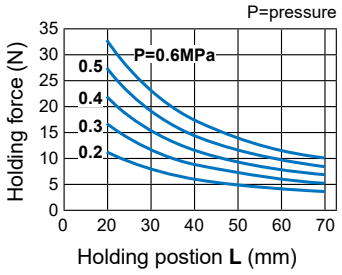


Gripping force

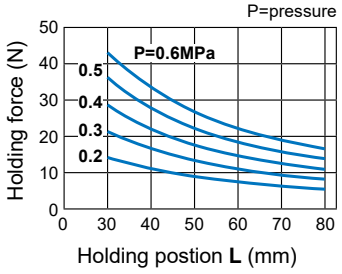
MCHY2-10



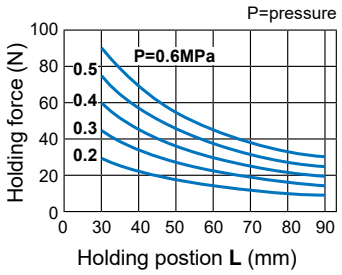
MCHY2-16



MCHY2-20

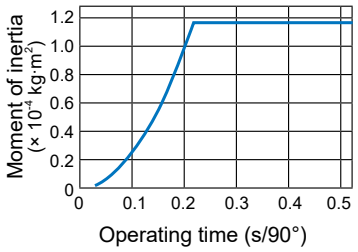


MCHY2-25

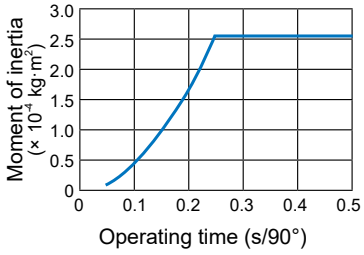


Moment of inertia

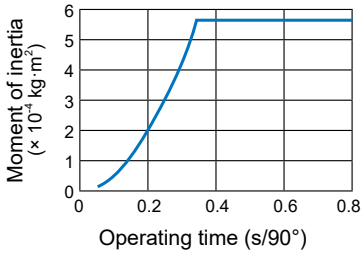
MCHY2-10



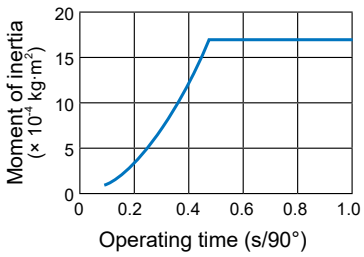
MCHY2-16



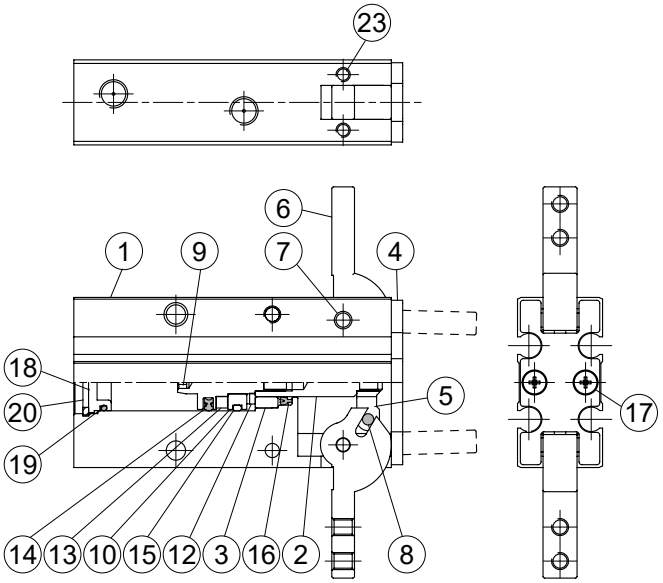
MCHY2-20



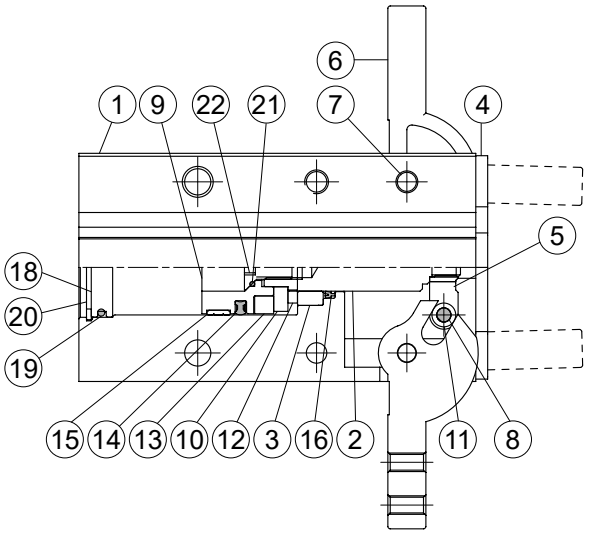
MCHY2-25



ø10



ø16~ø25



Material

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

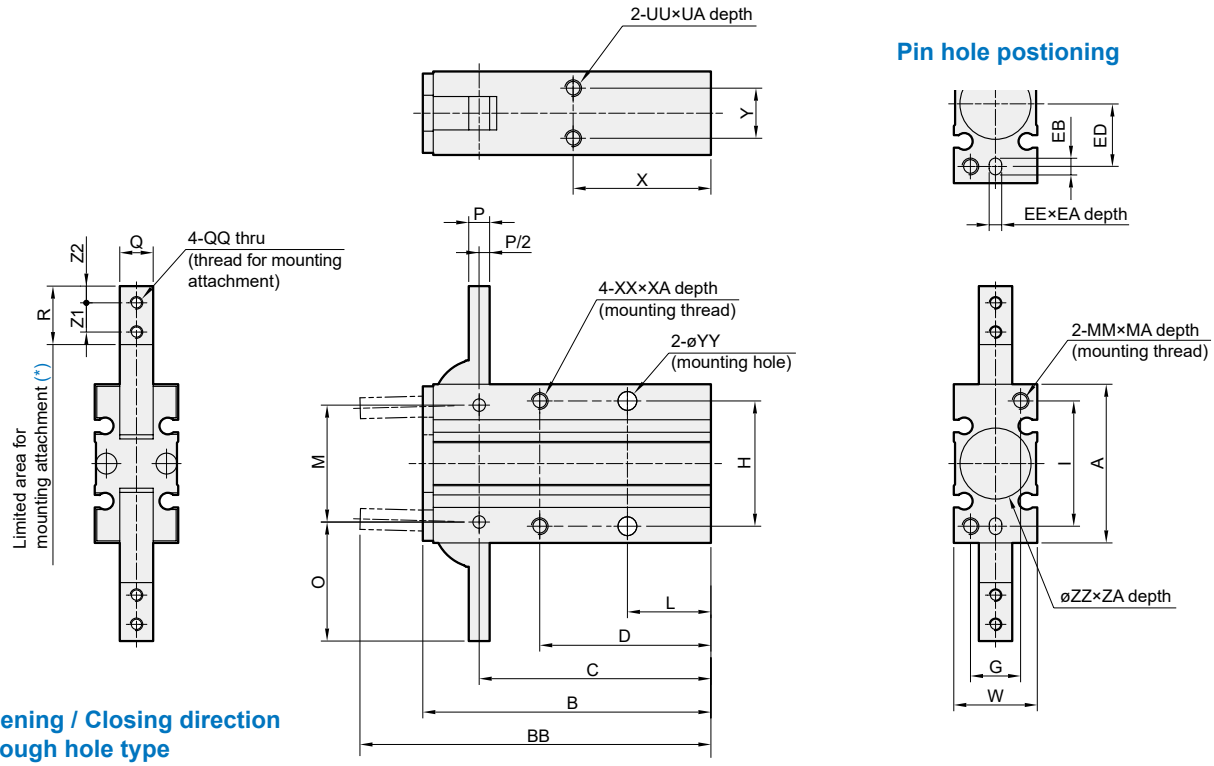
No.	Tube I.D. / Part name	10	16	20	25	Q'y	Repair kits (inclusion)
17	Screw	Stainless steel				2	
18	Rod cover	Aluminum alloy				1	
19	O-ring	NBR				1	●
20	Snap ring	*2	Stainless steel			1	
21	O-ring	–	NBR			1	●
22	Hexagon Bolt	–	Stainless steel			1	
23	Scew	Stainless steel				4	

*1. Stainless steel *2. Carbon steel

Order example of repair kits

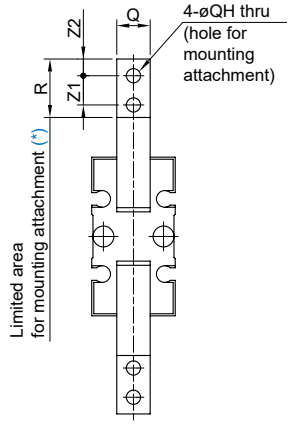
Tube I.D.	Repair kits
ø10	**PS-MCHY-10**
ø16	**PS-MCHY-16**
ø20	**PS-MCHY-20**
ø25	**PS-MCHY-25**

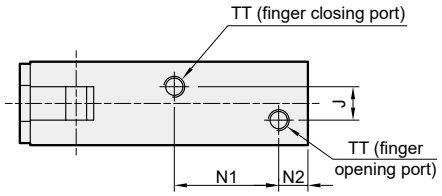
* Use the same repair kits with MCHY series.



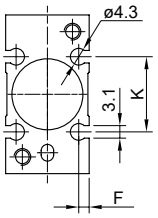
Pin hole postioning

Opening / Closing direction through hole type





Auto switch mounting groove position



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

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

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

COMING SOON
Compatible with RDC series sensor
Update information

MCTA series
ALL-IN-ONE PNEUMATIC GRIPPER

Features
Model selection
Technical data
Caution for safety
(Read before installing)

TMPlug&Play
CERTIFIED

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

Specification

Model	MCTA-J66	MCTA-S80
Acting type	Double acting	
Size	66	80
Stroke per-jaw (mm)	6	8
Effective external gripping force(N) *1	188	285
Effective internal gripping force (N) *1	194	290
Close/Open time (s)	0.03	0.04
Medium	Air	
Operating pressure range	0.2~0.7 MPa	0.3~0.7 MPa
Ambient temperature	+5~+80°C	
Lubrication	Not required	
Sensor switch	RDC	
Accessories	Accessory kits	
Weight (kg)	≈1.3	
Recom. work piece weight (kg) *2	3.8	2.6

*1. Under the condition of clamping length 40mm and operation pressure 0.6 MPa.
*2. The weight limit of gripping workpiece depends on the load limit of robot arm and usage parameters.

Order example of pneumatic gripper

MCTA — J66 — TM

MODEL | ❶ GRIPPER MODULE | ❷ ARM SPEC.

❶

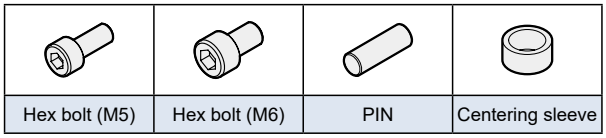
Gripper module	Model	Description
J66	MCHJ-66	3 finger
S80	MCHS-80	2 finger

❷

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

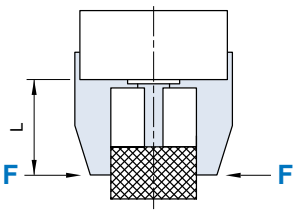
Order example of accessory kits

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

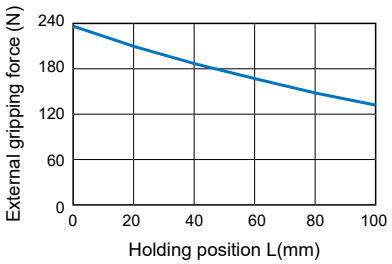


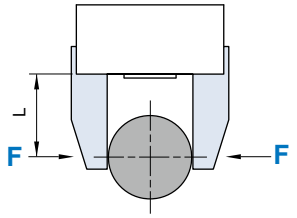
Holding force

* Operating pressure 0.6 MPa.

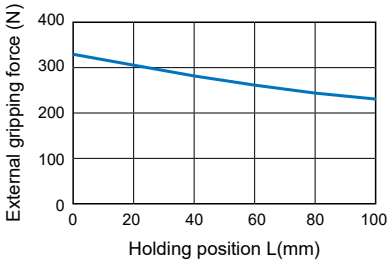


MCTA-J66

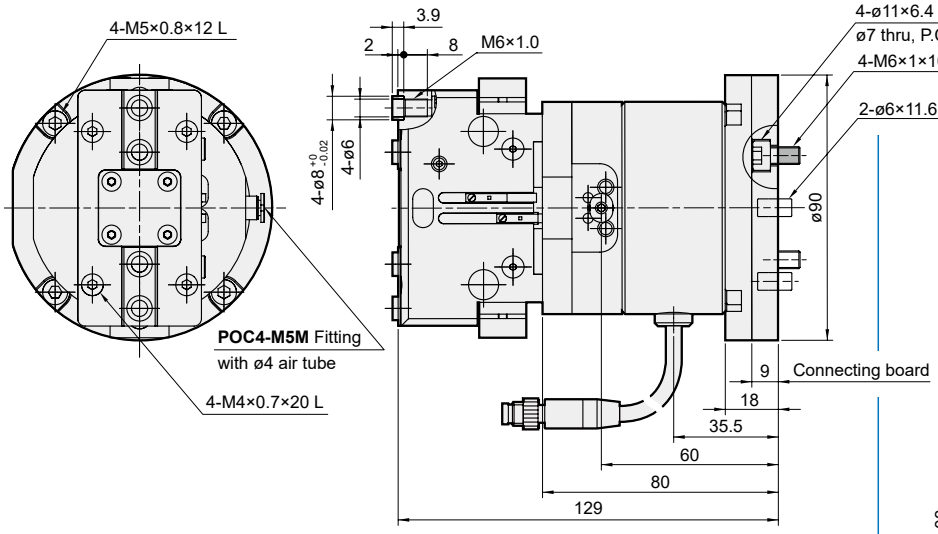




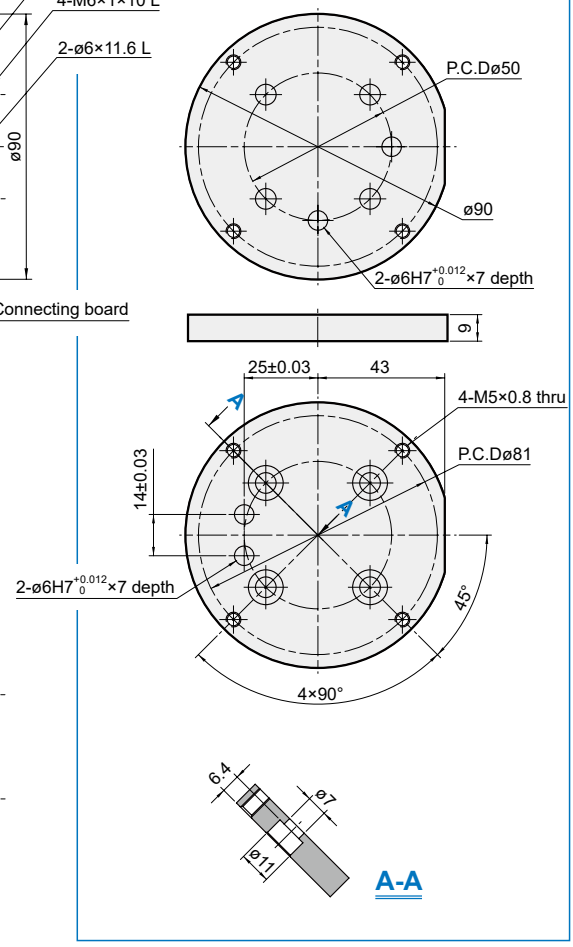
MCTA-S80



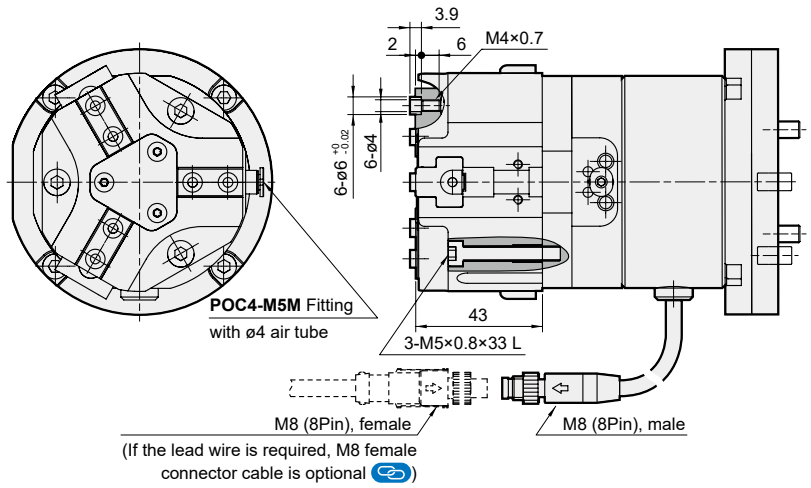
MCTA-S80-TM



Connecting board



MCTA-J66-TM



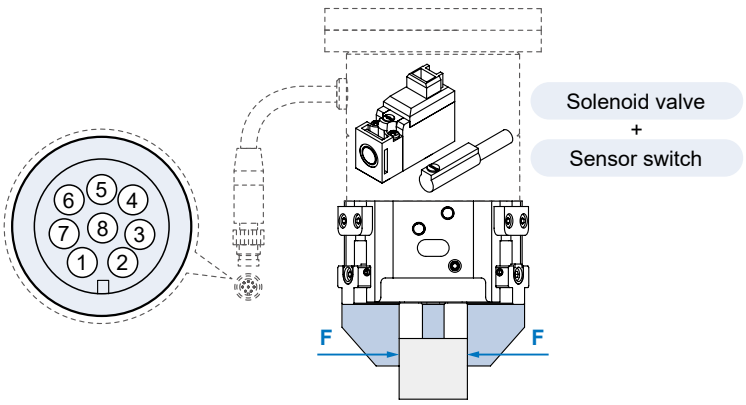
PIN Define

8-PIN digital I/O connector of robot

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

* Color for lead wire of M8 female connecter.

