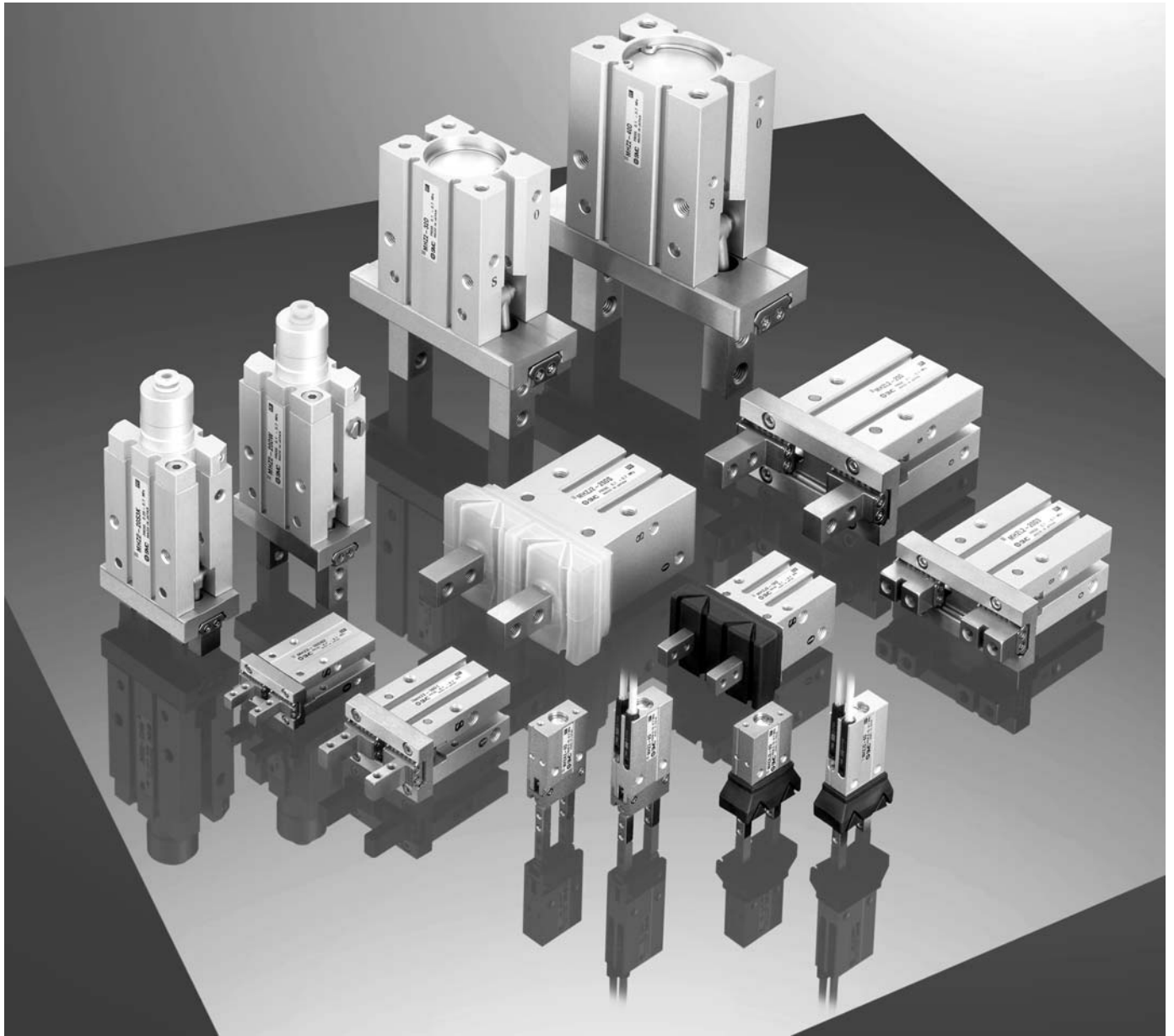


Parallel Type Air Gripper

Series *MHZ*

ø6, ø10, ø16, ø20, ø25, ø32, ø40

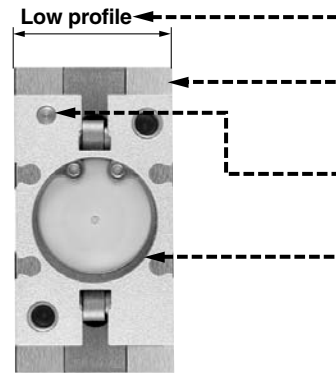
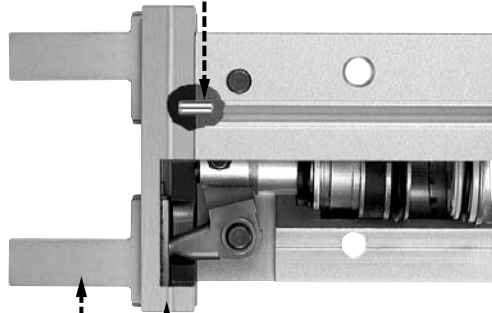
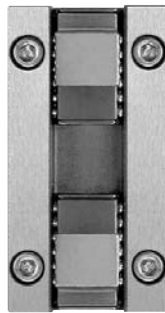


Series upgraded with the addition of new models
and expanded size variations

- Long stroke/MHZL2 and compact series/MHZA□2-6 introduced
 - ø6, ø32 and ø40 added to standard MHZ2
 - ø6 added to MHZJ2 with dust cover

Integral linear guide used for high

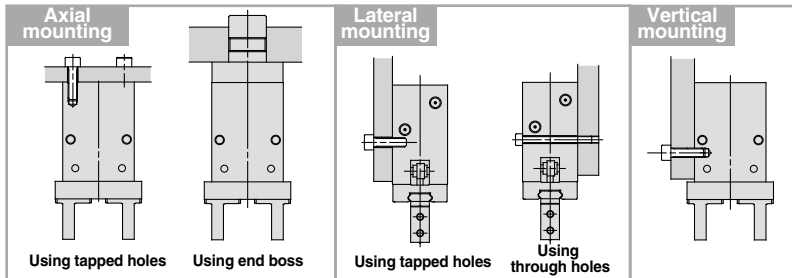
- **Linear guide slippage prevention**
Guide slippage is prevented by two positioning dowel pins.
- **Repeatability: $\pm 0.01\text{mm}$**



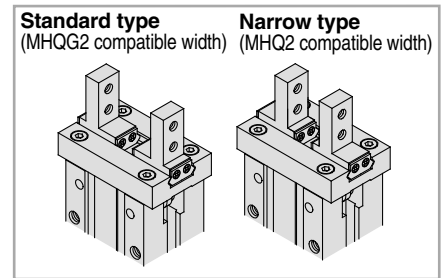
- **Martensitic stainless steel**

High degree of mounting flexibility

Can be mounted five ways from three directions.



Finger positions can be selected (Standard type/MHZ2)



Series Variations

Series	Bore size (mm)	Action	Body options							Finger options			
			Basic type	End boss type						Basic type (tapped in open/close direction)	Side tapped	Through holes in open/close direction	Flat type fingers
			Side ported	Side ported	With One-touch fitting for coaxial tube	With One-touch fitting	With M3 port	With M5 port	With hose nipple				
Compact series													
Standard MHZA2-6	6	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
With dust cover MHZAJ2-6	6	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
Standard MHZ2	6	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
	10, 16 20, 25	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
	32, 40	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
Long stroke MHZL2	10, 16 20, 25	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
With dust cover MHZJ2	6	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●
	10, 16 20, 25	Double acting Single acting (normally open) Single acting (normally closed)	●	●	●	●	●	●	●	●	●	●	●

rigidity and high precision

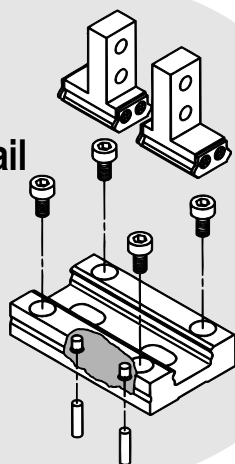
-- Body thickness tolerance: $\pm 0.05\text{mm}$

-- No guide protrusion in direction of body thickness

-- Improved remounting accuracy
Positioning dowel pin holes provided

-- Top mounting centering location
Mounting is more secure with a depth 0.5 to 2mm greater than conventional types

Integral guide rail construction



Accommodates diverse work piece diameters with a single unit

- Nearly double the standard stroke
- Long strokes are also compact and light weight

Series	Opening/Closing stroke mm (Open — Closed)	Weight g	Body thickness mm
MHZL2-10	8 (4)	60	16.4
MHZL2-16	12 (6)	135	23.6
MHZL2-20	18 (10)	270	27.6
MHZL2-25	22 (14)	470	33.6

Values inside () are for standard series MHZ2.

Long strokes MHZL2



A wide variety of types and broad size variations

Compact series (without auto switch)

ø6



With dust cover

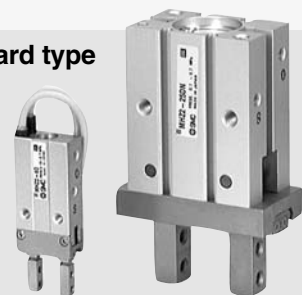
ø10 to ø25

ø6



Standard type

ø6



ø10 to ø25



ø32, ø40

Long stroke

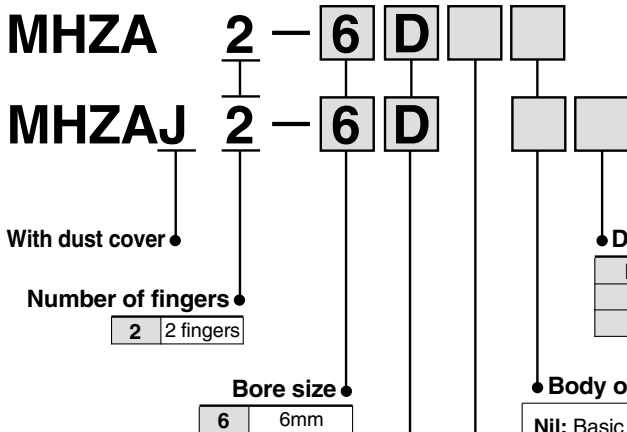
ø10 to ø25



Compact Series (Without Auto Switch)

Series *MHZA2-6/MHZAJ2-6*

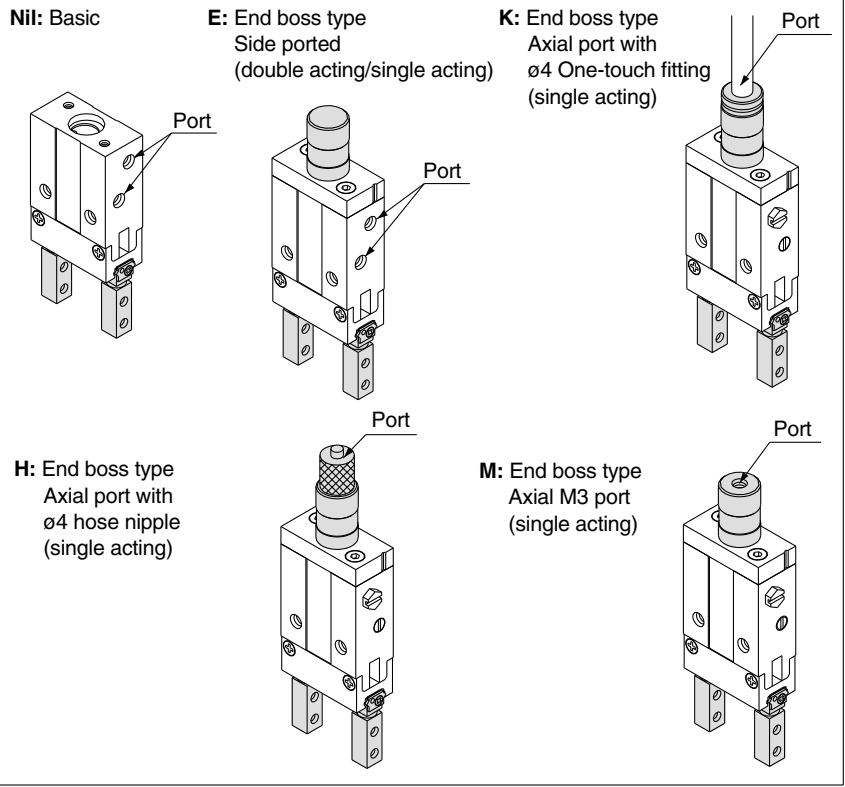
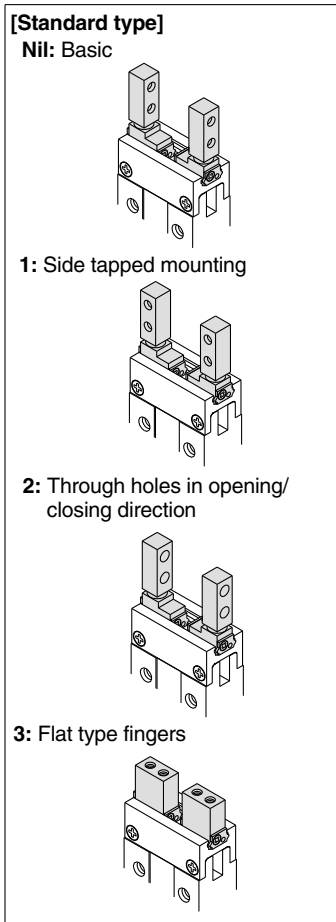
How to Order



● Dust cover type

Nil	Chloroprene rubber (CR)
F	Fluoro rubber (FKM)
S	Silicon rubber (Si)

● Body option





Specifications

Fluid		Air	
Operating pressure	Double acting		0.15 to 0.7MPa
	Single acting	Normally open	0.3 to 0.7MPa
		Normally closed	
Ambient and fluid temperature			-10 to 60 °C
Repeatability			±0.01mm
Maximum operating frequency			180c.p.m.
Lubrication			Non-lube
Action			Double acting, Single acting

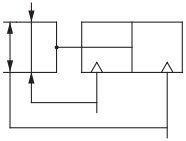
Models

Action	Model	Bore size (mm)	Gripping force ^{Note 1)}		Opening/Closing stroke (both sides) mm	Weight g	
			Gripping force per finger Effective value N				
			External gripping force	Internal gripping force			
Double acting	MHZA2-6D	6	3.3	6.1	4	26	
	MHZAJ2-6D	6					
Single acting	Normally open	MHZA2-6S	1.9	—	4	26	
		MHZAJ2-6S					6
	Normally closed	MHZA2-6C	6	—	3.7	4	26
		MHZAJ2-6C	6				

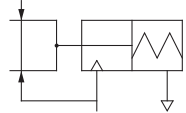
Note 1) Values based on pressure of 0.5MPa, gripping point L = 20mm, at center of stroke.

Symbols:

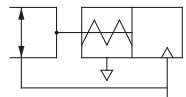
Double acting type



Single acting type, normally open



Single acting type, normally closed



Options

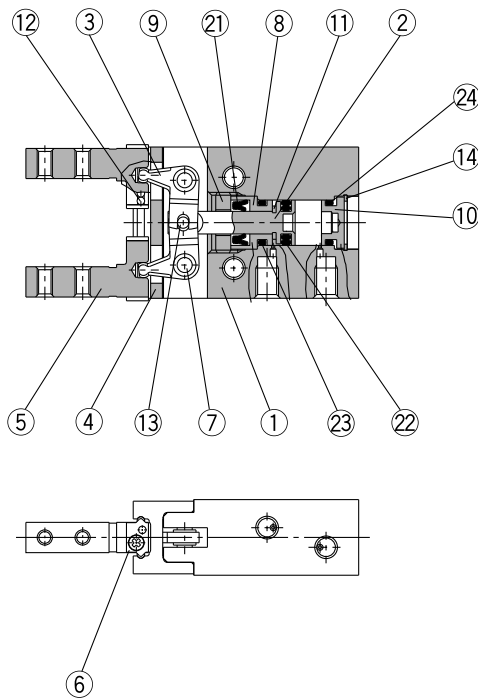
• Body options/End boss type

Symbol	Piping port position	Type of piping port	Applicable model	
		MHZA2-6/MHZAJ2-6	Double acting	Single acting
Nil	Standard	M3	●	●
E	Side ported	M3	●	●
K	Axial port	With ø4 One-touch fitting	—	●
H		With ø4 hose nipple	—	●
M		M3	—	●

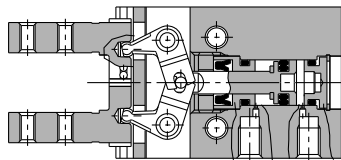
Series MHZA2-6/MHZAJ2-6

Construction/Standard Type MHZA2-6

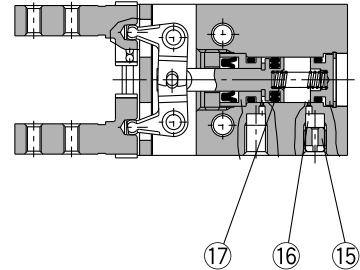
Double acting/with fingers open



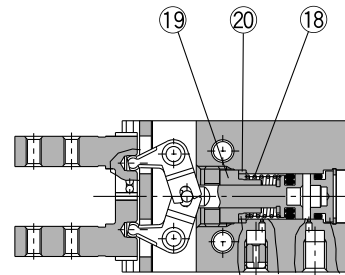
Double acting/with fingers closed



Single acting/normally open



Single acting/normally closed



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Stainless steel	
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Holder	Brass	Electroless nickel plated
9	Holder lock	Stainless steel	
10	Cap	Aluminum alloy	Clear anodized
11	Bumper	Urethane rubber	
12	Steel balls	High carbon chromium bearing steel	
13	Needle roller	High carbon chromium bearing steel	

Parts list

No.	Description	Material	Note
14	C type snap ring	Carbon steel	Nickel plated
15	Exhaust plug	Brass	Electroless nickel plated
16	Exhaust filter	Polyvinyl formal	
17	N.O. spring	Stainless steel spring wire	
18	N.C. spring	Stainless steel spring wire	
19	N.C. holder	Brass	Electroless nickel plated
20	N.C. spacer	Stainless steel	
21	Rod seal	NBR	
22	Piston seal	NBR	
23	Gasket	NBR	
24	Gasket	NBR	

Replacement parts: Seal kits

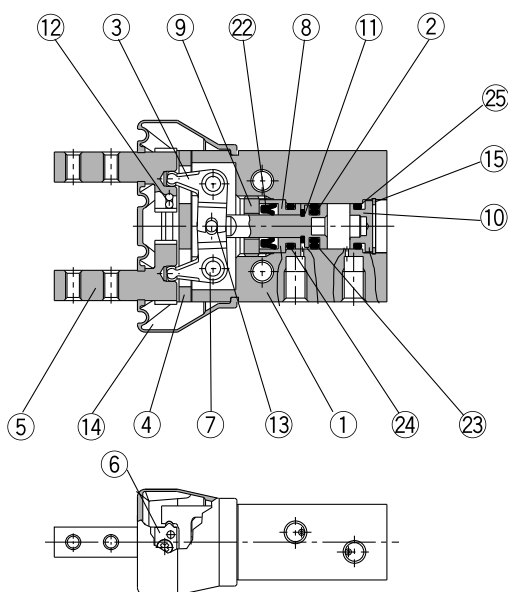
Seal kit no.	Description
MHZA6-PS	Kit includes items 21, 22, 23 and 24 from the table above.

* Seal kits consist of items 21, 22, 23 and 24 in one kit, and can be ordered using the seal kit number.

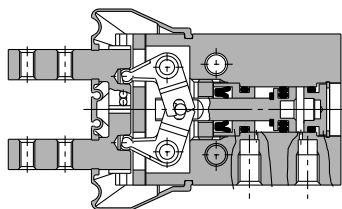
Note) Contact SMC when replacing seals.

Construction/With Dust Cover MHZAJ2-6

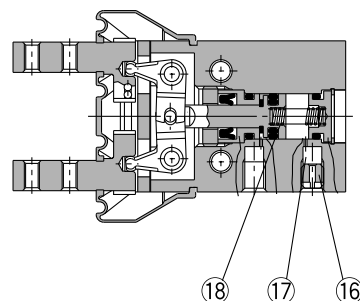
Double acting/with fingers open



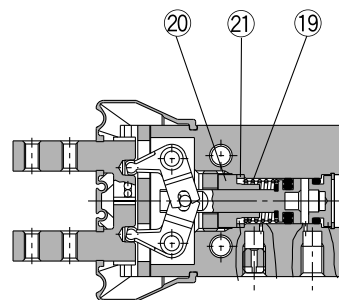
Double acting/with fingers closed



Single acting/normally open



Single acting/normally closed



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Stainless steel	
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Holder	Brass	Electroless nickel plated
9	Holder lock	Stainless steel	
10	Cap	Aluminum alloy	Clear anodized
11	Bumper	Urethane rubber	
12	Steel balls	High carbon chromium bearing steel	
13	Needle roller	High carbon chromium bearing steel	

Replacement parts: Seal kits

Seal kit no.	Description
MHZAJ6-PS	Kit includes items 22, 23, 24 and 25 from the table above.

* Seal kits consist of items 22, 23, 24 and 25 in one kit, and can be ordered using the seal kit number.

Note) Contact SMC when replacing seals.

Parts list

No.	Description	Material	Note
14	Dust cover	CR	Chloroprene rubber
		FKM	Fluoro rubber
		Si	Silicon rubber
15	C type snap ring	Carbon steel	Nickel plated
16	Exhaust plug	Brass	Electroless nickel plated
17	Exhaust filter	Polyvinyl formal	
18	N.O. spring	Stainless steel spring wire	
19	N.C. spring	Stainless steel spring wire	
20	N.C. holder	Brass	Electroless nickel plated
21	N.C. spacer	Stainless steel	
22	Rod seal	NBR	
23	Piston seal	NBR	
24	Gasket	NBR	
25	Gasket	NBR	

Replacement parts: Dust covers

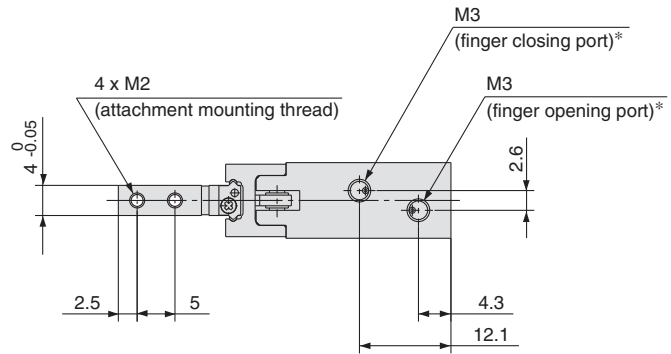
Material	Part number
CR	MHZAJ2-J6
FKM	MHZAJ2-J6F
Si	MHZAJ2-J6S

Series MHZA2-6/MHZAJ2-6

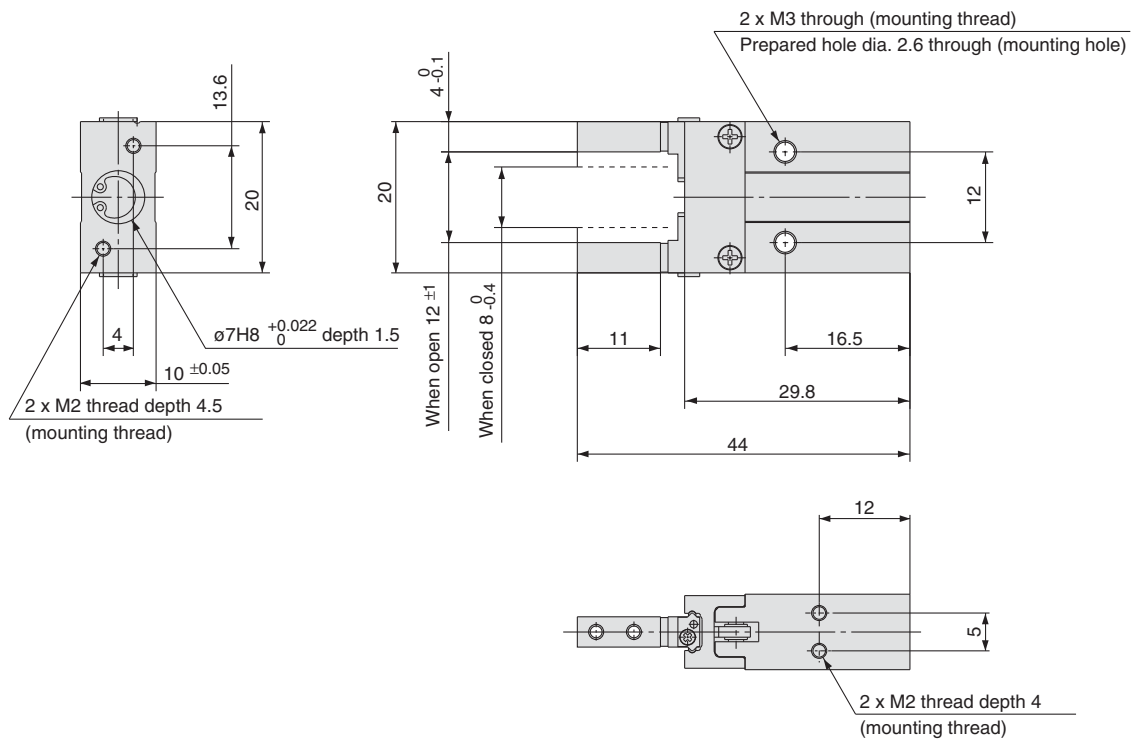
Dimensions/Standard Type

MHZA2-6□
 Double acting/Single acting
 Basic Type

Scale: 100%



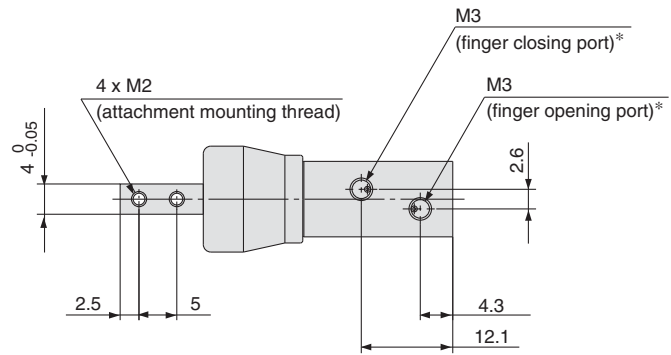
* For single action, the port on one side is a breathing hole



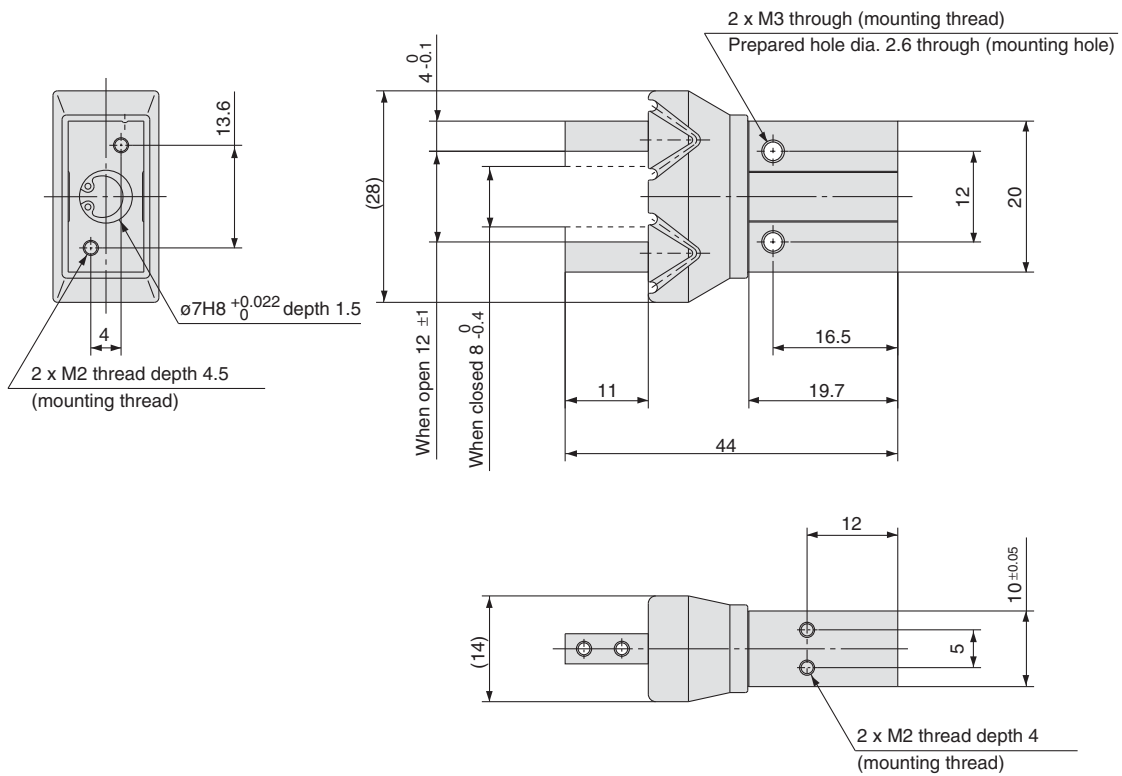
Dimensions/With dust cover

MHZAJ2-6□
Double acting/Single acting
Basic Type

Scale: 100%



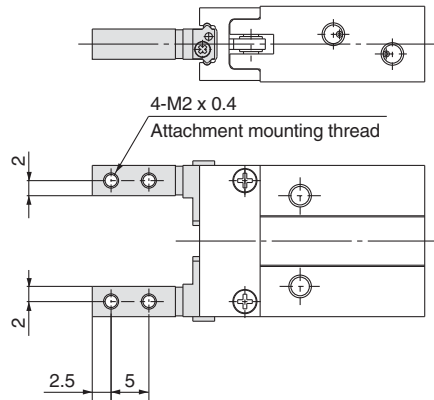
* For single action, the port on one side is a breathing hole.



Series MHZA2-6

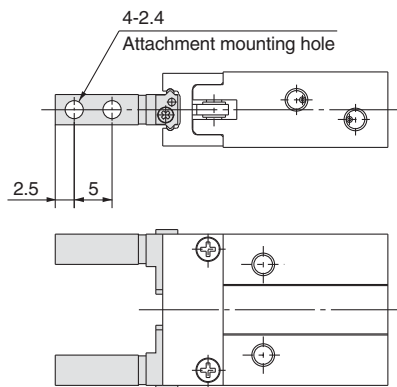
Finger Options

Side Tapped Mounting [1]



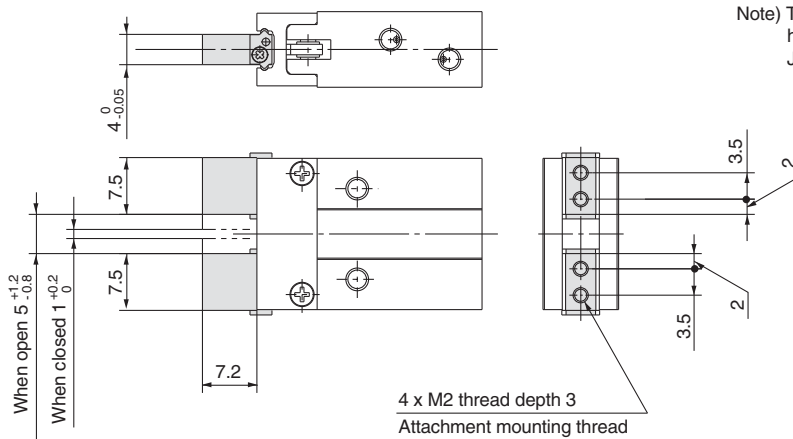
* Specifications and dimensions other than the above are the same as the basic type.

Through Holes in Opening/Closing Direction [2]



* Specifications and dimensions other than the above are the same as the basic type.

Flat Type Fingers [3]



Weight: 25g

* Specifications and dimensions other than the above are the same as the basic type.

Series MHZA2-6/MHZAJ2-6

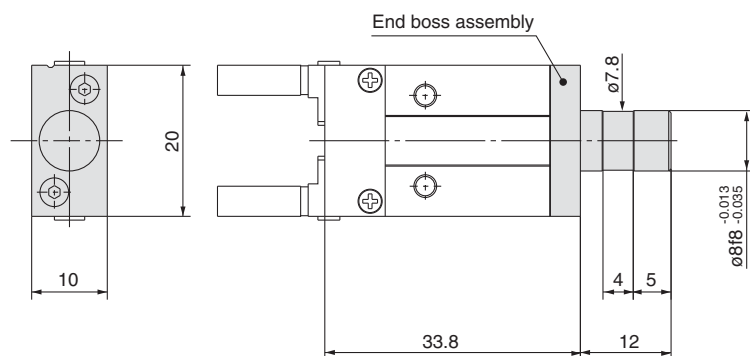
Body Options: End Boss Type

Applicable Models

Symbol	Piping port position	Type of piping port		Applicable model	
		MHZA2	MHZAJ2	Double acting	Single acting
E	Side ported	M3		●	●
H	Axial port	With $\phi 4$ hose nipple		—	●
K		With $\phi 4$ One-touch fitting		—	●
M		M3		—	●

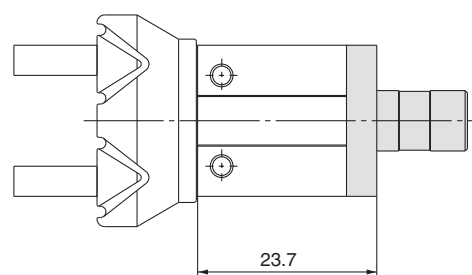
Side Ported [E]

MHZA2-6□□E



* Specifications and dimensions other than the above are the same as the basic type.

