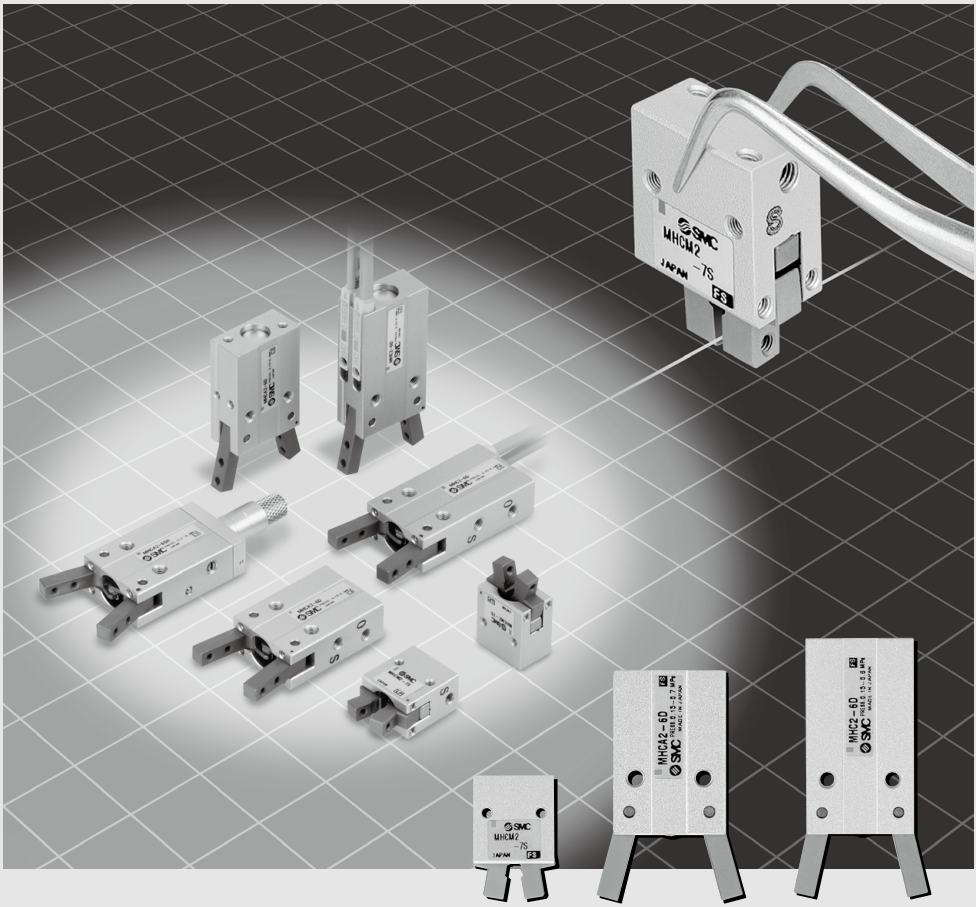
Angular Type Air Gripper

MHC2/MHCA2/MHCM2 Series

ø6, ø7



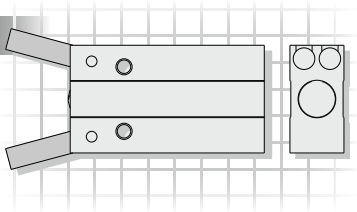
Angular type air gripper

MHC2/MHCA2/MHCM2 Series

MHC2-6□

Auto switch is attachable.

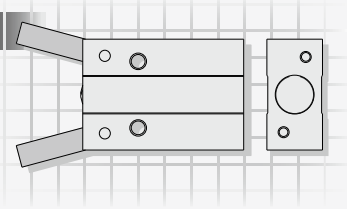
48 mm x 20 mm x 10 mm 22 g



MHCA2-6□

Short body.

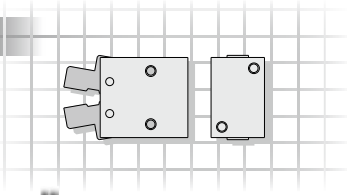
41 mm x 20 mm x 10 mm 19 g



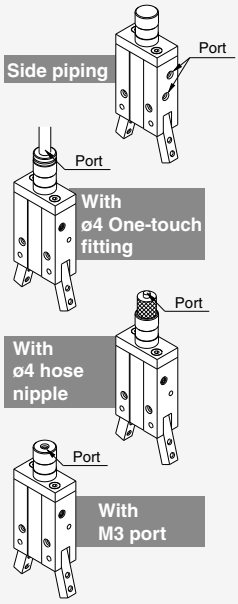
MHCM2-7S

Smallest size and lightest weight in MHC series.

23 mm x 15 mm x 10 mm 9.5 g



Body option
(Only for MHCA2-6)



Variations

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Model	MHC2-6□	MHCA2-6□	MHCM2-7S
Cylinder bore	ø6	ø6	ø7
Action	Double acting Single acting (Normally open)		Single acting (Normally open)
Opening/Closing angle (Both sides)	30° to –10°		20° to –7°
Holding moment (at 0.5 MPa)	0.038 N·m (Double acting) 0.024 N·m (Single acting)		0.017 N·m
Repeat ability	±0.02 mm		
Maximum operating frequency	180 c. p.m		
Weight	22 g Note)	19 g	9.5 g
Auto switch	Solid state auto switch (2-wire, 3-wire)	—	—
Body option	—	End boss type	—

Note) Not including auto switch weight.

MHC2/MHCA2/MHCM2 Series
Specific Product Precautions

Be sure to read this before handling the products.