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



MCTC series

AUTOMATIC TOOL CHANGER

Features

Video 1

Video 2

TAIWAN EXCELLENCE 2022

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

Order example of automatic tool changer

MCTC — 20 R — SIP — □

- MODEL
- SIZE: **20**, **41**
- HOUSING TYPE

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

- PROXIMITY SENSOR TYPE
  Blank: Standard
  SIP: proximity sensor type
  * (R) Base plate only
- PORT THREAD
  Blank: M thread (only for size 20)
  Blank: G thread (only for size 41, Rc, NPT thread are made to order)

Electric feed-through module

K19 — MCTC — 20 R

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

Cable

* Size 20 and 41 use the same cable.

KBL□ — MCTC — 20 R — 5M

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

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

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

Features

- One robot base plate can accommodate multiple tool plates (such as grippers, pneumatic tools, or vacuum pads), offering excellent production flexibility, reducing tool changeover time, and lowering labor costs.
- High rigidity locating pins with special treatment for good service life.
- Tapered locating stud for high locating accuracy with repeatability of ±0.015 mm.
- Ejection mechanism for releasing base plate (R) and tool plate (T).
- Self-locking mechanism for preventing plates from ejecting when pneumatic source was accidently removed.
- Accurate connection change with electric module to avoid manual operation mistakes.
- ISO flange for easy-mounting on most of the robot arms.

Specification

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

*1. Tool and workpiece please refer to Applications.
*2. With tool plate (T).
*3. Under locking condition (operating pressure 0.45 MPa).
*4. Spring, tapered locating stud, and locating pin are consumables. Please consider to replace when performing below expectations.

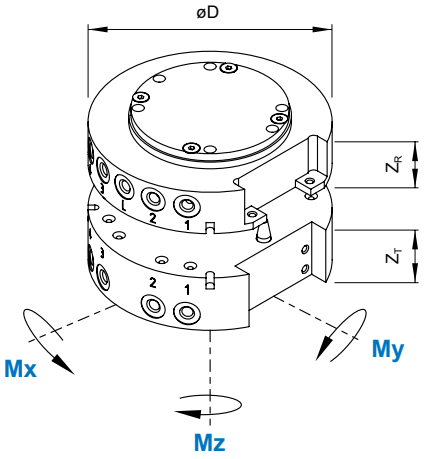
Electric feed-through module

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

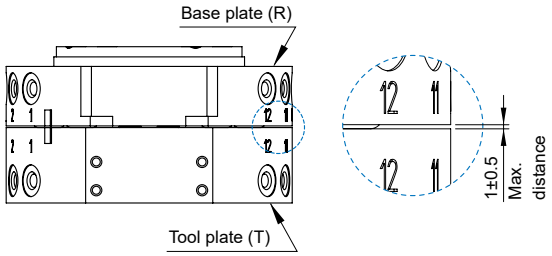
ISO adapter

Model			A50	A80
Size			20	41
Weight	Standard	(g)	193	357
	SIP	(g)	124	313

Max. allowable moment



Max. distance when locking

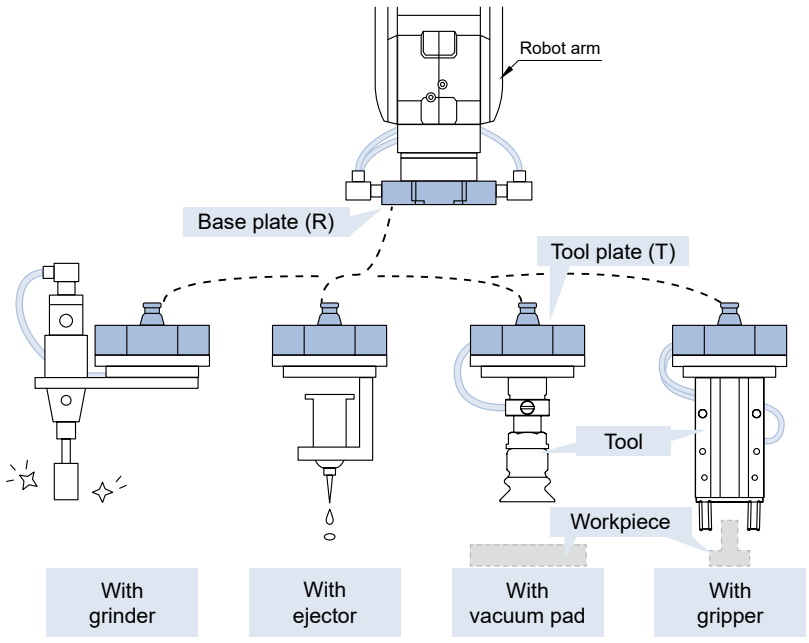


Size	øD	Z_R	Z_T	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)
20	90	18.7	23.7	161	161	209
41	130	32.3	27	447	447	616

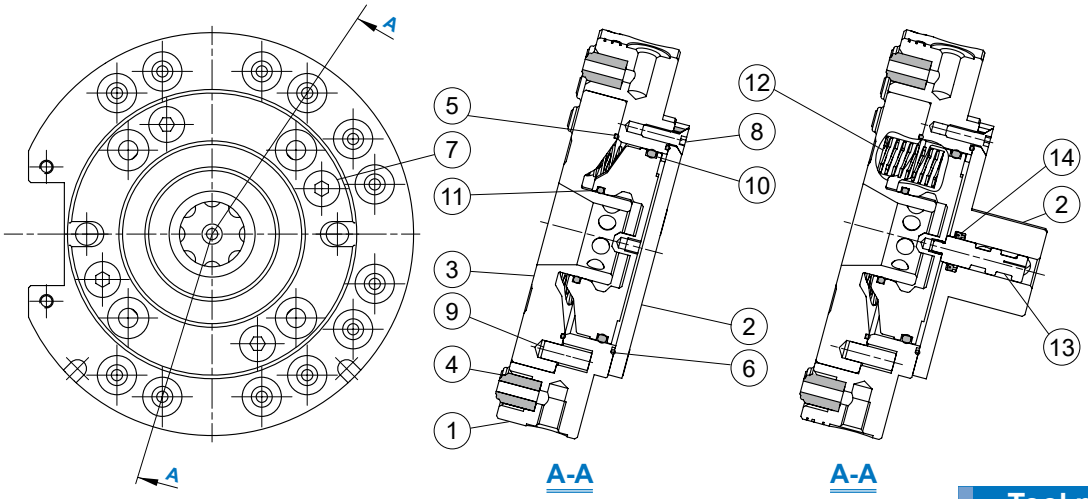
* Only for locking state.

Applications

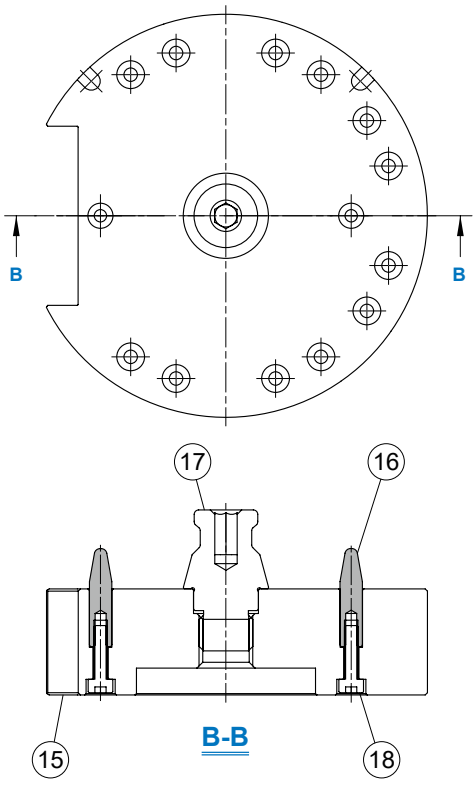
1. MCTC can be used on any type of robot arm.
2. The main feature is the quick tool exchange with good repeat accuracy.
3. MCTC can be used for various applications within max. 50 kg (Size 41) total load as shown below.



Base plate



Tool plate



Material – Base plate (R)

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

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

Material – Tool plate (T)

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

Order example of repair kits

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

Base plate (R)

Thread (×2)

For inductive proximity sensor.

Ejection Mechanism

Eject the plates with piston force smoothly without interference.

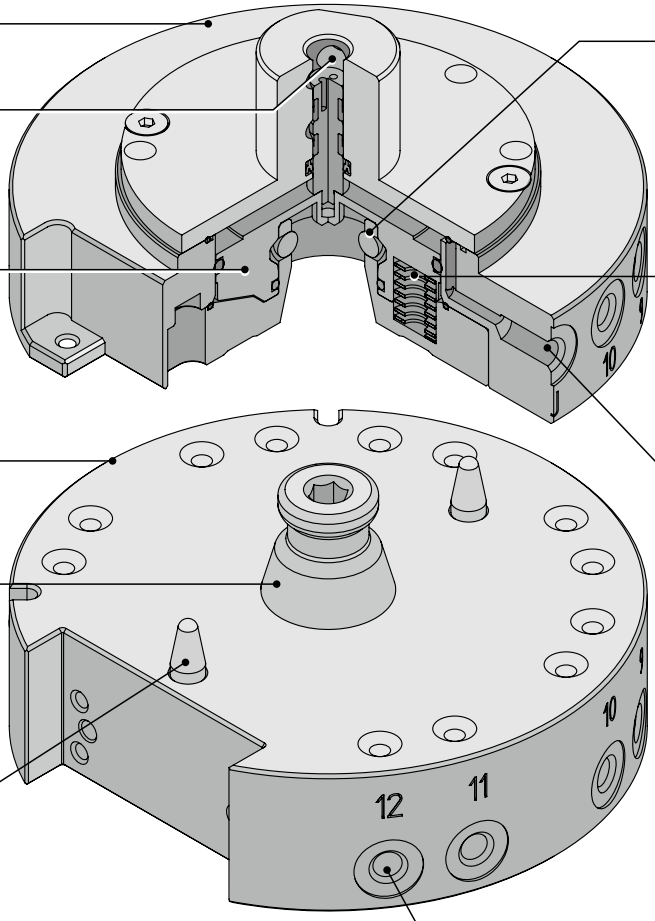
Tool plate (T)

Tapered locating stud

Tapered locating stud for high locating accuracy.

Locating pin (×2)

Tempered locating pin for good non-rotating accuracy.



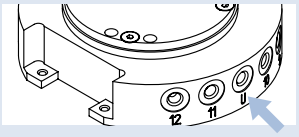
Locking mechanism

High accurate curved plate fitting for smooth combining and releasing.

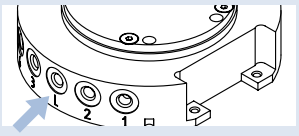
Self-locking mechanism

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

Unlock (U)



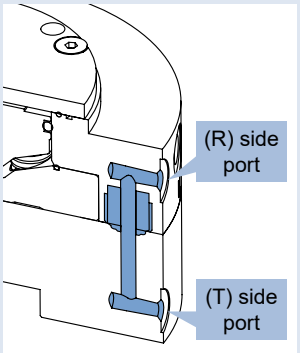
Lock (L)



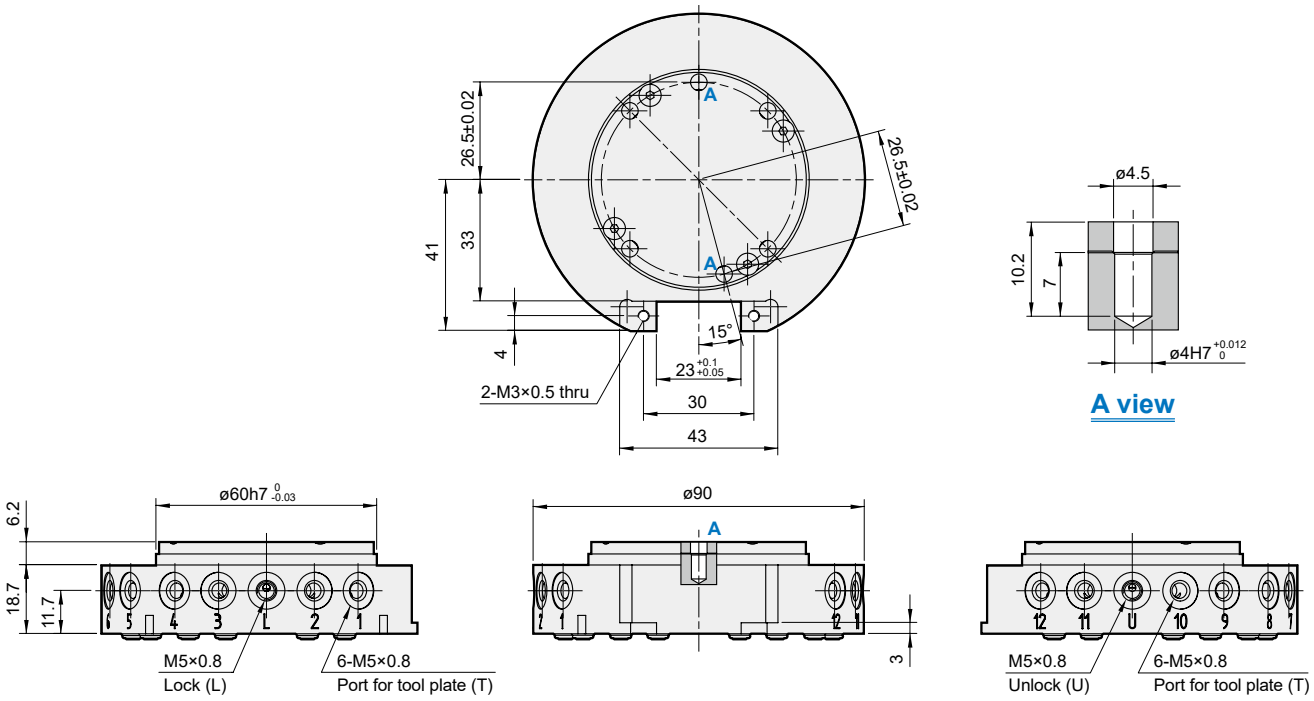
Air inlet

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

* Ports with identification number for piping.