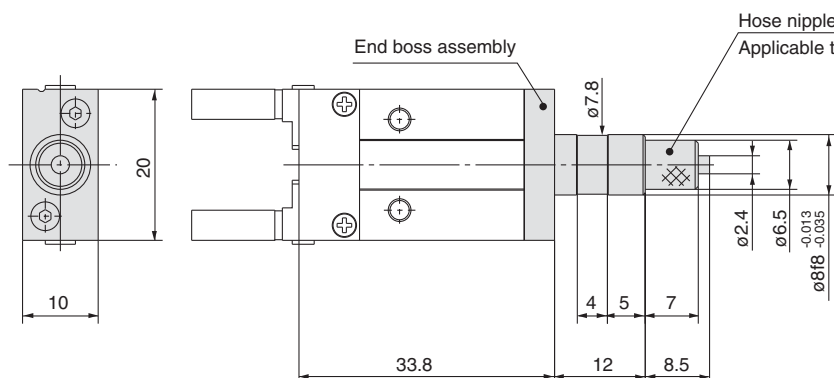
MHZAJ2-6□□E



* Specifications and dimensions other than the above are the same as the basic type or the end boss dimensions of the MHZA type.

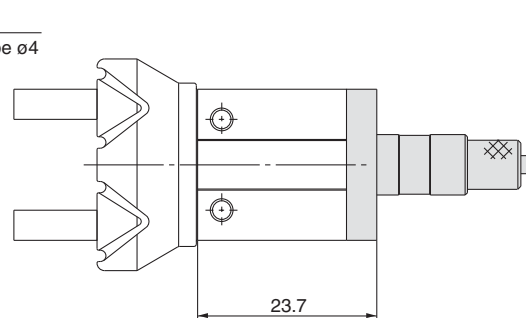
Axial Port (with Hose Nipple) [H]

MHZA2-6^S_C□H



* Specifications and dimensions other than the above are the same as the basic type.

MHZAJ2-6^S_C□H



* Specifications and dimensions other than the above are the same as the basic type or the end boss dimensions of the MHZA type.

Applicable Tubing

Description/Model	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coiled tubing
Specification	T0425	TS0425	TU0425	TCU0425B-1
Outside diameter mm	4	4	4	4
Max. operating pressure MPa	1.0	0.8	0.5	0.5
Minimum 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

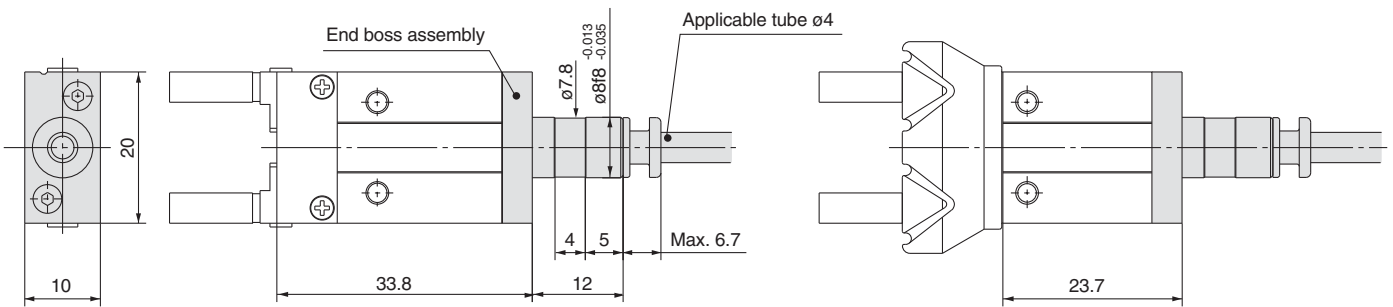
Refer to catalogue CAT.501-B "Air Fittings and Tubing" regarding One-touch fittings and tubing.

Series MHZA2-6/MHZAJ2-6

Axial Port (with One-touch Fitting) [K]

MHZA2-6 $\frac{S}{C}$ □K

MHZAJ2-6 $\frac{S}{C}$ □K



* Specifications and dimensions other than the above are the same as the basic type.

* Specifications and dimensions other than the above are the same as the basic type or the end boss dimensions of the MHZA type.

Applicable tubing

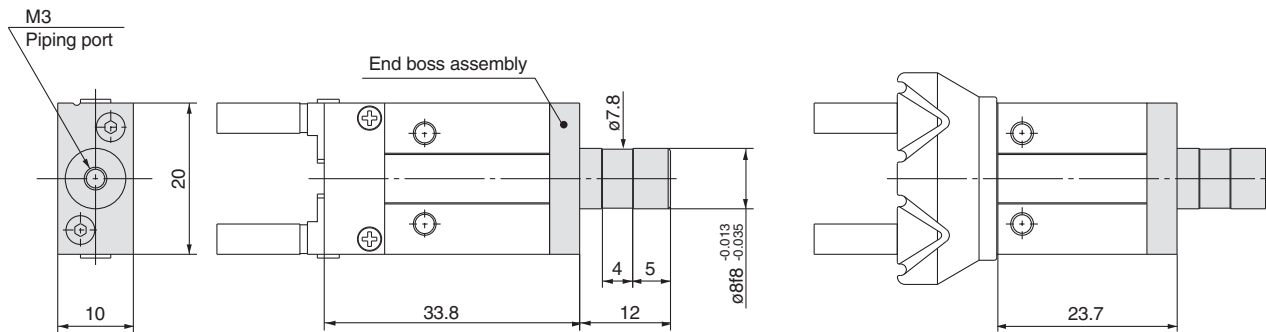
Description/Model	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coiled tubing
Specification	T0425	TS0425	TU0425	TCU0425B-1
Outside diameter mm	4	4	4	4
Max. operating pressure MPa	1.0	0.8	0.5	0.5
Minimum bending radius mm	13	12	10	—
Operating temperature °C	-20 to 60	-20 to 60	-20 to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

Refer to catalogue CAT. 501-B "Air Fittings and Tubing" regarding One-touch fittings and tubing.

Axial Port (M3 Port) [M]

MHZA2-6 $\frac{S}{C}$ □M

MHZAJ2-6 $\frac{S}{C}$ □M



* Specifications and dimensions other than the above are the same as the basic type.

* Specifications and dimensions other than the above are the same as the basic type or the end boss dimensions of the MHZA type.

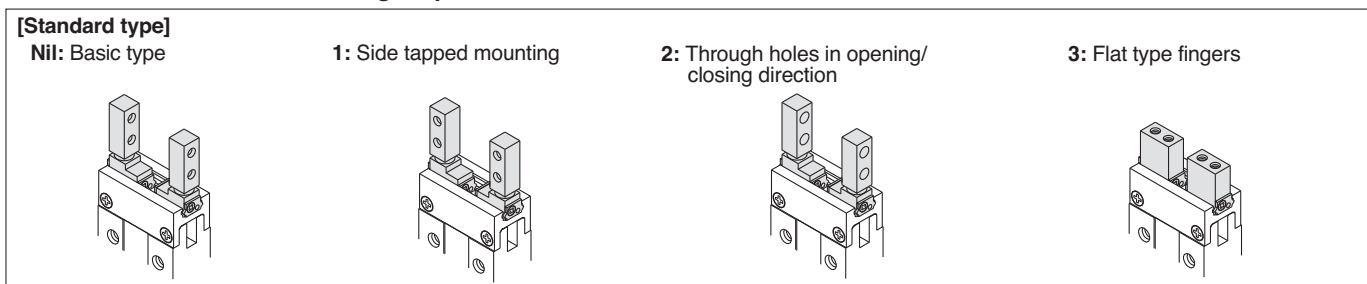
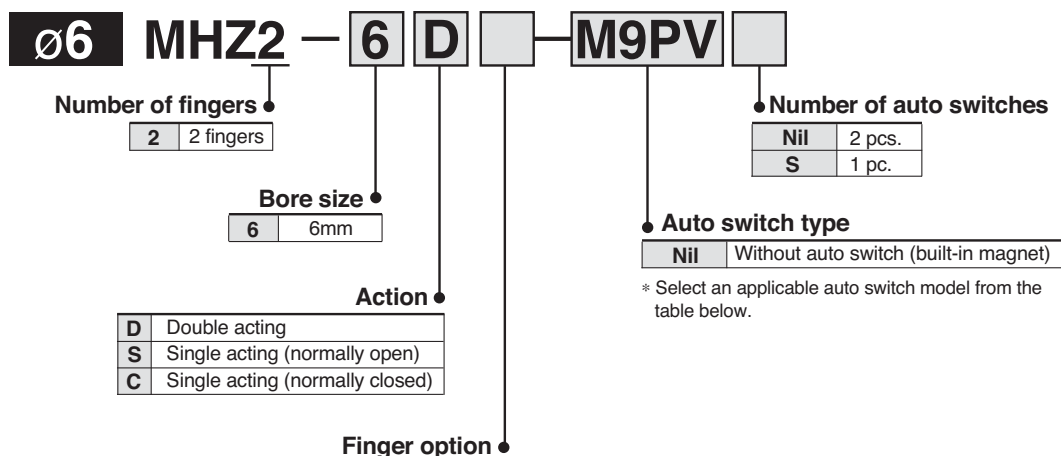
Weights

Model	End boss type (symbol)			
	E	H	K	M
MHZA2-6□□	28	28	28	28
MHZAJ2-6□□	29	29	29	29

Unit: g

Standard Type Series *MHZ2*

How to Order



Applicable 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	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)		IC circuit	Relay, PLC				
							Perpendicular	In-line											
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC			
				3-wire (PNP)				F8N	—	●	—	●	○	—					
				2-wire				M9PV	M9P	●	●	●	○	○					
				3-wire (NPN)				F8P	—	●	—	●	○	—					
				3-wire (PNP)				M9BV	M9B	●	●	●	○	○					
				2-wire				F8B	—	●	—	●	○	—					
	Diagnosis (2-colour indicator)			—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NWV	M9NW	●	●	●	○	○	IC circuit	Relay, PLC
							3-wire (PNP)				M9PVV	M9PW	●	●	●	○	○		
							2-wire				M9BVV	M9BW	●	●	●	○	○		
							3-wire (NPN)				M9NAV**	M9NA**	○	○	●	○	○		
							3-wire (PNP)				M9PAV**	M9PA**	○	○	●	○	○		
							2-wire				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) M9NW

1 m..... M (Example) M9NWM

3 m..... L (Example) M9NWL

5 m..... Z (Example) M9NWZ

* Solid state auto switches marked with ○ are produced upon receipt of order.

Note 1) When using a D-F8□ switch, mount it at a distance of 10 mm or more from magnetic substances such as iron, etc.

Note 2) When using the 2-colour 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.

How to Order

ø10 to ø25 MHZ2 - 16 D - M9PV

Number of fingers

2	2 fingers
---	-----------

Bore size

10	10mm
16	16mm
20	20mm
25	25mm

Action

D	Double acting
S	Single acting (normally open)
C	Single acting (normally closed)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Auto switch type

Nil	Without auto switch (built-in magnet)
-----	---------------------------------------

* Select an auto switch model from the table below.

Body option

Nil: Basic type

E: End boss type
Side ported (double acting/single acting)

W: End boss type
Axial port with ø4
One-touch fitting for coaxial tubing (double acting)

K: End boss type
Axial port with ø4
One-touch fitting (single acting)

M: End boss type
Axial M5 port (single acting)

Finger position/Option

Standard type
[MHQG2 compatible type]
Nil: Basic type

1: Side tapped mounting

2: Through holes in opening/closing direction

3: Flat type fingers

The flat type fingers do not have standard and narrow options. When MHQG2/MHQ2 compatible types are required, see the -X51 order made specifications on page 5-60

Narrow type
[MHQ2 compatible type]
N: Basic type

N1: Side tapped mounting

N2: Through holes in opening/closing direction

Applicable Auto Switches

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) *				Applicable model				Pre-wired connector	Applicable load		
					DC	AC	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	ø10	ø16	ø20	ø25				
							Perpendicular	In-line												
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	●	●	●	○	●	●	●	●	○	IC circuit	Relay, PLC	
				3-wire (PNP)					●	—	●	○	—	●	●	●	—			
				2-wire					●	●	●	○	●	●	●	●	—			
				3-wire (NPN)					●	●	●	○	●	●	●	●	○			
				3-wire (PNP)					●	●	●	○	●	●	●	●	○			
				2-wire					●	●	●	○	●	●	●	●	○			
	Diagnosis (2-colour indicator)	Grommet	Yes	—	3-wire (NPN)	24 V	—	M9NWV	M9NW	●	●	●	○	●	●	●	●	○	IC circuit	Relay, PLC
					3-wire (PNP)					●	—	●	○	—	●	●	●	—		
					2-wire					●	●	●	○	●	●	●	●	—		
					3-wire (NPN)					●	●	●	○	●	●	●	●	○		
					3-wire (PNP)					●	●	●	○	●	●	●	●	○		
					2-wire					●	●	●	○	●	●	●	●	○		
Water resistant (2-colour indicator)	Grommet	Yes	—	3-wire (NPN)	24 V	—	M9NAV**	M9NA**	○	○	●	○	●	●	●	●	○	IC circuit	Relay, PLC	
				3-wire (PNP)					○	○	●	○	●	●	●	●	○			
				2-wire					○	○	●	○	●	●	●	●	○			
				2-wire					○	○	●	○	●	●	●	●	○			

** 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) M9NW

1 m..... M (Example) M9NWM

3 m..... L (Example) M9NWL

5 m..... Z (Example) M9NWZ

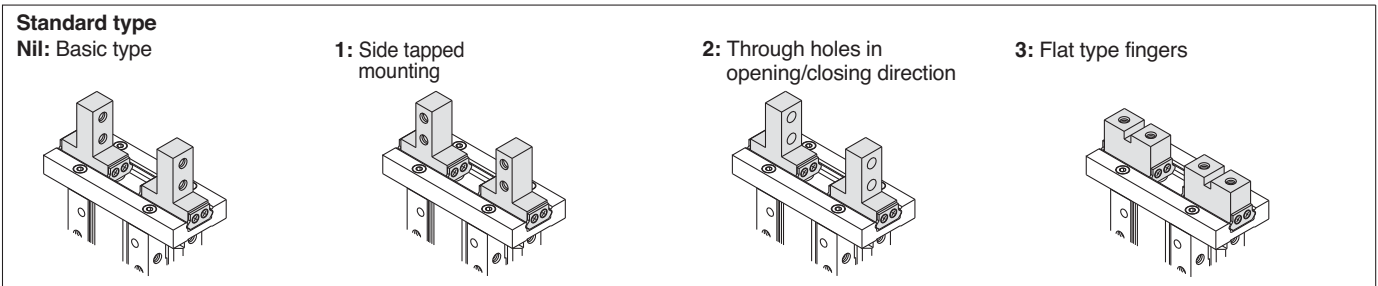
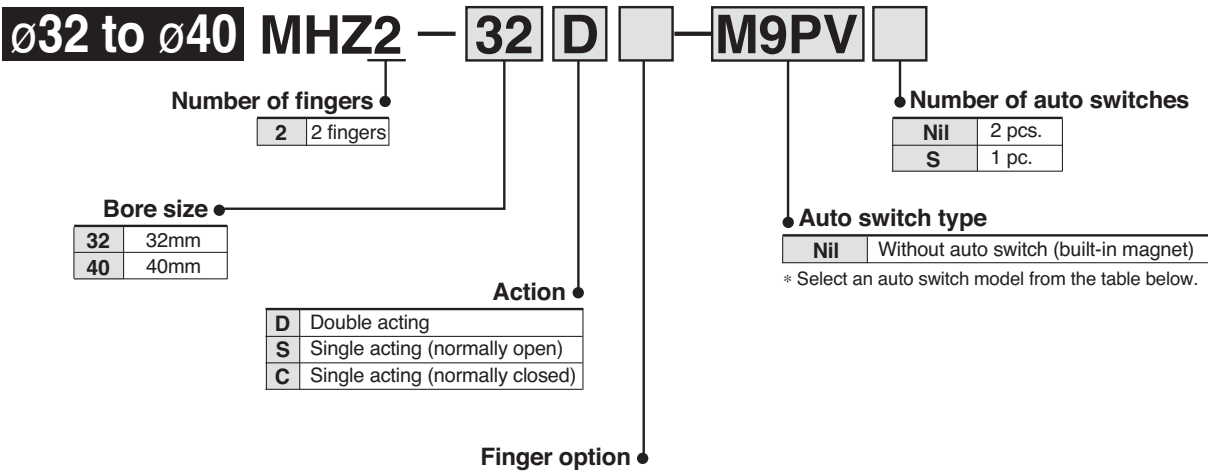
* Solid state auto switches marked with ○ are produced upon receipt of order.

Note 1) When using the 2-colour 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.

Note 2) Through-hole mounting is not possible when using the auto switch at the square groove on the side.

Note 3) When the product is ordered with auto switch, only MHZ2-10 is shipped with the auto switch mounting brackets. When the auto switch is used at the square groove on the side with MHZ2-16 to 25, mounting brackets (BMG2-012) are required. Please order them separately.

How to Order



Applicable 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	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)					
							Perpendicular	In-line									
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC		
				3-wire (PNP)			F8N	—	●	—	●	○	—				
				2-wire			M9PV	M9P	●	●	●	○	○				
				3-wire (NPN)			F8P	—	●	—	●	○	—				
				3-wire (PNP)			M9BV	M9B	●	●	●	○	○				
				2-wire			F8B	—	●	—	●	○	—				
	Diagnosis (2-colour indicator)			3-wire (NPN)	24 V		5 V, 12 V	M9NWV	M9NW	●	●	●	○	○		○	IC circuit
				3-wire (PNP)	5 V, 12 V		M9PWV	M9PW	●	●	●	○	○	○		IC circuit	
				2-wire	12 V		M9BWV	M9BW	●	●	●	○	○	○		—	
				3-wire (NPN)	5 V, 12 V		M9NAV**	M9NA**	○	○	●	○	○	○		IC circuit	
				3-wire (PNP)	5 V, 12 V		M9PAV**	M9PA**	○	○	●	○	○	○		IC circuit	
				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) M9NW
 1 m..... M (Example) M9NWM
 3 m..... L (Example) M9NWL
 5 m..... Z (Example) M9NWZ
 * Solid state auto switches marked with ○ are produced upon receipt of order.

Note 1) When using the 2-colour 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.
 Note 2) Through-hole mounting is not possible when using the auto switch at the square groove on the side.
 Note 3) When the auto switch is used at the square groove on the side with MHZ2-32 and 40, mounting brackets (BMG2-012) are required. Please order them separately.

Series MHZ2

ø6



ø10 to ø25

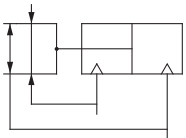


ø32, ø40

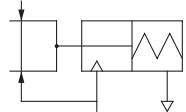


Symbols:

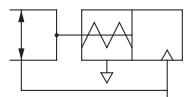
Double acting type



Single acting type, normally open



Single acting type, normally closed



Specifications

Fluid		Air	
Operating pressure	Double acting		ø6: 0.15 to 0.7MPa ø10: 0.2 to 0.7MPa ø16 to ø40: 0.1 to 0.7MPa
	Single acting	Normally open	ø6: 0.3 to 0.7MPa ø10: 0.35 to 0.7MPa ø16 to ø40: 0.25 to 0.7MPa
		Normally closed	ø6: 0.3 to 0.7MPa ø10: 0.35 to 0.7MPa ø16 to ø40: 0.25 to 0.7MPa
Ambient and fluid temperature		-10 to 60°C	
Repeatability		ø6 to ø25: ±0.01mm ø32, ø40: ±0.02mm	
Maximum operating frequency		ø6 to ø25: 180c.p.m. ø32, ø40: 60c.p.m.	
Lubrication		Non-lube	
Action		Double acting, Single acting	
Auto switch (option) ^{Note)}		Solid state switch (3 wire, 2 wire)	

Models

Action	Model	Bore size (mm)	Gripping force ^{Note 1)}		Opening/Closing stroke (both sides) mm	Weight ^{Note 2)} g	
			Gripping force per finger Effective value N				
			External gripping force	Internal gripping force			
Double acting	MHZ2-6D	6	3.3	6.1	4	27	
	MHZ2-10D(N)	10	11	17	4	55	
	MHZ2-16D(N)	16	34	45	6	115	
	MHZ2-20D(N)	20	42	66	10	235	
	MHZ2-25D(N)	25	65	104	14	430	
	MHZ2-32D	32	158	193	22	715	
Single acting	Normally open	MHZ2-40D	40	254	318	30	1275
		MHZ2-6S	6	1.9	—	4	27
		MHZ2-10S(N)	10	7.1	—	4	55
		MHZ2-16S(N)	16	27	—	6	115
		MHZ2-20S(N)	20	33	—	10	240
		MHZ2-25D(N)	25	45	—	14	435
	Normally closed	MHZ2-32S	32	131	—	22	760
		MHZ2-40S	40	217	—	30	1370
		MHZ2-6C	6	—	3.7	4	27
		MHZ2-10C(N)	10	—	13	4	55
		MHZ2-16C(N)	16	—	38	6	115
		MHZ2-20C(N)	20	—	57	10	240
		MHZ2-25C(N)	25	—	83	14	430
		MHZ2-32C	32	—	161	22	760
MHZ2-40C	40	—	267	30	1370		

Note 1) Values based on pressure of 0.5MPa, gripping point L = 20mm, at center of stroke.

Note 2) Values excluding weight of auto switch.

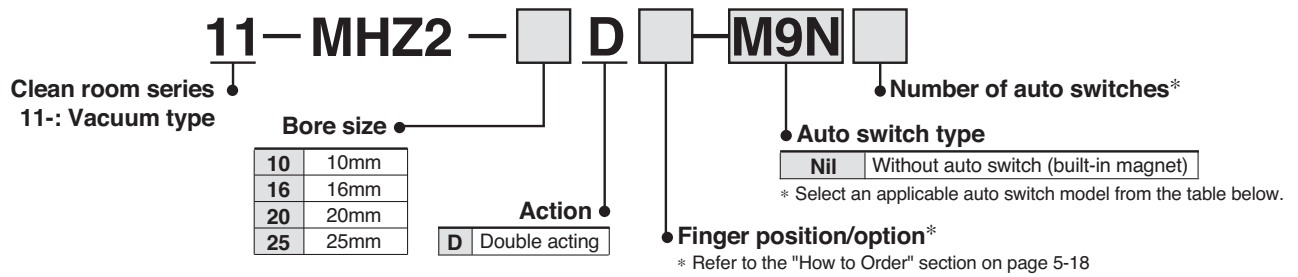
Options

• Body options/End boss type

Symbol	Piping port position	Type of piping port							Applicable model	
		MHZ2-6	MHZ2-10	MHZ2-16	MHZ2-20	MHZ2-25	MHZ2-32	MHZ2-40	Double acting	Single acting
Nil	Basic type	M3		M5					●	●
E	Side ported	—	M3	M5			—	—	●	●
W	Axial port	—	With ø4 One-touch fitting for coaxial tube				—	—	●	—
K	Axial port	—	With ø4 One-touch fitting				—	—	—	●
M	Axial port	—	M5					—	—	●

* For detailed body option specifications, refer to option specifications on page 5-32

Clean Room Series: Air Gripper



Applicable Auto Switches

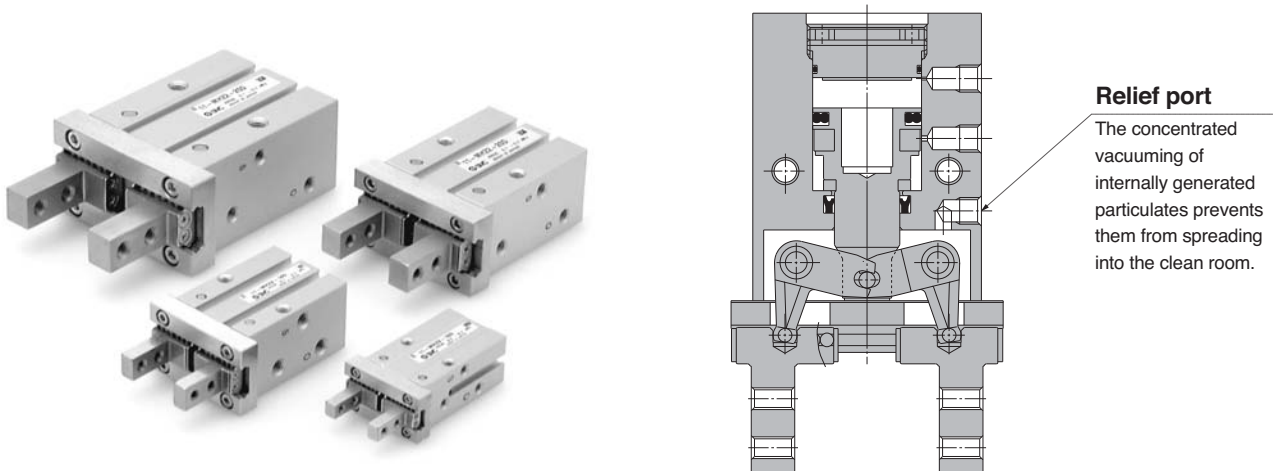
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) *				Pre-wired connector	Applicable load			
					DC	AC	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)		IC circuit	Relay, PLC		
							Perpendicular	In-line									
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○			○	—
								F8N	—	●	—	●	○	—			
				3-wire (PNP)	12 V	M9PV	M9P	●	●	●	○	○	—	—			
				F8P		—	●	—	●	○	—						
				2-wire	5 V, 12 V	M9BV	M9B	●	●	●	○	○	—	—			
				F8B		—	●	—	●	○	—						
	Diagnosis (2-colour indicator)	Water resistant (2-colour indicator)	—	—	3-wire (NPN)	24 V	5 V, 12 V	—	M9NWV	M9NW	●	●	●	○	○	—	—
									M9PWV	M9PW	●	●	●	○	○		
					3-wire (PNP)	12 V	M9BWV	M9BW	●	●	●	○	○	—	—		
					2-wire		5 V, 12 V	M9NAV**	M9NA**	○	○	●	○			○	—
					3-wire (NPN)	12 V		M9PAV**	M9PA**	○	○	●	○	○	—	—	
					3-wire (PNP)		12 V	M9BAV**	M9BA**	○	○	●	○	○			—
2-wire																	

** 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) M9NW
 1 m..... M (Example) M9NWM
 3 m..... L (Example) M9NWL
 5 m..... Z (Example) M9NWZ
 * Solid state auto switches marked with ○ are produced upon receipt of order.

Note 1) When using the 2-colour 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.
 Note 2) When using a D-F8□ switch, mount it at a distance of 10 mm or more from magnetic substances such as iron, etc.
 Note 3) For 11-MHZ2-10D□, the through-hole mounting cannot be made when using the auto switch.
 Note 4) Two extension fitting assemblies (P331176A) are supplied with 11-MHZ2-10D□. Please use them if the fitting interferes with the auto switch.

Specifications

Fluid	Air
Operating pressure	ø10: 0.2 to 0.7MPa ø16 to ø25: 0.1 to 0.7MPa
Ambient and fluid temperature	-10 to 60C
Repeatability	0.01mm
Maximum operating frequency	180c.p.m.
Lubrication	Non-lube
Action	Double acting
Particulate generation grade	Grade 2
Auto switch (option)	Solid state switch (3 wire, 2 wire)

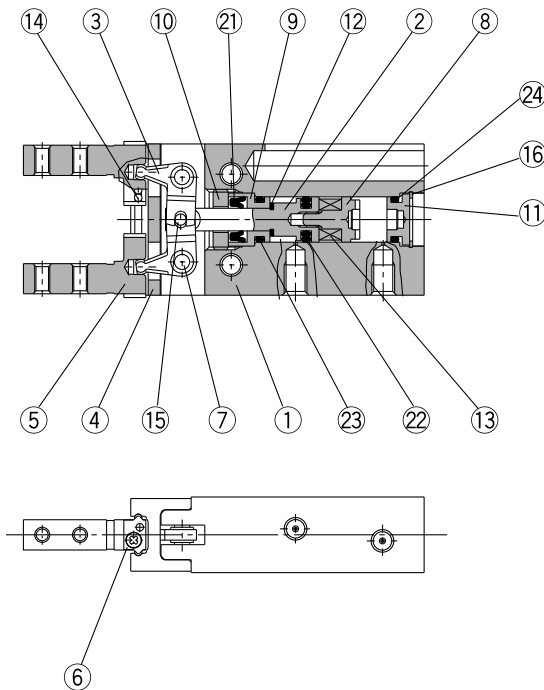


For details, refer to SMC Information "Clean Series: Air Gripper Series 11-MHZ2" (98-E461).

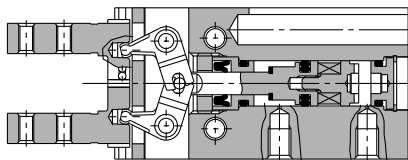
Series MHZ2

Construction/MHZ2-6□

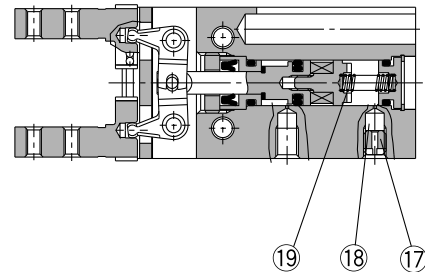
Double acting/with fingers open



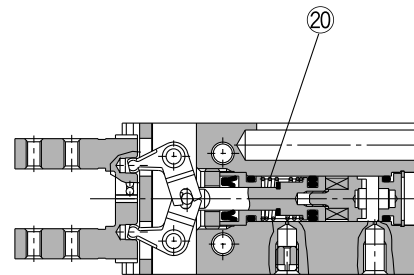
Double acting/with fingers closed



Single acting/normally open



Single acting/normally closed



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Stainless steel	
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Magnet holder	Stainless steel	
9	Holder	Brass	Electroless nickel plated
10	Holder lock	Stainless steel	
11	Cap	Aluminum alloy	Clear anodized
12	Bumper	Urethane rubber	
13	Magnet	Rare earth magnet	Nickel plated

Parts list

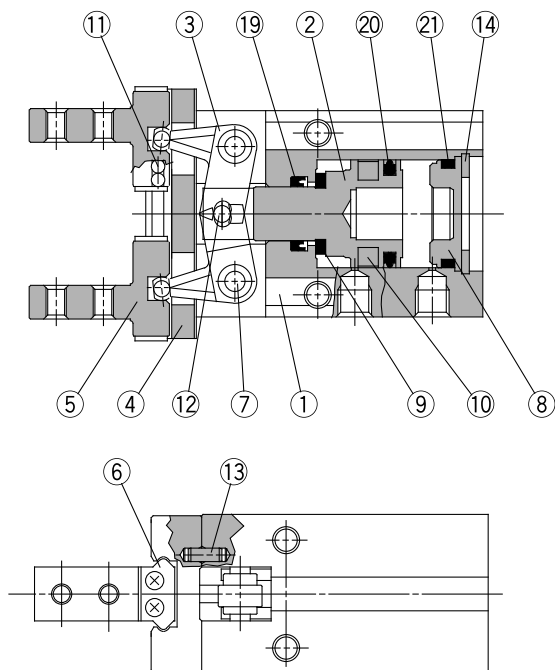
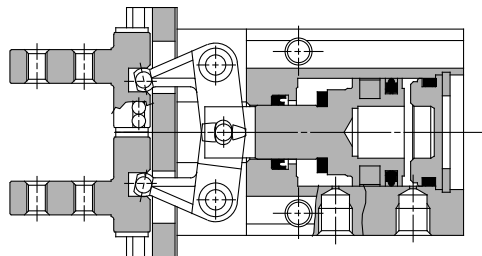
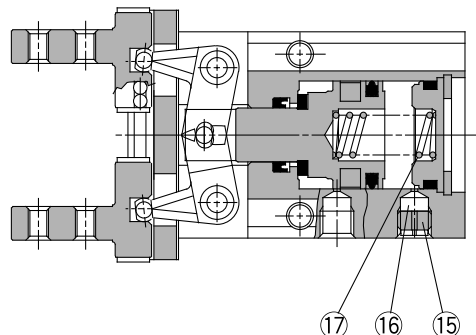
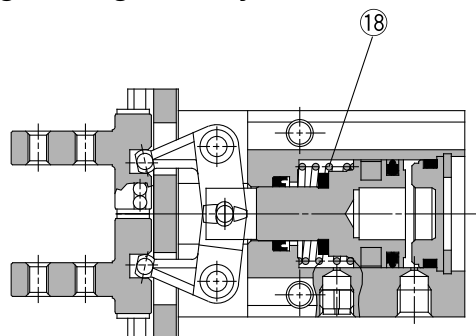
No.	Description	Material	Note
14	Steel balls	High carbon chromium bearing steel	
15	Needle roller	High carbon chromium bearing steel	
16	C type snap ring	Carbon steel	Nickel plated
17	Exhaust plug	Brass	Electroless nickel plated
18	Exhaust filter	Polyvinyl formal	
19	N.O. spring	Stainless steel spring wire	
20	N.C. spring	Stainless steel spring wire	
21	Rod seal	NBR	
22	Piston seal	NBR	
23	Gasket	NBR	
24	Gasket	NBR	

Replacement parts: Seal kits

Seal kit no.	Description
MHZ6-PS	Kit includes items 21, 22, 23 and 24 from the table above.

* Seal kits consist of items 21, 22, 23 and 24 in one kit, and can be ordered using the seal kit number.

Note) Contact SMC when replacing seals.