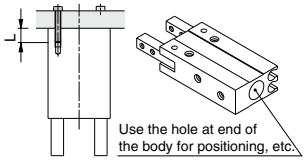
Mounting

⚠Warning

1. Tighten the screw within the specified torque range when mounting the air gripper.
Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

How to Mount Air Grippers

Axial Mounting (Body tapped)

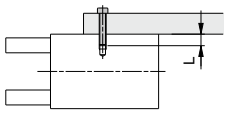


Model	Bolt	Max. tightening torque N·m	Max. screw-in depth L mm
MHCA2-6	M2 x 0.4	0.15	6
MHCM2-7S	M2 x 0.4	0.15	4

Note) MHC2-6 is not compatible with axial mounting.

Model	Hole dia. mm	Hole depth mm
MHCA2-6	ø7H8 $^{+0.022}_{0}$	1.5

Vertical mounting (Body tapped)

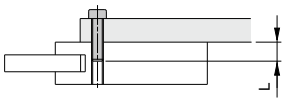


Model	Bolt	Max. tightening torque N·m	Max. screw-in depth L mm
MHCA2-6	M2 x 0.4	0.15	4

Note) MHC2-6 and MHCM2-7S are not compatible with vertical mounting.

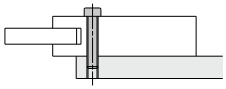
Lateral mounting (Body tapped, body through-hole)

● **Body tapped**



Model	Bolt	Max. tightening torque N·m	Max. screw-in depth L mm
MHC2-6	M3 x 0.5	0.88	10
MHCA2-6	M3 x 0.5	0.88	10
MHCM2-7S	M2 x 0.4	0.15	10

● **Body through-hole**



Model	Bolt	Max. tightening torque N·m
MHC2-6	M2.5 x 0.45	0.49
MHCA2-6	M2.5 x 0.45	0.49

Note) MHCM2-7S is not compatible with body through-hole mounting.

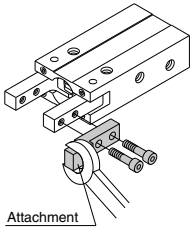
⚠Warning

2. Do not scratch or dent the air gripper by dropping or bumping it when mounting.
Slight deformation can cause inaccuracy or a malfunction.

3. Tighten the screw within the specified torque range when mounting the attachment.
Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

How to Mount Attachment to the Finger

Make sure to mount the attachments on fingers with the tightening torque in the table below by using bolts, etc., for the female threads on fingers.



Model	Bolt	Max. tightening torque N·m
MHC□2-6	M2 x 0.4	0.15
MHCM2-7S	M2 x 0.4	0.15

Operating Environment

⚠Caution

Use caution for the anti-corrosiveness of finger guide section.
Except for some models, martensitic stainless steel is used for the finger. However, be aware that its anti-corrosion performance is inferior to austenitic stainless steel. In particular, the finger might be rusted in an environment where water droplets are adhered to it due to dew condensation.

Model Selection

Model Selection

Selection Procedure

Step 1 Confirm gripping force → **Step 2** Confirmation of inertial moment of attachment

Step 1 Confirmation of Gripping Force

Confirmation of conditions → Calculation of required gripping force → Model selection from gripping force graph

Example

Workpiece mass: **0.01 kg**

Gripping method: External gripping

Length of gripping point: **25mm**

Operating pressure: **0.4MPa**

Model selection criteria with respect to workpiece mass

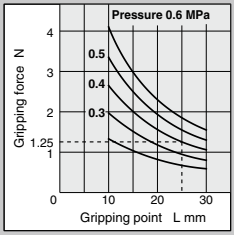
- Although differences will exist depending on factors such as shape and the coefficient of friction between the attachments and workpieces, select a model which will provide a gripping force 10 to 20 times the (Note 1) weight of the workpiece.

(Note 1) Refer to the model selection illustration for more information.

- Furthermore, in cases with high acceleration or impact, etc., it is necessary to allow an even greater margin of safety.

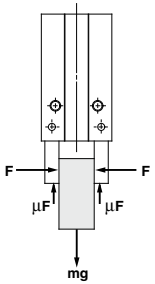
Example: When it is desired to set the gripping force at 10 times or more the workpiece weight.
Required gripping force = 0.01 kg x 10 x 9.8 m/s^2
= Approx. 0.98 N or more

MHC2-6D/MHCA2-6D



- Selecting the **MHC2-6D**. The gripping force of 1.25 N is obtained from the intersection point of gripping point distance L = 25 mm and pressure of 0.4 MPa.
- The gripping force is 12.7 times greater than the workpiece weight, and therefore satisfies a gripping force setting value of 10 times or more.

Model Selection Illustration



When gripping a workpiece as in the figure to the left and with the following definitions,
F: Gripping force (N)
μ**:** Coefficient of friction between attachments and workpiece
m: Workpiece mass (kg)
g: Gravitational acceleration (= 9.8 m/s^2)
mg: Workpiece weight (N)

the conditions under which the workpiece will not drop are

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

Number of fingers

and therefore,

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

With "**a**" as the safety margin, **F** is determined as follows:

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

Gripping force at least 10 to 20 times the workpiece weight

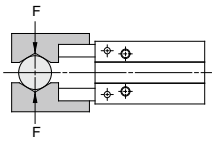
The "10 to 20 times or more of the workpiece weight" recommended by SMC is calculated with the safety margin of a = 4, which allows for impacts that occur during normal transportation, etc.

When μ = 0.2	When μ = 0.1
$F = \frac{mg}{2 \times 0.2} \times 4$	$F = \frac{mg}{2 \times 0.1} \times 4$
= 10 x mg	= 20 x mg
10 x workpiece weight	20 x workpiece weight

(Note) · Even in cases where the coefficient of friction is greater than μ = 0.2, for safety reasons, SMC recommends selecting a gripping force which is at least 10 to 20 times the workpiece weight.
· It is necessary to allow a greater safety margin for high accelerations and strong impacts, etc.