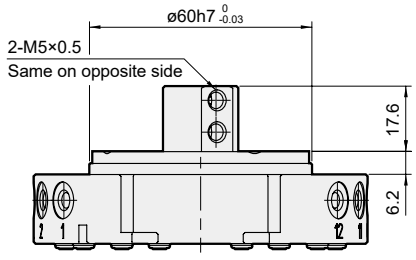


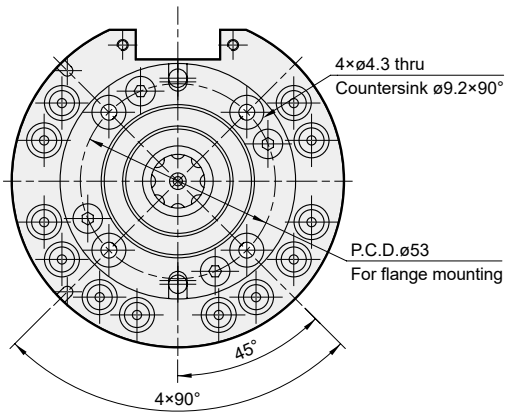
R Base plate



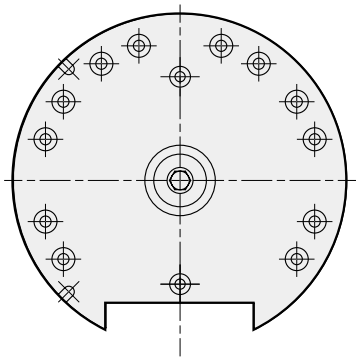
MCTC-20R-SIP

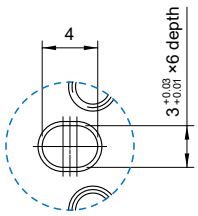
for proximity sensor



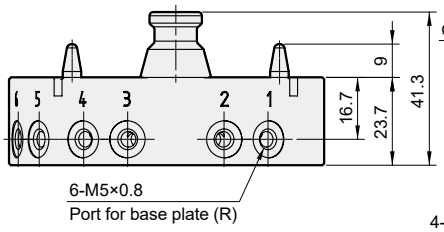


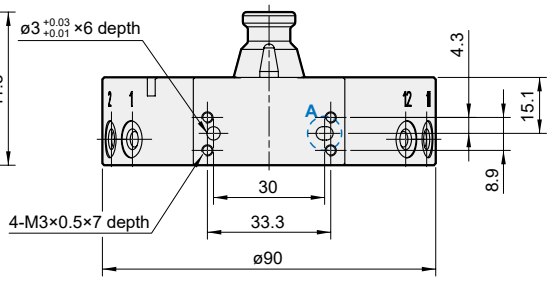
T Tool plate

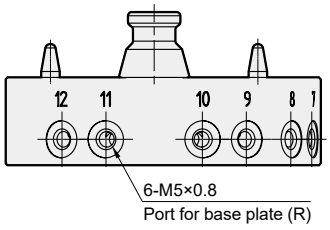


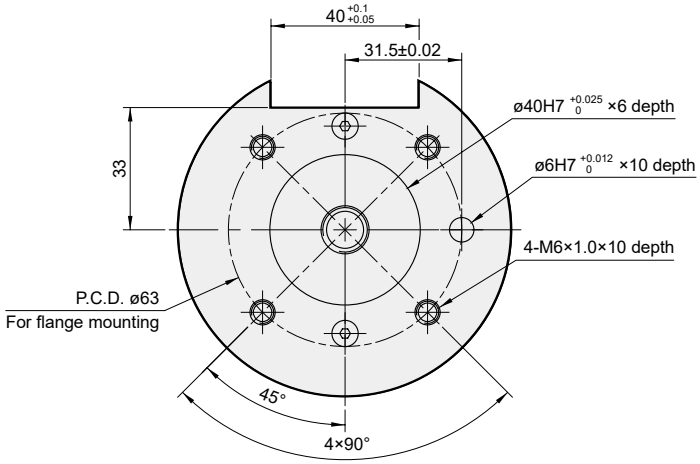


A view

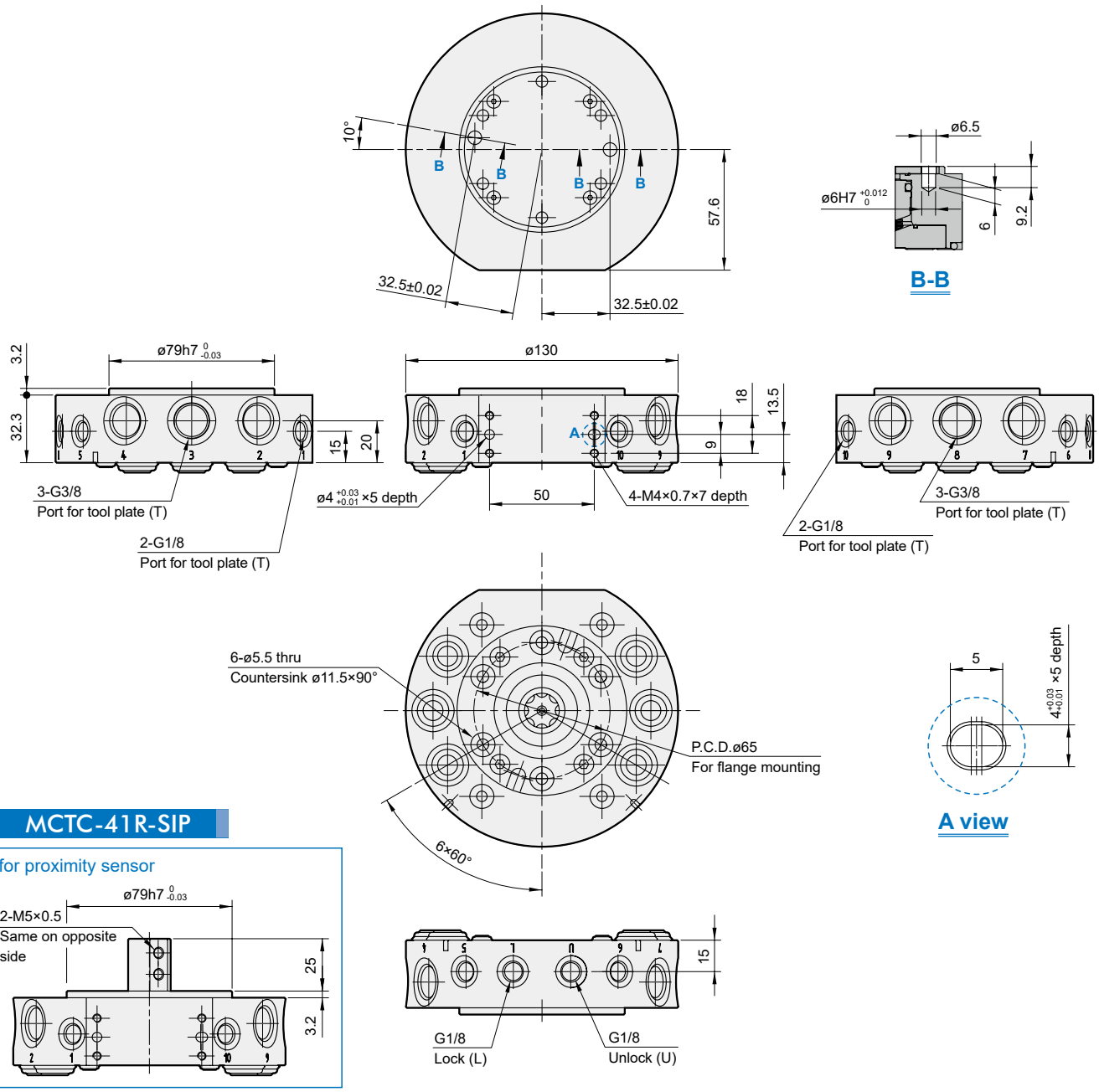








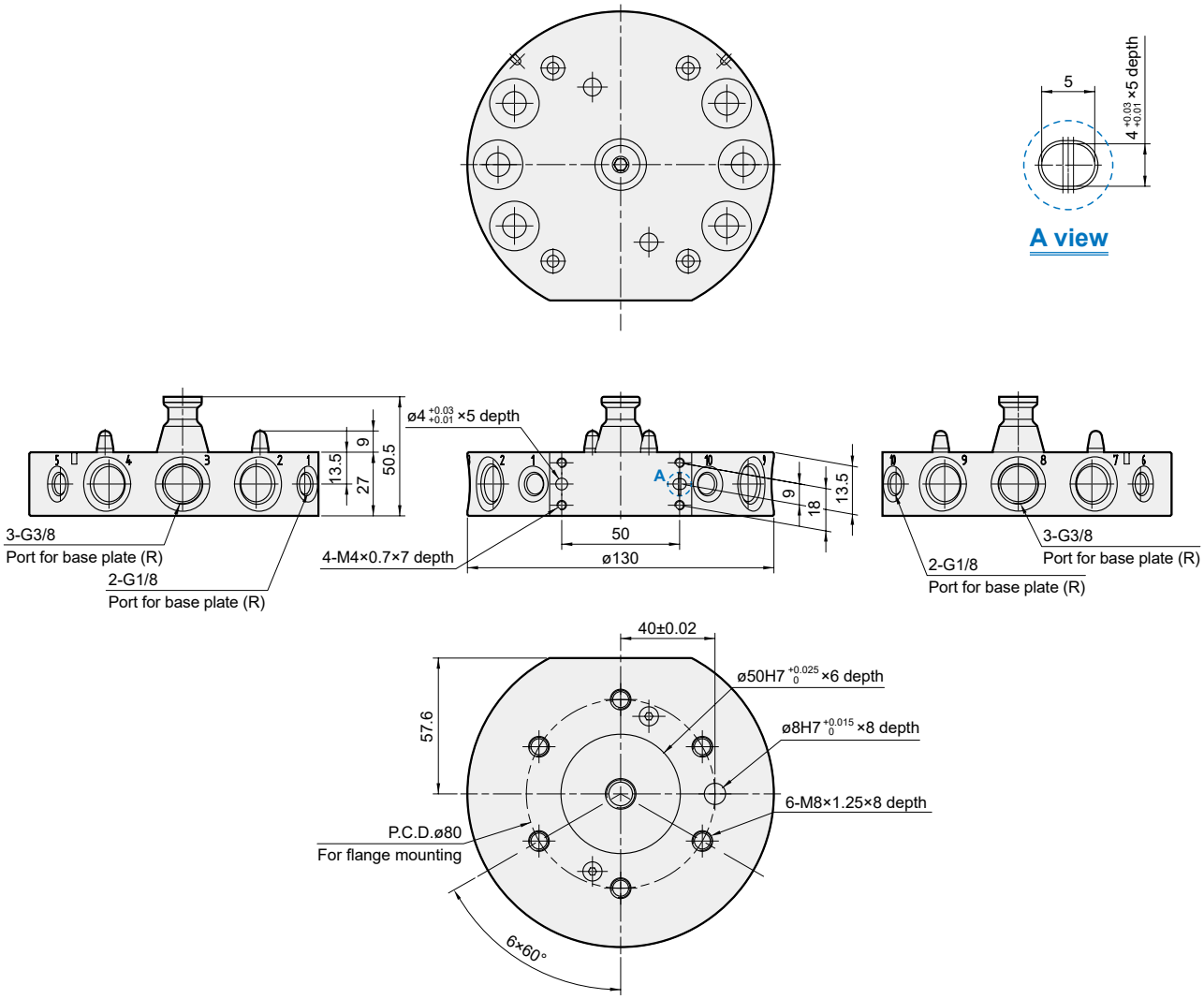
R Base plate



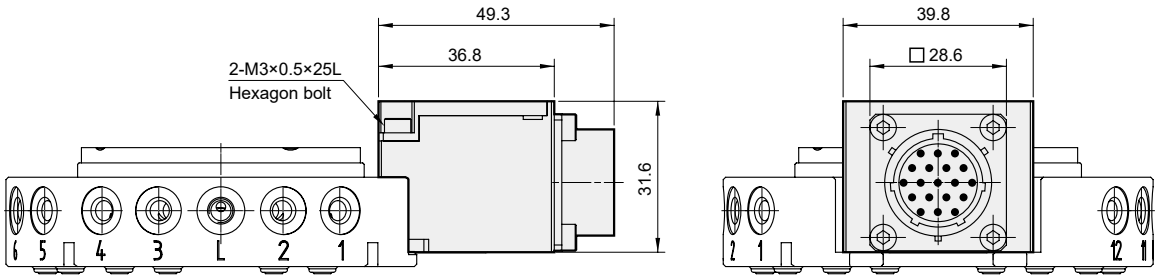
MCTC-41R-SIP

for proximity sensor

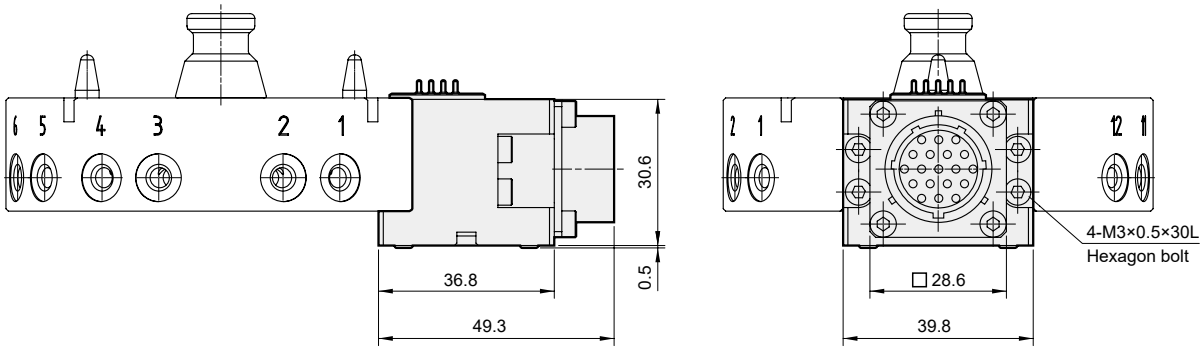
T Tool plate


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

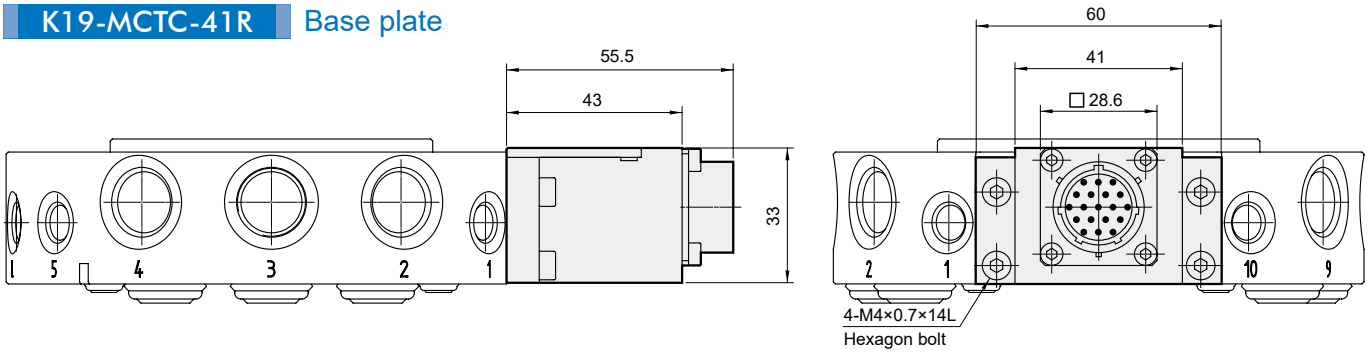
K19-MCTC-20R Base plate



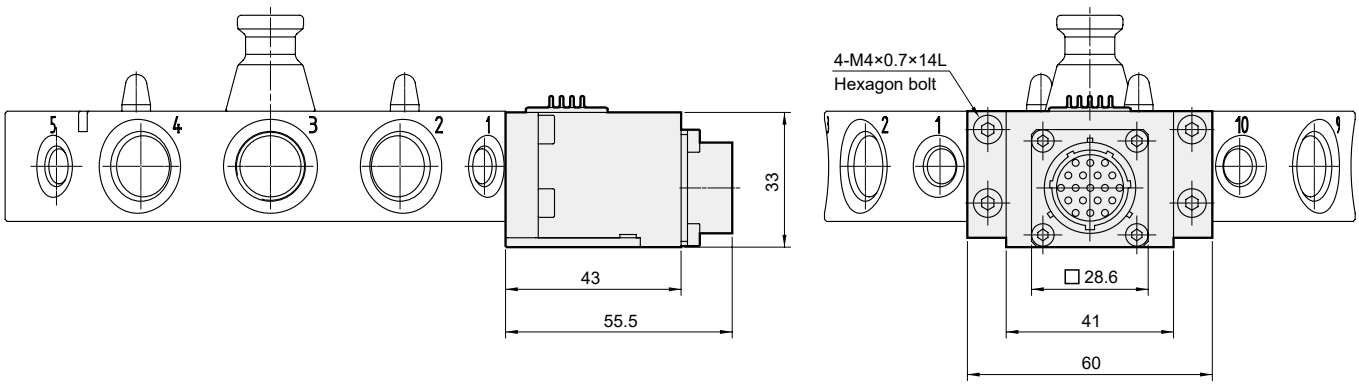
K19-MCTC-20T Tool plate



K19-MCTC-41R Base plate

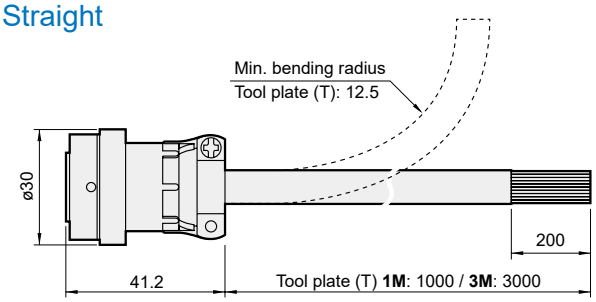


K19-MCTC-41T Tool plate



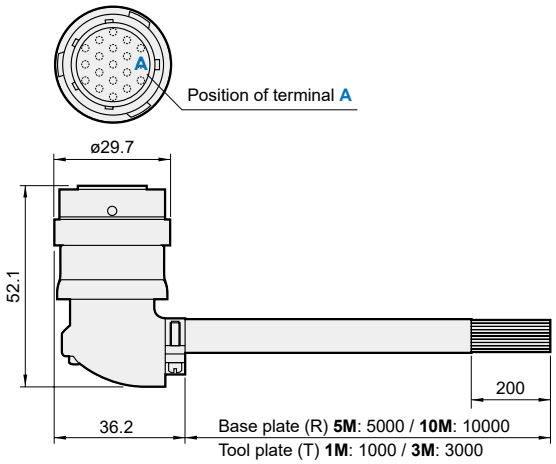
KBL-MCTC-20T Straight

Size 20 and 41 use the same cable



KBLV-MCTC-20R/T Vertical

Size 20 and 41 use the same cable



19 Pin layout

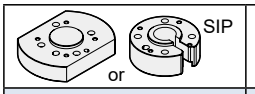
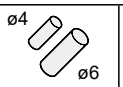
Electric		Way	Color	Cable	
Base plate (R) Bayonet lock connector (Male)	A	<----< <----<	White	A	**Base plate** (R) (Female)
	B	<----< <----<	Brown	B	
	C	<----< <----<	Green	C	
	D	<----< <----<	Yellow	D	
	E	<----< <----<	Gray	E	
	F	<----< <----<	Pink	F	
	G	<----< <----<	Blue	G	
	H	<----< <----<	Red	H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

Accessory kits of ISO adapter board

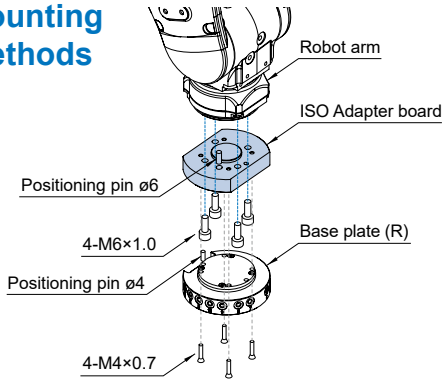
* for base plate (R)

AK — MCTC — 20R — SIP — A50

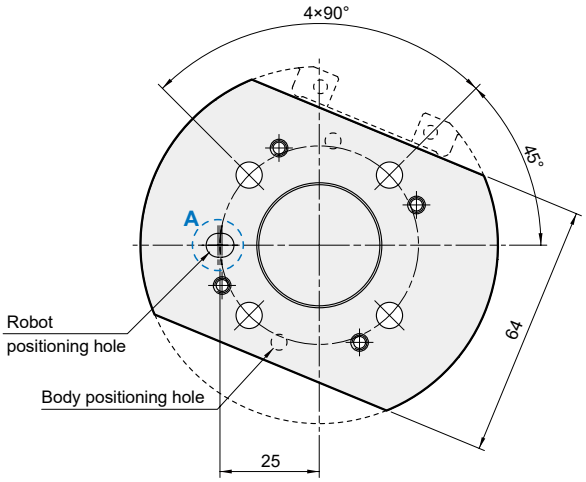
- SIP: PROXIMITY SENSOR TYPE (Blank: Standard type; **SIP**: Proximity sensor type)
- A50: ADAPTER BOARD P.C.D

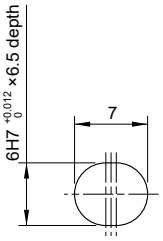
			
ISO Adapter board	Pin (each 1)	Bolt (×4)	Bolt (×4)

Mounting methods