Construction/MHZ2-10□ to 40□
Double acting/with fingers open

Double acting/with fingers closed

Single acting/normally open

Single acting/normally closed

Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	ø10, ø16: Stainless steel ø20 to ø40: Aluminum alloy	ø20 to ø40: Hard anodized
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Cap	ø10 to ø25: Synthetic resin ø32, ø40: Aluminum alloy	ø32, ø40: Clear anodized
9	Bumper	Urethane rubber	
10	Rubber magnet	Synthetic rubber	

Parts list

No.	Description	Material	Note
11	Steel balls	High carbon chromium bearing steel	
12	Needle roller	High carbon chromium bearing steel	
13	Parallel pin	Stainless steel	
14	C type snap ring	Carbon steel	Nickel plated
15	Exhaust plug A	Brass	Electroless nickel plated
16	Exhaust filter A	Polyvinyl formal	
17	N.O. spring	Stainless steel spring wire	
18	N.C. spring	Stainless steel spring wire	
19	Rod seal	NBR	
20	Piston seal	NBR	
21	Gasket	NBR	

Replacement parts: Seal kits

Seal kit no.						Description
MHZ2-10D	MHZ2-16D	MHZ2-20D	MHZ2-25D	MHZ2-32D	MHZ2-40D	Kits include items 19, 20 and 21 from the table above.
MHZ10-PS	MHZ16-PS	MHZ20-PS	MHZ25-PS	MHZ32-PS	MHZ40-PS	

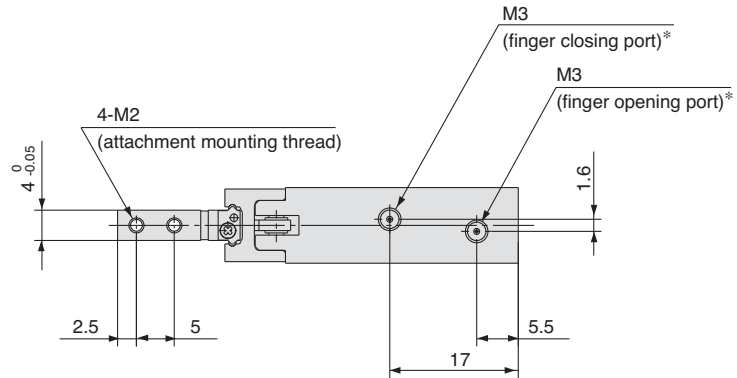
* Seal kits consist of items 19, 20 and 21 in one kit, and can be ordered using the seal kit number for each cylinder bore size.

Series MHZ2

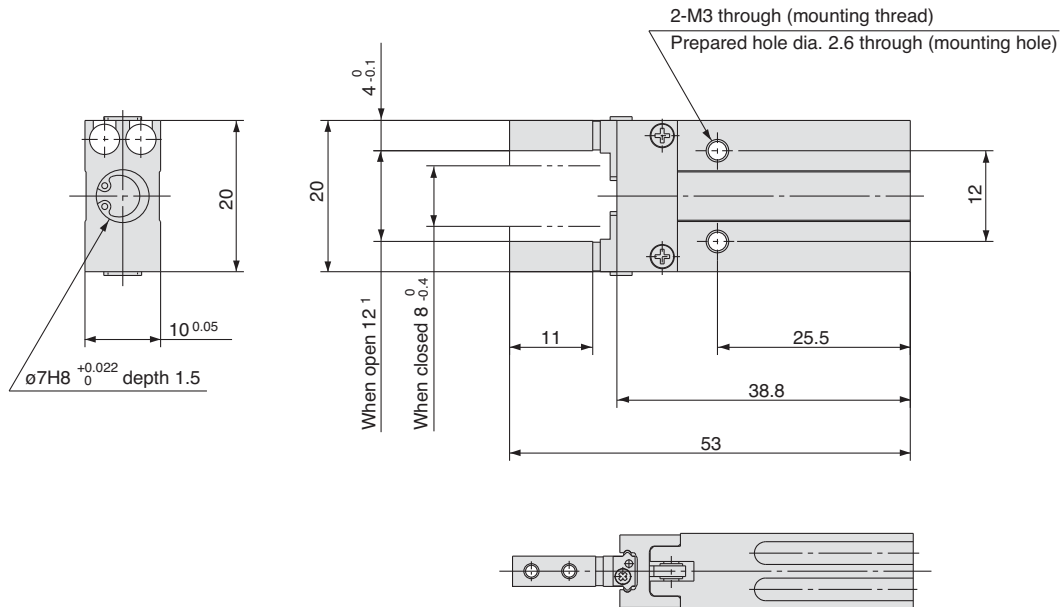
Dimensions

Scale: 100%

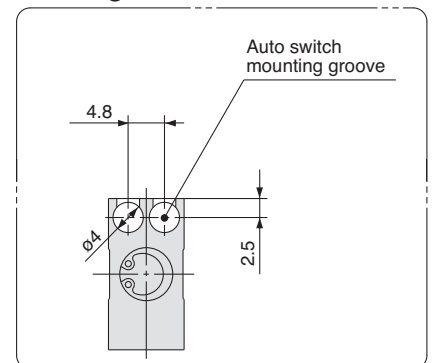
MHZ2-6□
Double acting/Single acting
Basic type



* For single action, the port on one side is a breathing hole.



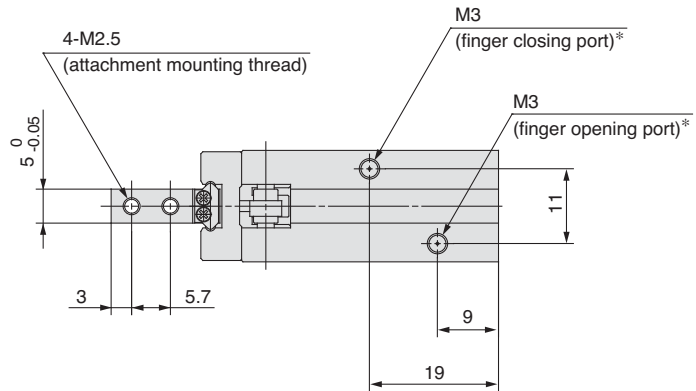
Auto switch mounting groove dimensions



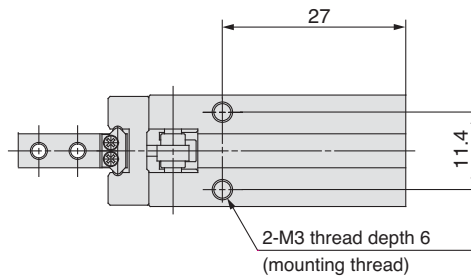
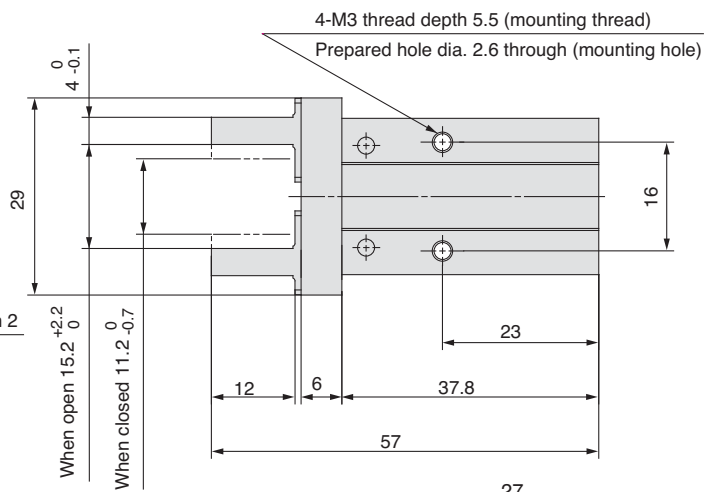
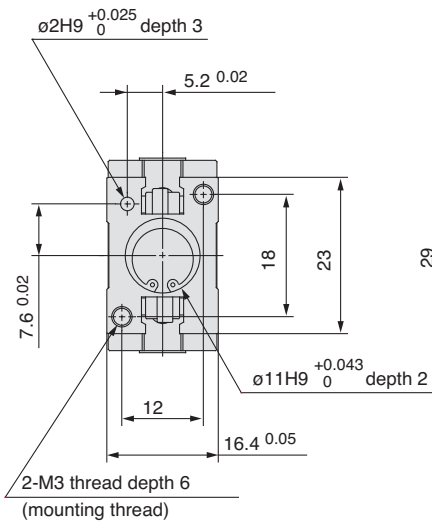
MHZ2-10□

Double acting/Single acting
Basic type

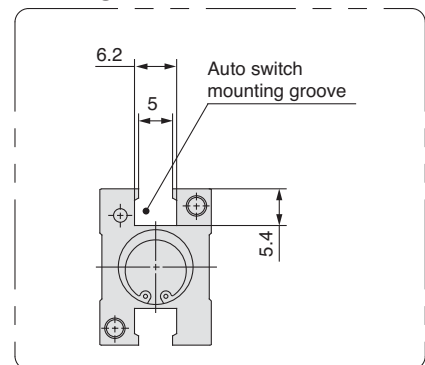
Scale: 90%



* For single action, the port on one side is a breathing hole.

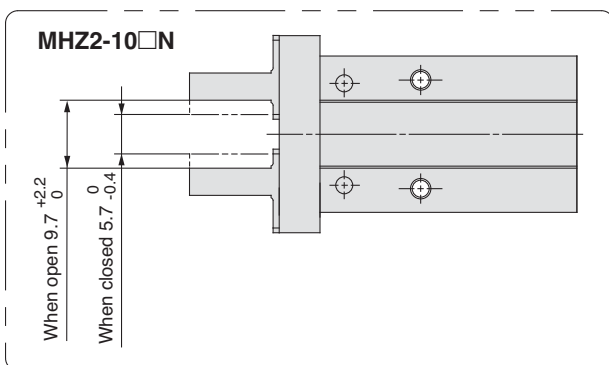


Auto switch mounting groove dimensions



Note) When using auto switches, through hole mounting is not possible.

Finger position/Narrow type

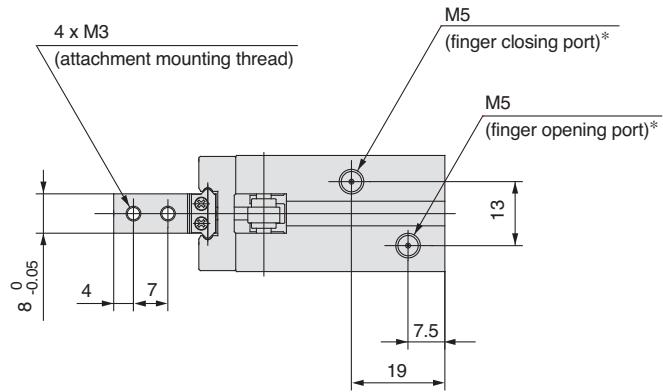


Series MHZ2

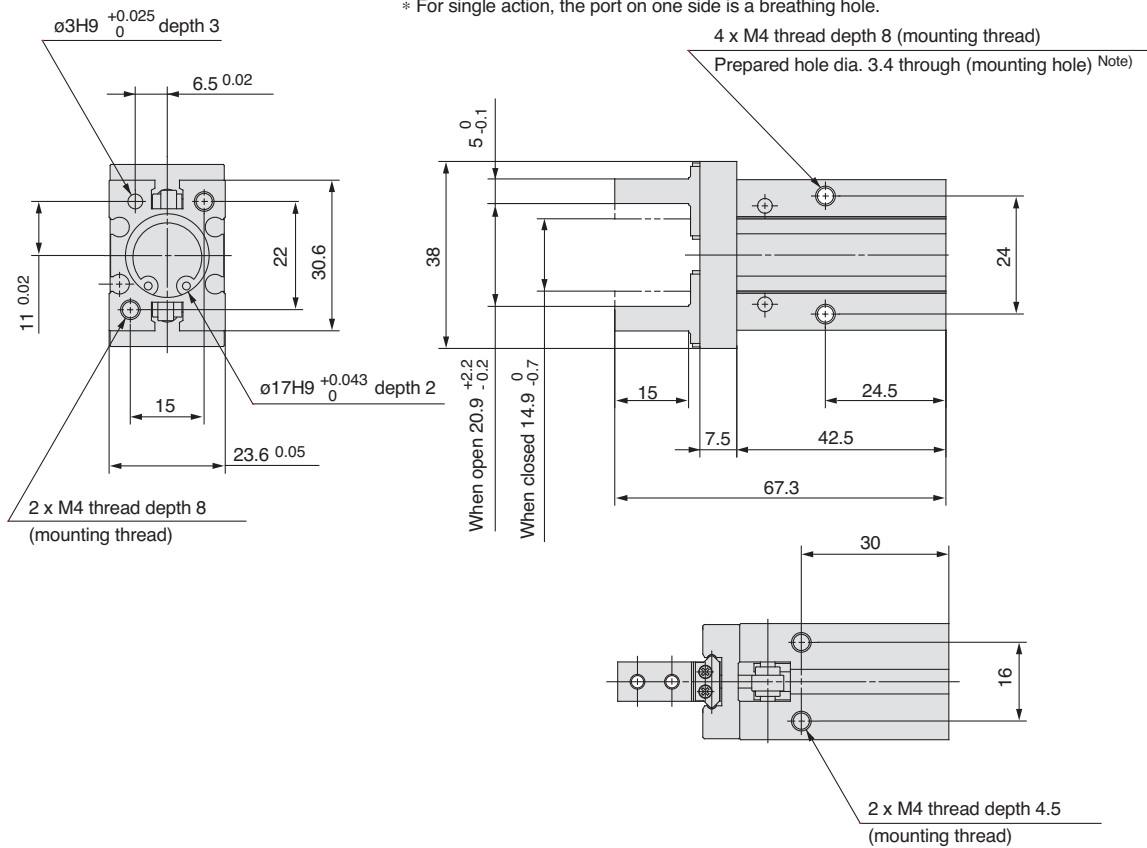
Dimensions

MHZ2-16□
Double acting/Single acting
Basic type

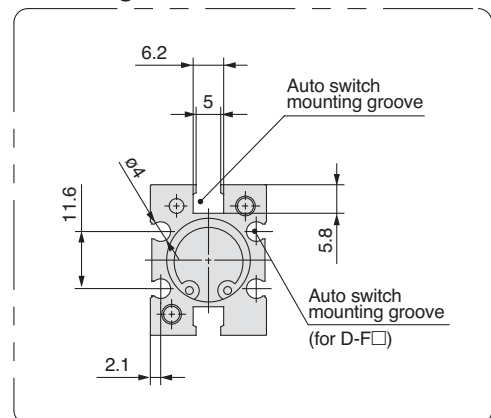
Scale: 65%



* For single action, the port on one side is a breathing hole.

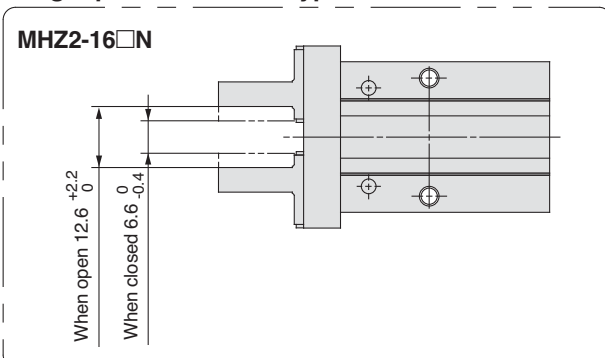


Auto switch mounting groove dimensions



Note) When using auto switches, through hole mounting is not possible.

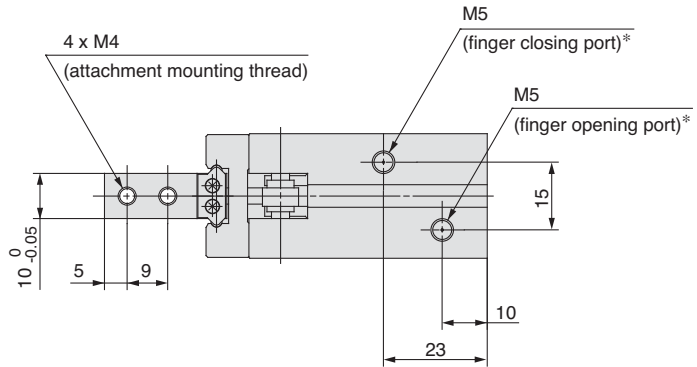
Finger position/Narrow type



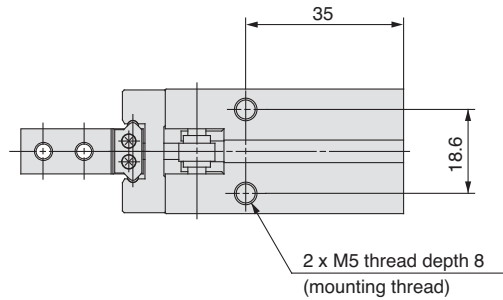
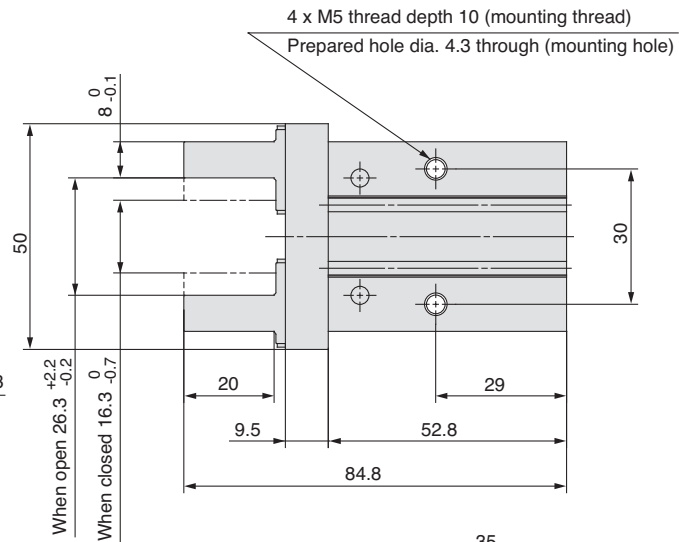
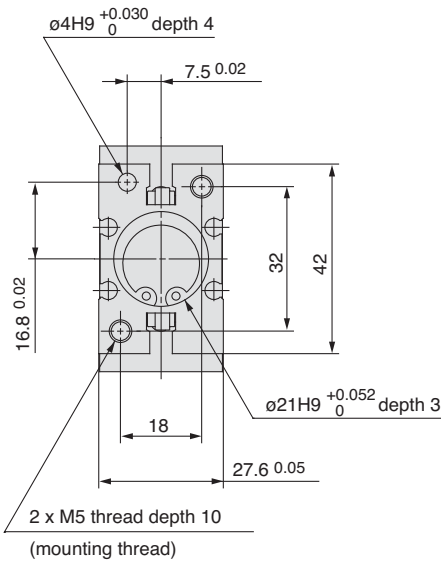
MHZ2-20□

**Double acting/Single acting
Basic type**

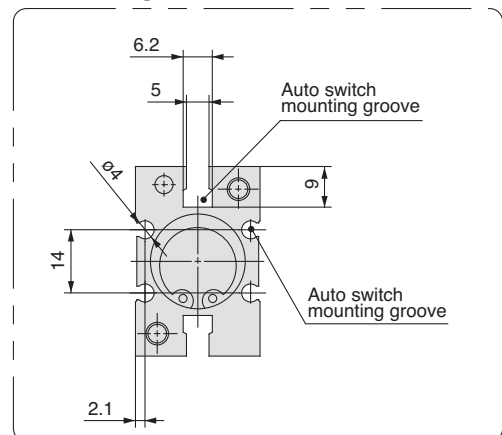
Scale: 60%



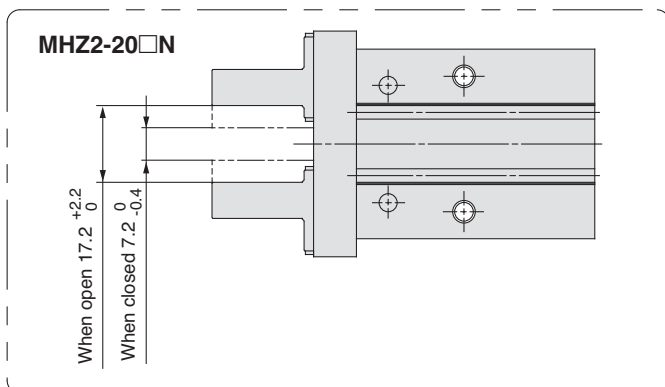
* For single action, the port on one side is a breathing hole.



Auto switch mounting groove dimensions



Finger position/Narrow type



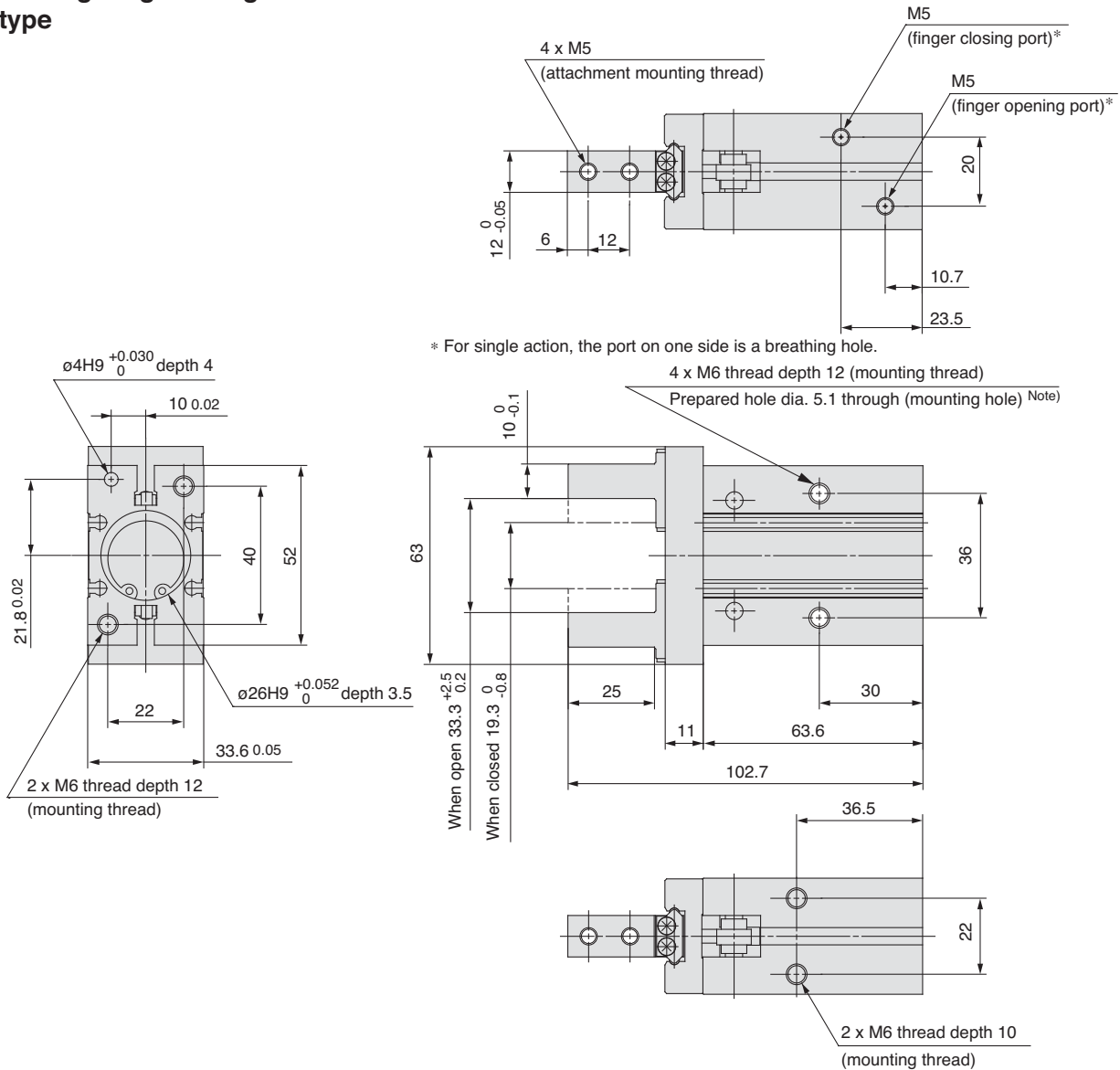
Note) When using auto switches, through hole mounting is not possible.

Series MHZ2

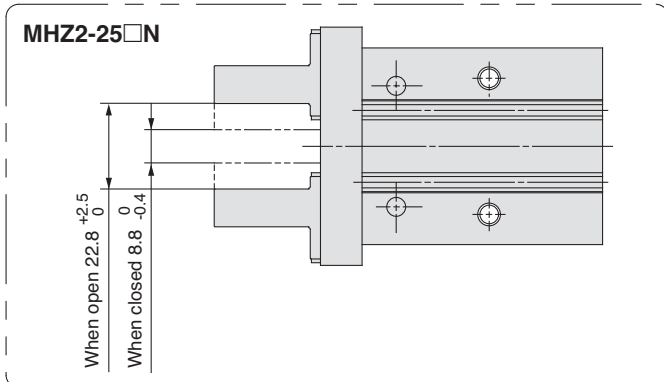
Dimensions

MHZ2-25□
 Double acting/Single acting
 Basic type

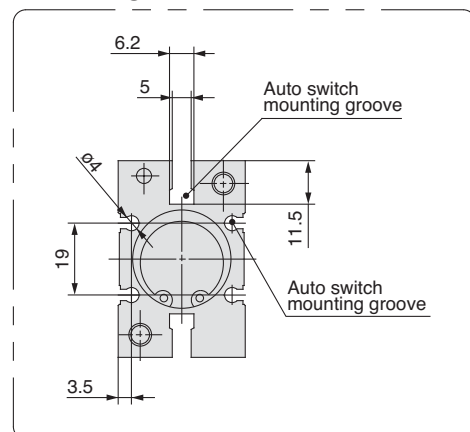
Scale: 50%



Finger position/Narrow type



Auto switch mounting groove dimensions

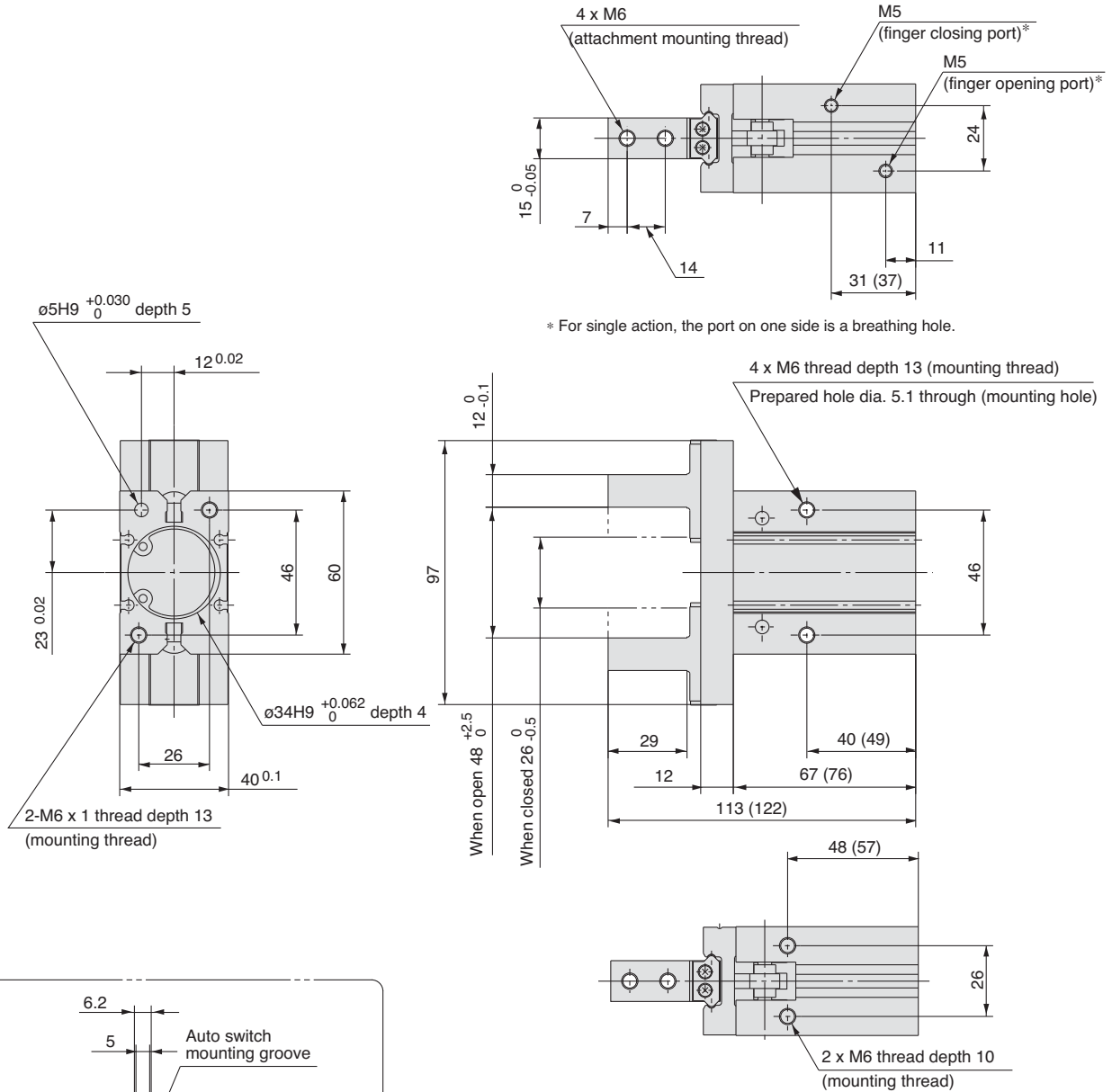


Note) When using auto switches, through hole mounting is not possible.

MHZ2-32
Double acting/Single acting
Basic Type

Scale: 40%

The values inside () are dimensions for the single acting type.



* For single action, the port on one side is a breathing hole.

Note) When using auto switches, through hole mounting is not possible.

Series MHZ2

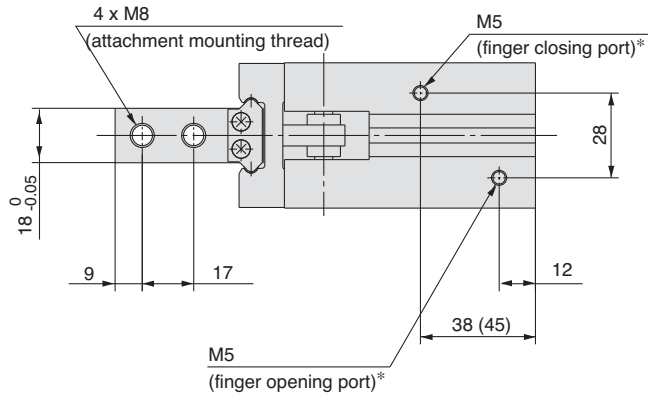
Dimensions

MHZ2-40□

Double acting/Single acting
Basic type

Scale: 40%

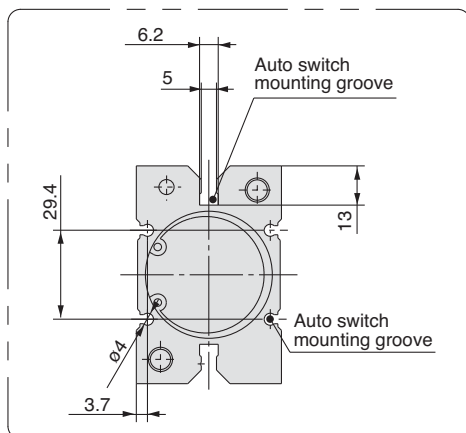
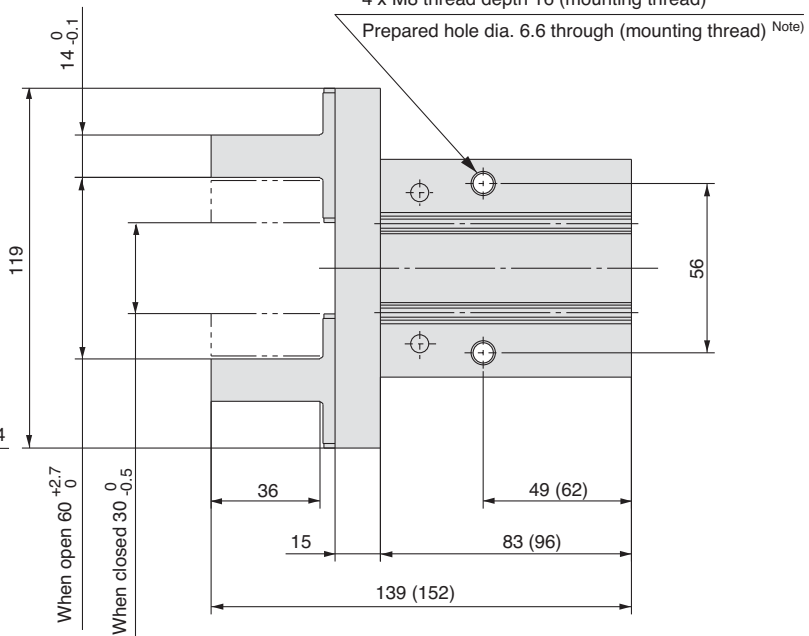
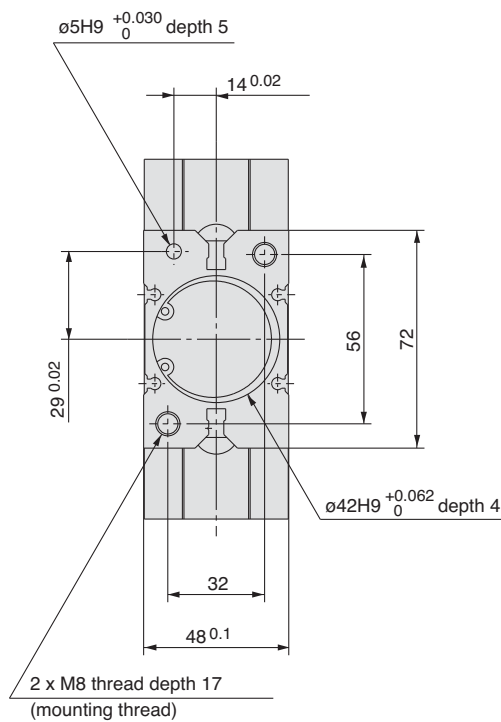
The values inside () are dimensions for the single acting type.