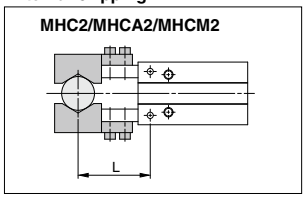
Step 1 Effective Gripping Force: MHC□2 Series External Gripping Force

• Expressing the 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 both fingers and attachments are in full contact with the workpiece as shown in the figure below.

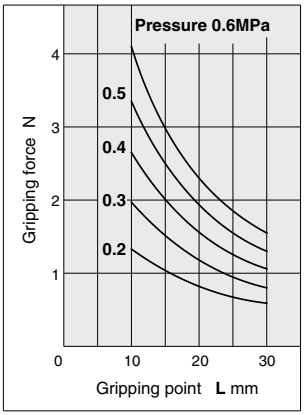


● If there is an overhang, please consult with SMC.

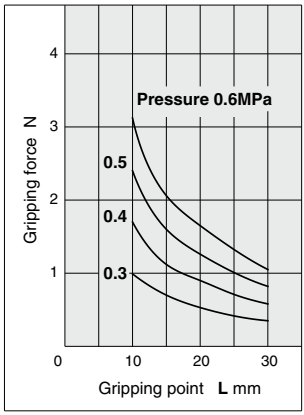
External Gripping



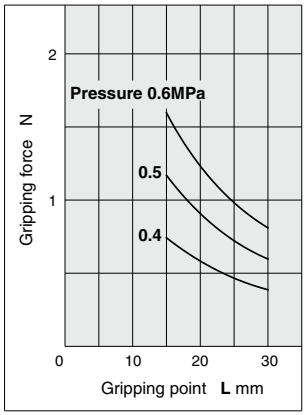
MHC2-6D/MHCA2-6D



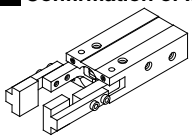
MHC2-6S/MHCA2-6S



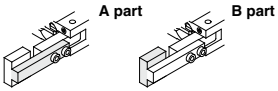
MHCM2-7S

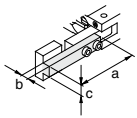
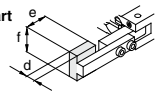
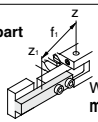
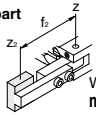


Step 2 Confirmation of Inertial Moment of Attachment



Confirm the inertial moment of one of the two attachments.
For example, in calculating the inertial moment of an attachment in the picture on the left, divide it into 2 rectangular parallelepipeds, A part and B part.



Procedure	Formula	Example
1.Calculate the operating conditions and attachment dimensions.	**A part**  **B part** 	Operating equipment: MHC2-6D **a** = 20 (mm) **b** = 3 (mm) **c** = 4 (mm) **d** = 4 (mm) **e** = 5 (mm) **f** = 6 (mm)
2.Calculate the inertial moment of the attachment.	**A part**  Weight calculation $m_1 = a \times b \times c \times$ Relative density Inertial moment around Z1 axis $I_{Z1} = \{m_1 (a^2 + b^2) / 12\} \times \frac{10^{-6}}{*}$ Inertial moment around Z axis $I_A = I_{Z1} + m_1 r_1^2 \times \frac{10^{-6}}{*}$ **B part**  Weight calculation $m_2 = d \times e \times f \times$ Relative density Inertial moment around Z2 axis $I_{Z2} = \{m_2 (d^2 \times e^2) / 12\} \times \frac{10^{-6}}{*}$ Inertial moment around Z axis $I_B = I_{Z2} \times m_2 r_2^2 \times \frac{10^{-6}}{*}$ Thus, the total inertial moment is $I = I_A + I_B$ (*: Unit conversion constant)	Assuming the attachment material is aluminium alloy (relative density=2.7), r_1 = 16.4 (mm). $m_1 = 20 \times 3 \times 4 \times 2.7 \times 10^{-6}$ $= 6.48 \times 10^{-4}$ (kg) $I_{Z1} = \{6.48 \times 10^{-4} \times (20^2 + 3^2)/12\} \times 10^{-6}$ $= 2.21 \times 10^{-8}$ (kg·m^2) $I_A = 2.21 \times 10^{-8} + 6.48 \times 10^{-4} \times 16.4^2 \times 10^{-6}$ $= 0.20 \times 10^{-6}$ (kg·m^2) r_2 = 23.5(mm) $m_2 = 4 \times 5 + 6 \times 2.7 \times 10^{-6}$ $= 3.24 \times 10^{-4}$ (kg) $I_{Z2} = \{3.24 \times 10^{-4} \times (4^2 + 5^2) / 12\} \times 10^{-6}$ $= 1.11 \times 10^{-9}$ (kg·m^2) $I_B = 1.11 \times 10^{-9} + 3.24 \times 10^{-4} \times 23.5^2 \times 10^{-6}$ $= 0.18 \times 10^{-6}$ (kg·m^2) $I = 0.20 \times 10^{-6} + 0.18 \times 10^{-6}$ $= 0.38 \times 10^{-6}$ (kg·m^2)
3.Confirm from the table that the inertial moment of one attachment is within the allowable range.	**MHC2-6D/MHCA2-6D** Finger opening and closing speed / Allowable inertial moment of attachment Without speed controller: 0.5×10^{-6} Kg·m^2 With speed controller (3/4 to 1 and 1/2 reverse rotation from fully close state): 1.5×10^{-6} Kg·m^2 Attachment inertial moment > Allowable inertial moment	Attachment inertial moment 0.38 x 10^{-6} (kg·m^2) < Allowable inertial moment without speed controller 0.5 x 10^{-6} (kg·m^2) Therefore, the attachment can be used without a speed controller.