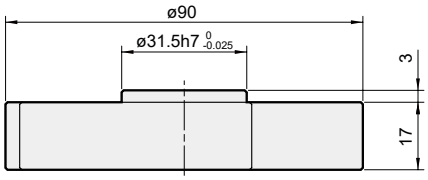


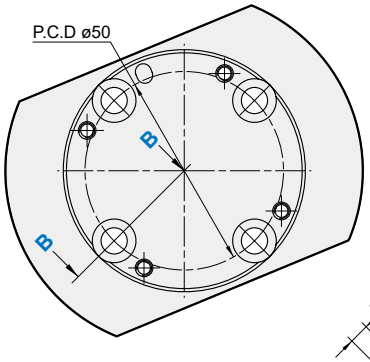
A50

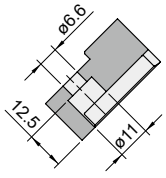




A view



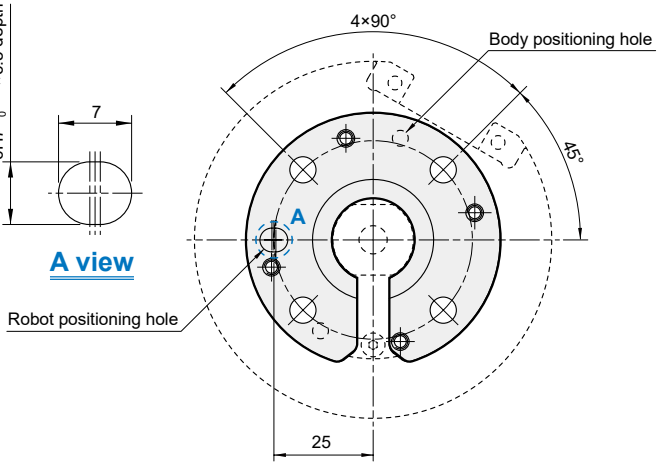


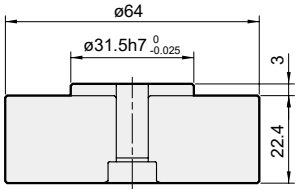


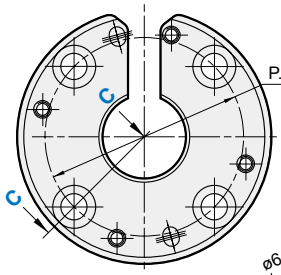
B-B

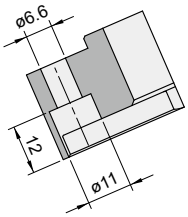
SIP-A50

Proximity sensor type









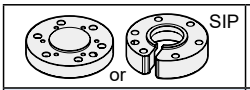
C-C

Accessory kits of ISO adapter board

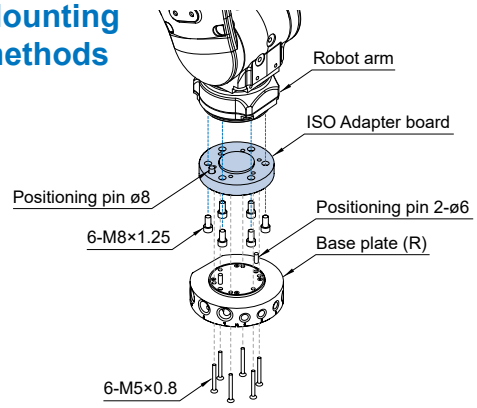
* for base plate (R)

AK — MCTC — 41R — SIP — A80

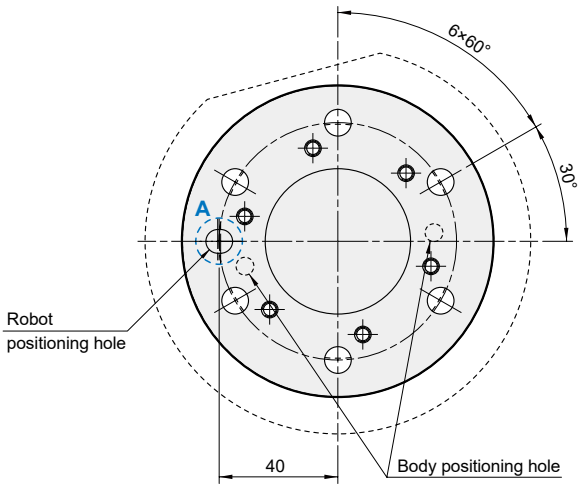
- SIP: PROXIMITY SENSOR TYPE — Blank: Standard type; **SIP**: Proximity sensor type
- A80: ADAPTER BOARD P.C.D

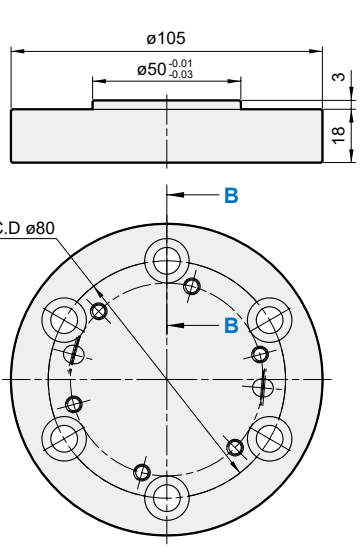
			
ISO Adapter board	Pin (ø6×2, ø8×1)	Bolt (×6)	Bolt (×6)

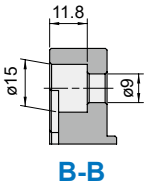
Mounting methods



A80



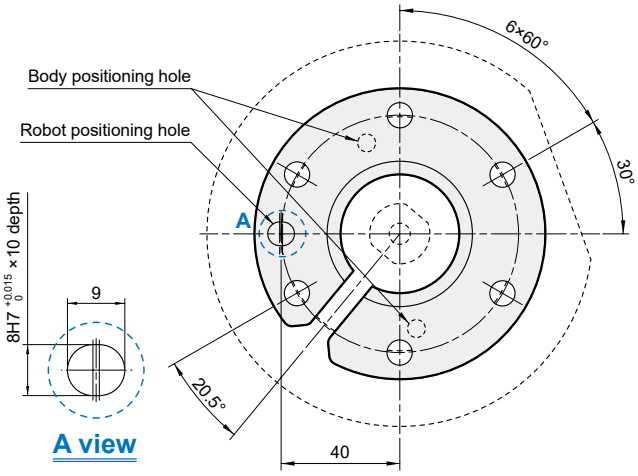




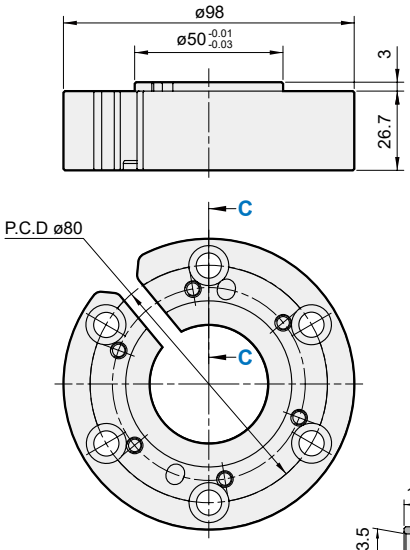
B-B

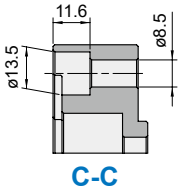
SIP-A80

Proximity sensor type



A view

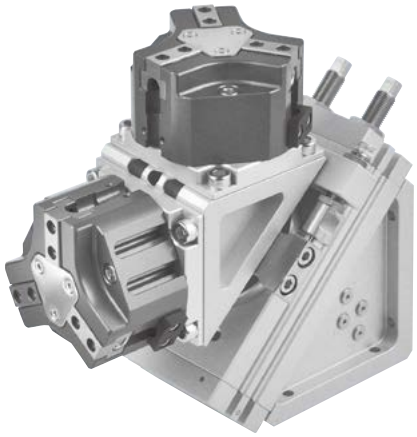




C-C

COMING SOON
Compatible with R*C(V) series sensor
Update information

MCRT series
180° ROTATION GRIPPER



Features

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

Order example

MCRT — 20 — J66

MODEL

TUBE I.D.
20
25

GRIPPER MODULE

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

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

Weight

Unit: kg

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

Specification – Rotation gripper

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

*1. The shock absorber is expendable. Replace when damping performance decrease.
*2. Excluding gripper module.

Specification – Gripper

Model		MCHS	MCHJ	MCHG2
Operating pressure range	(MPa)	0.3~0.8	0.2~0.8	0.2~0.6 (0.1~0.6) *
Sensor switch		RDC(V), RQC(V), RDFEV		

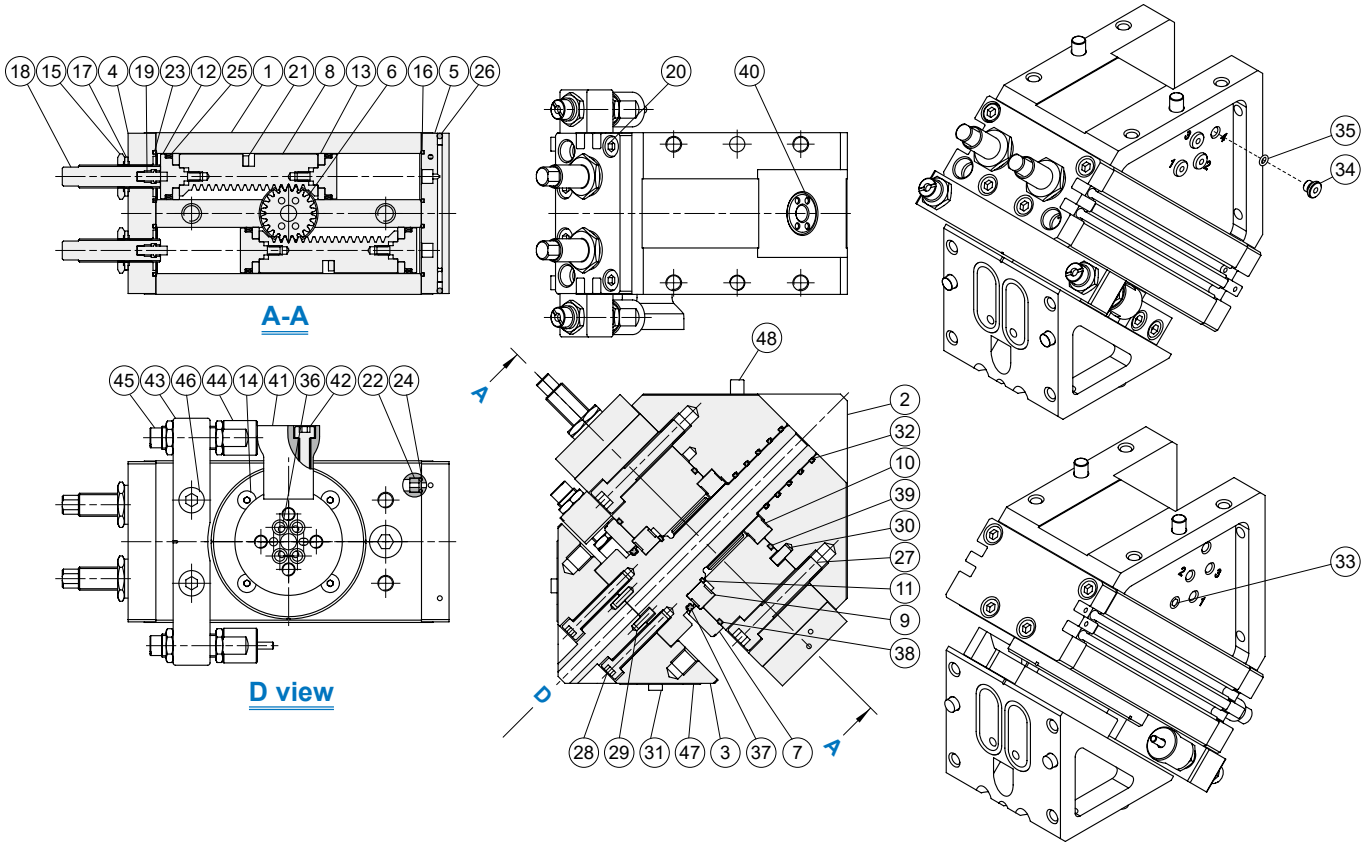
* ( ) for gripper module G32~G63.