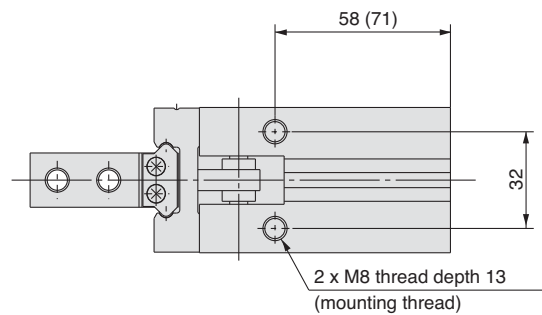
* For single action, the port on one side is a breathing hole.

4 x M8 thread depth 16 (mounting thread)

Prepared hole dia. 6.6 through (mounting thread) ^{Note)}



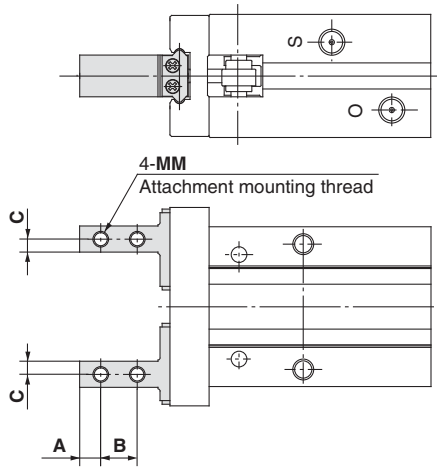
Note) When using auto switches, through hole mounting is not possible.



Standard Type/Series MHZ2

Finger Options

Side Tapped Mounting [1/N1]

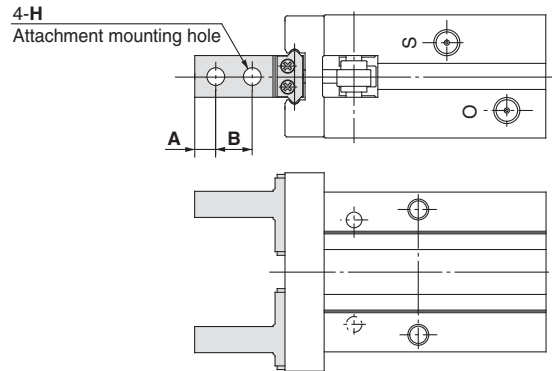


Unit: mm

Model	A	B	C	MM
MHZ2- 6□1	2.5	5	2	M2
MHZ2-10□ ¹ _{N1} □	3	5.7	2	M2.5
MHZ2-16□ ¹ _{N1} □	4	7	2.5	M3
MHZ2-20□ ¹ _{N1} □	5	9	4	M4
MHZ2-25□ ¹ _{N1} □	6	12	5	M5
MHZ2-32□1□	7	14	6	M6
MHZ2-40□1□	9	17	7	M8

* Specifications and dimensions other than the above are the same as the basic type (including narrow type).

Through Holes in Opening/Closing Direction [2/N2]

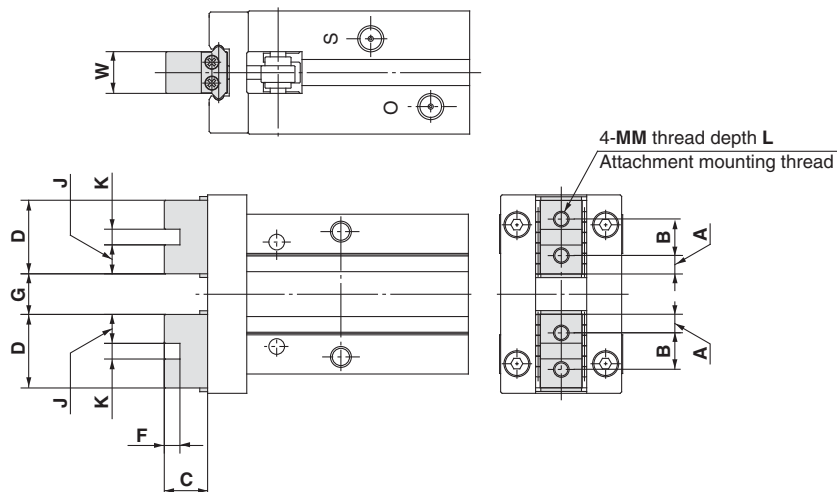


Unit: mm

Model	A	B	H
MHZ2- 6□2	2.5	5	2.4
MHZ2-10□ ² _{N2} □	3	5.7	2.9
MHZ2-16□ ² _{N2} □	4	7	3.4
MHZ2-20□ ² _{N2} □	5	9	4.5
MHZ2-25□ ² _{N2} □	6	12	5.5
MHZ2-32□2□	7	14	6.6
MHZ2-40□2□	9	17	9

* Specifications and dimensions other than the above are the same as the basic type (including narrow type).

Flat Type Fingers [3]



Unit: mm

Model	A	B	C	D	F	G		J	K	MM	L	W	Weight g
						Open	Closed						
MHZ2- 6□3 *1)	2	3.5	7.2	7.5	—	5 ^{+1.2} _{-0.8}	1 ^{+0.2} ₀	—	—	M2	3	4 ⁰ _{-0.05}	26
MHZ2-10□3□ *2), *3)	2.45	6	5.2	10.9	2	5.4 ^{+2.2} ₀	1.4 ⁰ _{-0.2}	4.45	2H9 ^{+0.025} ₀	M2.5	5	5 ⁰ _{-0.05}	55
MHZ2-16□3□ *2), *3)	3.05	8	8.3	14.1	2.5	7.4 ^{+2.2} ₀	1.4 ⁰ _{-0.2}	5.8	2.5H9 ^{+0.025} ₀	M3	6	8 ⁰ _{-0.05}	115
MHZ2-20□3□ *2), *3)	3.95	10	10.5	17.9	3	11.6 ^{+2.3} ₀	1.6 ⁰ _{-0.2}	7.45	3H9 ^{+0.025} ₀	M4	8	10 ⁰ _{-0.05}	235
MHZ2-25□3□ *2), *3)	4.9	12	13.1	21.8	4	16 ^{+2.5} ₀	2 ⁰ _{-0.2}	8.9	4H9 ^{+0.030} ₀	M5	10	12 ⁰ _{-0.05}	420
MHZ2-32□3□	7.3	20	18	34.6	5	25 ^{+2.7} ₀	3 ⁰ _{-0.2}	14.8	5H9 ^{+0.030} ₀	M6	12	15 ⁰ _{-0.05}	740 (785) *4)
MHZ2-40□3□	8.7	24	22	41.4	6	33 ^{+2.9} ₀	3 ⁰ _{-0.2}	17.7	6H9 ^{+0.030} ₀	M8	16	18 ⁰ _{-0.05}	1335 (1430) *4)

*1) To mount attachments, use M2 hexagon socket head cap screws with ø3.3 top diameter, or JISB1101 type M2 round head screws.

*2) Specifications and dimensions other than the above are the same as the basic type (including narrow type).

*3) The overall length is the same as the MHQ(G) flat finger type.

*4) The values inside () are for the single acting type.

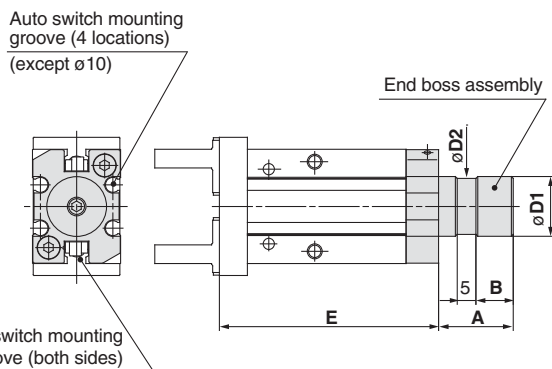
Standard Type/Series MHZ2

Body Options: End Boss Type

Applicable Models

Symbol	Piping port position	Type of Piping Port				Applicable model		
		MHZ2-10	MHZ2-16	MHZ2-20	MHZ2-25	Double acting	Single acting	
		M3		M5			Normally open	Normally closed
E	Side ported	M3		M5		●	●	●
W	Axial port	With $\phi 4$ One-touch fitting for coaxial tube				●	—	—
K		With $\phi 4$ One-touch fitting				—	●	●
M		M5 x 0.8				—	●	●

Side Ported [E]



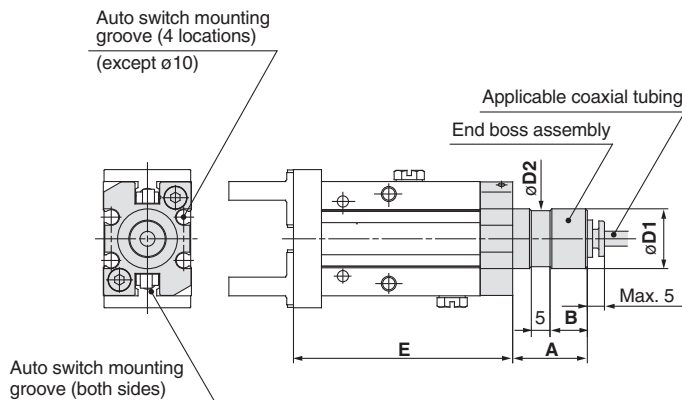
- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

Unit: mm

Model	Kit no.	A	B	D1	D2	E
MHZ2-10□□	MHZ-A1010	15	7	12f8 ^{-0.016} _{-0.043}	11	52.8
MHZ2-16□□	MHZ-A1610	20	10	16f8 ^{-0.016} _{-0.043}	15	58.7
MHZ2-20□□	MHZ-A2010	22	12	20f8 ^{-0.020} _{-0.053}	19	70.5
MHZ2-25□□	MHZ-A2510	25	15	25f8 ^{-0.020} _{-0.053}	24	82.9

Other dimensions and specifications correspond to the standard type.

Axial Port (One-Touch Fitting for Coaxial Tubing) [W]



- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

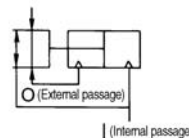
Unit: mm

Model	A	B	D1	D2	E
MHZ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	52.8
MHZ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	58.7
MHZ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	70.5
MHZ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	82.9

Other dimensions and specifications correspond to the standard type.

Applicable coaxial tubing

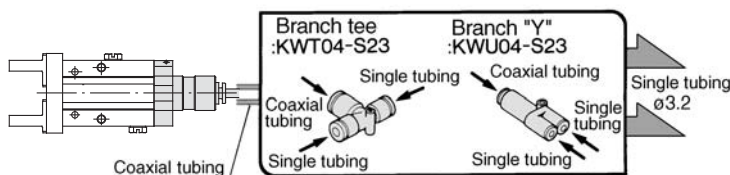
Reference symbol



Specification	Model	TW04B-20
Outside diameter		4mm
Max. operating pressure		0.6MPa
Min. bending radius		10mm
Operating temperature		-20 to 60°C
Material		Nylon 12

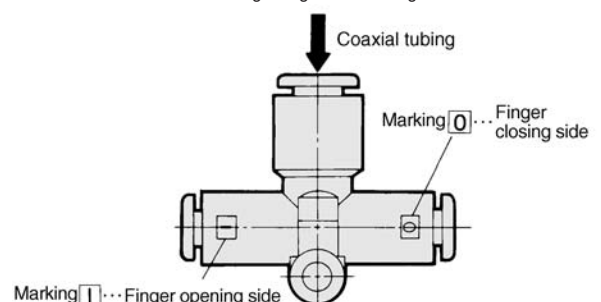
Changing from Coaxial to Single Tubing

Changing to single tubing is possible by using a branch "Y" or branch tee fitting. In this case particularly, single tube fittings and tubing for $\phi 3.2$ will be necessary.

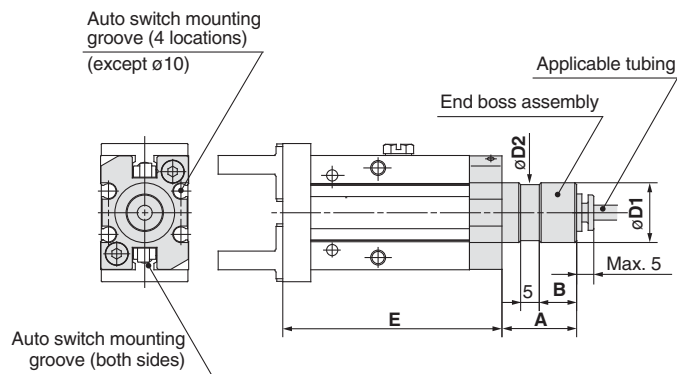


Branch tee, Different diameter tee, Branch "Y", Male run tee

Refer to catalog CAT.E004-A "Coaxial Air Tubing System" regarding coaxial tubing.



Axial Port (with One-touch Fitting) [K]



- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E
MHZ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	52.8
MHZ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	58.7
MHZ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	70.5
MHZ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	82.9

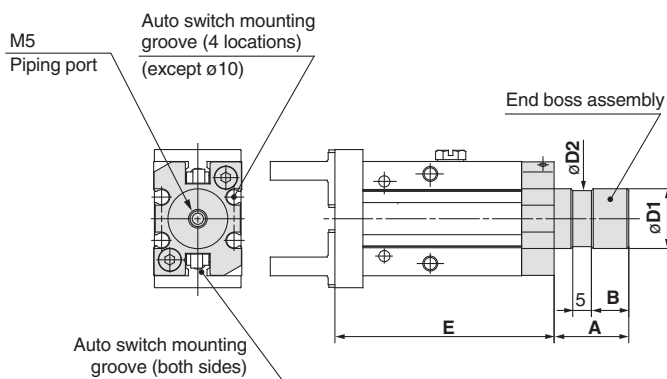
Other dimensions and specifications correspond to the standard type.

Applicable tubing

Description/ Model	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coiled 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 catalog CAT. E501-B "Air Fittings and Tubing" regarding One-touch fittings and tubing.

Axial Port (M5 Port) [M]



- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E
MHZ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	52.8
MHZ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	58.7
MHZ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	70.5
MHZ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	82.9

Other dimensions and specifications correspond to the standard type.

Weights

Unit: g

Model	End boss type (symbol)			
	E	W	K	M
MHZ2-10□□	65	64	66	65
MHZ2-16□□	148	147	148	147
MHZ2-20□□	277	277	277	277
MHZ2-25□□	495	495	496	494

Long Stroke

Series MHZL2

How to Order

MHZL2 – 16 D [] [] M9PV []

Number of fingers

2	2 fingers
---	-----------

Bore size

10	10mm
16	16mm
20	20mm
25	25mm

Action

D	Double acting
S	Single acting (normally open)
C	Single acting (normally closed)

Auto switch type

Nil	Without auto switch (built-in magnet)
S	1 pc.
Nil	2 pcs.

* Select an applicable auto switch model from the table below.

Finger option

- Nil: Basic type
- 1: Side tapped mounting
- 2: Through holes in opening/closing direction
- 3: Flat type fingers

Body option

- Nil: Basic type
- E: End boss type Side ported (double acting/single acting)
- W: End boss type Axial port with ø4 One-touch fitting for coaxial tubing (double acting)
- K: End boss type Axial port with ø4 One-touch fitting (single acting)
- M: End boss type Axial M5 port (single acting)

Applicable Auto Switches

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) *				Applicable model				Pre-wired connector	Applicable load						
					DC	AC	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	ø10	ø16	ø20	ø25								
							Perpendicular	In-line																
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5V, 12 V	—	M9NV	M9N	●	●	●	○	●	●	●	●	○	IC circuit	Relay, PLC					
				3-wire (PNP)			F8N	—	●	—	●	○	—	●	●	●	—							
				2-wire	12 V	—	M9PV	M9P	●	●	●	○	●	●	●	●	○							
				3-wire (PNP)			F8P	—	●	—	●	○	—	●	●	●	—							
				Diagnosis (2-colour indicator)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9BV	M9B	●	●	●	○	●	●			●	●	○	—	Relay, PLC
							3-wire (PNP)			F8B	—	●	—	●	○	—	●			●	●	—		
	Water resistant (2-colour indicator)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NWV	M9NW	●	●	●	○	●	●	●	●	○	IC circuit	Relay, PLC					
				3-wire (PNP)			M9PWV	M9PW	●	●	●	○	●	●	●	●	○							
				2-wire	12 V	—	M9BWV	M9BW	●	●	●	○	●	●	●	●	○							
				3-wire (NPN)			M9NAV**	M9NA**	○	○	●	○	●	●	●	●	○							
	3-wire (PNP)	5 V, 12 V	—	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) M9NW
 1 m..... M (Example) M9NWM
 3 m..... L (Example) M9NWL
 5 m..... Z (Example) M9NWX

* Solid state auto switches marked with ○ are produced upon receipt of order.

Note 1) When using the 2-colour 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.

Note 2) Through-hole mounting is not possible when using the auto switch at the square groove on the side.

Note 3) When the product is ordered with auto switch, only MHZ2-10 is shipped with the auto switch mounting brackets. When the auto switch is used at the square groove on the side with MHZ2-16 to 25, mounting brackets (BMG2-012) are required. Order them separately.

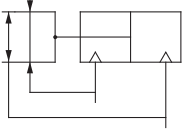
Specifications



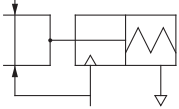
Fluid		Air	
Operating pressure	Double acting		ø10: 0.2 to 0.7MPa ø16 to ø25: 0.1 to 0.7MPa
	Single acting	Normally open	ø10: 0.35 to 0.7MPa
		Normally closed	ø16 to ø25: 0.25 to 0.7MPa
Ambient and fluid temperature		-10 to 60°C	
Repeatability		±0.01mm	
Maximum operating frequency		120c.p.m.	
Lubrication		Non-lube	
Action		Double acting, Single acting	
Auto switch (option) <small>Note)</small>		Solid state switch (3 wire, 2 wire)	

Symbols:

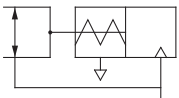
Double acting type



Single acting type, normally open



Single acting type, normally closed



Models

Action	Model	Bore size (mm)	Gripping force <small>Note 1)</small>		Opening/Closing stroke (both sides) mm	<small>Note 2)</small> Weight g	
			Gripping force per finger Effective value N				
			External gripping force	Internal gripping force			
Double acting	MHZL2-10D	10	11	17	8	60	
	MHZL2-16D	16	34	45	12	135	
	MHZL2-20D	20	42	66	18	270	
	MHZL2-25D	25	65	104	22	470	
Single acting	Normally open	MHZL2-10S	10	7.1	—	8	70
		MHZL2-16S	16	27		12	145
		MHZL2-20S	20	33		18	290
		MHZL2-25S	25	50		22	515
	Normally closed	MHZL2-10C	10	—	13	8	70
		MHZL2-16C	16		38	12	140
		MHZL2-20C	20		57	18	290
		MHZL2-25C	25		85	22	515

Note 1) Values based on pressure of 0.5MPa, gripping point L = 20mm, at center of stroke.

Note 2) Values excluding weight of auto switch.

Options

• Body options/End boss type

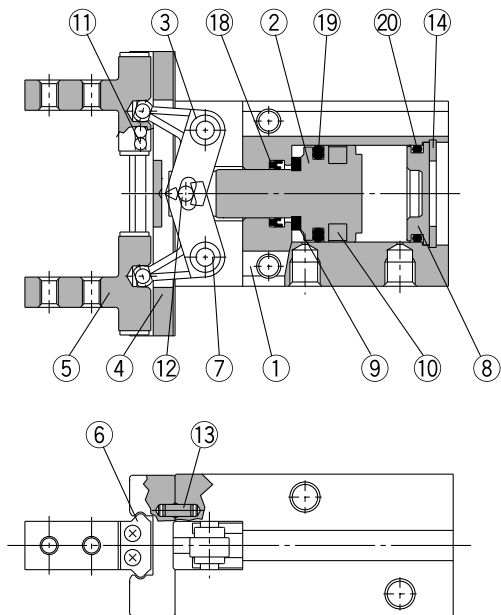
Symbol	Piping port position	Type of piping port				Applicable model	
		MHZL2-10	MHZL2-16	MHZL2-20	MHZL2-25	Double acting	Single acting
Nil	Basic type	M3	M5			●	●
E	Side ported	M3	M5			●	●
W	Axial port	With ø4 One-touch fitting for coaxial tube				●	—
K	Axial port	With ø4 One-touch fitting				—	●
M	Axial port	M5				—	●

* For detailed body option specifications, refer to option specifications on pages 5-42 and 5-43

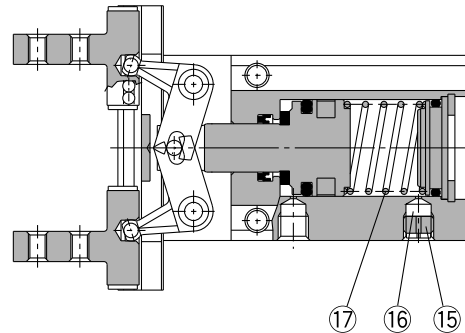
Series MHZL2

Construction/MHZL2-10□ to 25□

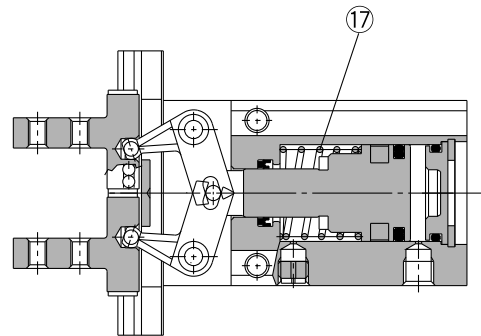
Double acting/with fingers open



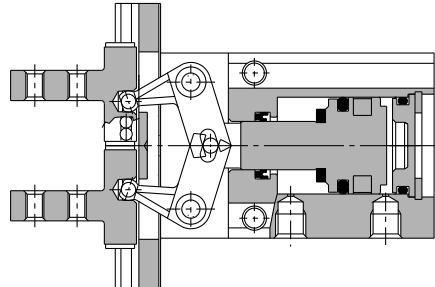
Single acting/normally open



Single acting/normally closed



Double acting/with fingers closed



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	ø10, ø16: Stainless steel ø20, ø25: Aluminum alloy	ø20, ø25: Hard anodized
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Cap	Aluminum alloy	Clear anodized
9	Bumper	Urethane rubber	
10	Rubber magnet	Synthetic rubber	

Parts list

No.	Description	Material	Note
11	Steel balls	High carbon chromium bearing steel	
12	Needle roller	High carbon chromium bearing steel	
13	Parallel pin	Stainless steel	
14	C type snap ring	Carbon steel	Nickel plated
15	Exhaust plug A	Brass	Electroless nickel plated
16	Exhaust filter A	Polyvinyl formal	
17	Spring	Stainless steel spring wire	
18	Rod seal	NBR	
19	Piston seal	NBR	
20	O-ring	NBR	

Replacement parts: Seal kits

Seal kit no.				Description
MHZL2-10D	MHZL2-16D	MHZL2-20D	MHZL2-25D	Kits include items 18, 19 and 20 from the table above.
MHZL10-PS	MHZL16-PS	MHZL20-PS	MHZL25-PS	

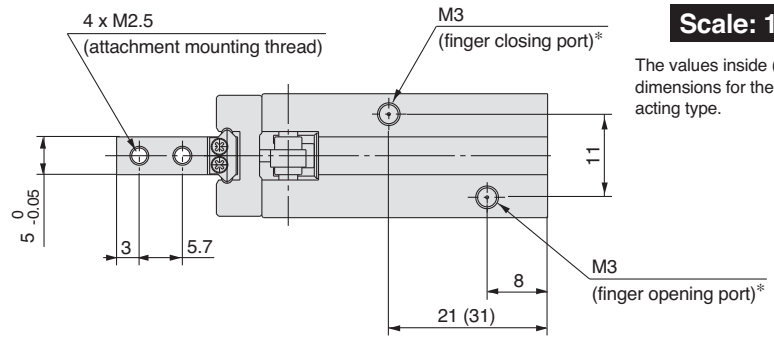
* Seal kits consist of items 18, 19 and 20 in one kit, and can be ordered using the seal kit number for each cylinder bore size.

Dimensions

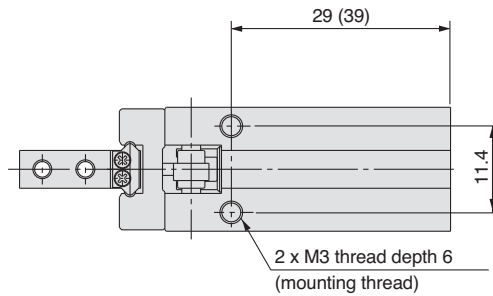
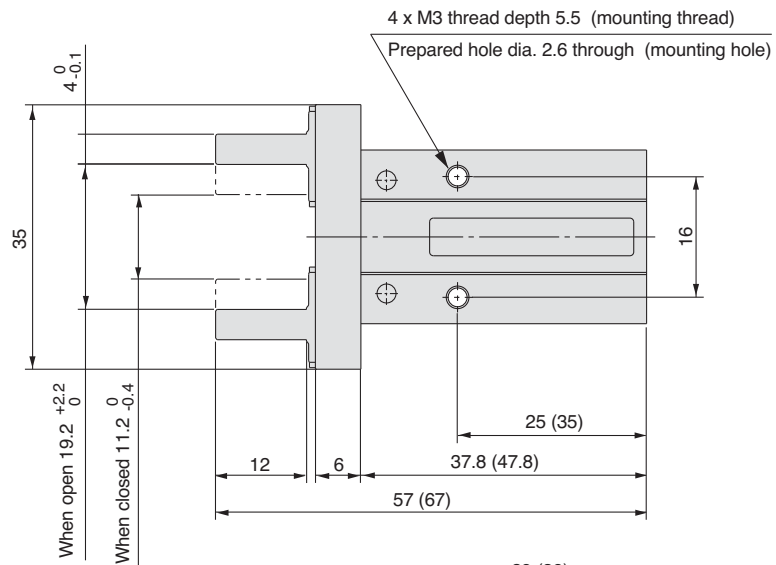
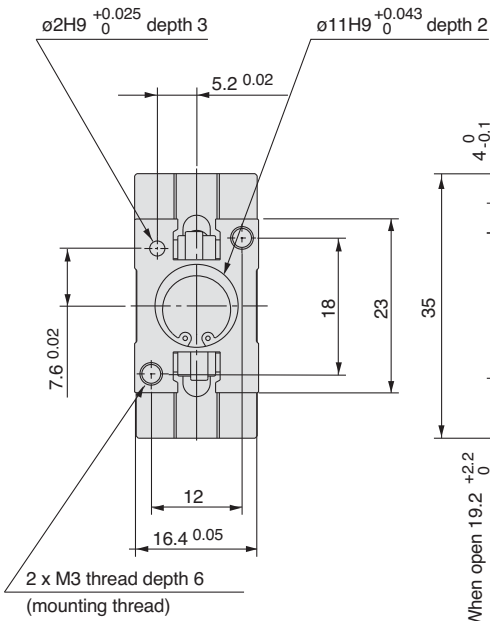
MHZL2-10□
Double acting/Single acting
Basic type

Scale: 100%

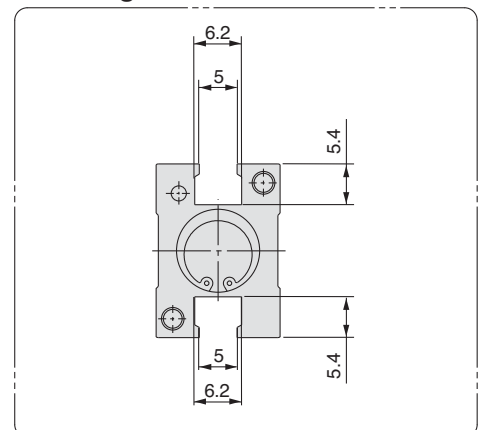
The values inside () are dimensions for the single acting type.



* For single action, the port on one side is a breathing hole.



Auto switch mounting groove dimensions



Noe) When using auto switches, through hole mounting is not possible.

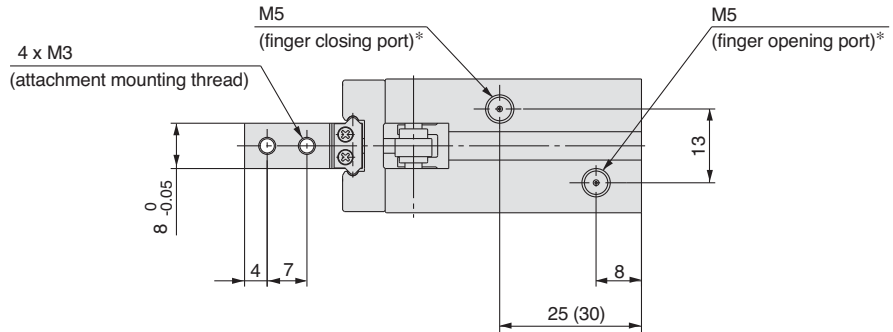
Series MHZL2

Dimensions

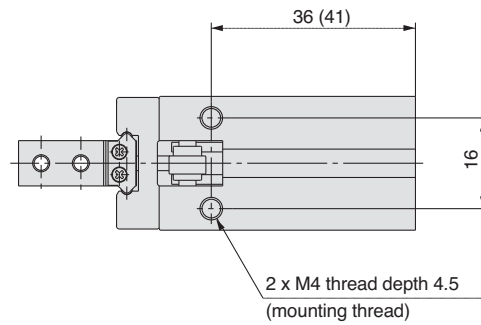
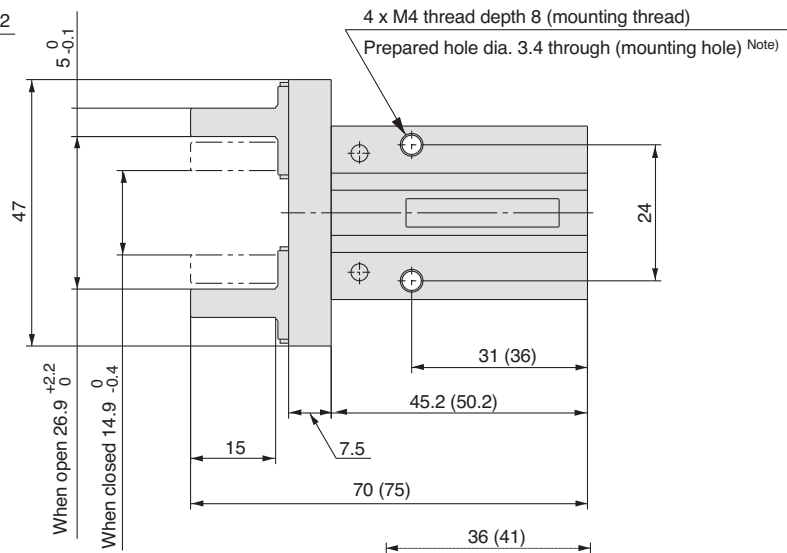
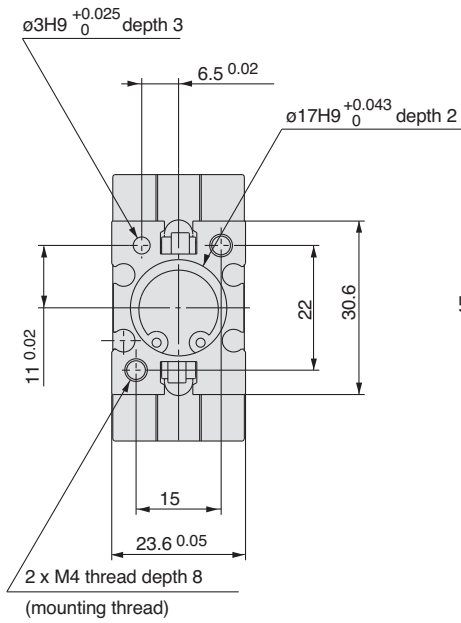
MHZL2-16 □
Double acting/Single acting
Basic type

Scale: 75%

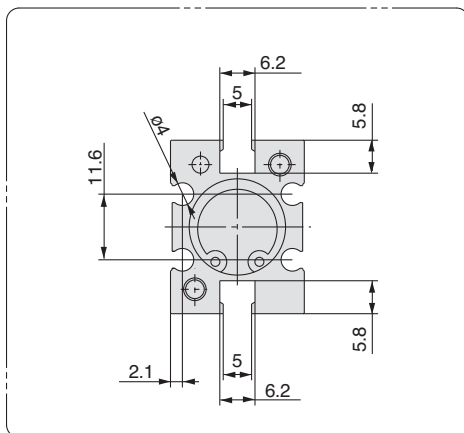
The values inside () are dimensions for the single acting type.



* For single action, the port on one side is a breathing hole.