Symbol

Symbol	Definition	Unit
Z	Central axis of finger rotation	—
Z_1	Axis which contains center of gravity of attachment A part and is parallel to Z	—
Z_2	Axis which contains center of gravity of attachment B part and is parallel to Z	—
I	Total inertial moment of attachment	kg·m^2
I_{Z1}	Inertial moment around Z1 axis of attachment A part	kg·m^2
I_{Z2}	Inertial moment around Z2 axis of attachment B part	kg·m^2
I_A	Inertial moment around Z axis of attachment A part	kg·m^2
I_B	Inertial moment around Z axis of attachment B part	kg·m^2
m_1	Weight of attachment A part	kg
m_2	Weight of attachment B part	kg
r_1	Distance between axes Z and Z1	mm
r_2	Distance between axes Z and Z2	mm

Limiting Range of Attachment Inertial Moment

MHC2-6D/MHCA2-6D

Finger opening and closing speed	Allowable inertial moment of attachment	Weight (Guide)
Without speed controller Note)	0.5 x 10^{-6} kg·m^2	2 g or less
With speed controller 3/4 to 1 and 1/2 reverse rotation from fully close state	1.5 x 10^{-6} kg·m^2	3.5 g or less

MHC2-6S/MHCA2-6S

Finger opening and closing speed	Allowable inertial moment of attachment	Weight (Guide)
Without speed controller Note)	0.5 x 10^{-6} kg·m^2	2 g or less
With speed controller 3/4 to 2 reverse rotation from fully close state	1.5 x 10^{-6} kg·m^2	3.5 g or less

MHCM2-7S

Finger opening and closing speed	Allowable inertial moment of attachment	Weight (Guide)
Without speed controller Note)	0.3 x 10^{-6} kg·m^2	2 g or less
With speed controller 1/2 to 1 3/4 reverse rotation from fully close state	1.0 x 10^{-6} kg·m^2	3.3 g or less

∗ Applicable speed controller ——— Air gripper direct connection type AS1211F-M3
Use a meter-in type.
Note) In the case of MHCM2-7S, provide a run off space because the speed controller protrudes from the body top surface by 0.6 mm.

Note) Sometimes the workpiece may not be gripped precisely because of excessive speed in finger opening and closing. Therefore, use a meter-in type speed controller to adjust the finger opening and closing speed.

Angular Type Air Gripper
MHC2-6/MHCA2-6 Series
ø6

How to Order

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

Nil	2 pcs.
S	1 pc.

MHC 2 – 6 D – M9B □ – □

MHC A 2 – 6 D □ – □

Short body
(Auto switch not attachable)

Made to Order
Refer to page 665 for details.

Number of fingers

2	2 finger

Bore size (mm)

6	6

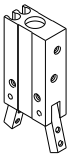
Action

D	Double acting
S	Single acting (Normally open)

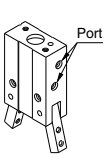
Body option (End boss type)

Nil: Basic type

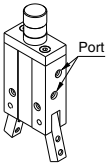
MHC2



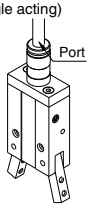
MHCA2



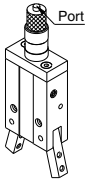
E: Side ported (Double acting/ Single acting)



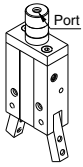
K: Axial ported with One-touch fitting (Single acting)



H: Axial ported with ø4 hose nipple (Single acting)



M: Axial M3 port (Single acting)



Applicable Auto Switches/Refer to pages 797 to 850 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length (m)∗				Pre-wired connector	Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**M9NV**	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				**M9PV**	**M9P**	●	●	●	○	○		
				2-wire		12 V		**M9BV**	**M9B**	●	●	●	○	○	—	
	Diagnosis (2-color indicator)			3-wire (NPN)		5 V, 12 V		**M9NWV**	**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)				**M9PWV**	**M9PW**	●	●	●	○	○		
				2-wire		12 V		**M9BWV**	**M9BW**	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)		5 V, 12 V		**M9NAV**∗∗	**M9NA**∗∗	○	○	●	○	○	IC circuit	
				3-wire (PNP)				**M9PAV**∗∗	**M9PA**∗∗	○	○	●	○	○		
				2-wire		12 V		**M9BAV**∗∗	**M9BA**∗∗	○	○	●	○	○	—	

∗∗ Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
∗ Lead wire length symbols: 0.5 m ····· Nil (Example) M9N
1 m ····· M (Example) M9NM
3 m ····· L (Example) M9NL
5 m ····· Z (Example) M9NZ
∗ Auto switches marked with "○" are made to order specification.

Note) When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.

MHC2-6□

MHCA2-6□

MHCA2-6□
Axial ported
(With hose nipple)

Specifications

Fluid		Air
Operating pressure	Double acting	0.15 to 0.6 MPa
	Single acting: Normally open	0.3 to 0.6 MPa
Ambient and fluid temperature		–10 to 60°C
Repeatability		±0.02 mm
Maximum operating frequency		180 c.p.m
Lubrication		Non-lube
Action		Double acting, Single acting (Normally open)
Auto switch (Option) Note)		Solid state auto switch (3-wire, 2-wire)

Note) Refer to pages 797 to 850 for further information on auto switches.

Model

Action	Model	Cylinder bore (mm)	Gripping moment (1) (Effective value) N·m	Opening/Closing angle (Both sides)	Weight (2) (g)
Double acting	**MHC2-6D**	6	0.038	30° to –10°	22
	MHCA2-6D	6			19
Single acting (Normally open)	**MHC2-6S**	6	0.024	30° to –10°	22
	MHCA2-6S	6			19

Note 1) At the pressure of 0.5 MPa
Note 2) Excluding the auto switch weight.