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

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

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

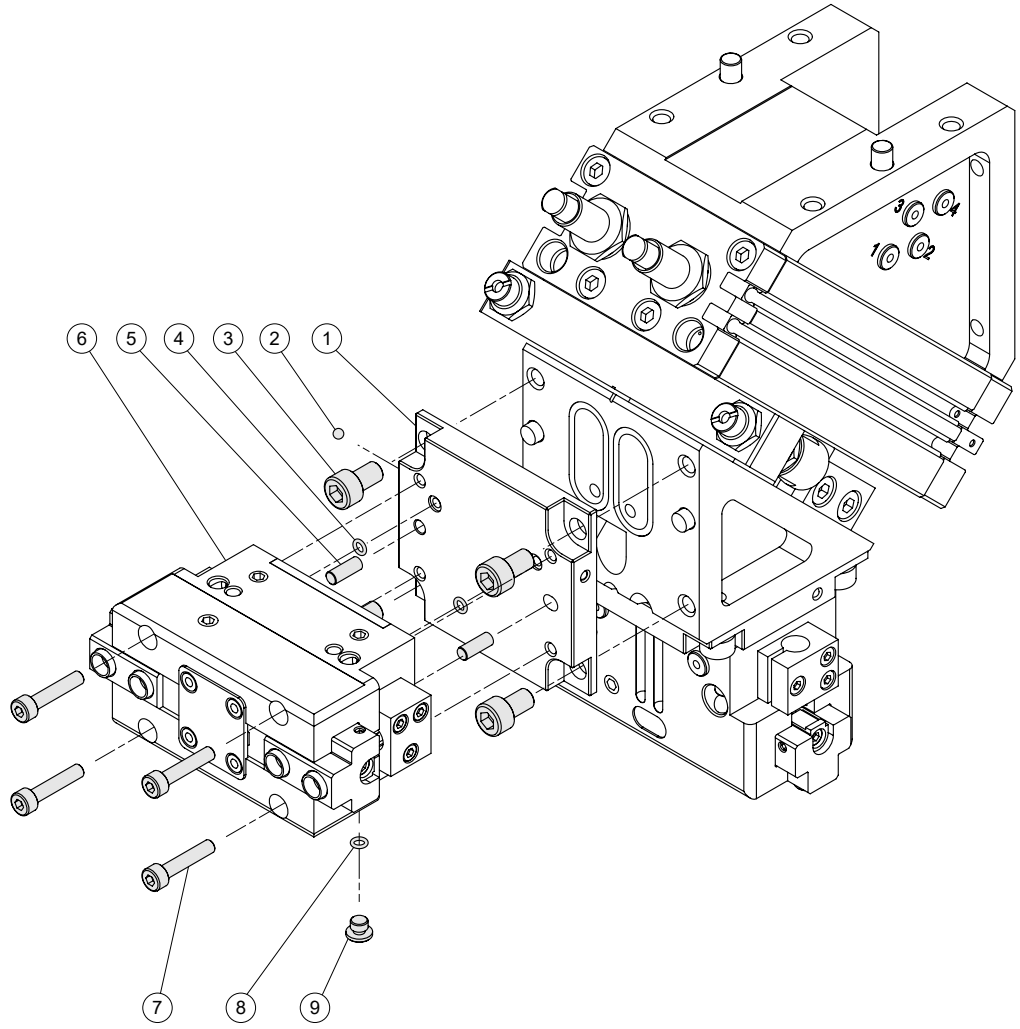
*1. Clamping length



Material

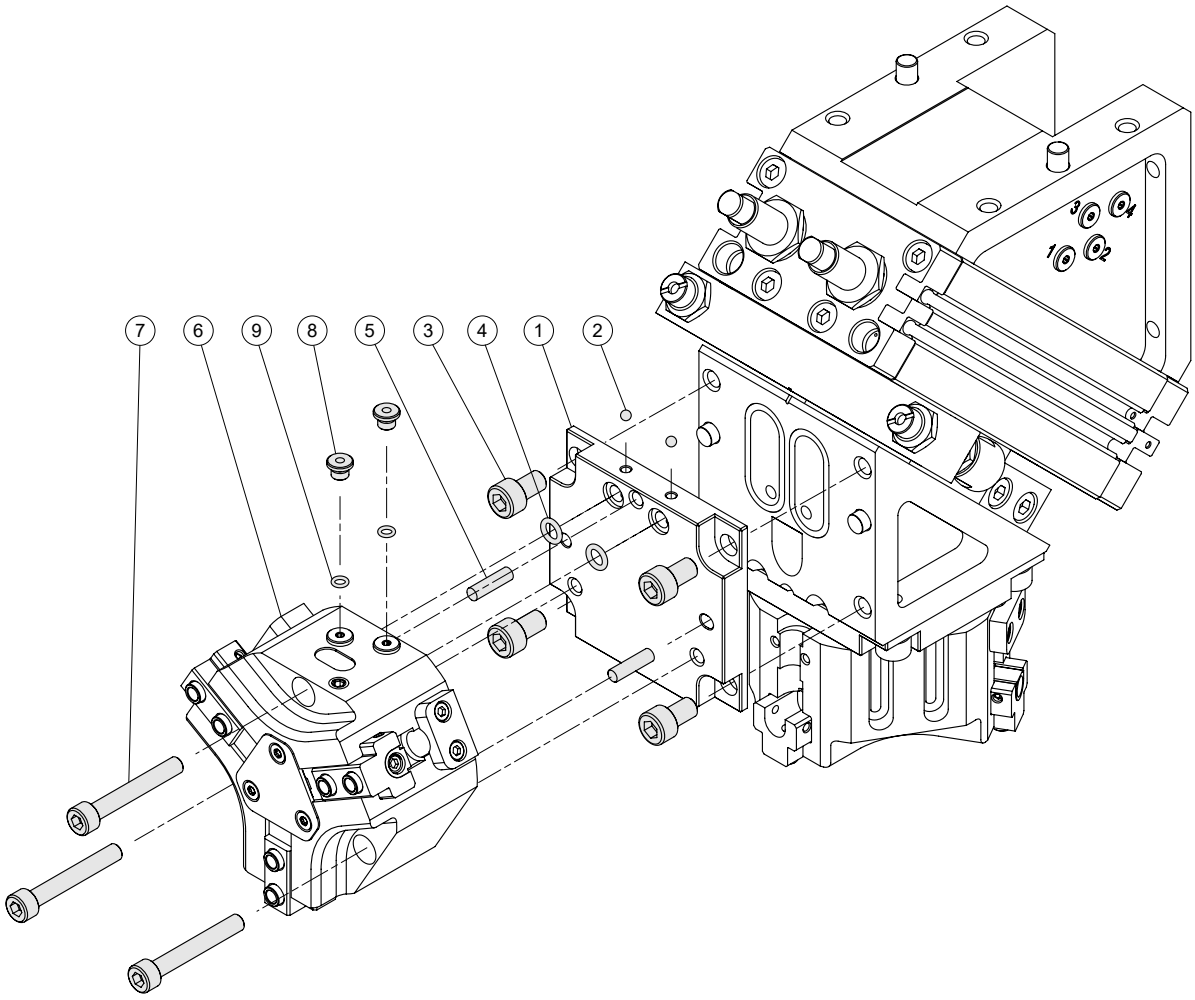
No.	Part name	Material	Q'y
1	Body	Aluminum alloy	1
2	Base	Aluminum alloy	1
3	Gripper fixed seat	Aluminum alloy	1
4	Cover	Aluminum alloy	1
5	End cover	Aluminum alloy	1
6	Pinion	Alloy steel	1
7	Bearing retainer	Aluminum alloy	1
8	Piston	Stainless steel	2
9	Ball bearing	Bearing steel	1
10	Ball bearing	Bearing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

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



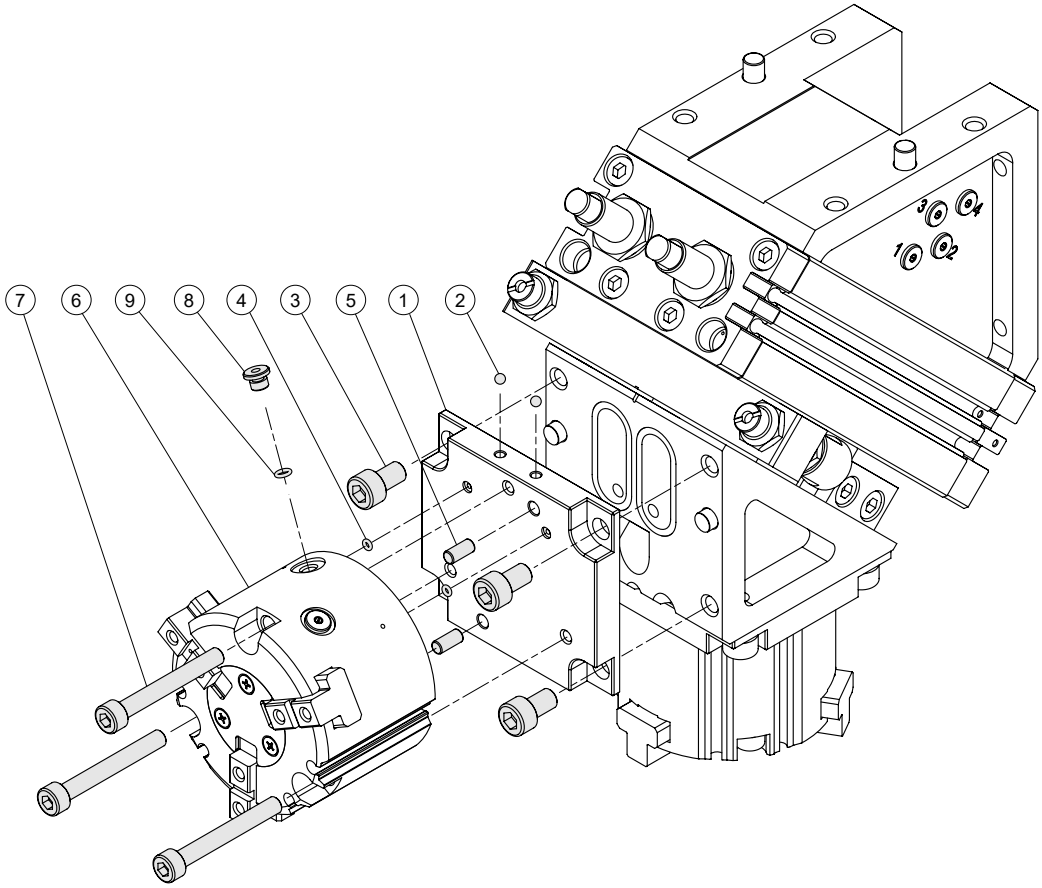
Material

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



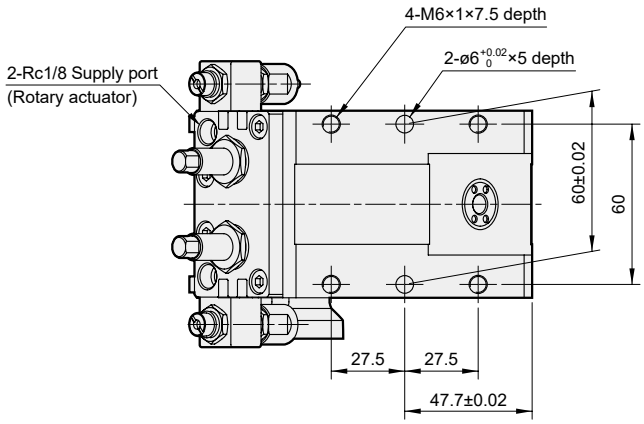
Material

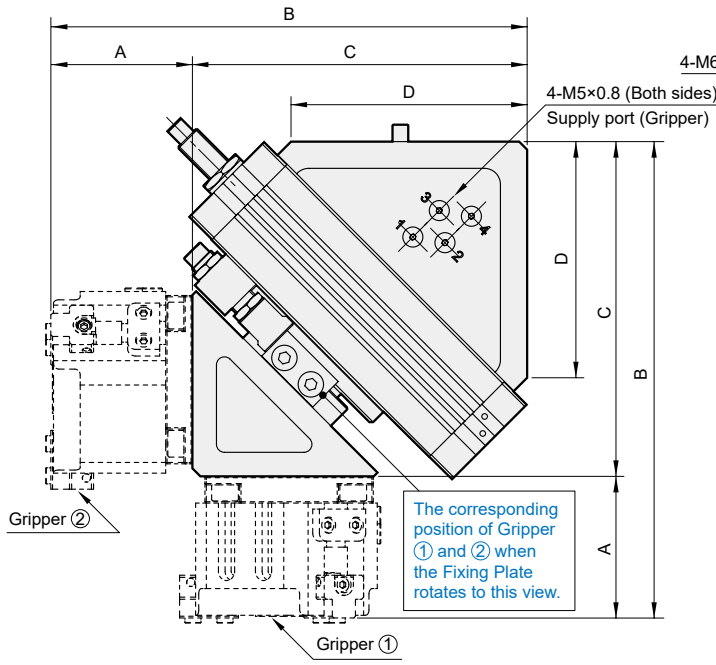
with gripper **MCHJ** series			Q'y			
No.	Part name	Material	MCRT-20		MCRT-25	
			J50	J66	J80	J100
1	Connecting board	Aluminum alloy	2	2	2	2
2	Ball	Stainless steel	–	4	–	4
3	Bolt	Carbon steel	8	8	8	8
4	O-ring	NBR	4	4	4	4
5	Pin	Steel	4	4	4	4
6	MCHJ Gripper	–	2	2	2	2
7	Bolt	Carbon steel	6	6	6	6
8	Plug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

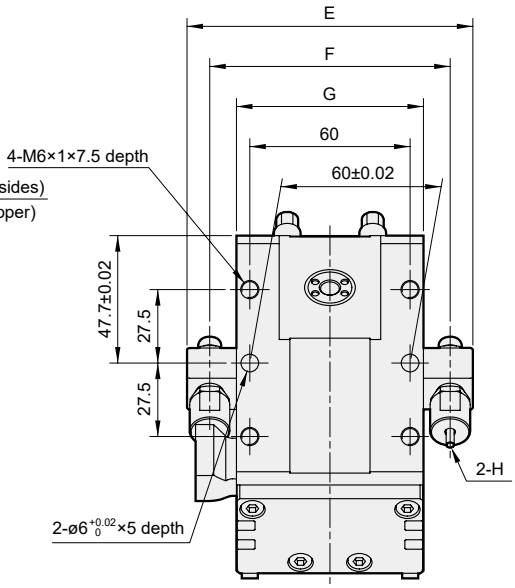


Material

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







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

Supply port (Gripper)

Gripper	Gripper open	Gripper close
①	2	1
②	4	3

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

Compliant Tool Selection Table

APPLICATION EXAMPLES

Model		Compliant type	Tool (Collet)	Compliant Stroke (Force)	Air Consumption/ Power	Working conditions: Seam weld	Weld bead	Weld slag	Utilizing small-scale grinding tools	Utilizing heavy-duty grinding tools		Working conditions: 90° inside corner	Small-diameter hole burr	Chamfering	Circular hole	Outer diameter	Inner diameter	Intersection of inner holes	Hole backside (The back of the hole, looking in from the other end)	Flat	Key groove	Straight Line	Curve	Riser
	**TAF20**	Angular	Pneumatic file (ø6mm flat file)	±5.5° (6~15 N)	170 LPM							●		●	●	●		●	●		●	●		
	**TAG30**	Angular	Pneumatic spindle (ø3, ø6mm Milling bur)	One-sided 5.5° (4~8 N)	350 LPM									●		●					●	●		
	**TLG30**	Linear	Pneumatic spindle (ø3, ø6mm Grinding material with shank)	One-sided 10mm (5~20 N)	350 LPM								●	●	●	●		●		●	●	●		●
	**TLZ10**	Linear	Z-axis compliant module	One-sided 10mm (10~30 N)	–				●															
	**TPG60**	Linkage	Pneumatic grinder (3 inch grinding wheel, sandpaper disc)	One-sided 8mm (20~50 N)	150 LPM		●	●						●		●				●		●		●
	**TPG90**	Linkage	High-power pneumatic grinder (5 inch grinding wheel)	One-sided 8mm (20~50 N)	1800 LPM	●								●		●				●		●		●
	**TRG20**	Radial	Pneumatic spindle (ø3mm milling bur)	Radial 3.5° (2~10 N)	150 LPM									●	●	●	●	●	●		●	●		
	**TRG30**	Radial	Pneumatic spindle (ø6mm milling bur)	Radial 3.5° (13~32 N)	510 LPM									●	●	●	●	●	●		●	●		
	**TRF20**	Radial	Pneumatic file (ø6mm round file)	Radial 3.5° (12~30 N)	170 LPM							●		●	●	●	●	●	●		●	●		
	**TSB80**	–	Small belt sander (Belt width 20mm)	–	850 LPM		●													●			●	

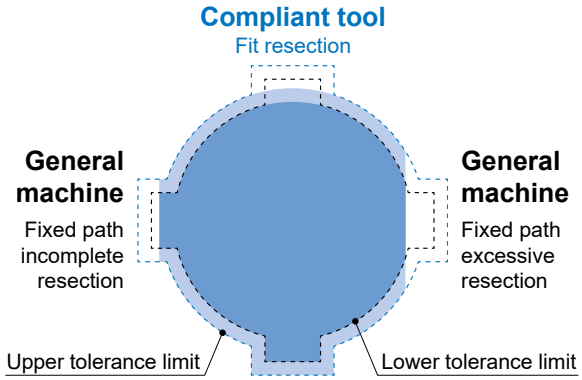
What is the COMPLIANT TOOL ?