Auto switch mounting groove dimensions

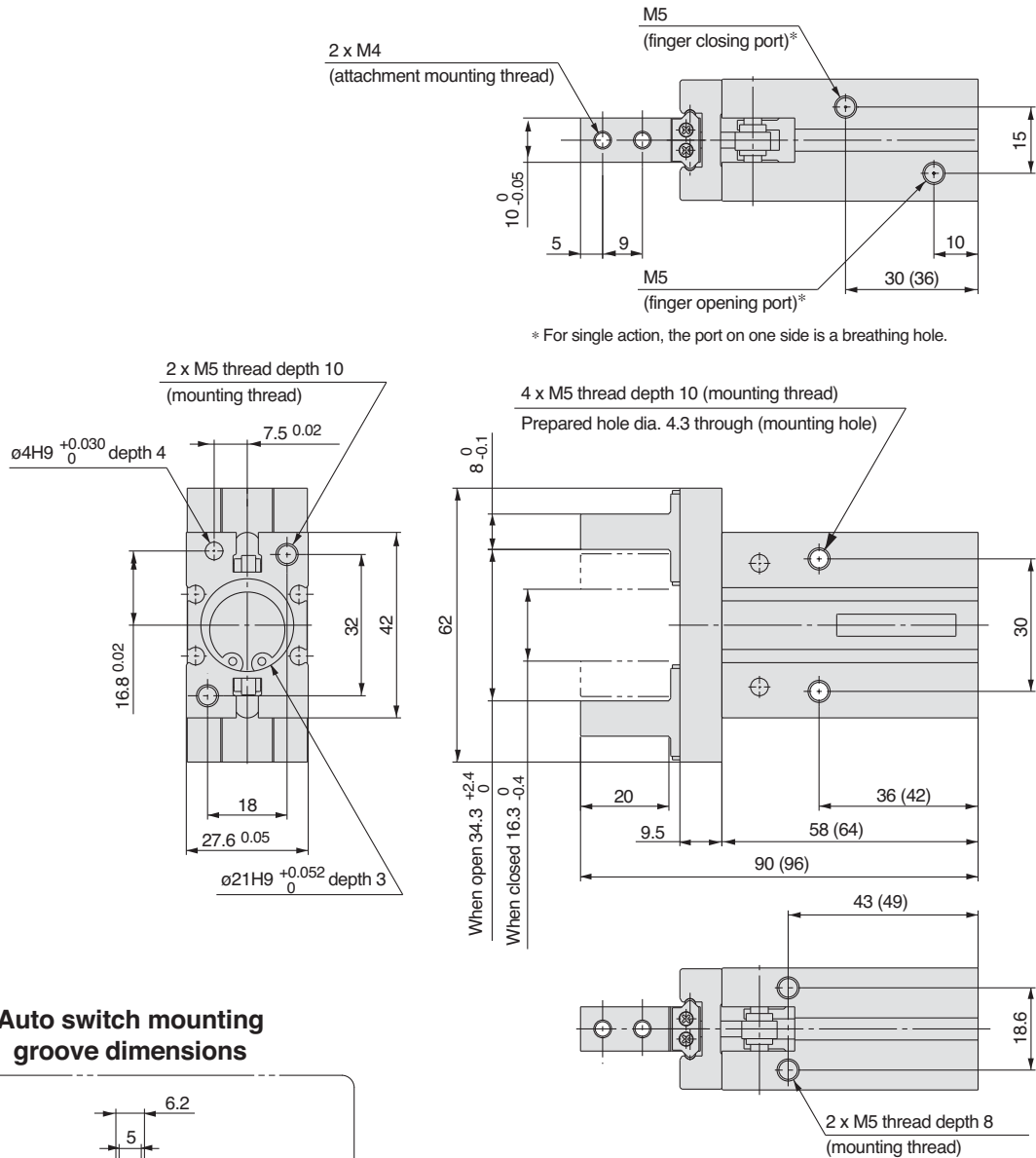


Note) When using auto switches, through hole mounting is not possible.

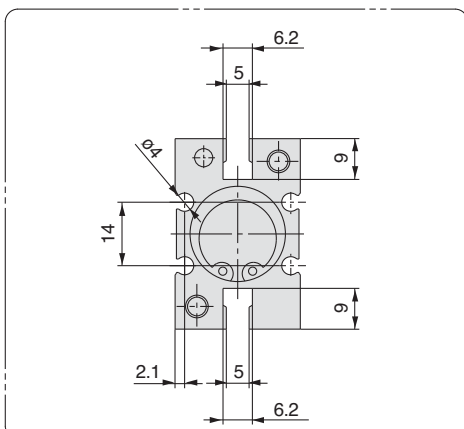
MHZL2-20□
Double acting/Single acting
Basic type

Scale: 60%

The values inside () are dimensions for the single acting type.



Auto switch mounting groove dimensions



Note) When using auto switches, through hole mounting is not possible.

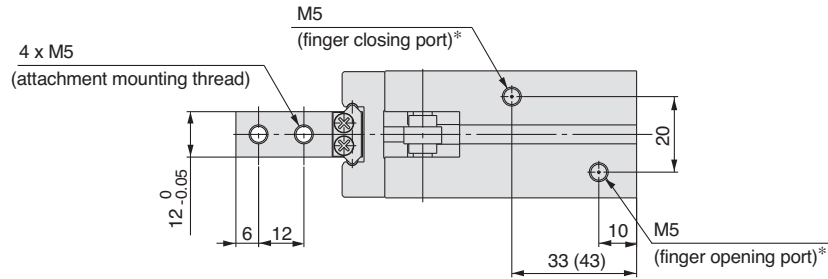
Series MHZL2

Dimensions

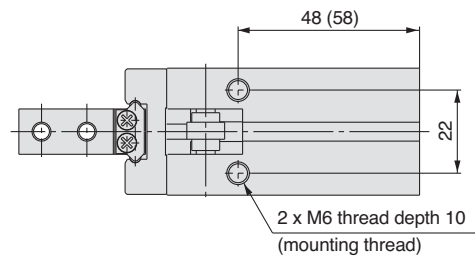
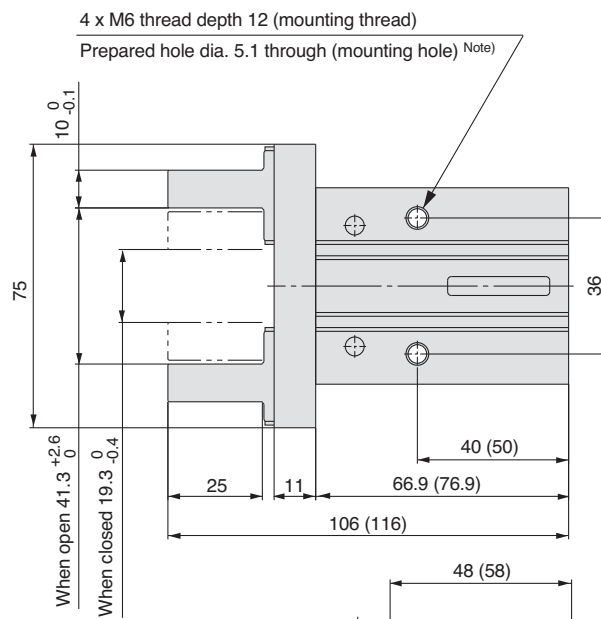
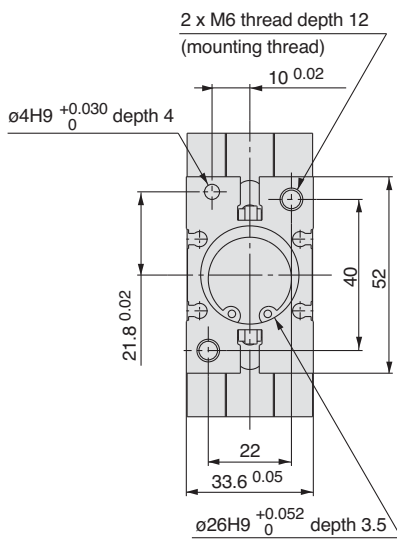
MHZL2-25
Double acting/Single acting
Basic type

Scale: 50%

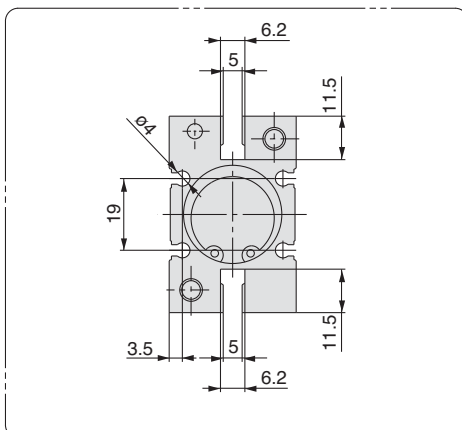
The values inside () are dimensions for the single acting type.



* For single action, the port on one side is a breathing hole.



Auto switch mounting groove dimensions



Note) When using auto switches, through hole mounting is not possible.

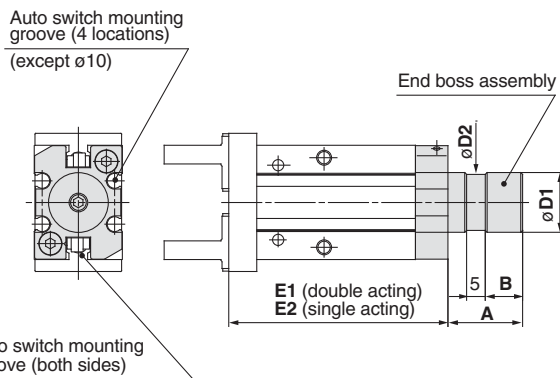
Long Stroke/Series MHZL2

Body Options: End Boss Type

Applicable Models

Symbol	Piping port position	Type of Piping Port				Applicable model		
		MHZL2-10	MHZL2-16	MHZL2-20	MHZL2-25	Double acting	Single acting	
							Normally open	Normally closed
E	Side ported	M3	M5		●	●	●	
W	Axial port	With $\phi 4$ One-touch fitting for coaxial tube				●	—	—
K		With $\phi 4$ One-touch fitting				—	●	●
M		M5 x 0.8				—	●	●

Side Ported [E]



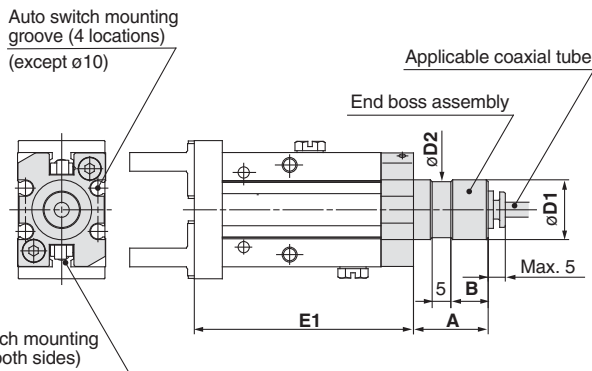
- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

Unit: mm

Model	Kit no.	A	B	D1	D2	E1	E2
MHZL2-10□□	MHZ-A1010	15	7	12f8 ^{-0.016} _{-0.043}	11	52.8	62.8
MHZL2-16□□	MHZ-A1610	20	10	16f8 ^{-0.016} _{-0.043}	15	61.4	66.4
MHZL2-20□□	MHZ-A2010	22	12	20f8 ^{-0.020} _{-0.053}	19	75.7	81.7
MHZL2-25□□	MHZ-A2510	25	15	25f8 ^{-0.020} _{-0.053}	24	86.2	96.2

Other dimensions and specifications correspond to the standard type.

Axial Port (One-touch Fitting for Coaxial Tubing) [W]



- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

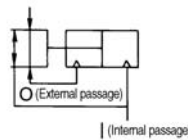
Unit: mm

Model	A	B	D1	D2	E1
MHZL2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	52.8
MHZL2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	61.4
MHZL2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	75.7
MHZL2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	86.2

Other dimensions and specifications correspond to the standard type.

Applicable coaxial tubing

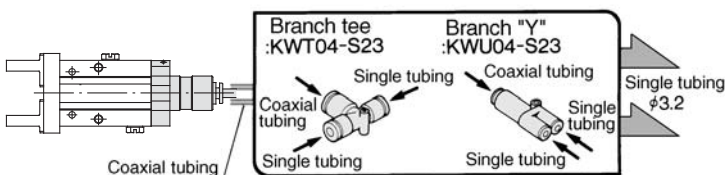
Reference symbol



Specification	Model	TW04B-20
Outside diameter		4mm
Max. operating pressure		0.6MPa
Min. bending radius		10mm
Operating temperature		-20 to 60°C
Material		Nylon 12

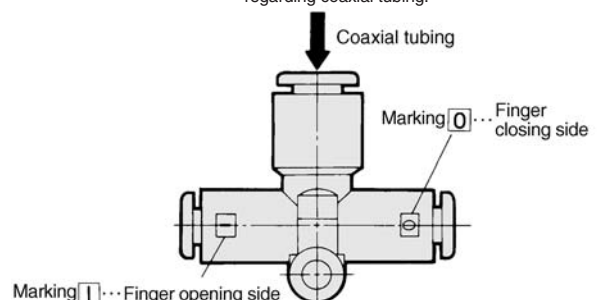
Changing from Coaxial to Single Tubing

Changing to single tubing is possible by using a branch "Y" or branch tee fitting. In this case particularly, single tube fittings and tubing for $\phi 3.2$ will be necessary.

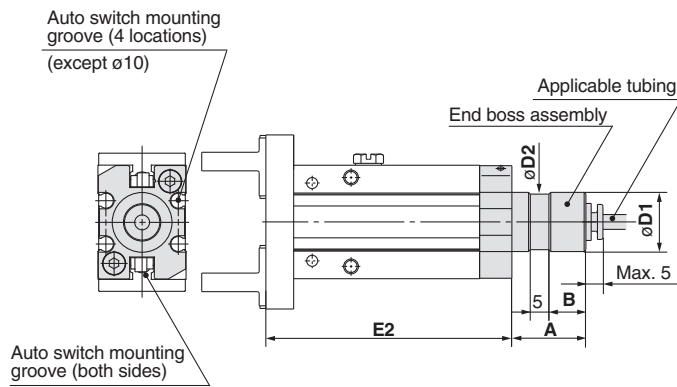


Branch tee, Different diameter tee, Branch "Y", Male run tee

Refer to catalogue CAT.E004-A "Coaxial Air Tubing System" regarding coaxial tubing.



Axial Port (with One-touch Fitting) [K]



- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E2
MHZL2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	62.8
MHZL2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	66.4
MHZL2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	81.7
MHZL2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	96.2

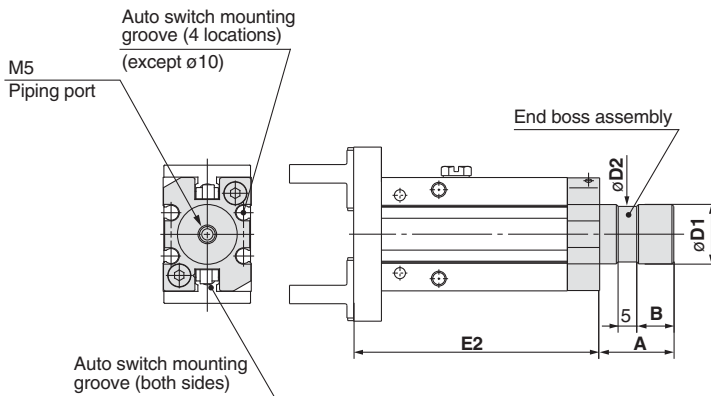
Other dimensions and specifications correspond to the standard type.

Applicable tubing

Description Model	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coiled tubing
	Specification	T0425	TS0425	TU0425
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 catalog CAT. 501-B "Air Fittings and Tubing" regarding One-touch fittings and tubing.

Axial Port (M5 Port) [M]



- * Refer to the dimension table.
- * When auto switches are used, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E2
MHZL2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	62.8
MHZL2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	66.4
MHZL2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	81.7
MHZL2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	96.2

Other dimensions and specifications correspond to the standard type.

Weights

Unit: g

Model	End boss type (symbol)				
	E		W	K	M
	Double acting	Single acting			
MHZL2□-10□□	70	80	70	80	80
MHZL2□-16□□	170	180	170	180	180
MHZL2□-20□□	310	330	310	330	330
MHZL2□-25□□	535	580	535	580	580

With Dust Cover

Series *MHZJ2*

How to Order

MHZJ2-16 D □ □ M9PV □

Number of fingers
2 2 fingers

Bore size

6	6mm
10	10mm
16	16mm
20	20mm
25	25mm

Action

D	Double acting
S	Single acting (normally open)
C	Single acting (normally closed)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Auto switch type

Nil	Without auto switch (built-in magnet)
-----	---------------------------------------

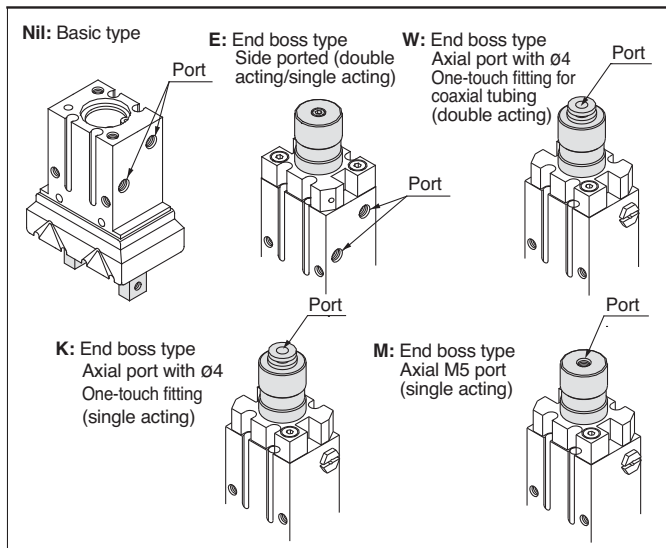
* Select an applicable auto switch model from the table below.

Body option

* ø6 is only applicable with basic type.

Dust cover type

Nil	Chloroprene rubber (CR)
F	Fluoro rubber (FKM)
S	Silicon rubber (Si)



Applicable Auto Switches

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) *					Applicable model					Pre-wired connector	Applicable load	
					DC	AC	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	ø6	ø10	ø16	ø20	ø25				
							Perpendicular	In-line													
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	●	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)			F8N	—	●	—	●	○	●	—	●	●	●				—
				2-wire			M9PV	M9P	●	●	●	○	●	●	●	●	●				○
				3-wire (NPN)			F8P	—	●	—	●	○	●	—	●	●	●				—
				3-wire (PNP)			M9BV	M9B	●	●	●	○	●	●	●	●	●				○
				2-wire			F8B	—	●	—	●	○	●	—	●	●	●				—
	Diagnosis (2-colour indicator)	Grommet	Yes	3-wire (NPN)	24 V	—	M9NWV	M9NW	●	●	●	○	●	●	●	●	○	○	IC circuit		
				3-wire (PNP)			M9PWV	M9PW	●	●	●	○	●	●	●	●	○				
				2-wire			M9BWV	M9BW	●	●	●	○	●	●	●	●	○				
				3-wire (NPN)			M9NAV**	M9NA**	○	○	●	○	●	●	●	●	○				
				3-wire (PNP)			M9PAV**	M9PA**	○	○	●	○	●	●	●	●	○				
				2-wire			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) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

* Solid state auto switches marked with ○ are produced upon receipt of order.

Note 1) When using the 2-colour 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.

Note 2) When using a D-F8□ switch on sizes ø6, mount it at a distance of 10 mm or more from magnetic substances such as iron, etc.

Specifications

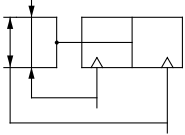


Fluid		Air	
Operating pressure	Double acting	ø6: 0.15 to 0.7MPa ø10: 0.2 to 0.7MPa ø16 to ø25: 0.1 to 0.7MPa	
		Single acting	Normally open ø6: 0.3 to 0.7MPa ø10: 0.35 to 0.7MPa
	Normally closed ø16 to ø25: 0.25 to 0.7MPa		
Ambient and fluid temperature		-10 to 60°C	
Repeatability		±0.01mm	
Maximum operating frequency		180c.p.m.	
Lubrication		Non-lube	
Action		Double acting, Single acting	
Auto switch (option) ^{Note)}		Solid state switch (3 wire, 2 wire)	

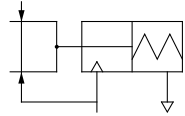
Models

Symbols:

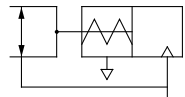
Double acting type



Single acting type, normally open



Single acting type, normally closed



Action	Model	Bore size (mm)	Gripping force ^{Note 1)}		Opening/ Closing stroke (both sides) mm	Weight ^{Note 2)} g	
			Gripping force per finger Effective value N				
			External gripping force	Internal gripping force			
Double acting	MHZJ2- 6D	6	3.3	6.1	4	28	
	MHZJ2-10D	10	9.8	17	4	60	
	MHZJ2-16D	16	30	40	6	130	
	MHZJ2-20D	20	42	66	10	250	
	MHZJ2-25D	25	65	104	14	460	
Single acting	Normally open	MHZJ2- 6S	6	1.9	—	4	28
		MHZJ2-10S	10	6.3		4	60
		MHZJ2-16S	16	24		6	130
		MHZJ2-20S	20	28		10	255
		MHZJ2-25S	25	45		14	264
	Normally closed	MHZJ2- 6C	6	—	3.7	4	28
		MHZJ2-10C	10		12	4	60
		MHZJ2-16C	16		31	6	130
		MHZJ2-20C	20		56	10	255
		MHZJ2-25C	25		83	14	460

Note 1) Values based on pressure of 0.5MPa, gripping point L = 20mm, at center of stroke.

Note 2) Values excluding weight of auto switch.

Options

● Body options/End boss type

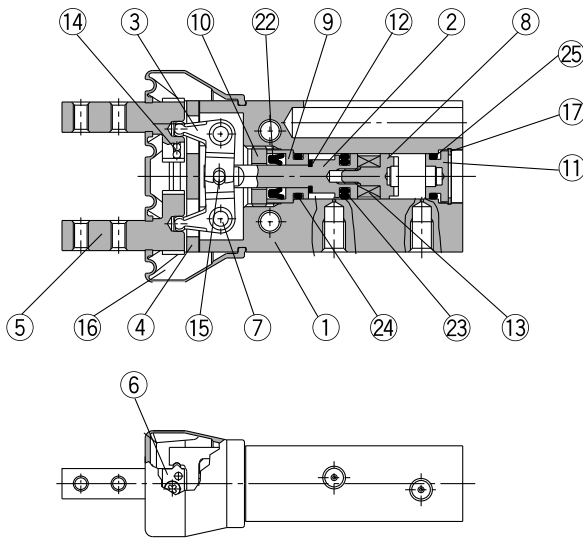
Symbol	Piping port position	Type of piping port				Applicable model	
		MHZJ2-10	MHZJ2-16	MHZJ2-20	MHZJ2-25	Double acting	Single acting
Nil	Basic type	M3 x 0.5	M5 x 0.8			●	●
E	Axial port	M3 x 0.5	M5 x 0.8			●	●
W	Axial port	With ø4 One-touch fitting for coaxial tube				●	—
K	Axial port	With ø4 One-touch fitting				—	●
M	Axial port	M5 x 0.8				—	●

* For detailed body option specifications, refer to option specifications on pages 5-53 and 5-54

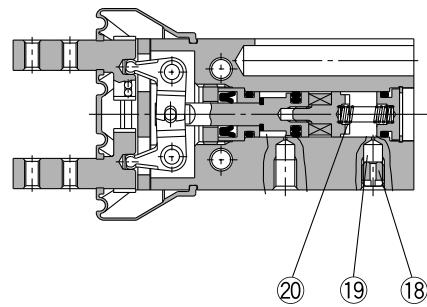
Series MHZJ2

Construction/MHZJ2-6□

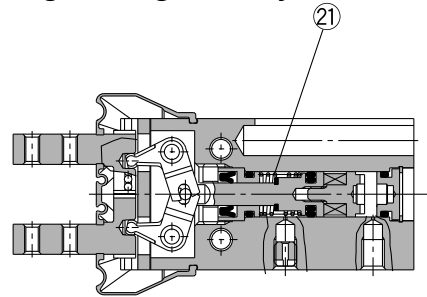
Double acting/with fingers open



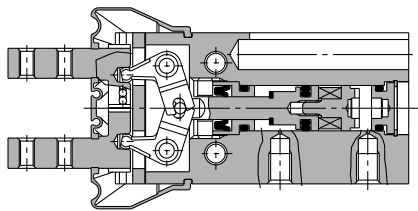
Single acting/normally open



Single acting/normally closed



Double acting/with fingers closed



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Stainless steel	
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Magnet holder	Stainless steel	
9	Holder	Brass	Electroless nickel plated
10	Holder lock	Stainless steel	
11	Cap	Aluminum alloy	Clear anodized
12	Bumper	Urethane rubber	
13	Magnet	Rare earth magnet	Nickel plated
14	Steel balls	High carbon chromium bearing steel	
15	Needle roller	High carbon chromium bearing steel	
16	Dust cover	CR	Chloroprene rubber
		FKM	Fluoro rubber
		Si	Silicon rubber
17	C type snap ring	Carbon steel	Nickel plated
18	Exhaust plug	Brass	Electroless nickel plated
19	Exhaust filter	Polyvinyl formal	
20	N.O. spring	Stainless steel spring wire	
21	N.C. spring	Stainless steel spring wire	
22	Rod seal	NBR	
23	Piston seal	NBR	
24	Gasket	NBR	
25	Gasket	NBR	

Replacement parts: Seal kits

Seal kit no.	Description
MHZJ6-PS	Kit includes items 22, 23, 24 and 25 from the table on the left.

* Seal kits consist of items 22, 23, 24 and 25 contained in one kit, and can be ordered using the seal kit number.

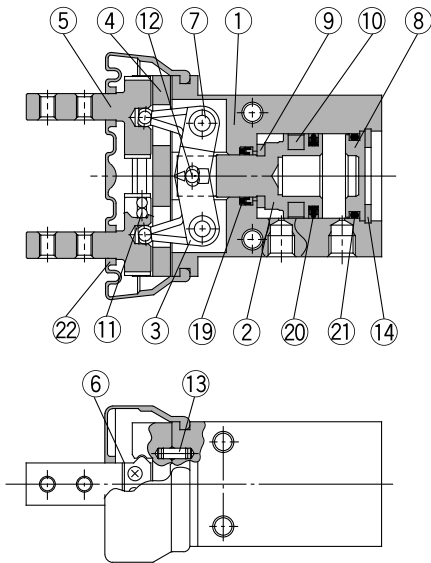
Note) Contact SMC when replacing seals.

Replacement parts: Dust covers

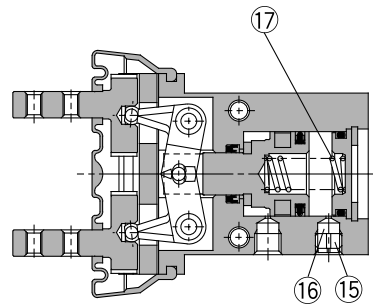
Material	Part no.
CR	MHZJ2-J6
FKM	MHZJ2-J6F
Si	MHZJ2-J6S

Construction/MHZJ2-10□ to 25□

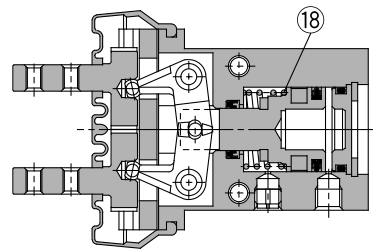
Double acting/with fingers open



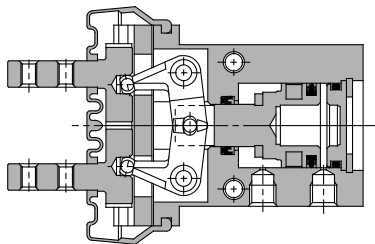
Single acting/normally open



Single acting/normally closed



Double acting/with fingers closed



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	ø10, ø16: Stainless steel ø20, ø25: Aluminum alloy	ø20, ø25: Hard anodized
3	Lever	Stainless steel	Heat treated
4	Guide	Stainless steel	Heat treated
5	Finger	Stainless steel	Heat treated
6	Roller stopper	Stainless steel	
7	Lever shaft	Stainless steel	Nitrided
8	Cap	Aluminum alloy	Hard anodized
9	Bumper	Urethane rubber	
10	Rubber magnet	Synthetic rubber	
11	Steel balls	High carbon chromium bearing steel	
12	Needle roller	High carbon chromium bearing steel	
13	Parallel pin	Stainless steel	
14	C type snap ring	Carbon steel	Nickel plated
15	Exhaust plug A	Brass	Electroless nickel plated
16	Exhaust filter A	Polyvinyl formal	
17	N.O. spring	Stainless steel spring wire	
18	N.C. spring	Stainless steel spring wire	
19	Rod seal	NBR	
20	Piston seal	NBR	
21	Gasket	NBR	
22	Dust cover	CR	Chloroprene rubber
		FKM	Fluoro rubber
		Si	Silicon rubber

Replacement parts: Seal kits

Seal kit no.				Description
MHZJ2-10□	MHZJ2-16□	MHZJ2-20□	MHZJ2-25□	Kits include ^{Note 2)} items 19, 20 and 21 from the table on the left
MHZJ10-PS	MHZJ16-PS	MHZJ20-PS	MHZJ25-PS	

Note 2) Seal kits consist of items 19, 20 and 21 in one kit, and can be ordered using the seal kit number for each cylinder bore size.

Replacement parts: Dust covers

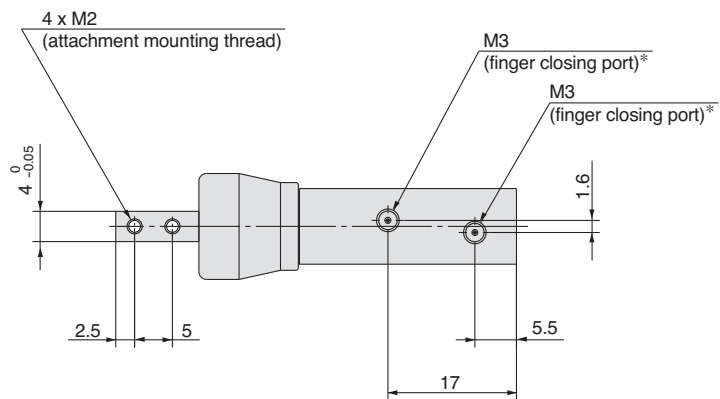
Material	Part no.			
	MHZJ2-10□	MHZJ2-16□	MHZJ2-20□	MHZJ2-25□
CR	MHZJ2-J10	MHZJ2-J16	MHZJ2-J20	MHZJ2-J25
FKM	MHZJ2-J10F	MHZJ2-J16F	MHZJ2-J20F	MHZJ2-J25F
Si	MHZJ2-J10S	MHZJ2-J16S	MHZJ2-J20S	MHZJ2-J25S

Series MHZJ2

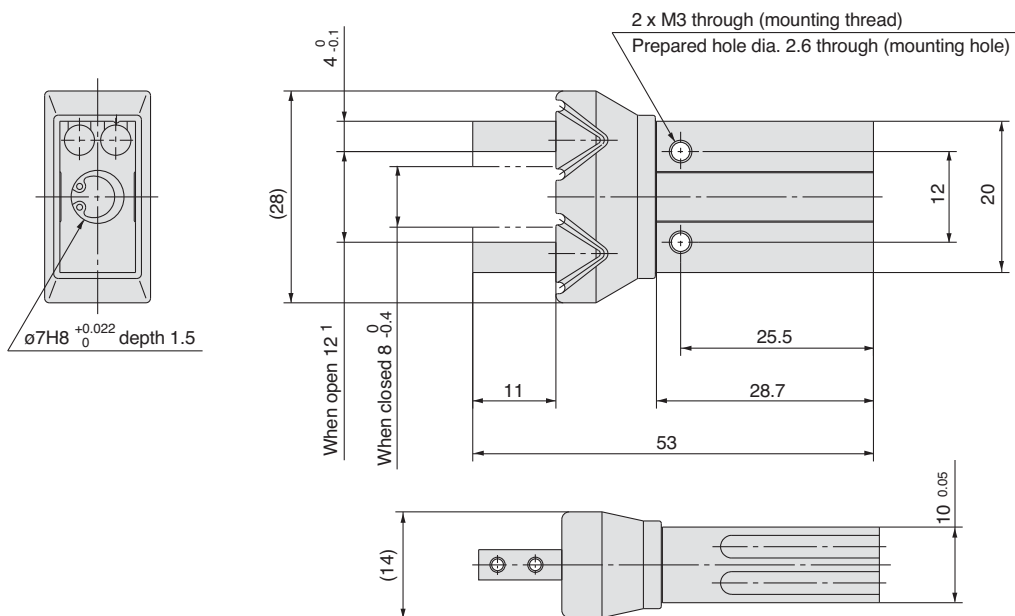
Dimensions

MHZJ2-6□
 Double acting/Single acting
 Basic type

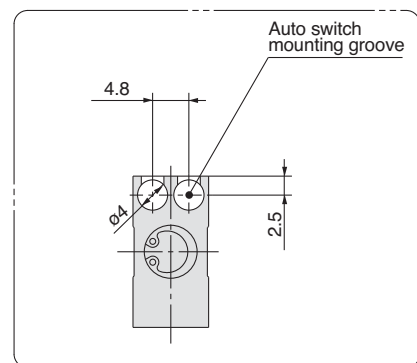
Scale: 100%



* For single action, the port on one side is a breathing hole.