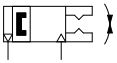
Option

●Body Option/End Boss Type

Symbol	Piping port location	Type of piping port	Applicable model	
		MHCA2-6	Double acting	Single acting
Nil	Basic type	M3 x 0.5	●	●
E	Side ported	M3 x 0.5	●	●
K	Axial ported	With ø4 One-touch fitting	—	●
H		With ø4 hose nipple	—	●
M		M3 x 0.5	—	●

Symbol

Double acting:
External grip



Single acting/ Normally open:
External grip

Made to Order

Made to Order

Refer to pages 725 to 748 for details.

Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X53	EPDM seal/Fluorine grease
-X56	Axial piping type
-X63	Fluorine grease
-X64	Finger: Side Tapped Mounting
-X65	Finger: Through-hole mounting
-X79	Grease for food processing machines, Fluorine grease
-X79A	Grease for food processing machines
-X81A	Anti-corrosive treatment of finger

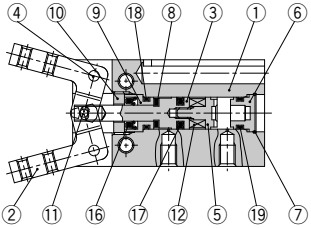
Moisture Control Tube IDK Series

When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.
Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to **the IDK series in the Best Pneumatics No.6**.

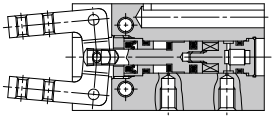
Construction

MHC2-6

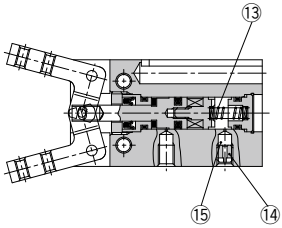
Double acting/With fingers open



Double acting/With fingers closed



Single acting



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	Hard anodized
2	**Finger**	Stainless steel	Heat treatment
3	**Piston**	Stainless steel	
4	**Lever shaft**	Stainless steel	Nitriding
5	**Magnet holder**	Stainless steel	
6	**Cap**	Aluminum alloy	Hard anodized
7	**Clip**	Stainless steel	
8	**Bumper**	Urethane rubber	
9	**Holder**	Brass	Electroless nickel plated
10	**Holder lock**	Stainless steel	

No.	Description	Material	Note
11	**Needle roller**	High carbon chromium bearing steel	
12	**Magnet**	—	Nickel plated
13	**N.O. spring**	Piano wire	Zinc chromated
14	**Exhaust plug**	Brass	Electroless nickel plated
15	**Exhaust filter**	Resin	
16	**Rod seal**	NBR	
17	**Piston seal**	NBR	
18	**Gasket**	NBR	
19	**Gasket**	NBR	

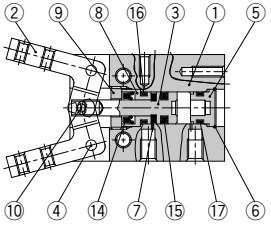
Replacement Parts

Description	Kit no.	Main parts	Note
Seal kit	Please contact SMC to replace seal kit		

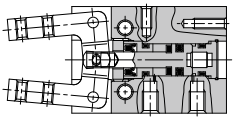
Replacement part/Grease pack part no.: GR-S-005 (5 g)

MHCA2-6 (Short body type)

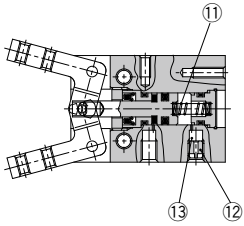
Double acting/With fingers open



Double acting/With fingers closed



Single acting



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	Hard anodized
2	**Finger**	Stainless steel	Heat treatment
3	**Piston**	Stainless steel	
4	**Lever shaft**	Stainless steel	Nitriding
5	**Cap**	Aluminum alloy	Hard anodized
6	**Clip**	Stainless steel	
7	**Bumper**	Urethane rubber	
8	**Holder**	Brass	Electroless nickel plated
9	**Holder lock**	Stainless steel	

No.	Description	Material	Note
10	**Needle roller**	High carbon chromium bearing steel	
11	**N.O. spring**	Piano wire	Zinc chromated
12	**Exhaust plug**	Brass	Electroless nickel plated
13	**Exhaust filter**	Resin	
14	**Rod seal**	NBR	
15	**Piston seal**	NBR	
16	**Gasket**	NBR	
17	**Gasket**	NBR	