DEBURRING TOOL

Description

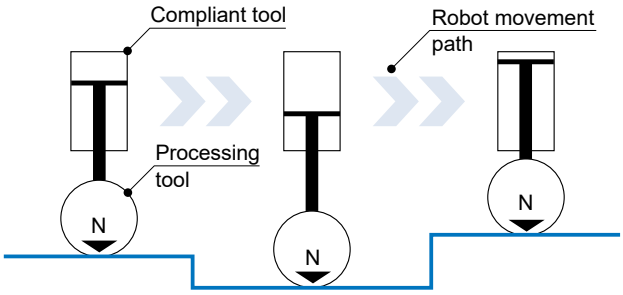
Most industrial robots follow pre-programmed paths like CNC machines, cutting fixed dimensions without considering rigidity or precision. In contrast, manual grinding focuses on surface finishing and removing excess material, differing from fixed-path machining. When large tolerances must be removed or only surface quality adjusted without changing geometry, fixed-path methods become limited.

1. Absorbs various errors and tolerances of the workpiece while maintaining consistent contact force.
2. Simplifies the teaching of the robot path.



Constant Contact Force

Floating tools use air pressure to provide constant contact force, ensuring consistency even when the surface of the object fluctuates. By controlling the air pressure, surface material can be evenly removed, preventing issues like overcutting, machine collisions, or tool breakage, and significantly simplifying the complexity of robot path teaching.

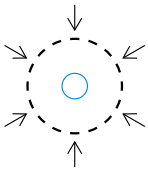


Compliant Type

Depending on the application requirements, compliant tools can have various movement modes, including radial (universal), angular, linear (unidirectional), and linkage types.

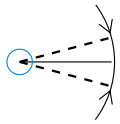
Radial

Absorbs 360° lateral tolerance or position changes of the blade, allowing for full circular free movement, suitable for deburring complex features.



Angular

Absorbs lateral tolerance or position changes of the blade, performing swing movement on the same plane, ideal for deburring straight lines or gentle surfaces.

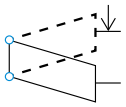


Linear

Allows axial forward and backward movement, compensating for size errors, suitable for deburring flat surfaces or surface grinding.

Linkage

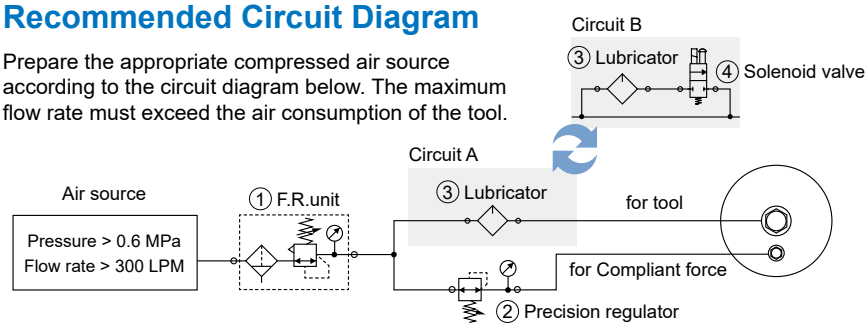
Allows the grinding tool to swing and float, absorbing size errors without changing the contact angle, suitable for removing large burrs, weld seams, or trimming surface shapes.



Floating tools can be used with pneumatic spindles, pneumatic files, grinders, and wheel grinders, depending on different processing methods. Floating tools are suitable for deburring die-cast parts, grinding weld seams, and surface finishing, reducing the complexity of robotic automation while enhancing work quality.

Recommended Circuit Diagram

Prepare the appropriate compressed air source according to the circuit diagram below. The maximum flow rate must exceed the air consumption of the tool.



No.	Type	Suggested model
1	F.R.unit	MAFRF401
2	Precision regulator	MAIR100
3	Lubricator	MAL302
4	Solenoid valve	MVDC-220

* If excessive oil injection occurs, it is recommended to reduce the lubricant amount in circuit A or refer to circuit B to add an oil circuit switch to set the oil injection interval. Adjust as needed to avoid excess dripping.

* TLZ series and TPG90 do not require lubricant to be added.

Precautions

- **Gas Lubrication**

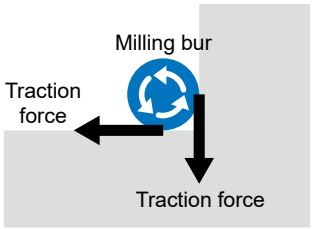
The air source (ø4mm quick connector) that provides the floating force should not be lubricated, as the internal chamber is sealed, and lubrication oil may cause blockage and malfunction.
Pneumatic spindles, pneumatic files, impact machines, and pneumatic grinders do require lubrication. If the oil injector cannot be adjusted to the appropriate oil level, try periodically turning it on (intervals of several hours to a day, depending on testing).

- **Floating Direction & Reaction Force**

Use grinding materials suitable for the type of floating mechanism to prevent damage caused by improper force application.
TR* and TA* require side machining grinding materials. For TA* in particular, ensure that the reaction force from contact with the workpiece aligns with the floating direction.
TLG requires face machining grinding materials. If using a 90° conical milling cutter, it should only be used for deburring small hole edges.
TPG must use the surface of the grinding wheel and not its edge.

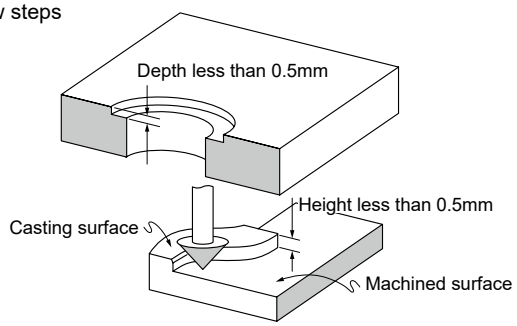
- **Tool Bouncing**

When rotating milling cutters contact the workpiece, the rolling motion generates traction. Since TRG floating tools can swing 360°, the traction may cause the tool to deviate from the center point. When the milling cutter passes through a concave corner, simultaneous contact at two points may cause severe tool bouncing, which can damage the tool or even the floating mechanism itself. Therefore, when teaching the robot path, avoid concave corners, or use a file for processing instead.

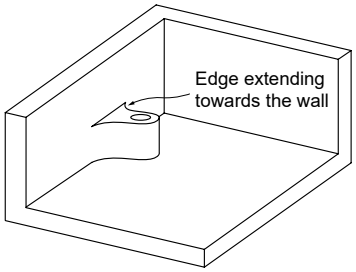


- **Geometric features that restrict compliant tools**

Shallow steps

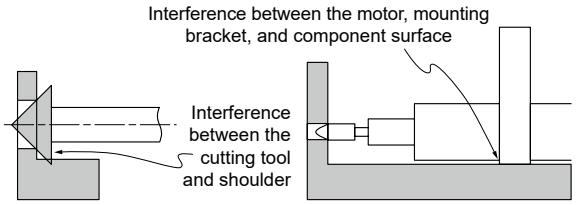


Intersection line protruding from the wall

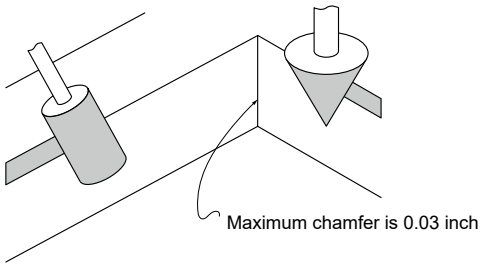


- **Geometric features that restrict compliant tools**

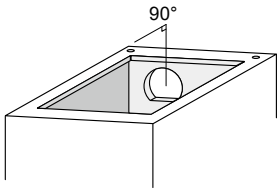
Holes near walls



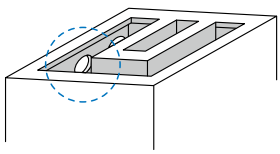
Inner contour line with too small a fillet



Internal D-shaped hole aligned at 90° with the opening



Interference between the inner circular hole and the feature



Installation FAQs

- **Can pneumatic tools have adjustable speeds ?**

Throttle valves can adjust speed but are generally not recommended. If cutting force is too strong, try increasing robot speed or reducing floating force. A shorter floating stroke can also help reduce grinding. Adjust speed only if necessary, and consider selecting better-suited floating tools and consumables.

- **How to set the compliant force ?**

1. Select the tool and test on the material.
2. Ensure full power (0.5~0.6 MPa with adequate air flow).
3. Find the maximum floating force without stalling the tool (maximum cutting capacity).
4. Adjust robot speed to achieve desired grinding.
5. If too much material is removed, reduce the floating force.

- **Can the air pressure exceed the rated input range ?**

No. Low pressure causes malfunctions, and exceeding the rated pressure shortens tool life. You can increase floating force for higher cutting power, but avoid overloading the pneumatic tool.

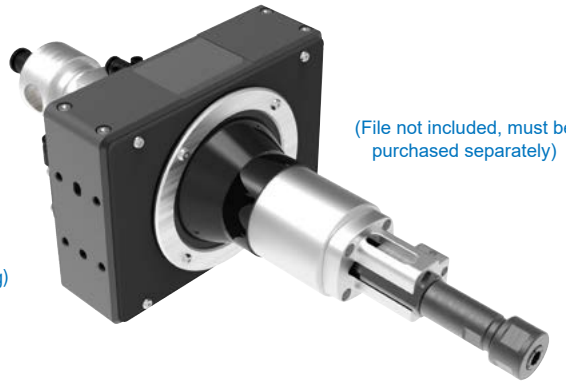
TAF20 series

PNEUMATIC FILE – **ANGULAR COMPLIANT DEBURRING TOOL**

Manual

Model selection

Caution for safety
(Read before installing)



(File not included, must be purchased separately)

Good for large burrs on complex curved edges

Feature

- The tool uses pneumatic control to handle ultra-small gaps, supports angular compliance, ensures precise surface finishing, and is compatible with file-type tools.
- Applicable material: Aluminum, copper, steel, plastic, composite materials, wood.

Order example

TAF20

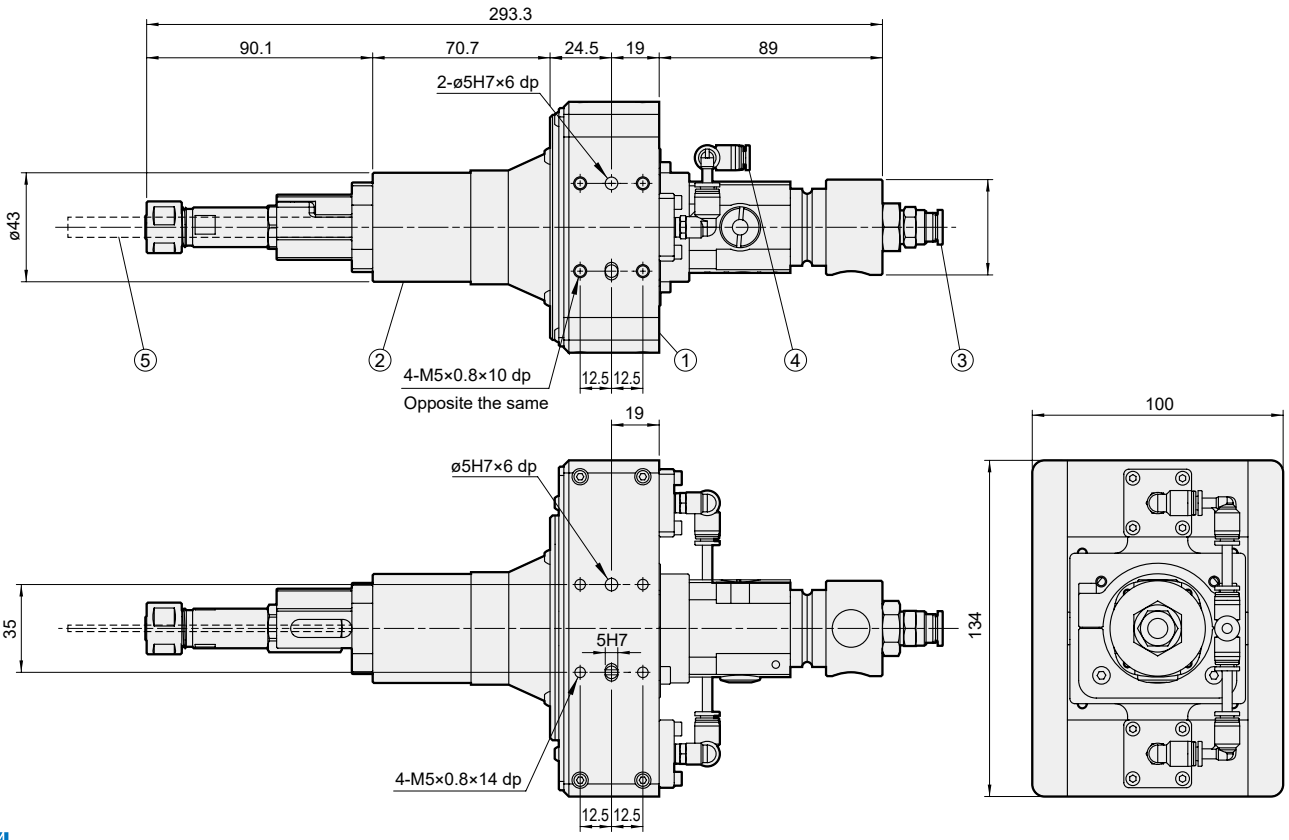
MODEL

Specification

Model		TAF20
Compliant stroke	(°)	±5.5 (Angular)
Compliant force	(N)	6~15
Rated operate pressure	(MPa)	Compliant: 0.2~0.5, Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Pneumatic file: 170
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(BPM)	5000
Frequency	(mm)	10
Collet size	(mm)	6 (Flat file)
Weight	(kg)	2

*1. Only for the pneumatic file. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

No.	Part	Qty	Note
1	Housing	1	–
2	Pneumatic file	1	Consumables
3	Air source for file	1	8 mm fitting
4	Air source for compliant force	1	4 mm fitting
5	Flat file	0	Purchased separately



Manual

Model selection

Caution for safety
(Read before installing)

(Milling bur not included, must be purchased separately)

Feature

Good for large burrs on curved surfaces

- The tool utilizes a compliant structure to adapt to the workpiece shape for surface processing. Combined with pneumatic control, it handles ultra-small gaps, supports angular compliance, prevents over-grinding, and ensures precise surface finishing.
- Applicable material: Aluminum, copper, steel, plastic, composite materials, wood.