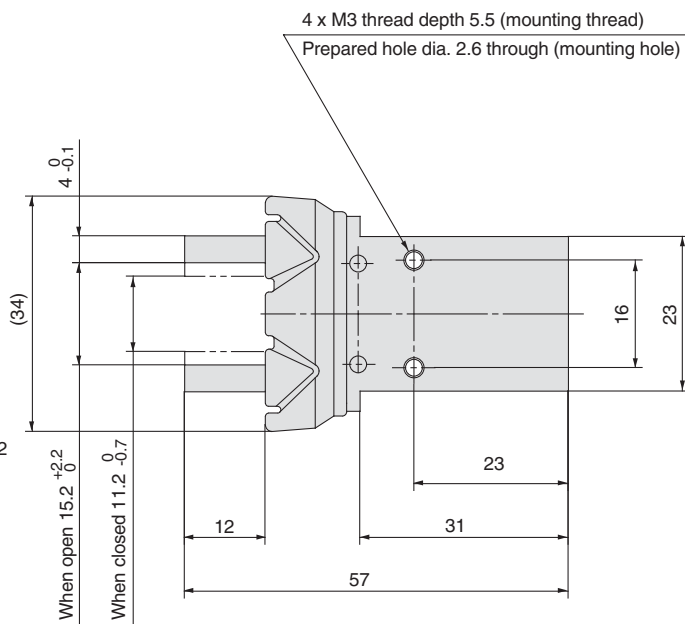
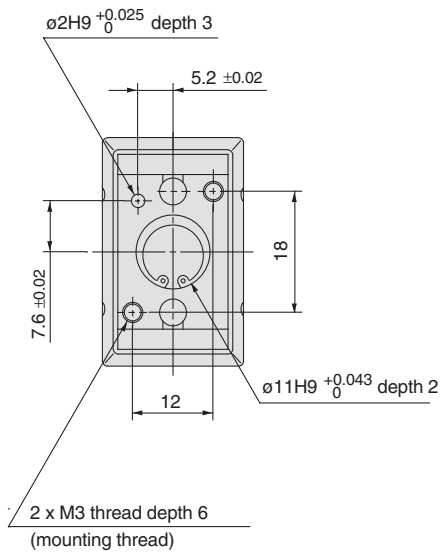
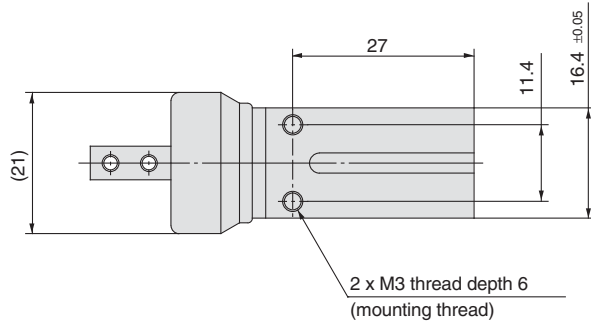


Auto switch mounting groove dimensions

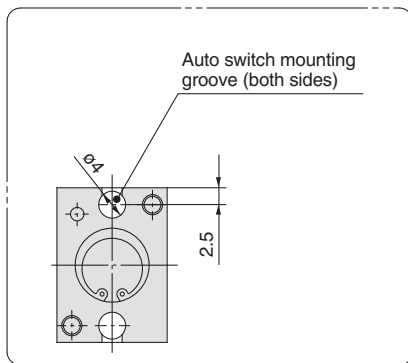


MHZJ2-10
Double acting/Single acting
Basic type

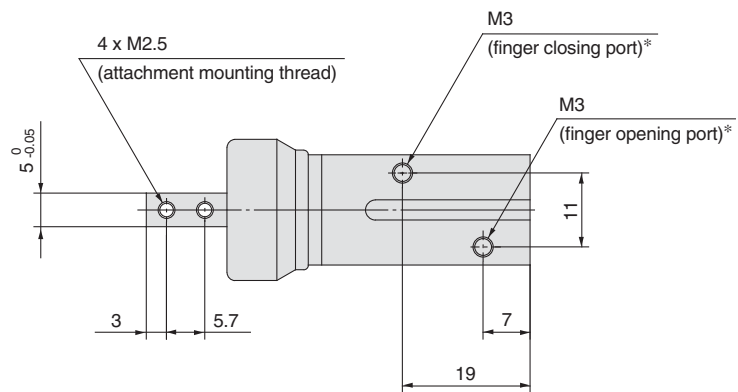
Scale: 90%



Auto switch mounting groove dimensions



Note) When using auto switches, through hole mounting is not possible.



* For single action, the port on one side is a breathing hole.

Series MHZJ2

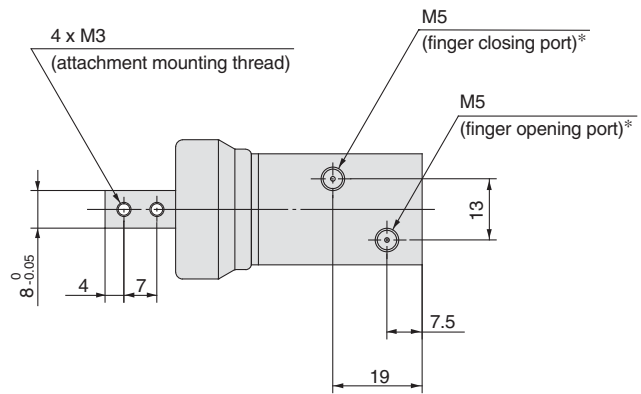
Dimensions

MHZJ2-16□

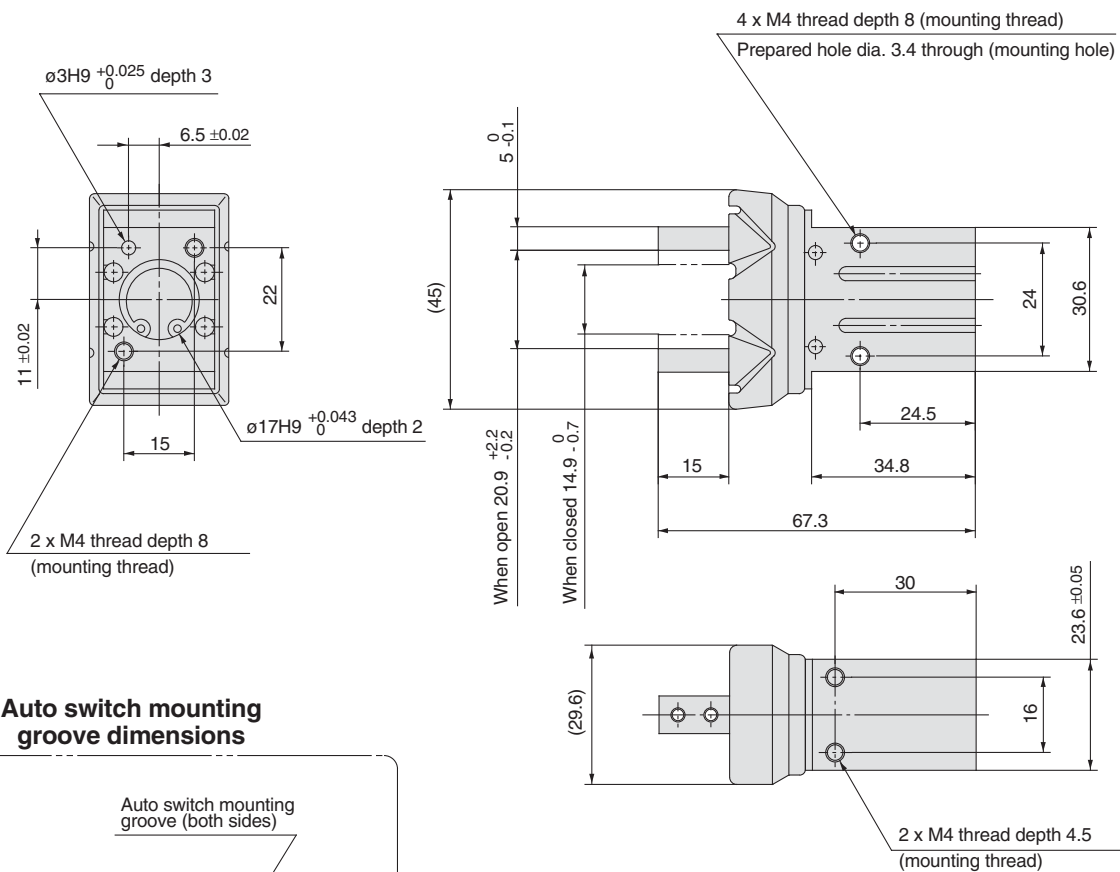
Double acting/Single acting

Basic type

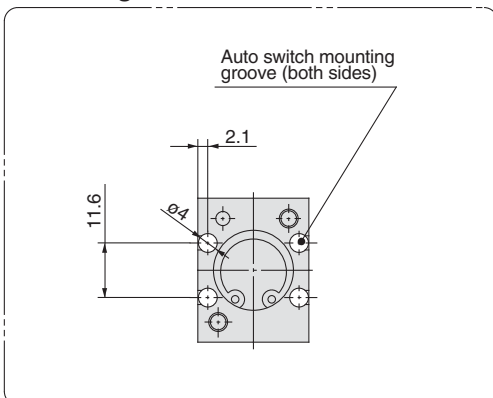
Scale: 60%



* For single action, the port on one side is a breathing hole.

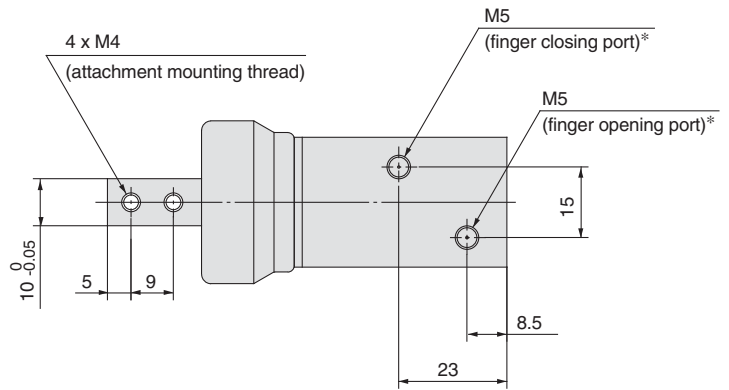


Auto switch mounting groove dimensions

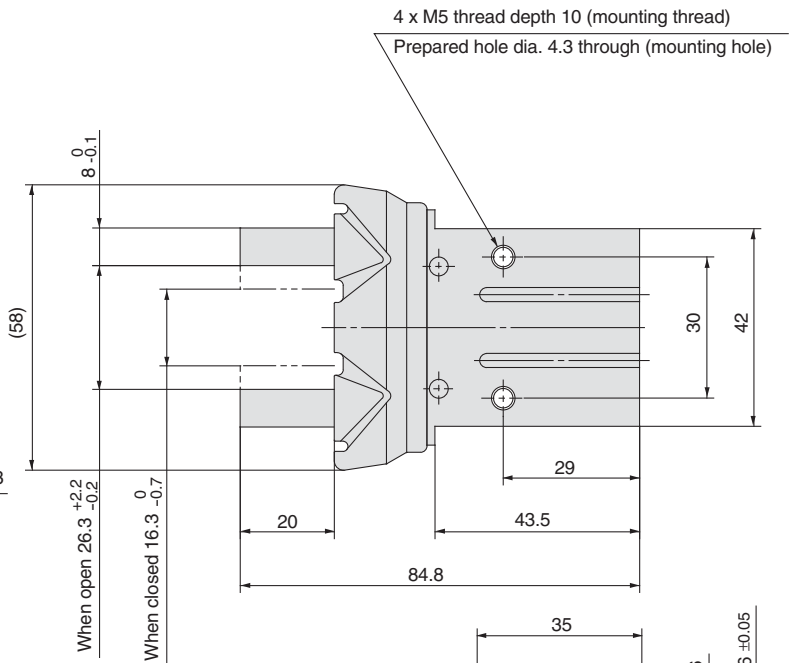
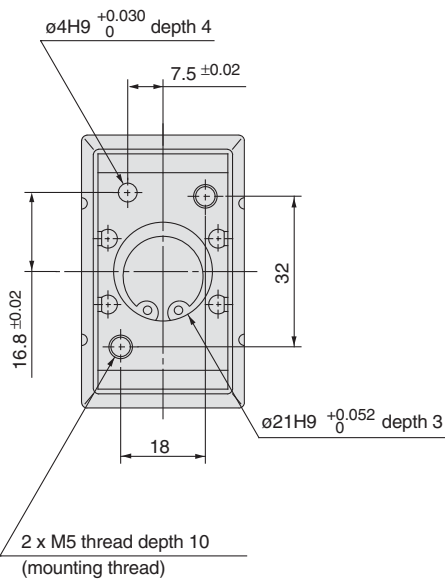


MHZJ2-20□
Double acting/Single acting
Basic type

Scale: 60%



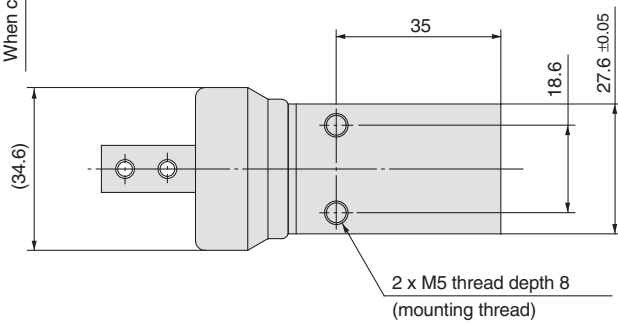
* For single action, the port on one side is a breathing hole.



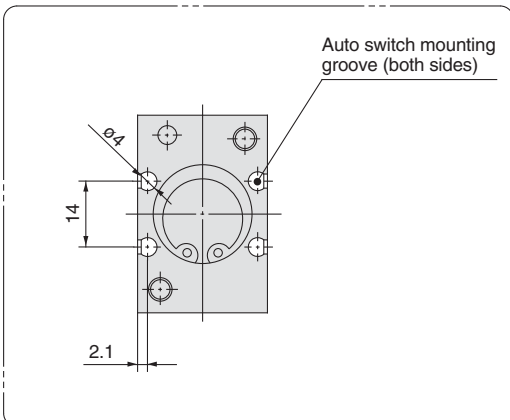
When open $26.3^{+2.2}_{-0.2}$

When closed $16.3^0_{-0.7}$

4 x M5 thread depth 10 (mounting thread)
 Prepared hole dia. 4.3 through (mounting hole)



Auto switch mounting groove dimensions



Series MHZJ2

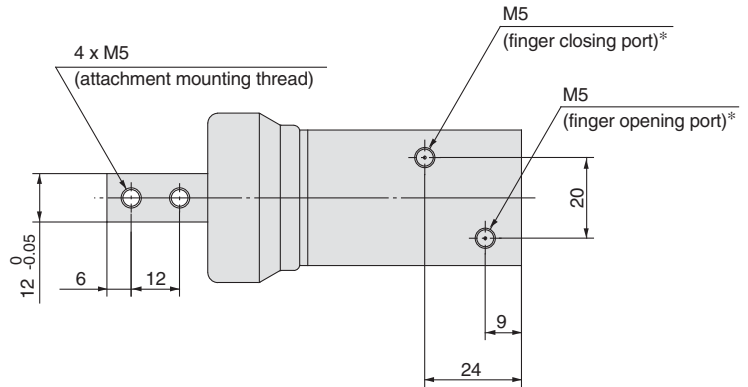
Dimensions

MHZJ2-25□

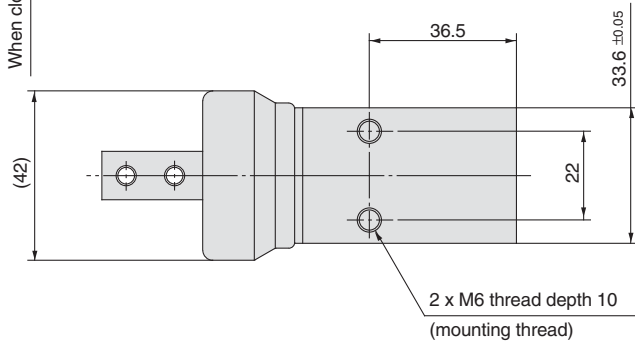
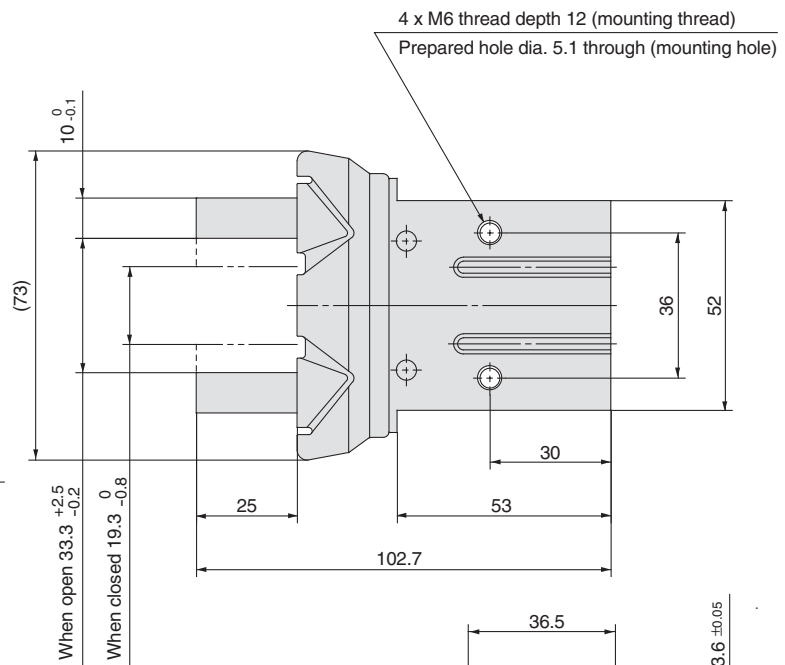
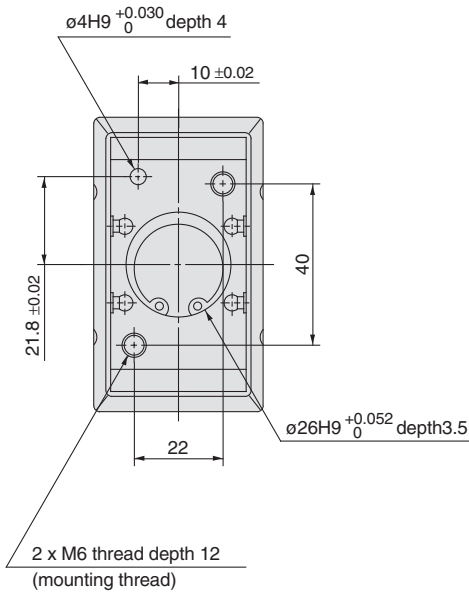
Double acting/Single acting

Basic type

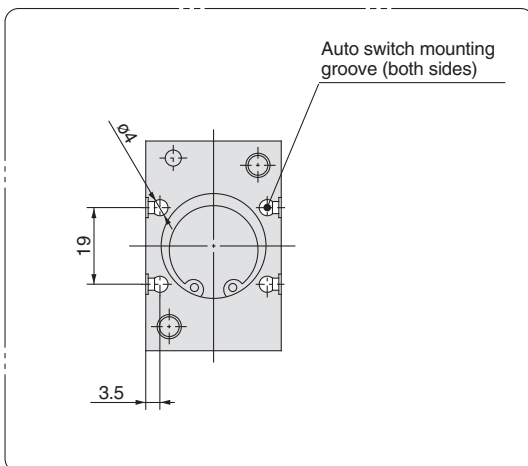
Scale: 50%



* For single action, the port on one side is a breathing hole.



Auto switch mounting groove dimensions



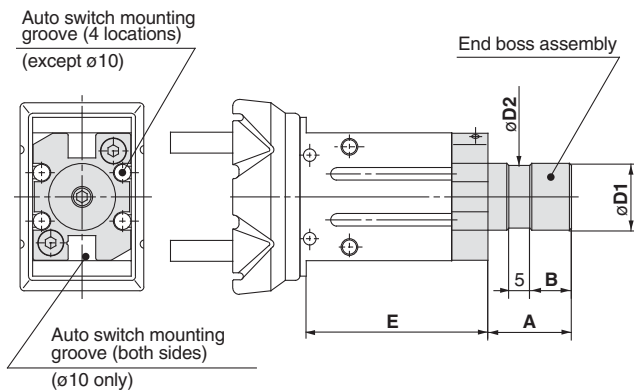
With Dust Cover/Series MHZJ2

Body Options: End Boss Type

Applicable Models

Symbol	Piping port position	Type of piping port				Applicable model		
		MHZJ2-10	MHZJ2-16	MHZJ2-20	MHZJ2-25	Double acting	Single acting	
							Normally open	Normally closed
E	Side ported	M3	M5		●	●	●	
W	Axial port	With $\phi 4$ One-touch fitting for coaxial tube				●	—	—
K		With $\phi 4$ One-touch fitting				—	●	●
M		M5 x 0.8				—	●	●

Side Ported [E]



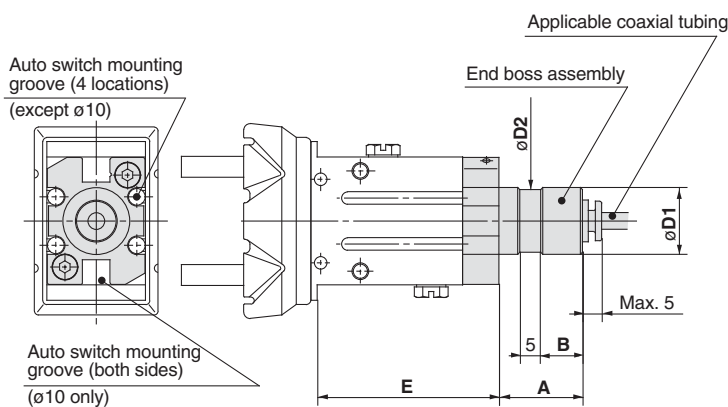
- * Refer to the dimension table.
- * When auto switches are used on $\phi 10$, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E
MHZJ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	40
MHZJ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	43.5
MHZJ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	51.7
MHZJ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	61.3

Other dimensions and specifications correspond to the standard type.

Axial Port (One-touch Fitting for Coaxial Tubing) [W]



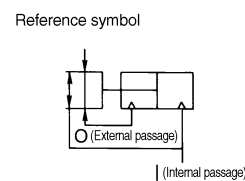
- * Refer to the dimension table.
- * When auto switches are used on $\phi 10$, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E
MHZJ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	40
MHZJ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	43.5
MHZJ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	51.7
MHZJ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	61.3

Other dimensions and specifications correspond to the standard type.

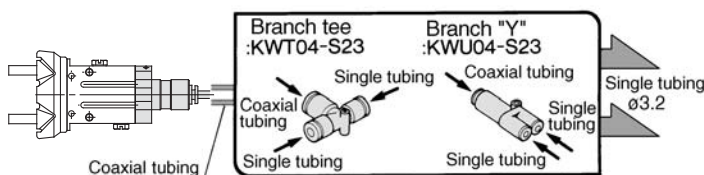
Applicable coaxial tubing



Specification	Model	TW04B-20
Outside diameter		4mm
Max. operating pressure		0.6MPa
Min. bending radius		10mm
Operating temperature		-20 to 60°C
Material		Nylon 12

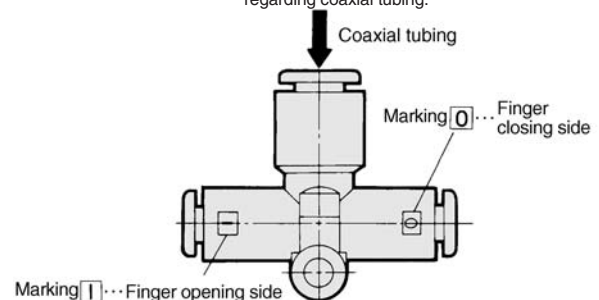
Changing from Coaxial to Single Tubing

Changing to single tubing is possible by using a branch "Y" or branch tee fitting. In this case particularly, single tube fittings and tubing for $\phi 3.2$ will be necessary.



Branch tee, Different diameter tee, Branch "Y", Male run tee

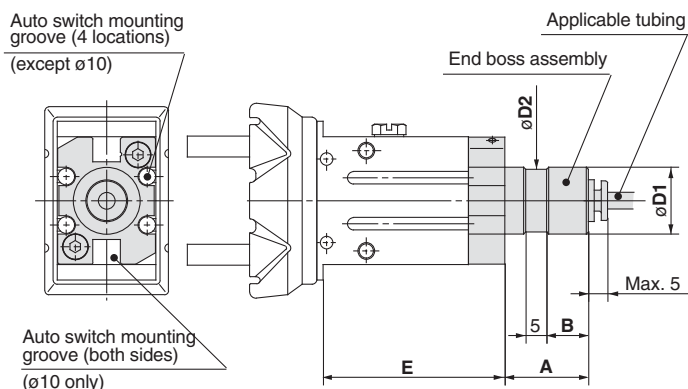
Refer to catalogue CAT.E004-A "Coaxial Air Tubing System" regarding coaxial tubing.



With Dust Cover/Series MHZJ2

Body Options: End Boss Type

Axial Port (with One-touch Fitting) [K]



- * Refer to the dimension table.
- * When auto switches are used on ø10, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E
MHZJ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	40
MHZJ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	43.5
MHZJ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	51.7
MHZJ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	61.3

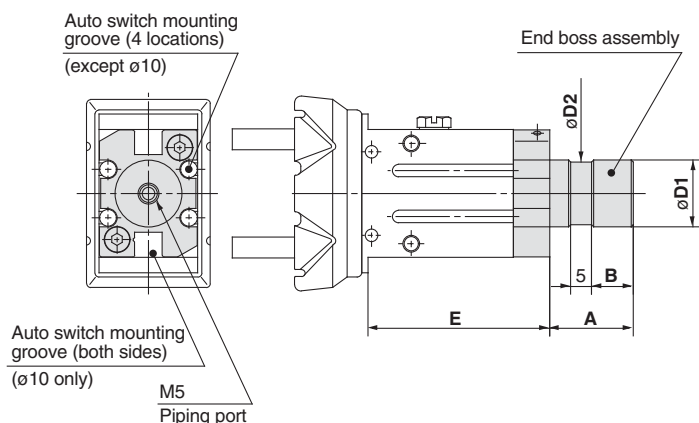
Other dimensions and specifications correspond to the standard type.

Applicable tubing

Description/ Model	Nylon tubing	Soft nylon tubing	Polyurethane tubing	Polyurethane coiled 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 catalog CAT. E501-B "Air Fittings and Tubing" regarding One-touch fittings and tubing.

Axial Port (M5 Port) [M]



- * Refer to the dimension table.
- * When auto switches are used on ø10, side mounting with through holes is not possible.

Unit: mm

Model	A	B	D1	D2	E
MHZJ2-10□□	15	7	12f8 ^{-0.016} _{-0.043}	11	40
MHZJ2-16□□	20	10	16f8 ^{-0.016} _{-0.043}	15	43.5
MHZJ2-20□□	22	12	20f8 ^{-0.020} _{-0.053}	19	51.7
MHZJ2-25□□	25	15	25f8 ^{-0.020} _{-0.053}	24	61.3

Other dimensions and specifications correspond to the standard type.

Weights

Unit: g

Model	End boss type (symbol)			
	E	W	K	M
MHZJ2-10□□	70	70	70	70
MHZJ2-16□□	165	165	165	165
MHZJ2-20□□	290	290	290	290
MHZJ2-25□□	525	525	525	525

Series MHZ2/MHZ□2 Auto Switch Installation Examples and Mounting Position

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

1) Detection when Gripping Exterior of Workpiece

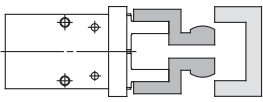
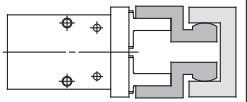
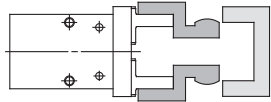
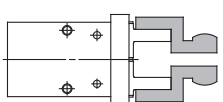
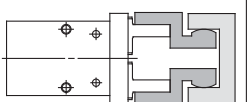
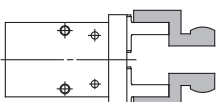
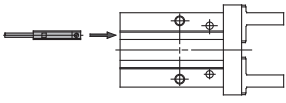
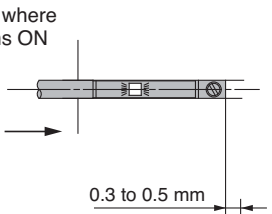
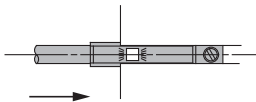
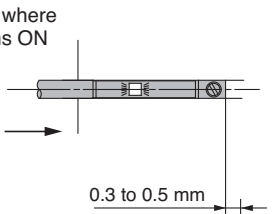
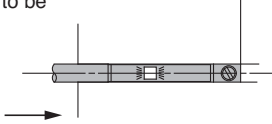
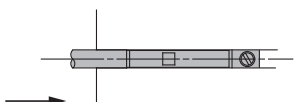
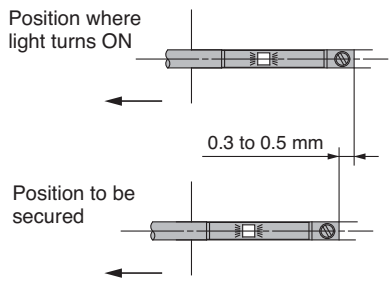
Detection example		1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected		Position of fingers fully opened	Position when gripping workpiece	Position of fingers fully closed
Operation of auto switch		Auto switch turned 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.	●	●	●
	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 switch installation groove in the direction shown in the following drawing.0		
		<p>Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.</p> <p>Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out.</p> <p>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.</p> <p>Position where light turns ON</p> <p>Position to be secured</p> <p>0.3 to 0.5 mm</p>	<p>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.</p> <p>Position where light turns ON</p> <p>Position to be secured</p> <p>0.3 to 0.5 mm</p>	

Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.

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.

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

2) Detection when Gripping Interior of Workpiece

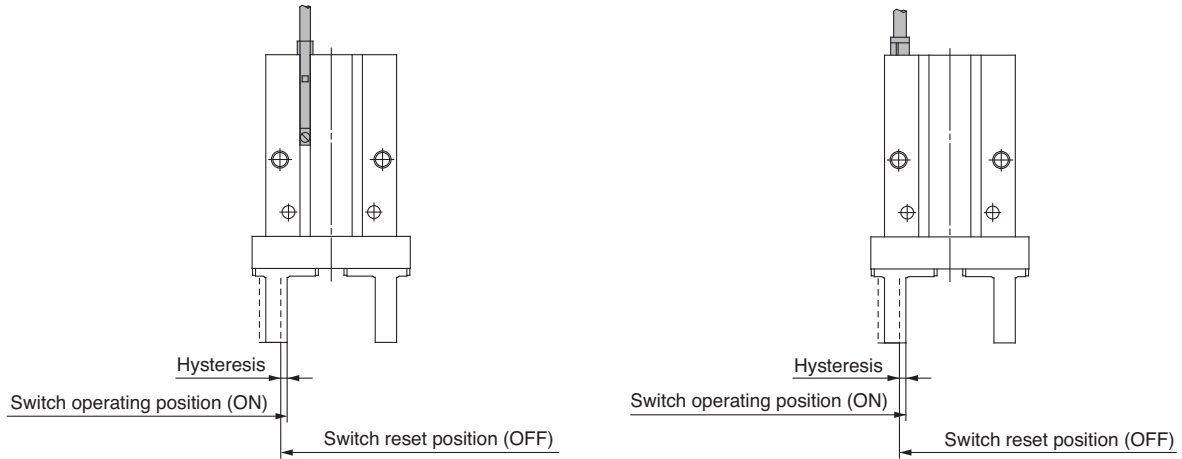
Detection example		1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected	Position of fingers fully closed 	Position when gripping workpiece 	Position of fingers fully opened 	
Operation of auto switch	Auto switch turned 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.	●	●	●
	Two auto switches *Two positions of ①, ②, and ③ can be detected.	●	●	—
		—	●	●
Pattern	●	—	●	
How to determine auto switch installation position	Step 1) Fully close the fingers. 	Step 1) Position fingers for gripping a workpiece. 	Step 1) Fully open 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 switch installation groove in the direction shown in the following drawing. 			
	Step 3) Move the auto switch in the direction of the arrow and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates. 	Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates. 		
	Position where light turns ON  0.3 to 0.5 mm Position to be secured 	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 0.3 to 0.5 mm in the direction indicated by the arrow from its location when the indicator light comes on again. 		

Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.

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

Auto switches have hysteresis similar to micro switches. Use the table below as a guide when adjusting auto switch positions, etc.



Hysteresis

Auto switch model	D-Y59A/Y59B D-Y69A/Y69B D-Y7P(V) D-Y7□W(V)	D-F8□	D-M9□(V) D-M9□W(V) D-M9□A(V)
Air gripper model			
MHZ2-6□	No setting	0.5	0.5
MHZ2-10□, MHZL2-10□	0.5	0.5 ^{Note)}	0.5 ^{Note)}
MHZ2-16□, MHZL2-16□	0.5	0.5	0.5
MHZ2-20□, MHZL2-20□	0.5	0.5	0.8
MHZ2-25□, MHZL2-25□	0.5	0.5	0.5
MHZ2-32□	0.5	0.5	0.7
MHZ2-40□	0.5	0.5	0.9
MHZJ2-6□	No setting	0.5	0.5
MHZJ2-10□		0.5	0.5
MHZJ2-16□		0.5	0.5
MHZJ2-20□		0.5	0.8
MHZJ2-25□		0.5	0.5

Note) When mounting D-M9□(V), M9□W(V) and M9□A(V) on MHZ2-10□ and MHZL2-10, mounting brackets (BMG2-012) are required.

Auto Switch Mounting

Applicable models:

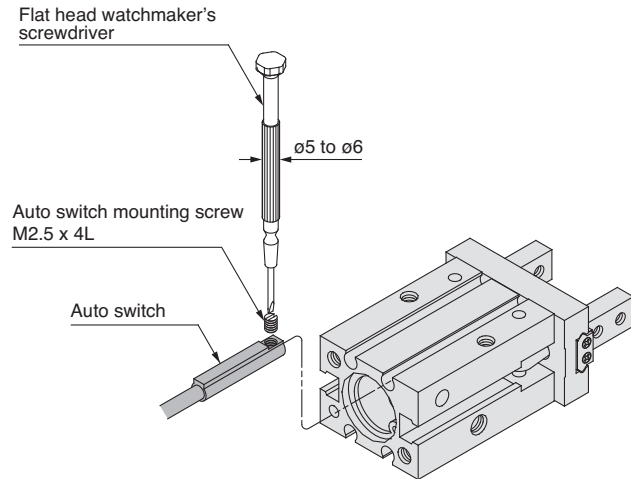
MHZ2-6

Series MHZJ2

Round groove of Series MHZ2

Round groove of Series MHZL2

To set the auto switch, insert the auto switch into the auto switch installation groove of the gripper from the direction indicated in the following drawing. After setting the position, tighten the attached auto switch mounting screw with a flat head watchmaker's screwdriver.