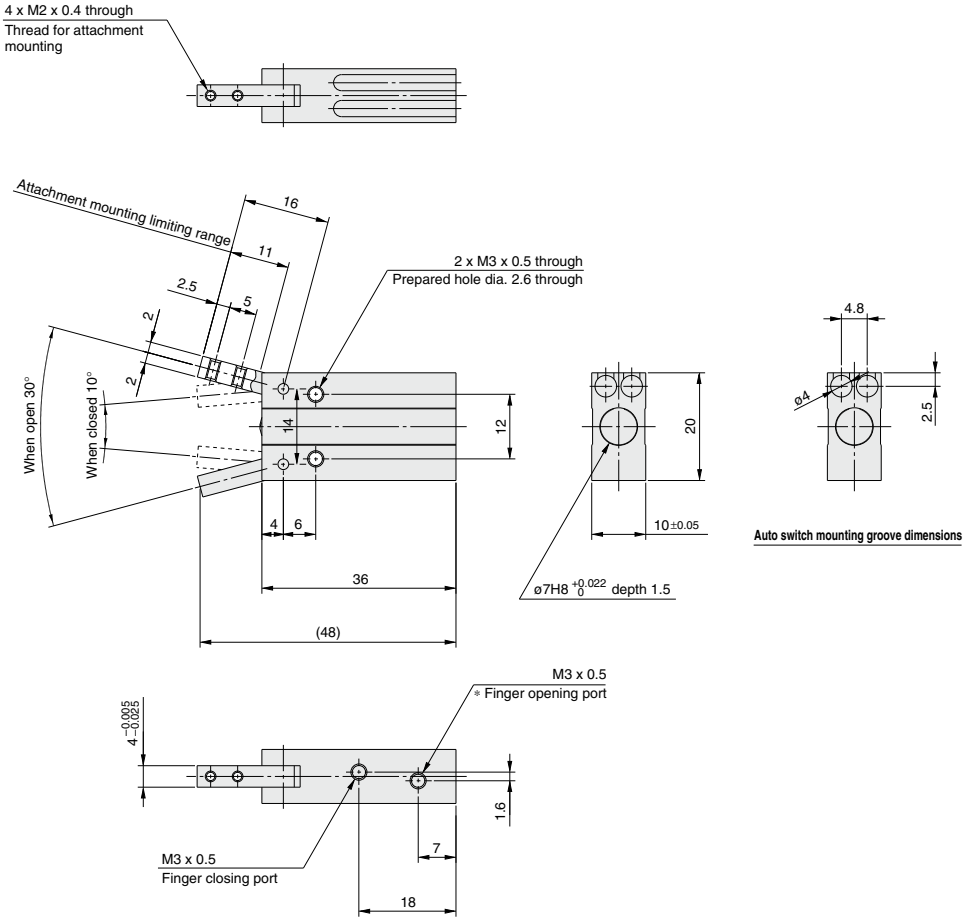
Replacement Parts

Description	Kit no.	Main parts	Note
Seal kit	Please contact SMC to replace seal kit		

Replacement part/Grease pack part no.: GR-S-010 (10 g)

Dimensions

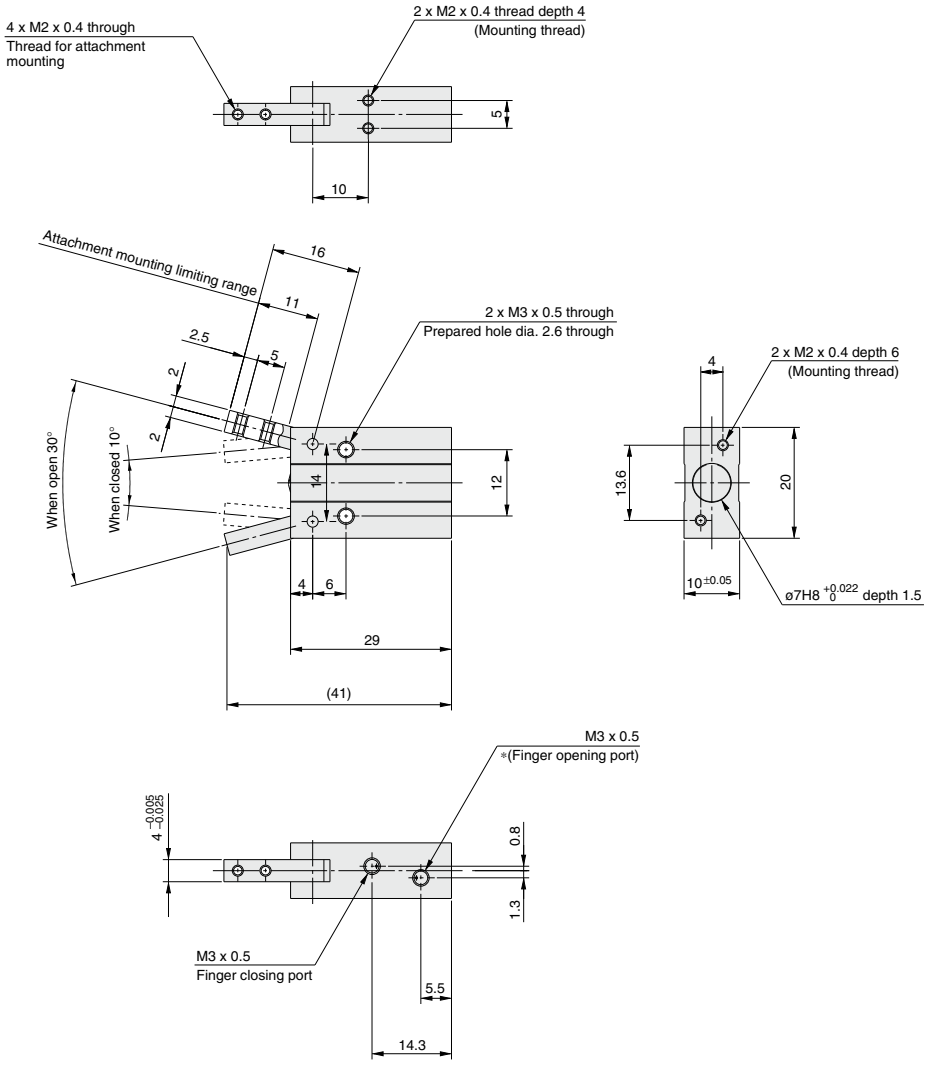
MHC2-6□



* In the case of MHC2-6S, finger opening port is a breathing hole.

Dimensions

MHCA2-6□ (Short body type)



∗ In the case of MHCA2-6S, finger opening port is a breathing hole.