Specification

Model		TAG30
Compliant stroke	(°)	5.5 (Angular)
Compliant force	(N)	4~8
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 350
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	35000
Collet size	(mm)	ø3, ø6 (Milling bur)
Weight	(kg)	1.6

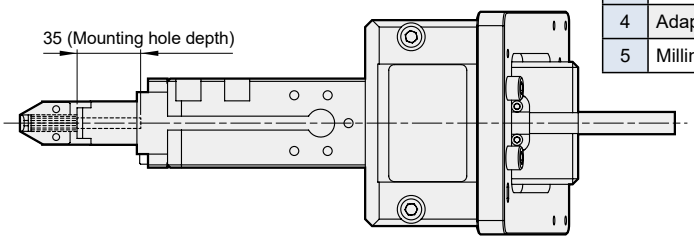
*1. Only for the pneumatic spindle. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

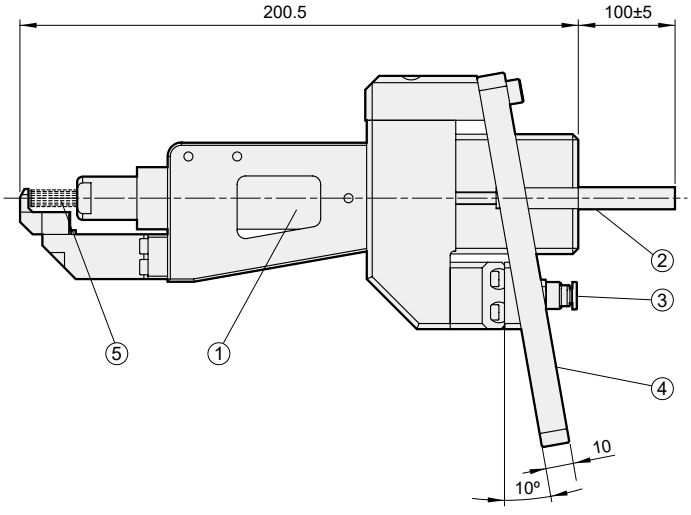
Order example

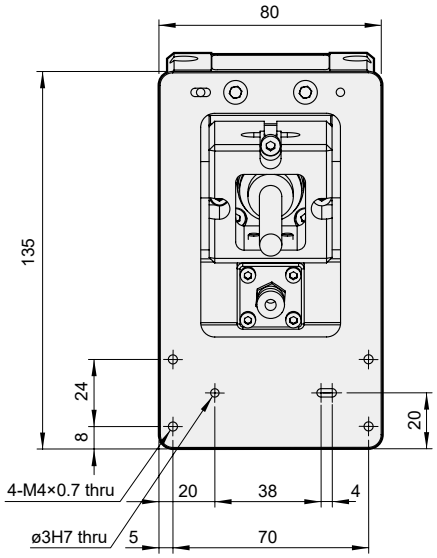
TAG30

MODEL

No.	Part	Qty	Note
1	Pneumatic spindle	1	Consumables
2	Air source for spindle	1	8 mm tube
3	Air source for compliant force	1	4 mm fitting
4	Adapter plate	1	
5	Milling bur	0	Purchased separately







TLG30 series

PNEUMATIC SPINDLE – LINEAR COMPLIANT DEBURRING TOOL

Manual

Model selection

Caution for safety
(Read before installing)

(Grinding material with shank not included, must be purchased separately)

Feature

Good for treating minor burrs on flat surfaces

- The tool utilizes pneumatic control to process ultra-small gaps, supports linear compliance, and ensures precise surface finishing.
- Applicable material: Aluminum, copper

Specification

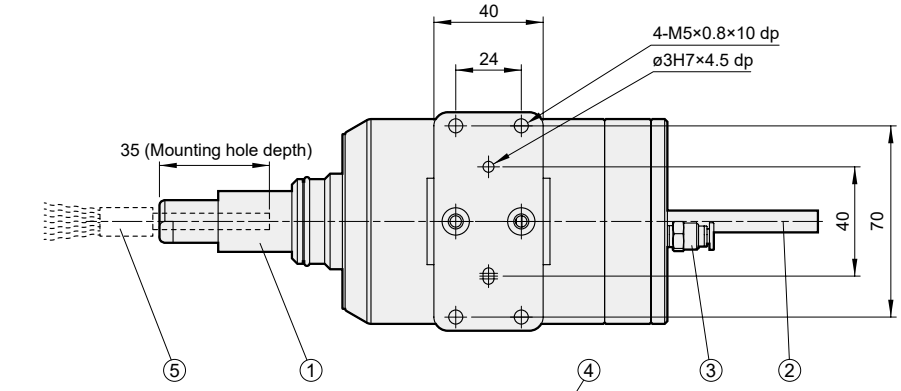
Model		TLG30
Compliant stroke	(mm)	10 (One-sided)
Compliant force	(N)	5~20
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air source requirement	(MPa)	0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 350
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	35000
Collet size	(mm)	ø3, ø6 (Grinding material with shank)
Weight	(kg)	1.7

*1. Only for the pneumatic spindle. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.
*3. Cannot be used with side milling cutters.
*4. Can be used with 90° conical milling cutters for deburring small-diameter hole edges.

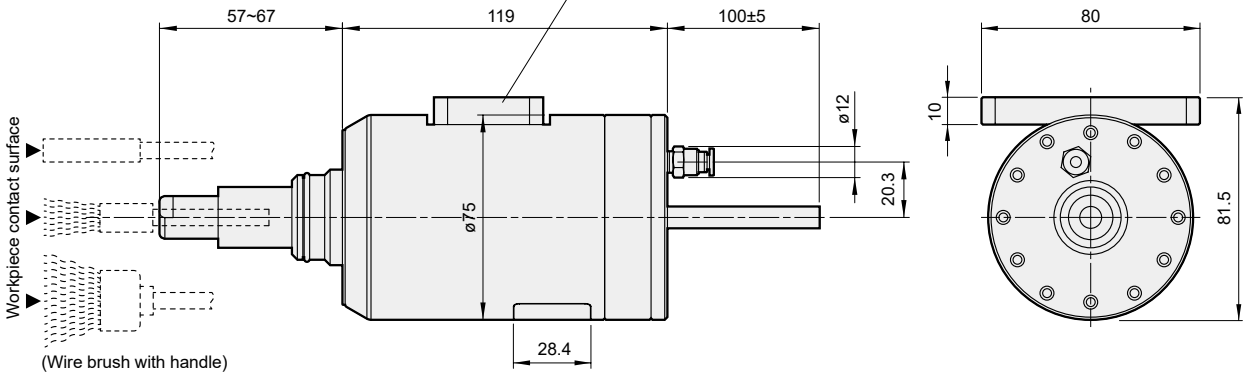
Order example

TLG30

MODEL



No.	Part	Qty	Note
1	Pneumatic spindle	1	Consumables
2	Spindle air supply	1	6 mm tube
3	Compliant force air supply	1	4 mm fitting
4	Adapter plate	1	
5	Grinding material with shank	0	Purchased separately



TLZ10 series

Z-AXIS COMPLIANT MODULE – **LINEAR COMPLIANT TOOL**

Manual

Model selection

Caution for safety
(Read before installing)

(Front grinding head not included, must be purchased separately)

Feature

- Adds compliance function to customer-owned tools.
- The tool is compact, supports linear compliant force, and can be flexibly paired with other tools to ensure precise surface finishing.
- Applicable material: Depending on the tool used.

Specification

Model		TLZ10
Compliant stroke	(mm)	10 (One-sided)
Compliant force	(N)	10~30
Rated operate pressure	(MPa)	Compliant: 0.1~0.5
Recomm. lubricating oil		None
Weight	(kg)	1.2

* Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

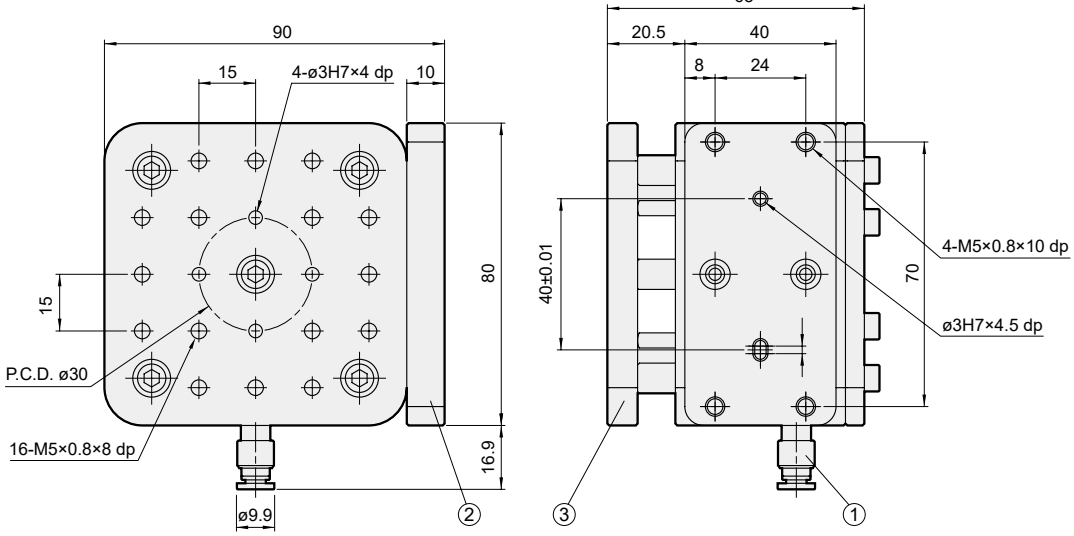
Installation methods	Tool vertical downward	Tool horizontal	Tool vertical upward
			
Rated load (tool weight) (kg)	3	3	2.4

No.	Part	Qty	Note
1	Compliant force air supply	1	4 mm fitting
2	Adapter plate	1	
3	Tool flange	1	

Order example

TLZ10

MODEL



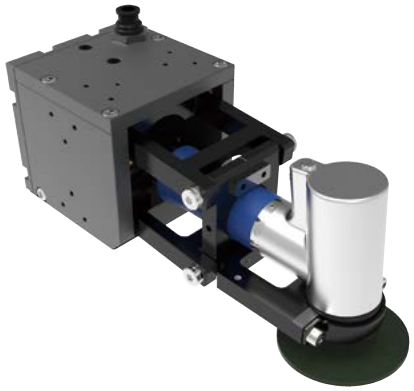
TPG60 series

PNEUMATIC GRINDER – **LINKAGE COMPLIANT TOOL**

Manual

Model selection

Caution for safety
(Read before installing)



(Grinding wheel not included,
must be purchased separately)

Specification

Model		TPG60
Compliant stroke	(mm)	8 (One-sided)
Compliant force	(N)	20~50
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 150
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	18000
Collet size	(inch)	3 (Grinding wheel, sanding disc)
Weight	(kg)	2.4

*1. Only for the pneumatic spindle. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

Feature

Good for large burrs on curved edges

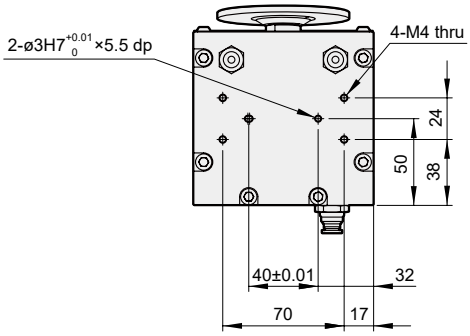
- Minimal compliance force and lightweight grinding. Capable of performing multiple functions based on different sanding disc installations.
- Applicable material: Cast iron, stainless steel,wood, aluminum, copper, steel, plastic, composite materials

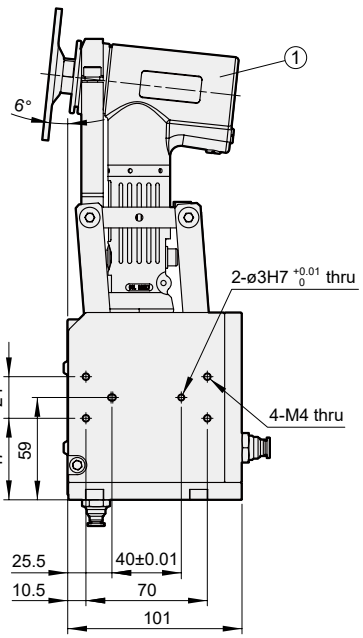
Order example

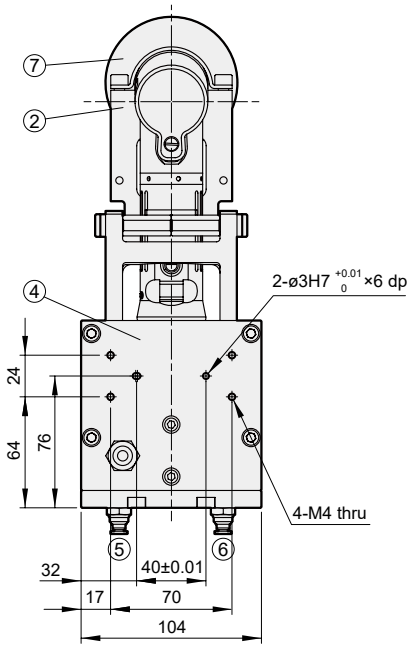
TPG60

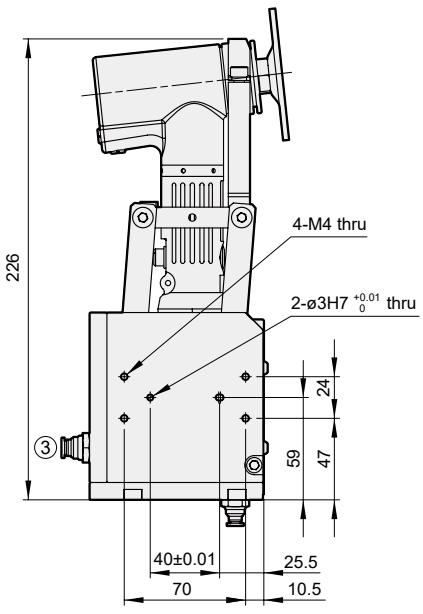
MODEL

No.	Part	Qty	Note
1	Pneumatic grinder	1	
2	Compliant linkage	1	
3	Tool body	1	
4	Pneumatic grinder air supply connector	1	6 mm fitting
5	Air pressure connector	1	6 mm fitting
6	Grinding wheel air pressure connector	1	6 mm fitting
7	Grinding wheel, sandpaper disc	0	Purchased separately









TPG90 series

HIGH-POWER PNEUMATIC GRINDER – **LINKAGE COMPLIANT TOOL**

mindman

Manual

Model selection

Caution for safety
(Read before installing)

(Grinding wheel not included, must be purchased separately)

Feature

- Good for large burrs on curved edges.
- Workpiece touch sensing and powerful grinding. Capable of performing multiple functions based on different sanding disc installations.
- Applicable material: Aluminum, copper, steel, cast iron, stainless steel, hard metals, plastic, composite materials, wood.