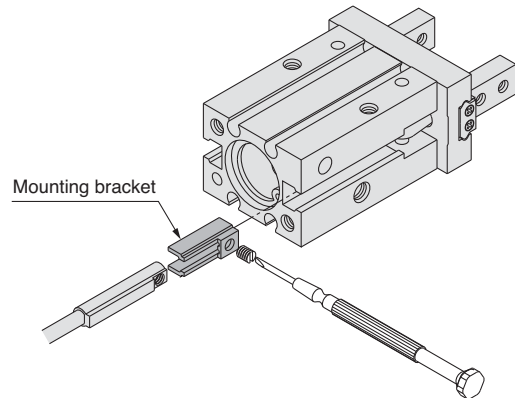
Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be 0.05 to 0.15 N·m.

Applicable models:

Square groove on the side of Series MHZ2

Square groove on the side of Series MHZL2

- (1) To set the auto switch, insert the auto switch into the installation groove of the cylinder as shown below and set it roughly.
- (2) Insert the auto switch into the auto switch bracket installation groove.
- (3) After confirming the detecting position, tighten the set screws (M2.5) attached to the auto switch and set it.
- (4) Be sure to change the detecting position in the state of (2).



Auto Switch Mounting Bracket: Part No.

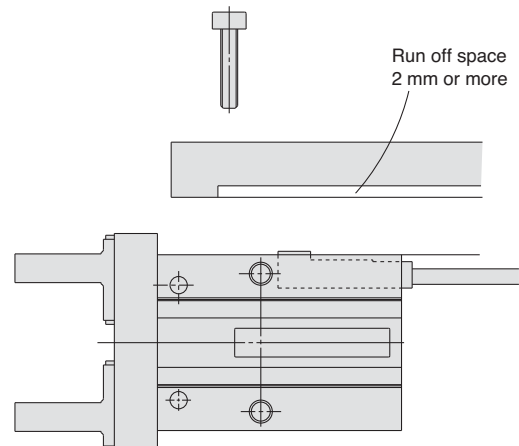
Auto switch part no.	Auto switch mounting bracket part no.
D-M9□(V)	BMG2-012
D-M9□W(V)	
D-F8□	
D-M9□A(V)	

Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the set screws (M2.5). The tightening torque should be 0.05 to 0.1 N·m. As a guide, it should be turned about 90° beyond the point at which tightening can be felt.

Note) D-F8□ cannot be mounted on MHZ2-10□, MHZJ2-10□ and MHZL2-10□

[Handling of Mounting Brackets: Precautions]

When auto switch is set on the mounting side as shown below, allow at least 2 mm run off space on mounting plate since the auto switch is protruded from the gripper edge.



Protrusion of Auto Switch from Edge of Body

The amount of auto switch protrusion from the body's end surface is as shown in the table below.
 Use this as a standard when mounting, etc.
 D-F8□ has no protrusion from the body's end surface.
 The end boss type has no protrusion either.

Standard Body

Lead wire type		Explanatory drawing	In-line electrical entry type			Perpendicular electrical entry type			
			D-Y59□ D-Y7P D-Y7□W	D-M9□ D-M9□W	D-M9□A	D-Y69□ D-Y7PV D-Y7□WV	D-M9□V D-M9□WV	D-M9□AV	
Air gripper model	Finger position								
Standard	MHZ2-6□	Open	No setting	11	13	No setting	9	11	
		Close		13	15		11	13	
	MHZ2-10□	Open	1	3.5 ^{Note 3)}	5.5 ^{Note 3)}	—	1.5 ^{Note 3)}	3.5 ^{Note 3)}	
		Close	7.5	6.5 ^{Note 3)}	8.5 ^{Note 3)}	6.5	4.5 ^{Note 3)}	6.5 ^{Note 3)}	
	MHZ2-16□	Open	—	1	3	—	—	—	
		Close	6	4	6	5	2	4	
	MHZ2-20□	Open	—	—	—	—	—	—	
		Close	4	2	4	3	—	—	
	MHZ2-25□	Open	—	—	—	—	—	—	
		Close	1	—	—	—	—	—	
	MHZ2-32□	Open	—	—	—	—	—	—	
		Close	3	—	—	2	—	—	
	MHZ2-40□	Open	—	—	—	—	—	—	
		Close	2	—	—	1	—	—	
	With dust cover	MHZJ2-6□	Open	No setting	11	13	No setting	9	11
			Close		13	15		11	13
		MHZJ2-10□	Open		5	7		3	5
			Close		7	9		5	7
		MHZJ2-16□	Open		2	4		—	—
			Close		5	7		3	5
		MHZJ2-20□	Open		—	—		—	—
			Close		3	5		1	3
		MHZJ2-25□	Open		—	—		—	—
			Close		2	4		—	—
Long stroke	Double acting	MHZL2-10D	Open	0.5	1.5 ^{Note 3)}	3.5 ^{Note 3)}	—	—	
			Close	8.5	8 ^{Note 3)}	10 ^{Note 3)}	7.5	6 ^{Note 3)}	8 ^{Note 3)}
		MHZL2-16D	Open	—	—	—	—	—	—
			Close	8	6	8	7	4	6
		MHZL2-20D	Open	—	—	—	—	—	—
			Close	7	5	7	6	3	5
	MHZL2-25D	Open	—	—	—	—	—	—	
		Close	5.5	3.5	5.5	4.5	1.5	3.5	
	Single acting (Normally open)	MHZL2-10S	Open	—	—	—	—	—	
			Close	—	—	—	—	—	
		MHZL2-16S	Open	—	—	—	—	—	
			Close	3	1	3	2	—	—
		MHZL2-20S	Open	—	—	—	—	—	
			Close	1	—	—	—	—	
	MHZL2-25S	Open	—	—	—	—	—		
		Close	—	—	—	—	—		
	Single acting (Normally closed)	MHZL2-10C	Open	—	—	—	—	—	
			Close	5.5	5 ^{Note 3)}	7 ^{Note 3)}	4.5	3 ^{Note 3)}	5 ^{Note 3)}
MHZL2-16C		Open	—	—	—	—	—		
		Close	5.5	3.5	5.5	4.5	1.5	3.5	
MHZL2-20C		Open	—	—	—	—	—		
		Close	3.5	1.5	3.5	2.5	—	—	
MHZL2-25C	Open	—	—	—	—	—			
	Close	1.5	—	—	0.5	—	—		

Note 1) There is no protrusion if no values are entered in the table.

Note 2) The actual mounting position should be adjusted after confirming the auto switch operating conditions.

Note 3) When mounting D-M9□(V), M9□W(V) and M9□A(V) on MHZ2-10□ and MHZL2-10, mounting brackets (BMG2-012) are required.

Series MHZ Order Made Specifications

Contact SMC for detailed dimensions, specifications and lead times.

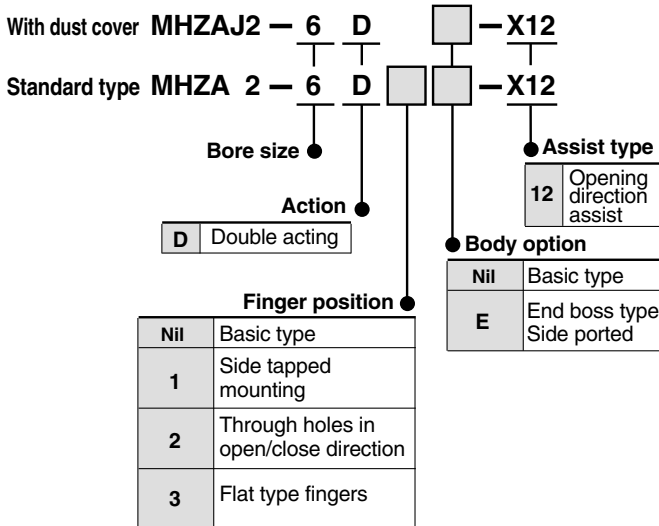


Symbol

X7
- X12

1 Spring Assisted Type

Compact Type/MHZA2-6, MHZAJ2-6

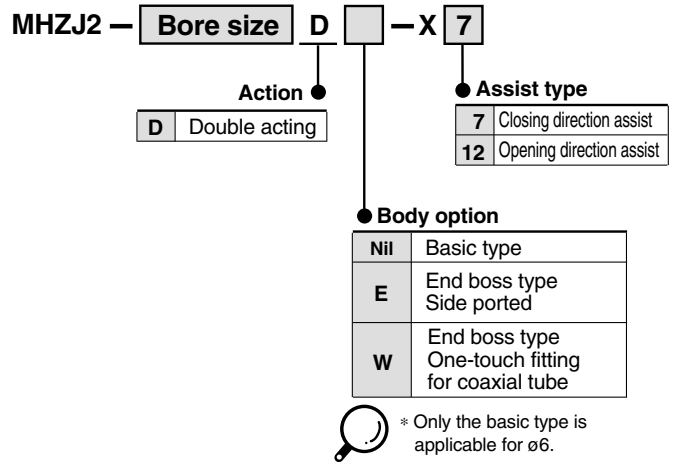


Specifications

Type	Spring assisted type
Bore size	6
Action	Double acting
Fluid	Air

Note) Dimensions are the same as the standard type.

With Dust Cover/MHZJ2

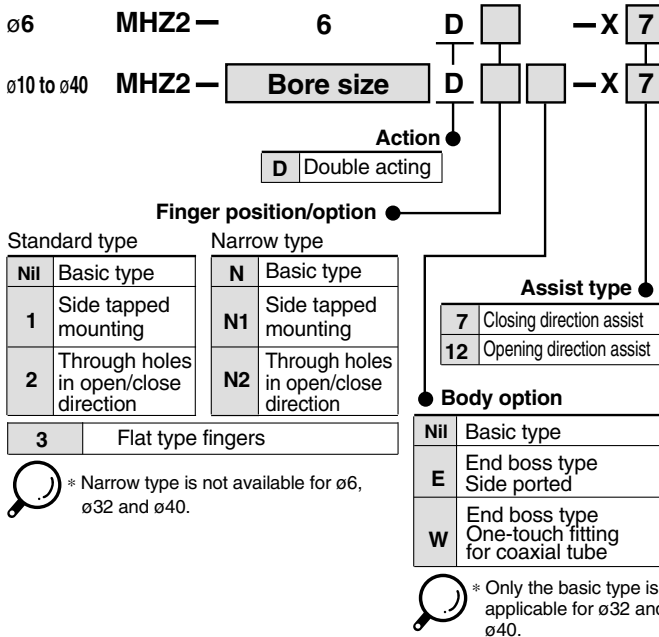


Specifications

Type	Spring assisted type
Bore size	6, 10, 16, 20, 25
Action	Double acting
Fluid	Air

Note) Dimensions are the same as the standard type.

Standard Type/MHZ2

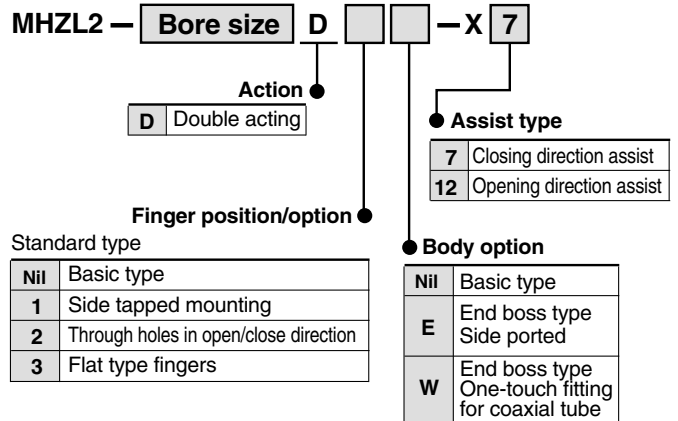


Specifications

Type	Spring assisted type
Bore size	6, 10, 16, 20, 25, 32, 40
Action	Double acting
Fluid	Air

Note) Dimensions of ø6 to ø25 are the same as the standard type. Dimensions of ø32 and ø40 are the same as the standard single acting type.

Long Stroke/MHZL2



Specifications

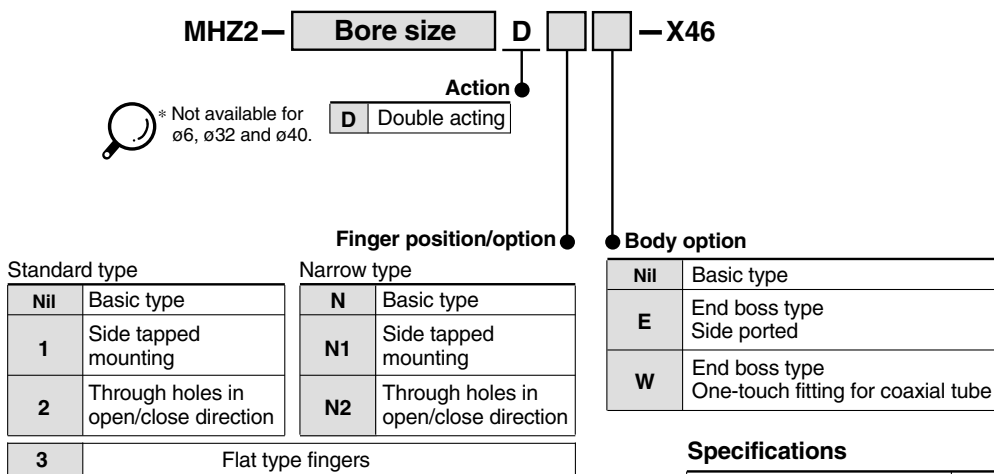
Type	Spring assisted type
Bore size	10, 16, 20, 25
Action	Double acting
Fluid	Air

Note) Dimensions are the same as the single acting type.

2 With Needle (with Variable Throttle)

-X46

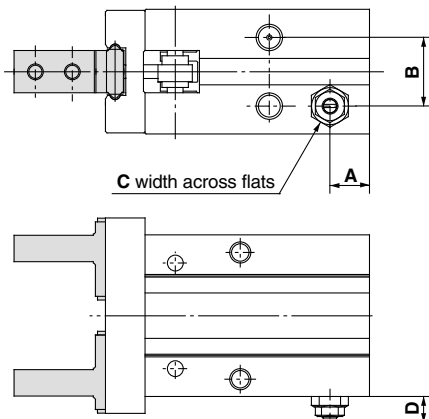
Installation of a variable throttle allows adjustment of the finger opening/closing speed.



Specifications

Type	With needle
Bore size	10, 16, 20, 25
Action	Double acting
Fluid	Air

Dimensions



Model	A	B	C	D*
MHZ2-10D□□-X46	9	11	4.5	5.2
MHZ2-16D□□-X46	7.5	13	7	5.8
MHZ2-20D□□-X46	10	15	7	6
MHZ2-25D□□-X46	10.7	20	7	6.2

Dimensions other than the above are identical to the standard type; refer to pages 5-24 through 5-28.

* Reference values to establish criteria for needle adjustment.

Adjust so that the finger opening/closing speed will be no greater than necessary. If the finger opening/closing speed is greater than necessary, impact forces acting on the fingers and other parts will increase. This can cause a loss of repeatability when gripping work pieces and have an adverse effect on the life of the unit.

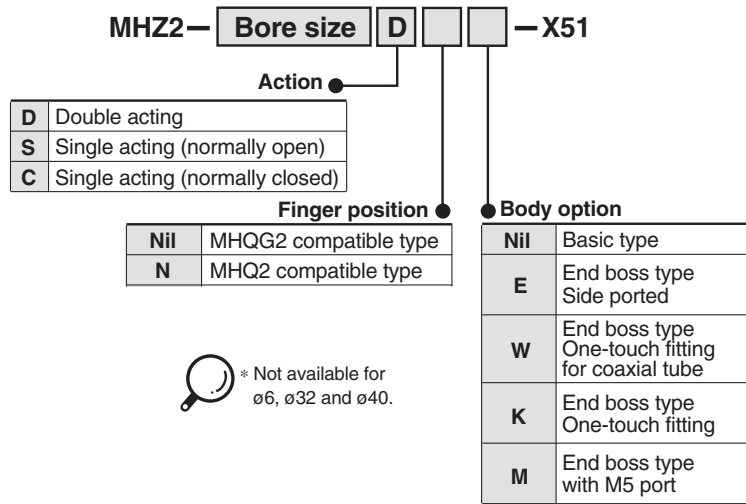
Guide for internal needle adjustment

Model	Number of rotations from fully closed needle condition ^{Note 1)}
MHZ2-10D□□-X46	1/4 to 1/2
MHZ2-16D□□-X46	1/2 to 1
MHZ2-20D□□-X46	1 to 1 1/2
MHZ2-25D□□-X46	1 1/2 to 2

Note 1) The condition in which the needle is tightened gently until it stops.

3 MHQ2/MHQG2 Compatible Flat Finger Type

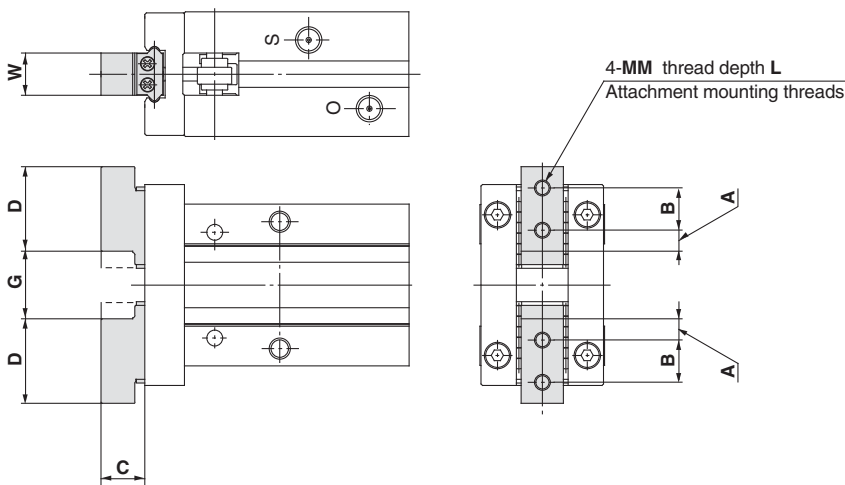
The flat finger type can be selected depending on the intended application.



Specifications

Type	Flat finger type
Bore size	10, 16, 20, 25
Action	Double acting, Single acting (normally open, normally closed)
Fluid	Air

Dimensions



Unit: mm

Model		A	B	C	D	G		MM	L	W
						Open	Closed			
MHZ2-10□□□-X51	MHQG2 compatible	3	6	5.2	12	9.7 ^{+2.2} ₀	5.7 ⁰ _{-0.4}	M2	3.6	5 ⁰ _{-0.05}
	MHQ2 compatible	2	5	5.2	9	9.7 ^{+2.2} ₀	5.7 ⁰ _{-0.4}	M2	3.6	5 ⁰ _{-0.05}
MHZ2-16□□□-X51	MHQG2 compatible	4	8	8.3	16	12.6 ^{+2.2} ₀	6.6 ⁰ _{-0.4}	M3	6	8 ⁰ _{-0.05}
	MHQ2 compatible	2.5	7	8.3	12	12.6 ^{+2.2} ₀	6.6 ⁰ _{-0.4}	M3	6	8 ⁰ _{-0.05}
MHZ2-20□□□-X51	MHQG2 compatible	5	10	10.5	20.8	17.2 ^{+2.2} ₀	7.2 ⁰ _{-0.4}	M4	8	10 ⁰ _{-0.05}
	MHQ2 compatible	3.3	9	10.5	15.5	17.2 ^{+2.2} ₀	7.2 ⁰ _{-0.4}	M4	8	10 ⁰ _{-0.05}
MHZ2-25□□□-X51	MHQG2 compatible	6.5	12	13.1	25	22.8 ^{+2.5} ₀	8.8 ⁰ _{-0.4}	M5	10	12 ⁰ _{-0.05}
	MHQ2 compatible	3.5	12	13.1	19	22.8 ^{+2.5} ₀	8.8 ⁰ _{-0.4}	M5	10	12 ⁰ _{-0.05}

Dimensions other than the above are identical to the standard type; refer to pages 5-24 through 5-28

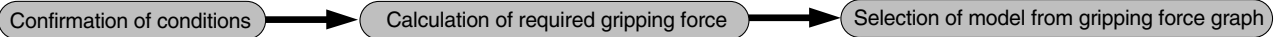
Series MHZ Model Selection

Model Selection

Selection procedure



Step 1 Confirmation of gripping force



Example Work piece weight: 0.1kg

Gripping method: External gripping

Model selection criteria with respect to work piece weight

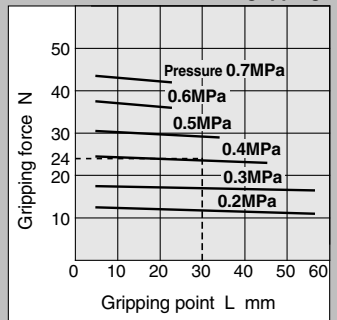
- Although differences will exist depending upon factors such as shape and the coefficient of friction between the attachments and the work pieces, select a model which will provide a gripping force at least 10 to 20 times ^{Note)} greater than the work piece weight.

Note) For further details, refer to the model selection illustration.

- 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 20 times or more above the work piece weight.
Required gripping force = 0.1kg x 20 x 9.8m/s² (approx.) 19.6N or more

MHZ□2-16 External gripping



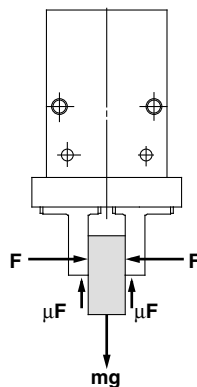
- Selecting MHZ□2-16D. A gripping force of 24N is obtained from the intersection point of gripping point distance L = 30mm and pressure of 0.4MPa.

- The gripping force is 24.5 times greater than the work piece weight, and therefore satisfies a gripping force setting value of 20 times or more.

Gripping point distance: L = 30mm

Operating pressure: 0.4MPa

Model selection illustration



When gripping a work piece as in the figure to the left, and with the following definitions,

F: Gripping force (N)

μ: Coefficient of friction between the attachments and the work piece

m: Work piece mass (kg)

g: Gravitational acceleration (= 9.8m/s²)

mg: Work piece weight (N)

the conditions under which the work piece will not drop are

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

↑
Number of fingers

and therefore,

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

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

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

"Gripping force at least 10 to 20 times the work piece weight"

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

When $\mu = 0.2$	When $\mu = 0.1$
$F = \frac{mg}{2 \times 0.2} \times 4$	$F = \frac{mg}{2 \times 0.1} \times 4$
$= 10 \times mg$	$= 20 \times mg$

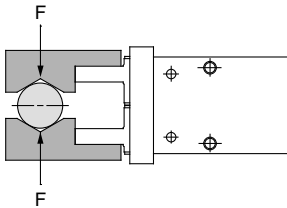
10 x work piece weight

20 x work piece weight

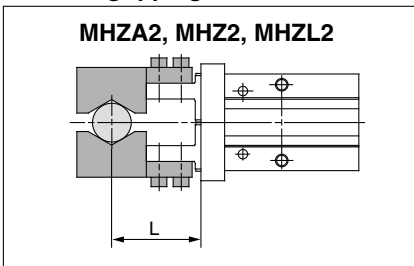
Note) Even in cases where the coefficient of friction is greater than $\mu = 0.2$, for reasons of safety, select a gripping force which is at least 10 to 20 times greater than the work piece weight, as recommended by SMC. It is necessary to allow a greater safety margin for high accelerations and strong impacts, etc.

Step 1 Effective gripping force: Series MHZ□2/Double acting/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 impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

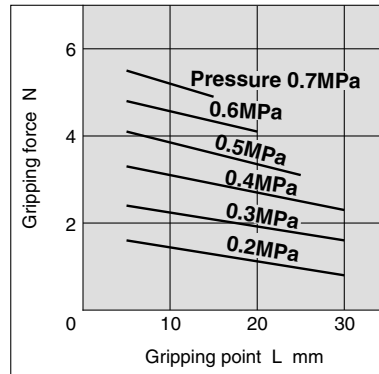


External gripping

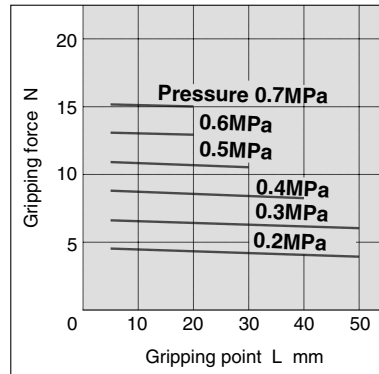


External gripping force

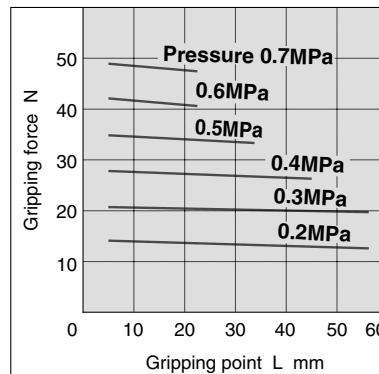
MHZ2-6D/MHZA2-6D



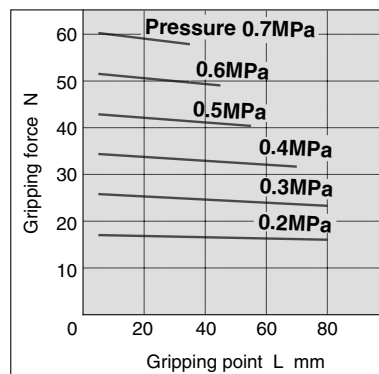
MHZ2-10D/MHZA2-10D



MHZ2-16D/MHZA2-16D

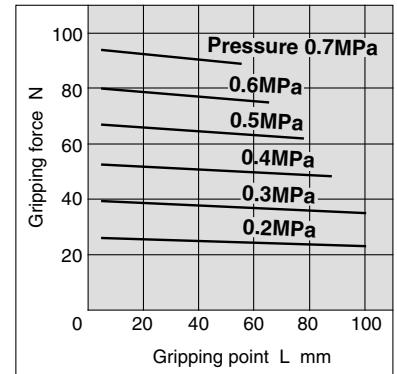


MHZ2-20D/MHZA2-20D

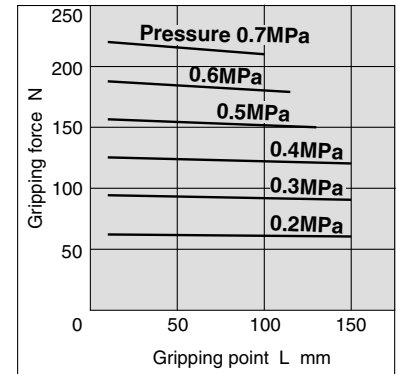


External gripping force

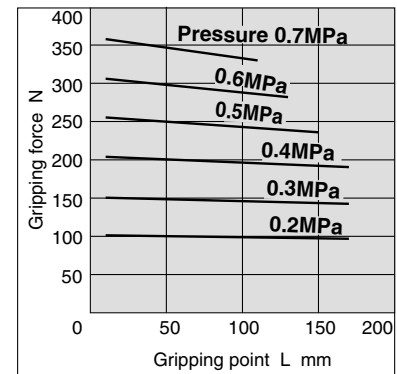
MHZ2-25D/MHZA2-25D



MHZ2-32D



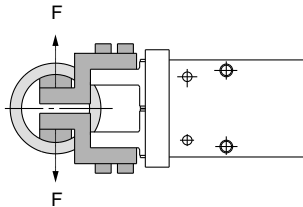
MHZ2-40D



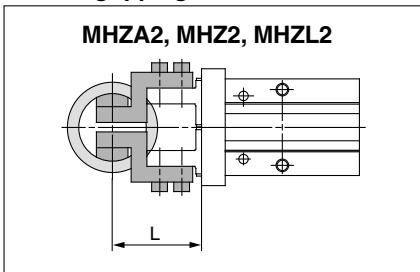
Model Selection

Step 1 Effective gripping force: Series MHZ□2/Double acting/Internal 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 impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

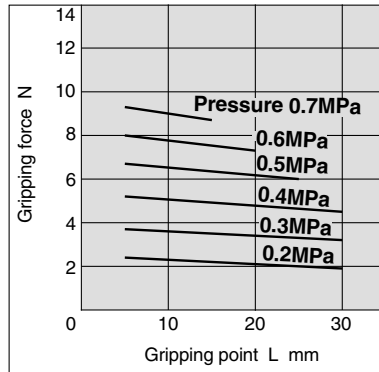


Internal gripping

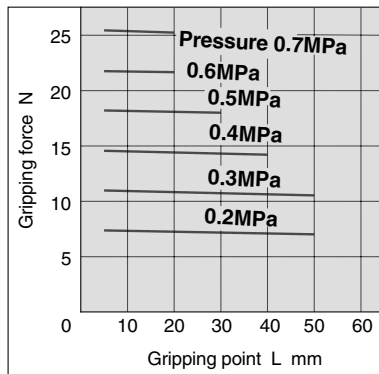


Internal gripping force

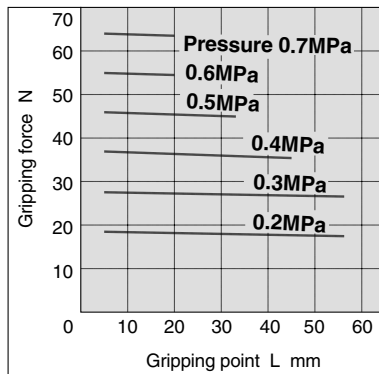
MHZ2-6D/MHZA2-6D



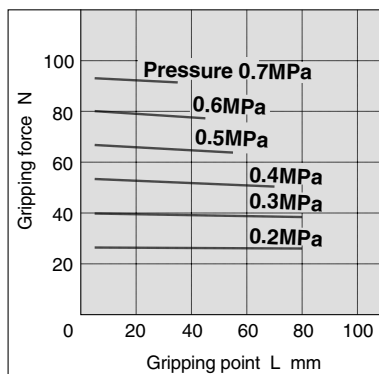
MHZ2-10D/MHZA2-10D



MHZ2-16D/MHZA2-16D

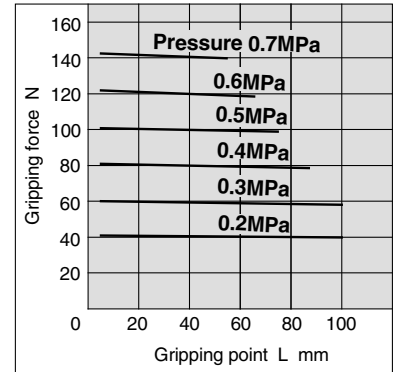


MHZ2-20D/MHZA2-20D

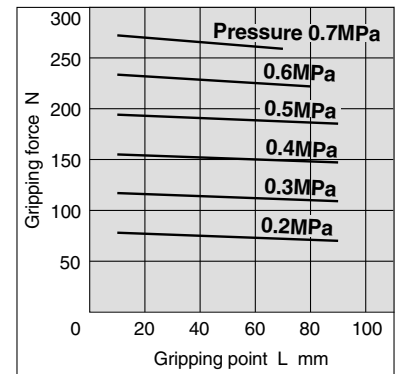


Internal gripping force

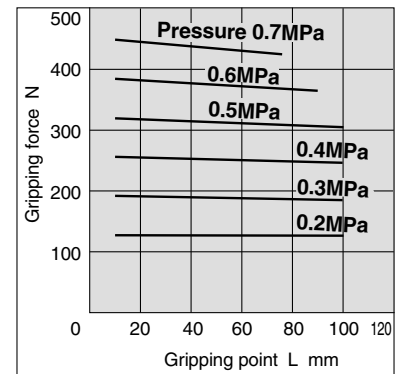
MHZ2-25D/MHZA2-25D



MHZ2-32D

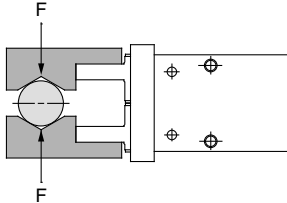


MHZ2-40D

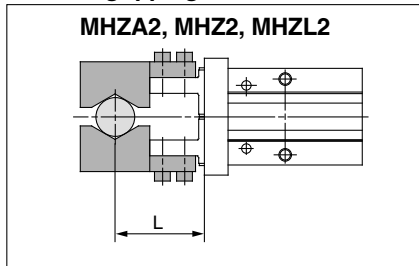


Step 1 Effective gripping force: Series MHZ 2/Single acting/External gripping force

- Expressing the effective gripping force
The effective gripping force shown in the graphs to the right is expressed as F, which is the impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