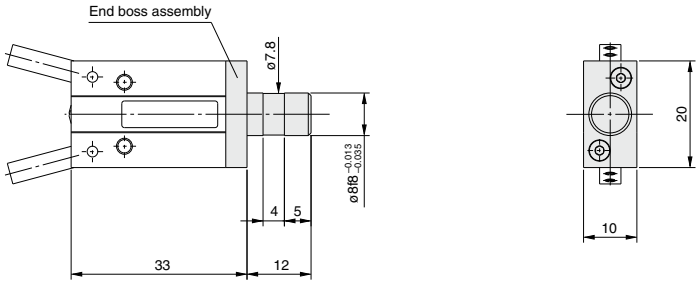
MHCA2 Series
Body Option: End Boss Type

Applicable Model

Symbol	Piping port location	Type of piping port	Applicable model	
			Double acting	Single acting
E	Side ported	M3 x 0.5	●	●
H	Axial ported	With ø4 hose nipple	—	●
K		With ø4 One-touch fitting	—	●
M		M3 x 0.5	—	●

Side Ported [E]

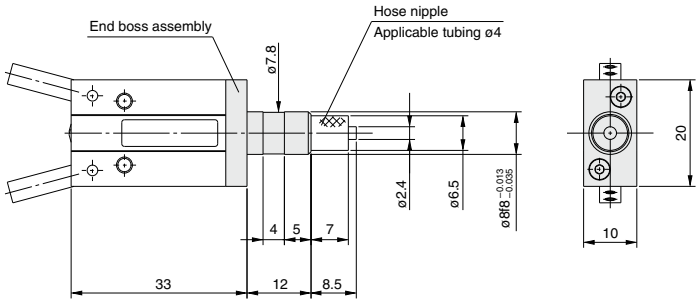
MHCA2-6□E



∗ The specifications and dimensions not given above are identical with those of the standard type.

Axial Ported (With hose nipple) [H]

MHCA2-6SH



∗ The specifications and dimensions not given above are identical with those of the standard type.

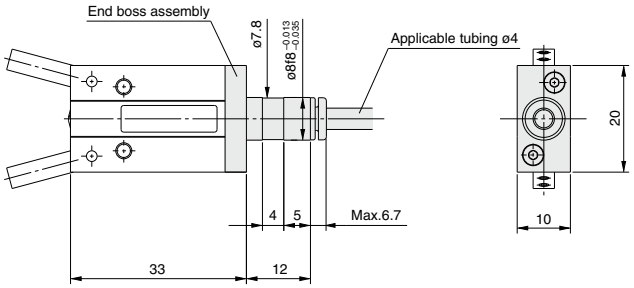
Applicable Tubing

Description/Model / Specifications	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coil tubing
	T0425	**TS0425**	**TU0425**	**TCU0425B-1**
Outside diameter mm	4	4	4	4
Max. operating pressure MPa	1.0	0.8	0.5	0.5
Min. bending radius mm	13	12	10	—
Operating temperature °C	–20 to 60	–20 to 60	–20 to 60	–20 to 60
Material	Nylon 12	Nylon 12	Polyurethane	Polyurethane

Refer to “Best Pneumatics No. 7” regarding One-touch fittings and tubing.

Axial Ported (With One-touch fitting) [K]

MHCA2-6SK



∗ The specifications and dimensions not given above are identical with those of the standard type.

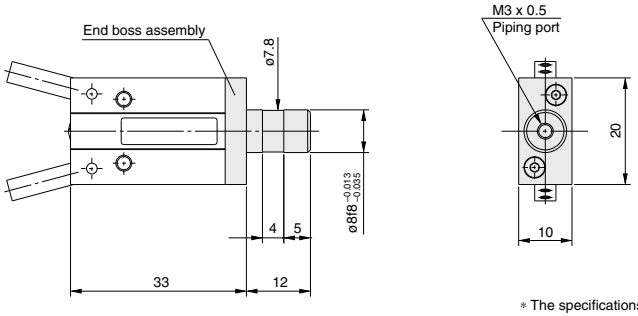
Applicable Tubing

Description/Model / Specifications	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coil tubing
	T0425	**TS0425**	**TU0425**	**TCU0425B-1**
Outside diameter mm	4	4	4	4
Max. operating pressure MPa	1.0	0.8	0.5	0.5
Min. bending radius mm	13	12	10	—
Operating temperature °C	–20 to 60	–20 to 60	–20 to 60	–20 to 60
Material	Nylon12	Nylon12	Polyurethane	Polyurethane

Refer to “Pneumatics Piping Equipment (CAT.E50)” regarding One-touch fittings and tubing.

Axial Ported (With M3 port) [M]

MHCA2-6SM



∗ The specifications and dimensions not given above are identical with those of the standard type.

Weight

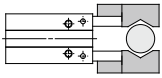
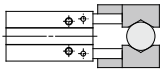
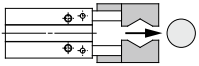
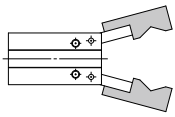
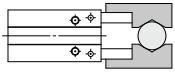
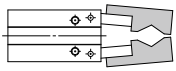
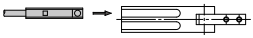
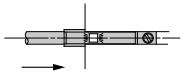
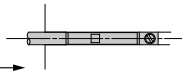
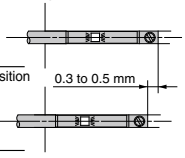
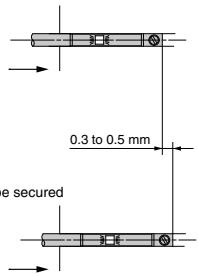
Unit: g

Model	End boss type (Symbol)			
	E	**H**	**K**	**M**
MHCA2-6□□	23	23	23	23

MHC2-6/MHCA2-6 Series
Auto Switch Installation Examples and Mounting Positions

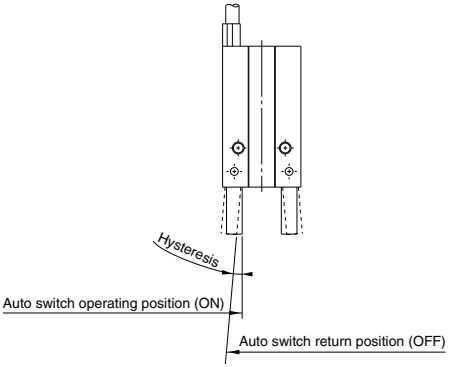
Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.