Specification

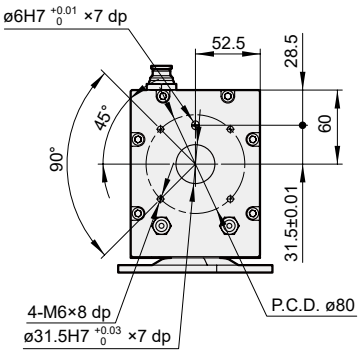
Model		TPG90
Compliant stroke	(mm)	8 (One-sided)
Compliant force	(N)	20~50
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 1800
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	12000
Collet size	(inch)	5 (Grinding wheel, sanding disc)
Weight	(kg)	4

*1. Only for the pneumatic spindle. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

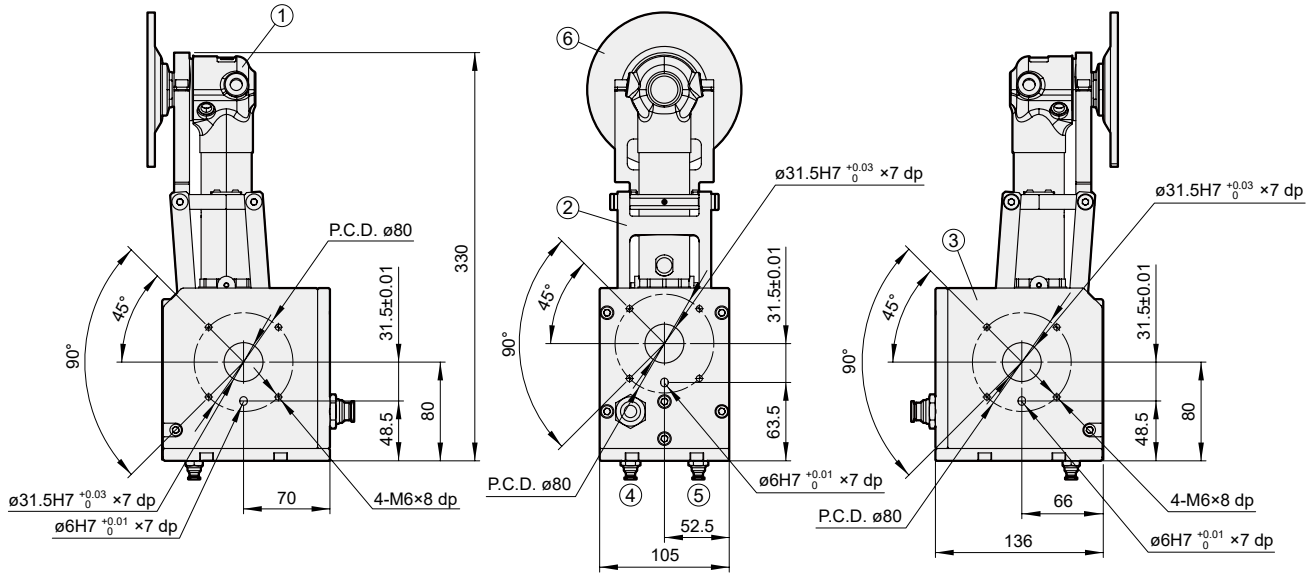
Order example

TPG90

MODEL



No.	Part	Qty	Note
1	Electric angle Grinder	1	
2	Compliant linkage	1	
3	Tool body	1	
4	Air pressure connector	1	4 mm fitting
5	Grinding wheel air pressure connector	1	4 mm fitting
6	Grinding wheel	0	Purchased separately



Manual

Model selection

Caution for safety
(Read before installing)

(Milling bur not included, must be purchased separately)

Feature

- Good for small burrs on complex curved edges.
- Ultra-high speed and minimal compliance force, utilizing pneumatic control to handle ultra-small gaps. Supports highly sensitive radial compliance, ensuring precise surface finishing. Ideal for deburring small components.
- Applicable material: Aluminum, copper, steel

Specification

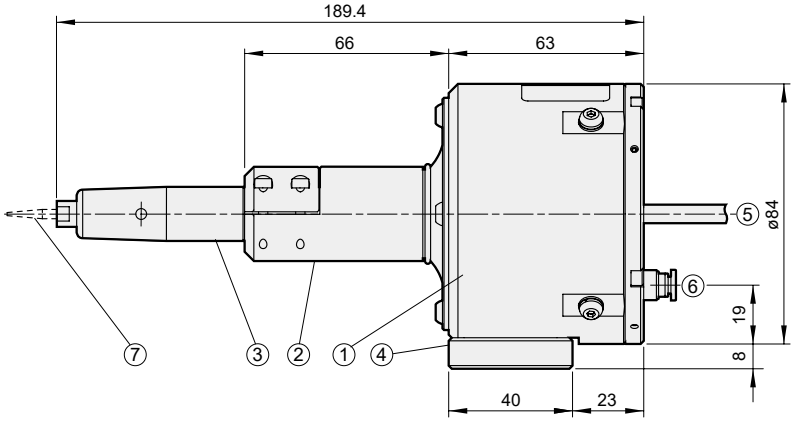
Model		TRG20
Compliant stroke	(°)	3.5 (Radial)
Compliant force	(N)	2~10
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 150
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	65000
Collet size	(mm)	3 (Milling bur)
Weight	(kg)	1.3

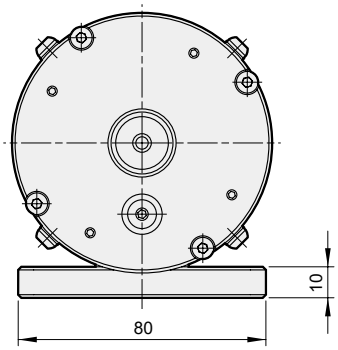
*1. Only for the pneumatic spindle. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

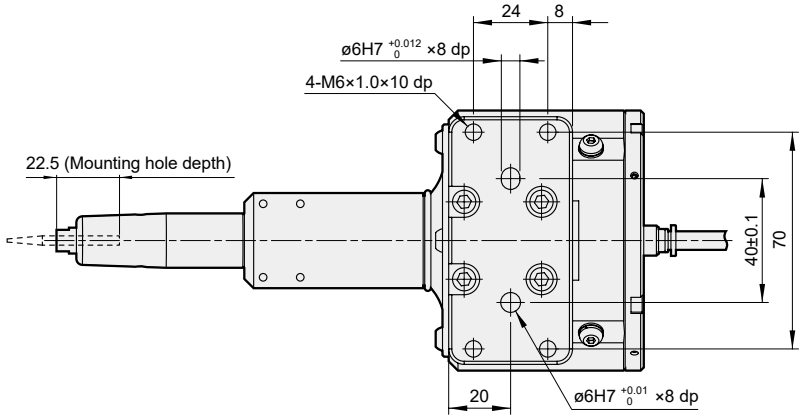
Order example

TRG20

MODEL







No.	Part	Qty	Note
1	Compliant seat	1	–
2	Collet chuck	1	–
3	Pneumatic spindle	1	Consumables
4	Adapter	1	–
5	Spindle air connector	1	6 mm tube
6	Compliant air connector	1	4 mm fitting
7	Milling bur	0	Purchased separately

TRG30 series

PNEUMATIC SPINDLE – **RADIAL COMPLIANT TOOL**

mindman

Manual

Model selection

Caution for safety
(Read before installing)

(Milling bur not included, must be purchased separately)

Feature

- Good for large burrs on complex curved edges.
- Compact design with strong compliance force, utilizing pneumatic control to handle ultra-small gaps. Supports highly sensitive radial compliance, ensuring precise surface finishing.
- Applicable material: Aluminum, copper, steel

Specification

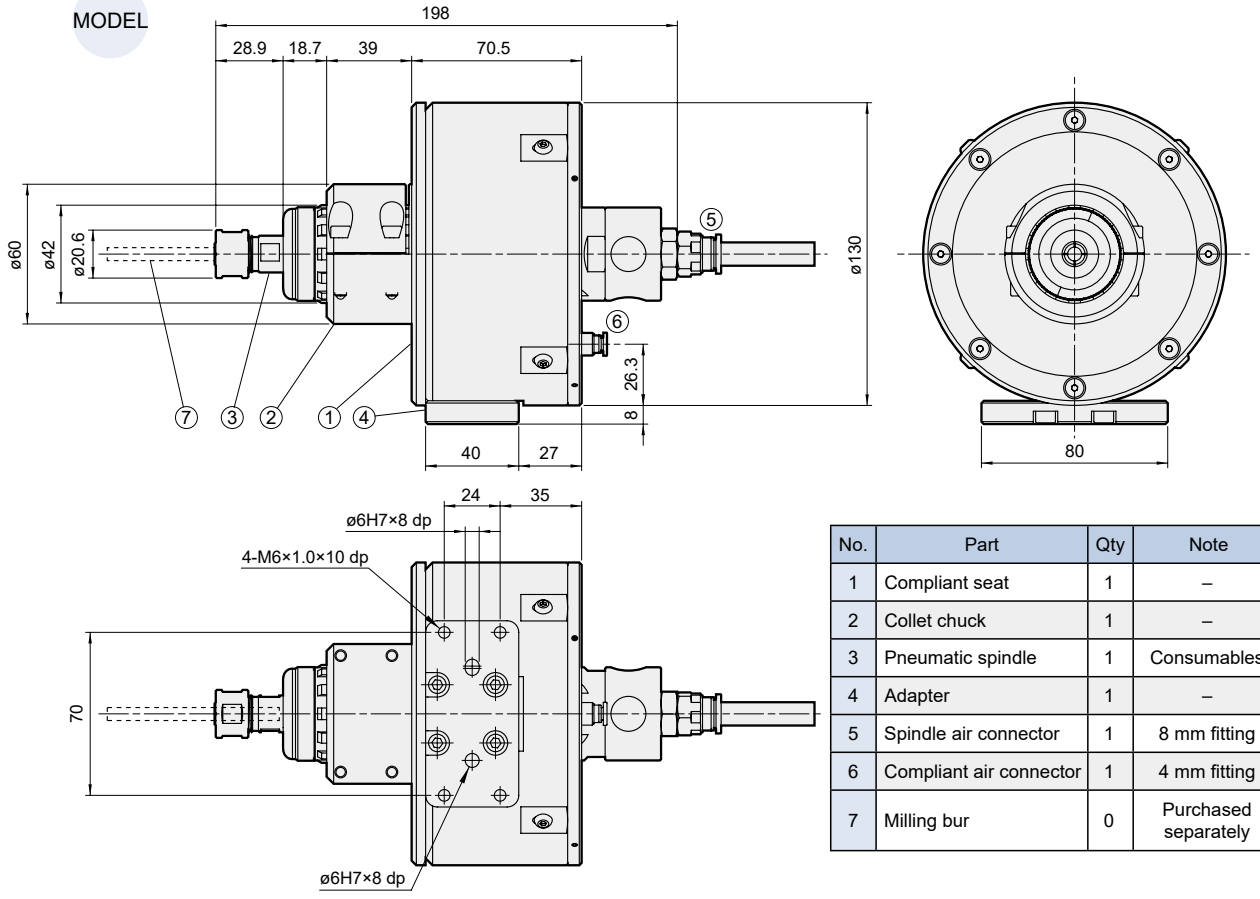
Model		TRG30
Compliant stroke	(°)	3.5 (Radial)
Compliant force	(N)	13~32
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 510
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	16000
Collet size	(mm)	6 (End mill)
Weight	(kg)	3

*1. Only for the pneumatic spindle. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.
*3. Options: High-force compliance type available for large or high-hardness materials.

Order example

TRG30

MODEL



No.	Part	Qty	Note
1	Compliant seat	1	–
2	Collet chuck	1	–
3	Pneumatic spindle	1	Consumables
4	Adapter	1	–
5	Spindle air connector	1	8 mm fitting
6	Compliant air connector	1	4 mm fitting
7	Milling bur	0	Purchased separately

TRF20 series

PNEUMATIC FILE – **RADIAL COMPLIANT TOOL**

Manual

Model selection

Caution for safety
(Read before installing)

(Round file not included, must be purchased separately)

Feature

- Good for small burrs on complex curved edges.
- The tool utilizes pneumatic control to process ultra-small gaps, supports radial compliance, and ensures precise surface finishing. It is designed exclusively for use with file-type tools.
- Applicable material: Aluminum, copper, steel, plastic, composite materials, wood.

Specification

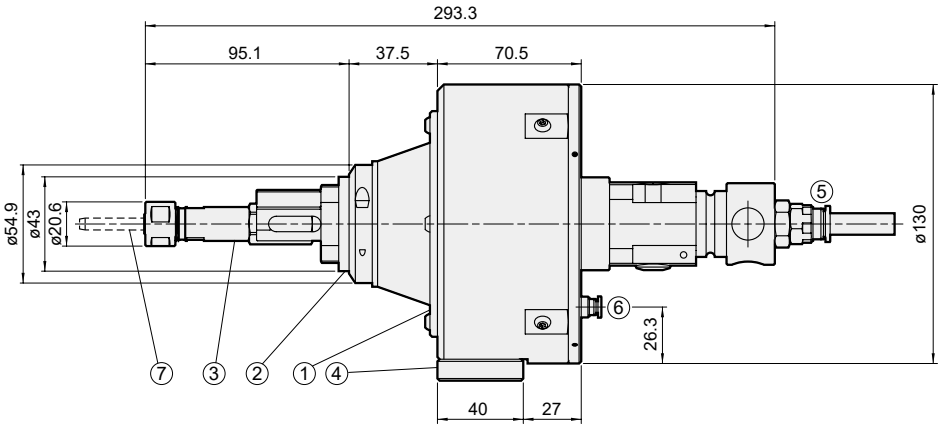
Model		TRF20
Compliant stroke	(°)	3.5 (Radial)
Compliant force	(N)	12~30
Rated operate pressure	(MPa)	Compliant: 0.2~0.5 Spindle: 0.6
Air consumption	(LPM)	Compliant: Neglectable Spindle: 170
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating frequency	(BPM)	5000
Compliant stroke	(mm)	10
Collet size	(mm)	6 (File)
Weight	(kg)	3

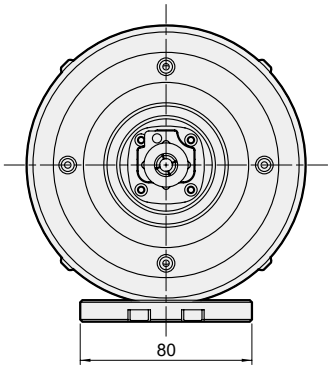
*1. Only for the pneumatic file. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.
*3. Options: High-force compliance type available for large or high-hardness materials.

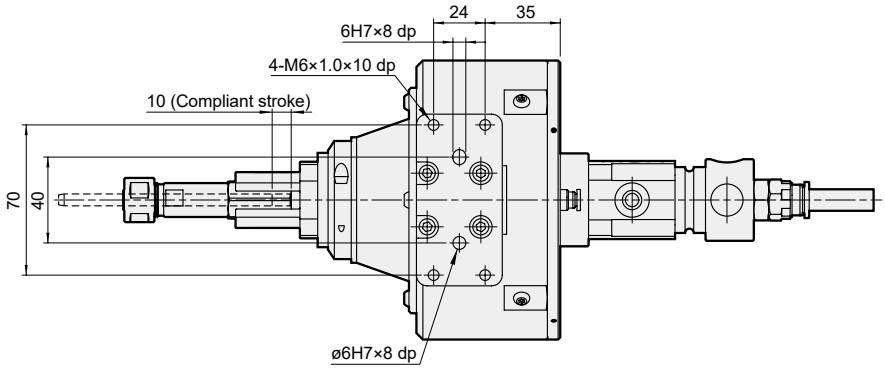
Order example

TRF20

MODEL



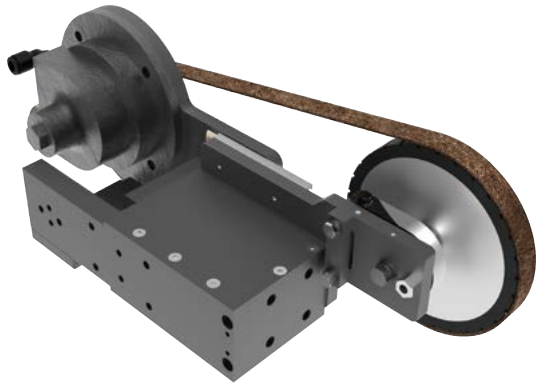




No.	Part	Qty	Note
1	Compliant seat	1	–
2	Collet chuck	1	–
3	Pneumatic File	1	Consumables
4	Adapter	1	–
5	Spindle air connector	1	8 mm fitting
6	Compliant air connector	1	4 mm fitting
7	Round file	0	Purchased separately

Model selection

Caution for safety
(Read before installing)



(Belt not included, must be purchased separately)

Feature

- Good for fine finishing of metal surfaces including scratches.
- Equipped with a highly efficient abrasive belt grinding system, delivering powerful, fast, and consistent grinding performance, suitable for various surface finishing needs.
- Applicable material: Aluminum, copper, steel, cast iron, stainless steel, plastic, composite materials, and wood.

Specification

Model		TSB80
Spindle pressure	(MPa)	0.6
Air consumption	(LPM)	850
Recomm. lubricating oil (*1)		Turbine oil ISO-VG32
Oscillating speed	(RPM)	3000
Collet size	(mm)	Belt width 20
Weight	(kg)	8.6

*1. Adjust oil quantity as needed.
*2. Do not disassemble this product yourself. For repairs or replacement of consumables, please contact our sales.

No.	Part	Qty	Note
1	Silencer	1	–
2	Motor	1	–
3	Pneumatic connector	1	10 mm fitting
4	Protective cover	1	–
5	Rubber wheel	1	–
6	Sanding belt	0	Purchased separately

Order example

TSB80

MODEL