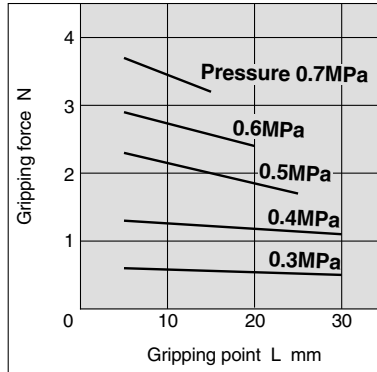


External gripping



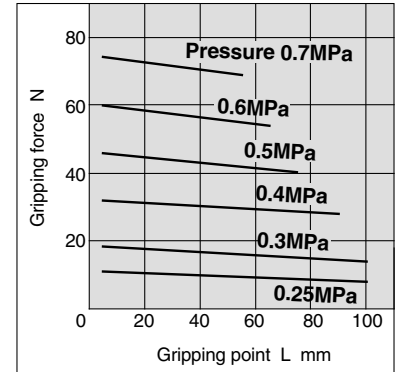
External gripping force

MHZ2-6S/MHZA2-6S

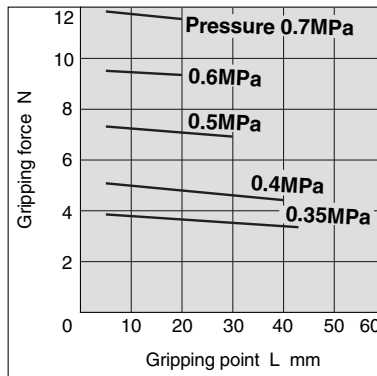


External gripping force

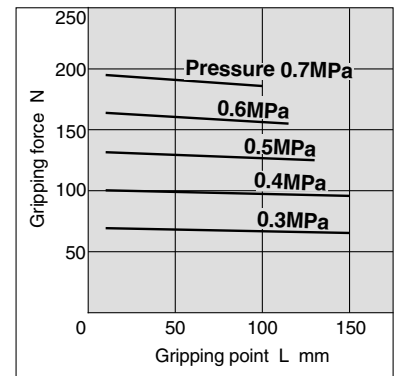
MHZ2-25S/MHZL2-25S



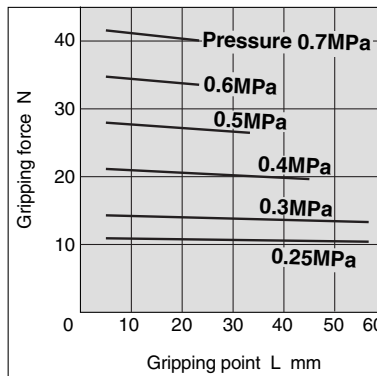
MHZ2-10S/MHZL2-10S



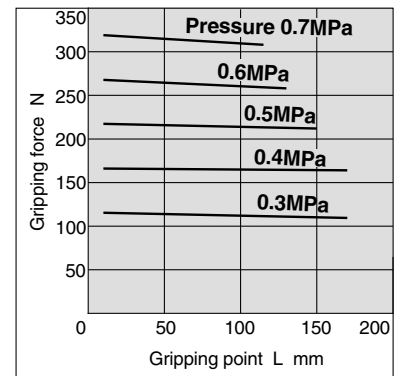
MHZ2-32S



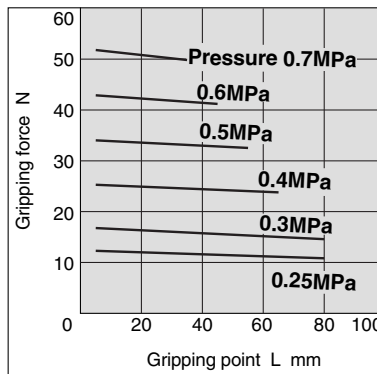
MHZ2-16S/MHZL2-16S



MHZ2-40S



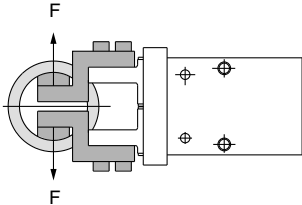
MHZ2-20S/MHZL-20S



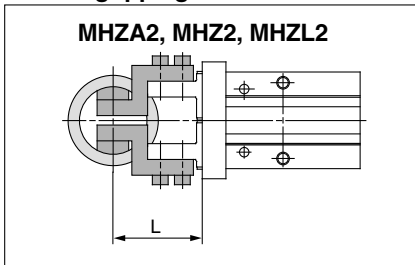
Model Selection

Step 1 Effective gripping force: Series MHZ/2/Single acting/Internal 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 impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

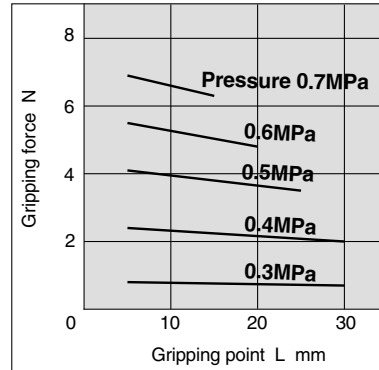


Internal gripping



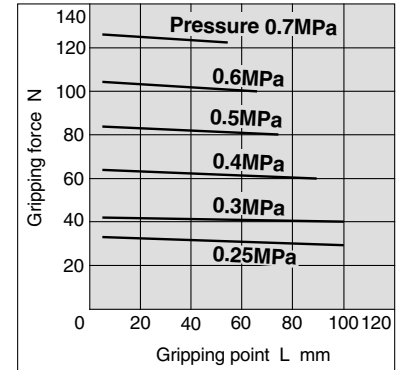
Internal gripping force

MHZ2-6C/MHZA2-6C

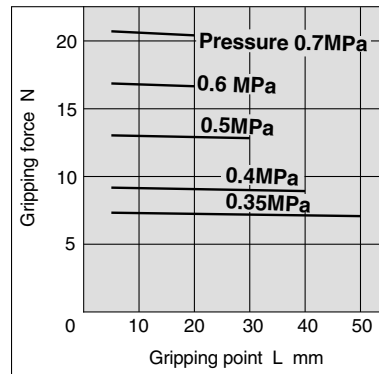


Internal gripping force

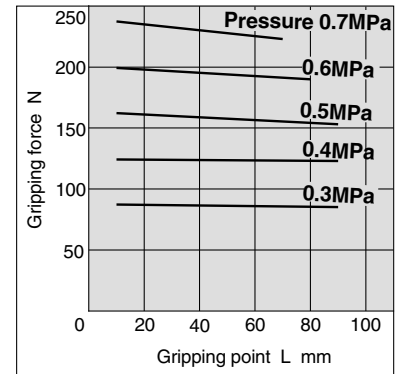
MHZ2-25C/MHZA2-25C



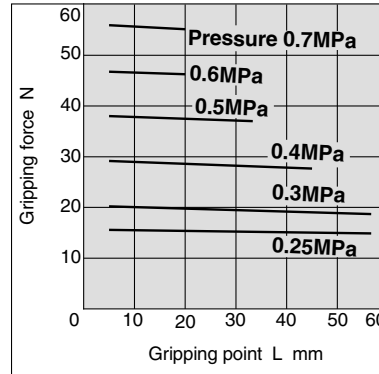
MHZ2-10C/MHZA2-10C



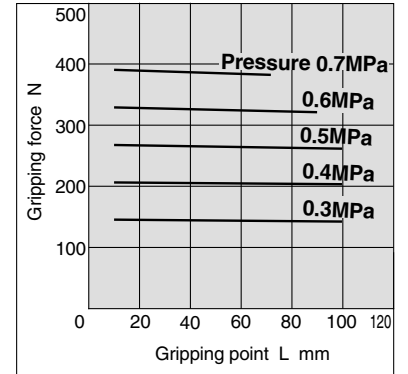
MHZ2-32C



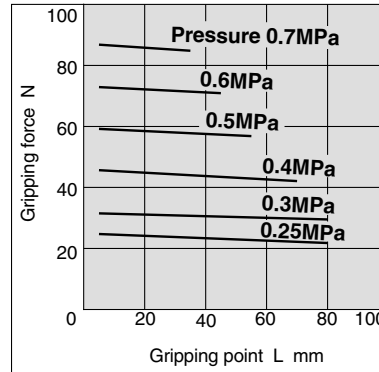
MHZ2-16C/MHZA2-16C



MHZ2-40C

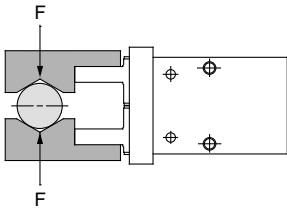


MHZ2-20C/MHZA2-20C

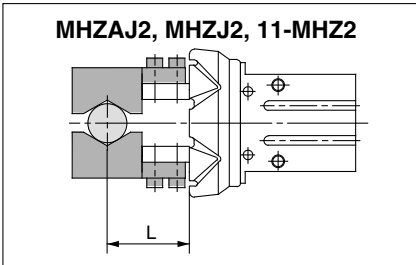


Step 1 Effective gripping force: Series MHZ□2/Double acting/External gripping force

- Expressing the effective gripping force
The effective gripping force shown in the graphs to the right is expressed as F, which is the impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

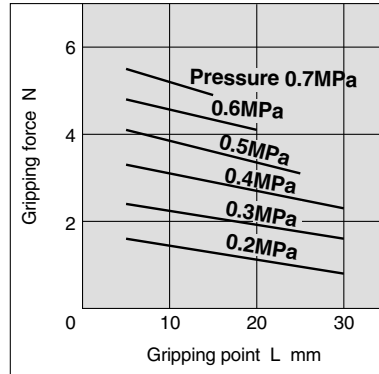


External gripping



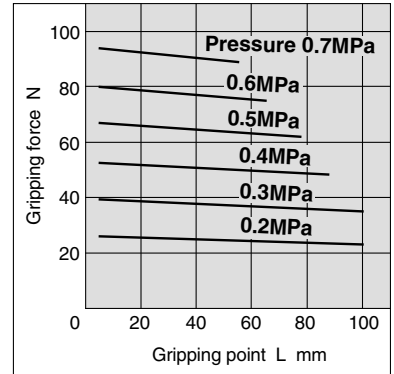
External gripping force

MHZJ2-6D/MHZAJ2-6D

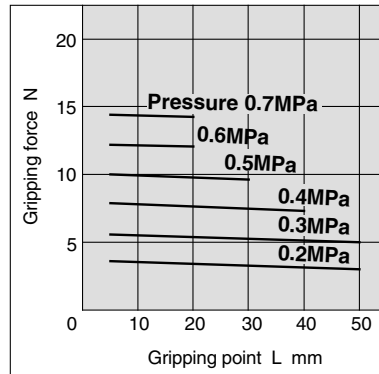


External gripping force

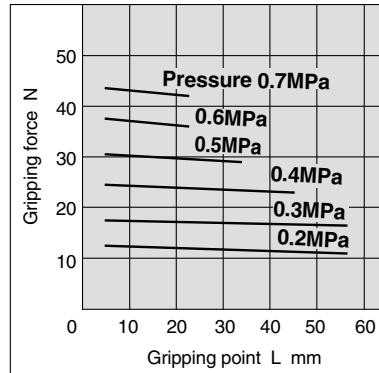
MHZJ2-25D/11-MHZ2-25D



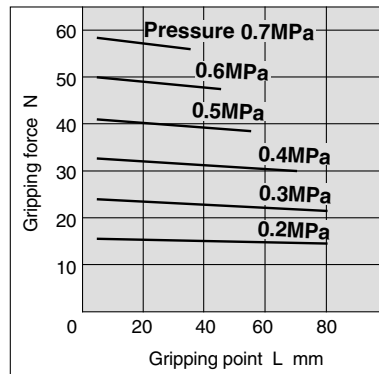
MHZJ2-10D/11-MHZ2-10D



MHZJ2-16D/11-MHZ2-16D



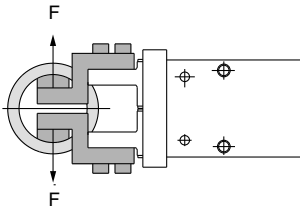
MHZJ2-20D/11-MHZ2-20D



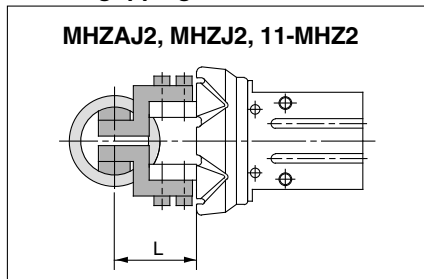
Model Selection

Step 1 Effective gripping force: Series MHZ□2/Double acting/Internal 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 impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

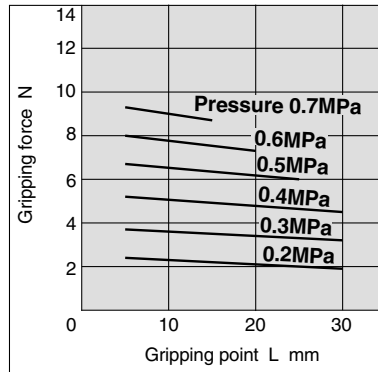


Internal gripping

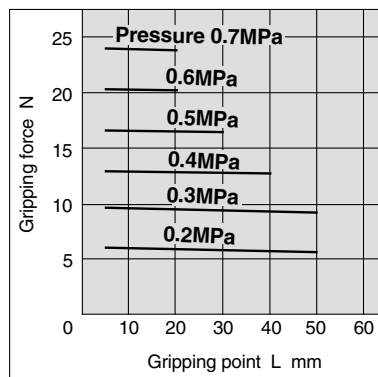


Internal gripping force

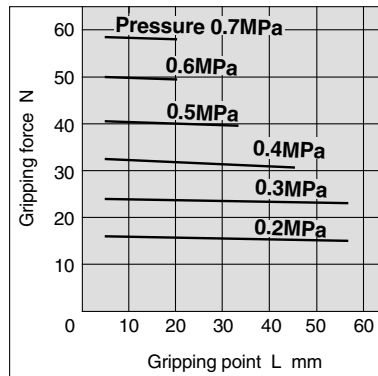
MHZJ2-6D/MHZAJ2-6D



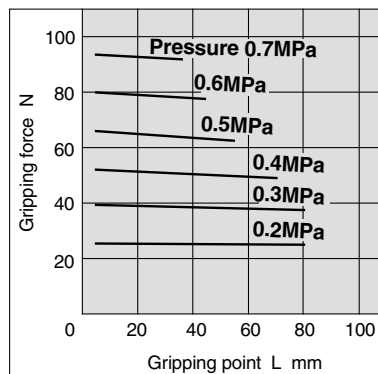
MHZJ2-10D/11-MHZ2-10D



MHZJ2-16D/11-MHZ2-16D

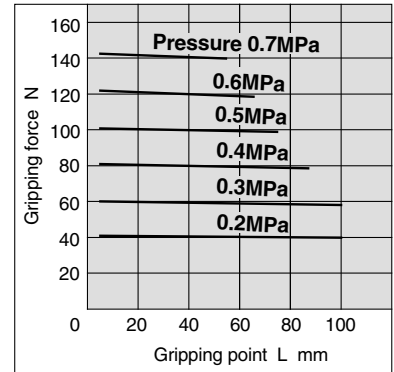


MHZJ2-20D/11-MHZ2-20D



Internal gripping force

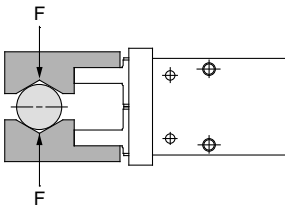
MHZJ2-25D/11-MHZ2-25D



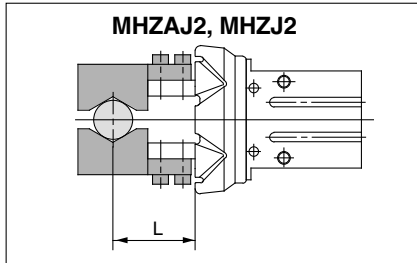
Step 1 Effective gripping force: Series MHZ□2/Single acting/External gripping force

- Expressing the effective gripping force

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

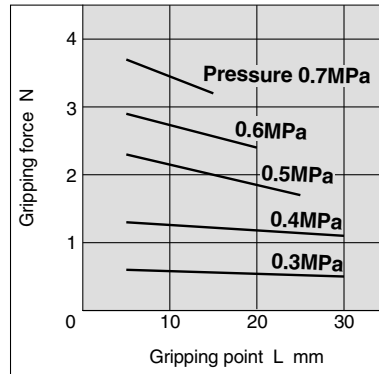


External gripping



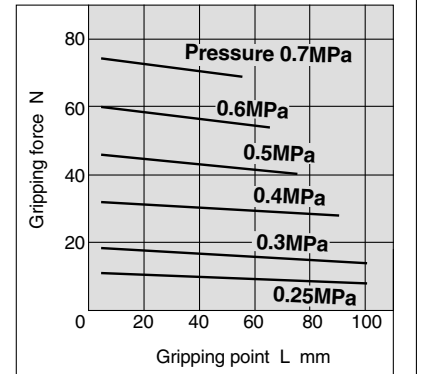
External gripping force

MHZJ2-6S/MHZAJ2-6S

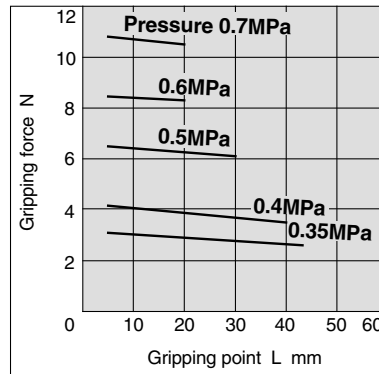


External gripping force

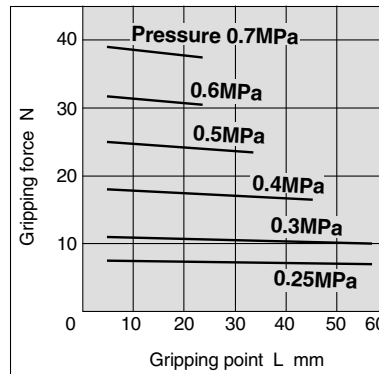
MHZJ2-25S



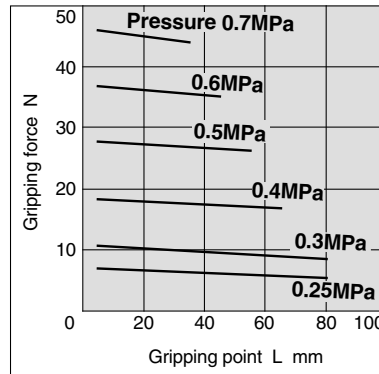
MHZJ2-10S



MHZJ2-16S



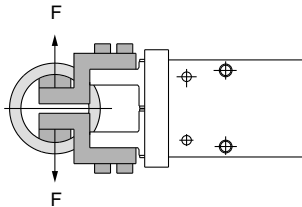
MHZJ2-20S



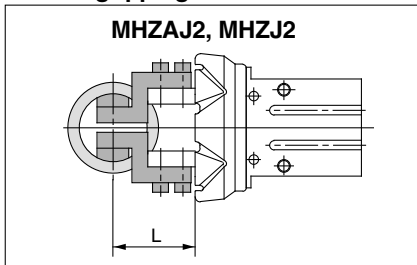
Model Selection

Step 1 Effective gripping force: Series MHZ□2/Single acting/Internal 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 impellent force of one finger, when both fingers and attachments are in full contact with the work piece as shown in the figure below.

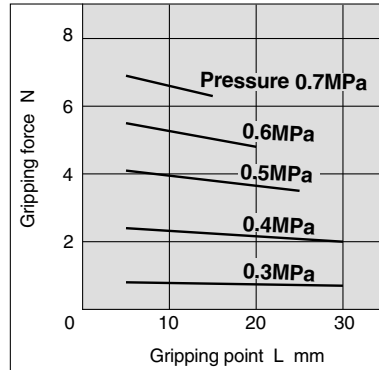


Internal gripping



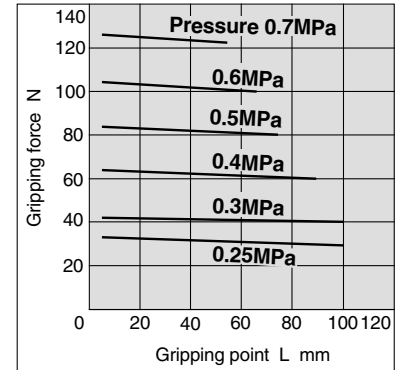
Internal gripping force

MHZJ2-6C/MHZAJ2-6C

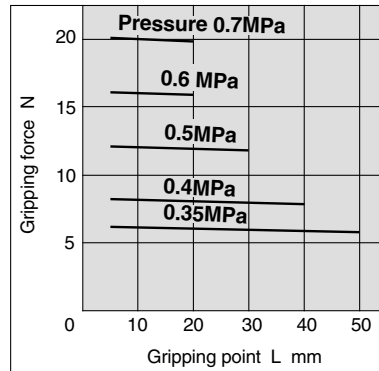


Internal gripping force

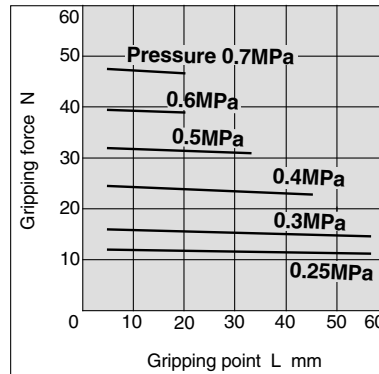
MHZJ2-25C



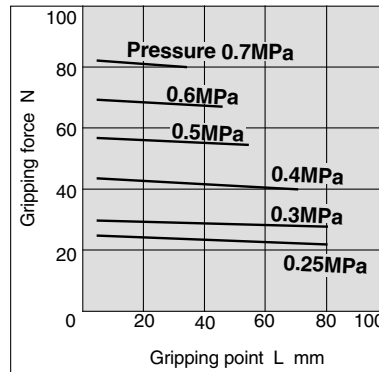
MHZJ2-10C



MHZJ2-16C

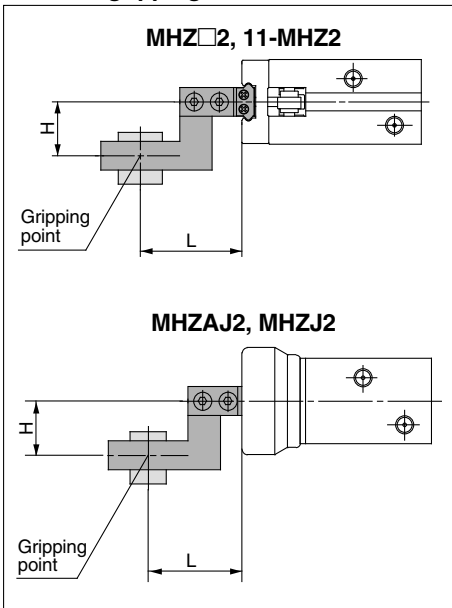


MHZJ2-20C



Step 2 Confirmation of gripping point: Series MHZ/External gripping

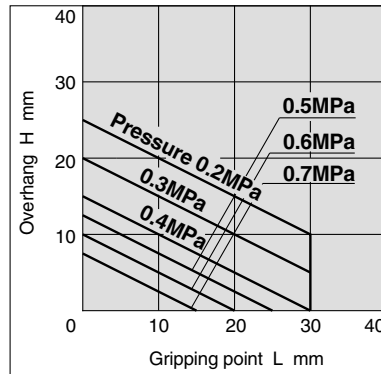
External gripping



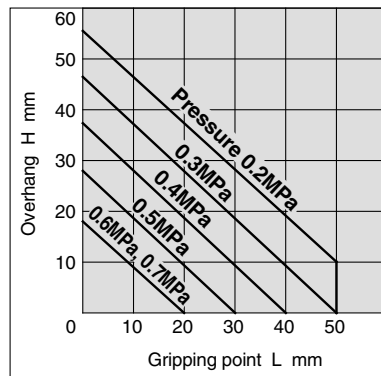
- The air gripper should be operated so that the work piece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs to the right.
- If the work piece gripping point goes beyond the range limits, this will have an adverse effect on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

External gripping

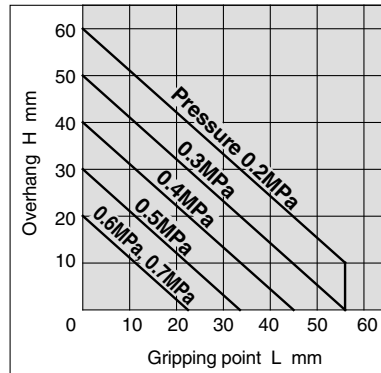
MHZ□2-6□



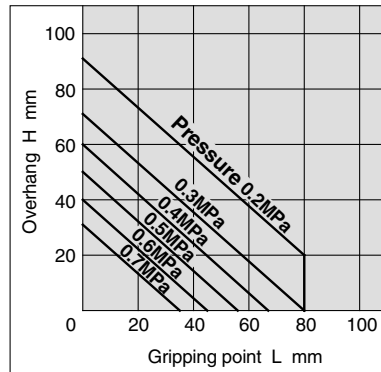
MHZ□2-10□/11-MHZ2-10□



MHZ□2-16□/11-MHZ2-16□

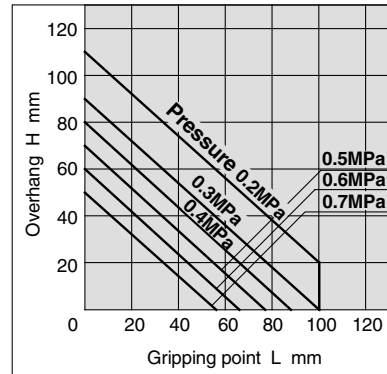


MHZ□2-20□/11-MHZ2-20□

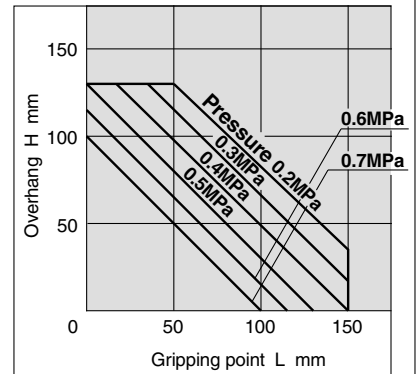


External gripping

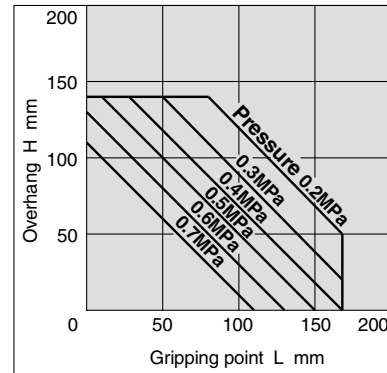
MHZ□2-25□/11-MHZ2-25□



MHZ2-32□



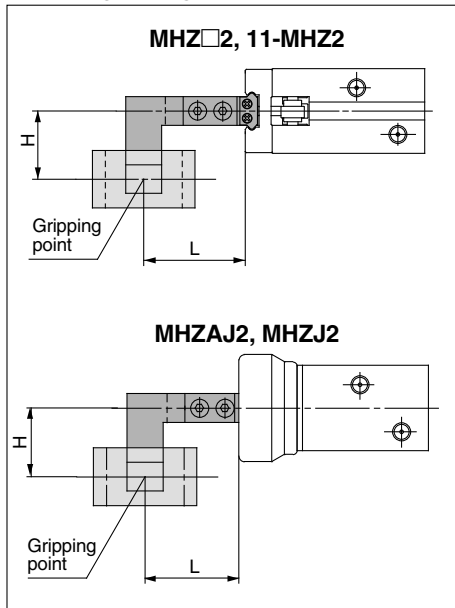
MHZ2-40□



Model Selection

Step 2 Confirmation of gripping point: Series MHZ/Internal gripping

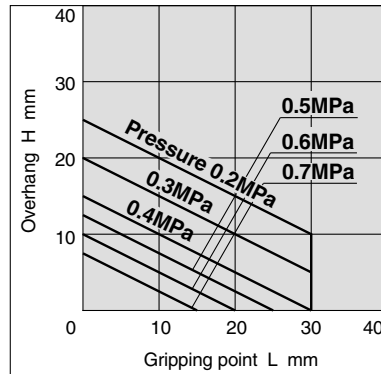
Internal gripping



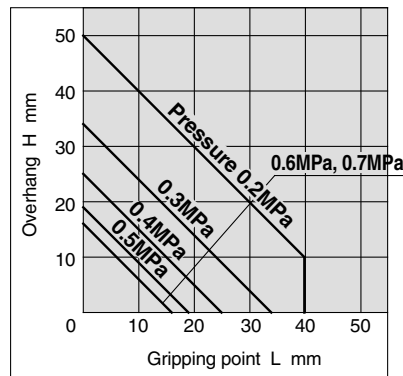
- The air gripper should be operated so that the work piece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs to the right.
- If the work piece gripping point goes beyond the range limits, this will have an adverse effect on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

Internal gripping

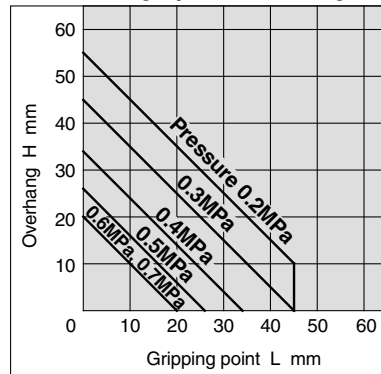
MHZ□2-6



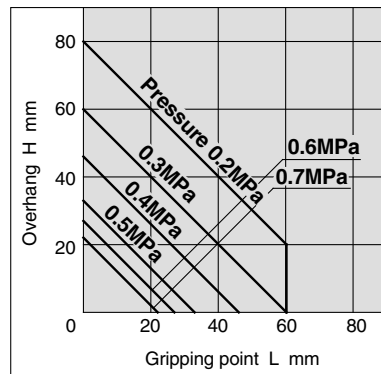
MHZ□2-10/11-MHZ2-10



MHZ□2-16/11-MHZ2-16

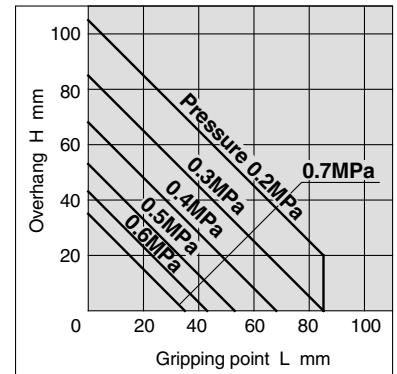


MHZ□2-20/11-MHZ2-20

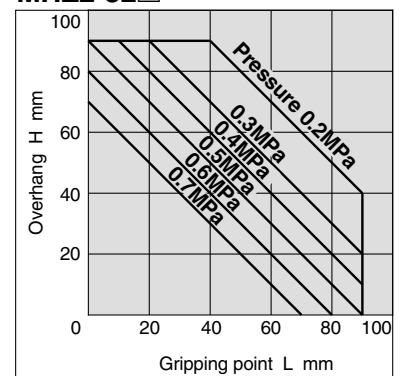


Internal gripping

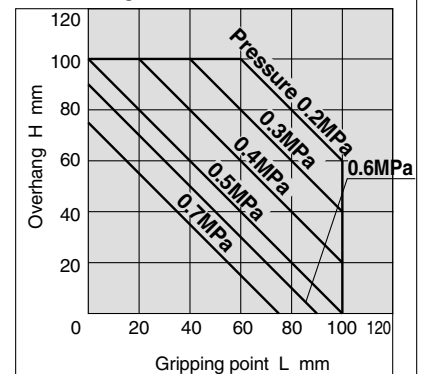
MHZ□2-25/11-MHZ2-25



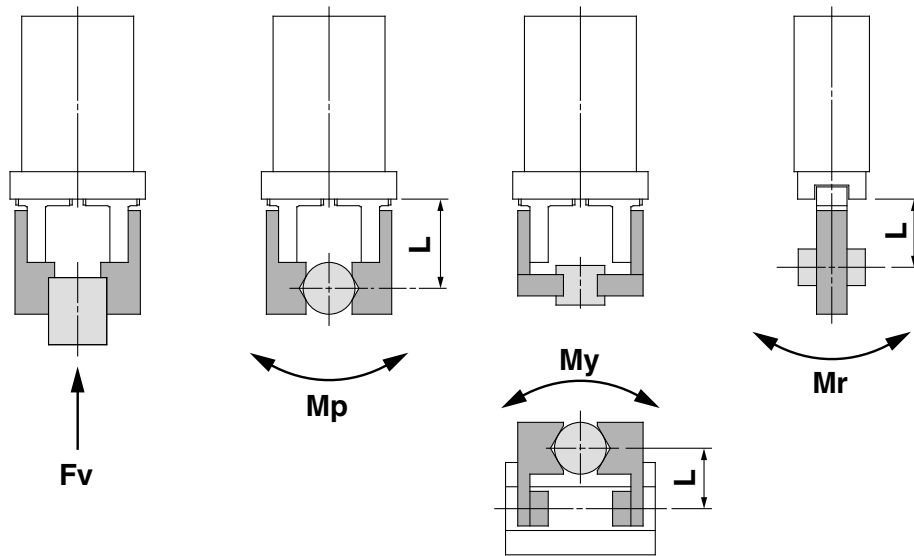
MHZ2-32



MHZ2-40



Step 3 Confirmation of external force on fingers: Series MHZ 2



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

Model	Allowable vertical load Fv (N)	Maximum allowable moment		
		Pitch moment: Mp (N·m)	Yaw moment: My (N·m)	Roll moment: Mr (N·m)
MHZ 2-6	10	0.04	0.04	0.08
MHZ 2-10	58	0.26	0.26	0.53
MHZ 2-16	98	0.68	0.68	1.36
MHZ 2-20	147	1.32	1.32	2.65
MHZ 2-25	255	1.94	1.94	3.88
MHZ 2-32	343	3	3	6
MHZ 2-40	490	4.5	4.5	9

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

Calculation of allowable external force (when moment load is applied)	Calculation example
$\text{Allowable load } F \text{ (N)} = \frac{M \text{ (maximum allowable moment) (N·m)}}{L \times 10^{-3} \text{ (*)}}$ <p>(* Unit conversion constant)</p>	<p>When a static load of $f = 10\text{N}$ is operating, which applies pitch moment to point $L = 30\text{mm}$ from the MHZ 2-16D guide.</p> $\text{Allowable load } F = \frac{0.68}{30 \times 10^{-3}}$ $= 22.7 \text{ (N)}$ <p>Load $f = 10 \text{ (N)} < 22.7 \text{ (N)}$ Therefore, it can be used.</p>