1) Detection when Gripping Exterior of Workpiece

Detection example	1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected	Position of fingers fully opened 	Position when gripping workpiece 	Position of fingers fully closed 
Operation of auto switch	Auto switch turned on when fingers return. (Light ON)	Auto switch turned on when gripping a workpiece. (Light ON)	When a workpiece is not held (Abnormal operation): Auto switch to turn ON (Light ON)
Detection combinations — One auto switch (∗ One position, any of ①, ② and ③ can be detected.)	●	●	●
Detection combinations — Two auto switches (∗ Two positions of ①, ② and ③ can be detected.) Pattern A	●	●	—
Pattern B	—	●	●
Pattern C	●	—	●
How to determine auto switch installation position	Step 1) Fully open the fingers. 	Step 1) Position fingers for gripping a workpiece. 	Step 1) Fully close the fingers. 
At no pressure or low pressure, connect the auto switch to a power supply, and follow the directions.	Step 2) Insert the auto switch into the auto switch installation groove in the direction shown in the drawing. 		
	Step3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.  Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out.  Step 5) Move the auto switch in the opposite direction and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates. Position where light turns ON 	Step 3) Slide the auto switch in the direction of the arrow until the light illuminates and fasten it at a position 0.3 to 0.5 mm in the direction of the arrow beyond the position where the indicator light illuminates. Position where light turns ON 	

Note 1) It is recommended to grip a workpiece when the fingers are in parallel with each other.
Note 2) When holding a workpiece close at the end of open/close stroke of fingers, detecting performance of the combinations listed in the above table may be limited, depending on the hysteresis of an auto switch, etc.

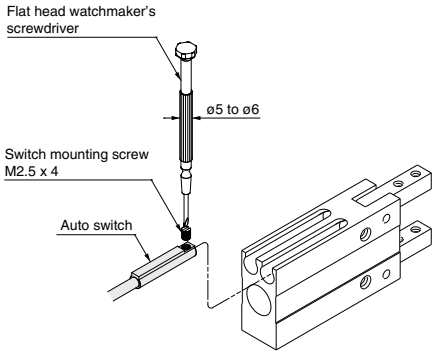
Auto Switch Hysteresis



Hysteresis

Model	D-M9□(V), M9□A(V)
MHC2-6□	4°

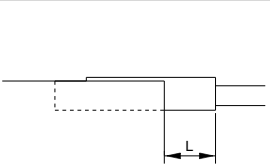
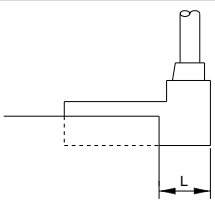
Auto Switch Mounting



Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.15 N·m.

Protrusion of Auto Switch from Edge of Body

• The amount of auto switch protrusion from the body end surface is shown in the table below.
• Use this as a standard when mounting, etc.

Lead wire type / Illustration / Auto switch model / Finger position / Air gripper model		In-line entry		Perpendicular entry	
					
		D-M9□ M9□W	**D-M9□A**	**D-M9□V M9□WV**	**D-M9□AV**
MHC2-6□	Open	6.5 mm	8.5 mm	4.5 mm	6.5 mm
	Close	9 mm	11 mm	7 mm	9 mm

Angular Type Air Gripper/Compact Type

MHCM2-7S Series

ø7

How to Order

MHC M 2 – 7 S – ☐

- **Compact type**
- **Number of fingers**
  - **2** 2 finger
- **Bore size (mm)**
  - **7** 7 mm
- **Action**
  - **S** Single acting (Normally open)
- **Made to Order**
  Refer to the table below for details

Symbol

Single acting/ Normally open: External grip

Specifications

Fluid	Air
Operating pressure	0.4 to 0.6 MPa
Ambient and fluid temperature	–10 to 60°C
Repeatability	±0.02 mm
Maximum operating frequency	180 c.p.m.
Lubrication	Non-lube
Action	Single acting (Normally open)

Model

Action	Model	Cylinder bore (mm)	Gripping moment Note) (Effective value) N◊m	Opening/Closing angle (Both sides)	Weight (g)
Single acting (Normally open)	**MHCM2-7S**	7	0.017	20° to –7°	9.5

Note) At the pressure of 0.5 MPa

Made to Order
Refer to pages 725 to 748 for details.

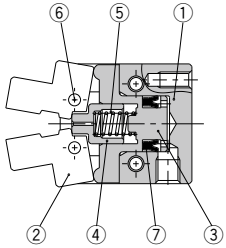
Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X56	Axial piping type
-X63	Fluorine grease
-X79	Grease for food processing machines, Fluorine grease
-X79A	Grease for food processing machines
-X81A	Anti-corrosive treatment of finger

Moisture Control Tube IDK Series

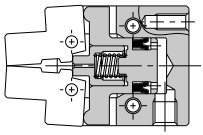
When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.
Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to **the IDK series in the Best Pneumatics No.6**.

Construction/MHCM2-7S (Compact type)

Single acting/With fingers open



With fingers closed



Component Parts

No.	Description	Material	Note	Replacement parts order no.
1	**Body**	Aluminium alloy	Hard anodized	
2	**Finger**	Stainless steel	Heat treatment	
3	**Piston**	Stainless steel	Heat treatment	
4	**Pusher**	Stainless steel		
5	**Spring**	Piano wire	Zinc chromated	
6	**Needle roller**	High carbon chromium bearing steel		
7	**Piston seal**	NBR		MYN-4

Dimensions

MHCM2-7S