Standard Type
Series MHZ2

How to Order

ø6 MHZ2 – 6 D ☐ – F9PV ☐

Number of fingers

2	2 fingers

Bore size

6	6mm

Action

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

Finger option

Auto switch type

Nil	Without auto switch (built-in magnet)

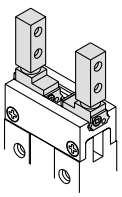
∗ Select an applicable auto switch model from the table below.

Number of auto switches

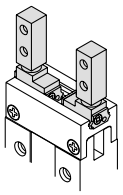
Nil	2 pcs.
S	1 pc.

[Standard type]

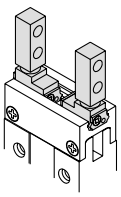
Nil: Basic type



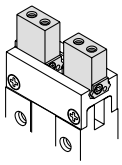
1: Side tapped mounting



2: Through holes in opening/ closing direction



3: Flat type fingers



Applicable auto switches/ ∗ Refer to pages 48 through 60 for detailed auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch part no.		Lead wire length (m)∗			Note 2) Flexible lead wire (-61)	Applicable load	
					DC		AC	Electrical entry direction: Perpendicular	Electrical entry direction: In-line	0.5 (Nil)	3 (L)	5 (Z)			
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	**F9NV**	**F9N**	●	●	—	○	—	Relay, PLC
								F8N	—	●	●	○	○		
				3 wire (PNP)				**F9PV**	**F9P**	●	●	—	○		
								F8P	—	●	●	○	○		
				2 wire				**F9BV**	**F9B**	●	●	—	○		
								F8B	—	●	●	○	○		

∗ Lead wire length symbols: 0.5m ..... Nil (Example) F9N
3m ..... L (Example) F9NL
5m ..... Z (Example) F9NZ

∗ Auto switches marked with a "○" symbol are produced upon receipt of order.

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

Note 2) Add "-61" at the end of the part number for the flexible lead wire.

(Examples)

When ordering with an air gripper

MHZ☐ 2-16D-F9NVS-61

Flexible lead wire

When ordering auto switches only

D-F9PL-61

Flexible lead wire

How to Order

ø10 to ø25 **MHZ2** – **16** **D** [ ] [ ] – **F9PV** [ ]

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

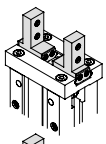
Nil	Without auto switch (built-in magnet)

∗ Select an auto switch model from the table below.

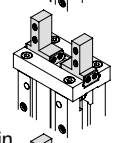
Finger position/Option

Standard type
[MHQG2 compatible type]

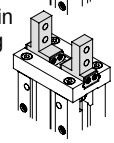
Nil: Basic type



1: Side tapped mounting

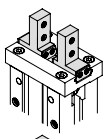


2: Through holes in opening/closing direction

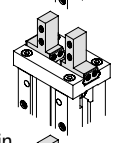


Narrow type
[MHQ2 compatible type]

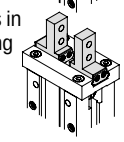
N: Basic type



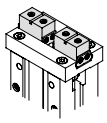
N1: Side tapped mounting



N2: Through holes in opening/closing direction



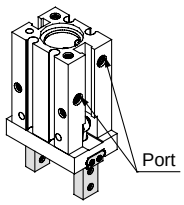
3: Flat type fingers



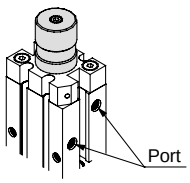
The flat type fingers do not have standard and narrow options. When MHQG2/MHQ2 compatible types are required, see the -X51 order made specifications on page 63.

Body option

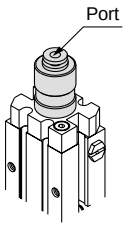
Nil: Basic type



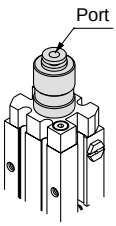
E: End boss type
Side ported (double acting/single acting)



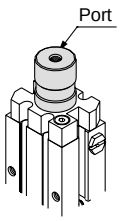
W: End boss type
Axial port with ø4 One-touch fitting for coaxial tubing (double acting)



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/ ∗ Refer to pages 48 through 60 for detailed auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch part no.		Lead wire length (m)∗			Note 2) Flexible lead wire (-61)	Applicable load		Applicable model			
							Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)							
					DC	AC	Perpendicular	In-line							ø10	ø16	ø20	ø25
Solid state auto switch	—	Grommet	Yes	3 wire (NPN)	5V, 12V	—	**Y69A**	**Y59A**	●	●	○	Standard	IC circuit	Relay, PLC	●	●	●	●
					12V		**F9NV**	**F9N**	●	●	—	○	—			●	●	●
							F8N	—	●	●	○	○				●	●	●
				3 wire (PNP)	5V, 12V		**Y7PV**	**Y7P**	●	●	○	Standard	IC circuit		●	●	●	●
					12V		**F9PV**	**F9P**	●	●	—	○	—			●	●	●
							F8P	—	●	●	○	○				●	●	●
				2 wire	12V		**Y69B**	**Y59B**	●	●	○	○			●	●	●	●
							F9BV	**F9B**	●	●	—	○				●	●	●
							F8B	—	●	●	○	○				●	●	●
	Diagnostic indication (2 color indicator)			3 wire (NPN)	5V, 12V		**Y7NWV**	**Y7NW**	●	●	○	Standard	IC circuit				●	●
					12V		**F9NWV**	**F9NW**	●	●	○	○	—				●	●
				3 wire (PNP)	5V, 12V		**Y7PWV**	**Y7PW**	●	●	○	Standard	IC circuit				●	●
					12V		**F9PWV**	**F9PW**	●	●	○	○	—				●	●
				2 wire			**Y7BWV**	**Y7BW**	●	●	○	Standard					●	●
							F9BWV	**F9BW**	●	●	○	○					●	●

∗ Lead wire length symbols: 0.5m ..... Nil (Example) F9N
3m ..... L (Example) F9NL
5m ..... Z (Example) Y59AZ

∗ Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) Use caution regarding hysteresis in the 2 color indicator types. When using this type, refer to "Auto Switch Hysteresis" on page 56.

Note 3) Through hole mounting is not possible when using auto switch types D-Y59, D-Y69, or D-Y7.

Note 2) Add "-61" at the end of the part number for the flexible lead wire.

(Examples)

When ordering with an air gripper

MHZ [ ]2-16D-F9NVS-61

Flexible lead wire

When ordering auto switches only

D-F9PL-61

Flexible lead wire

How to Order

ø32 to ø40 **MHZ2** – **32** **D** [ ] – **F9PV** [ ]

Number of fingers

2	2 fingers

Bore size

32	32mm
40	40mm

Action

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

Finger option

Number of auto switches

Nil	2 pcs.
S	1 pc.

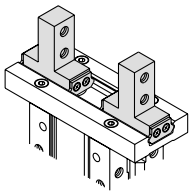
Auto switch type

Nil	Without auto switch (built-in magnet)

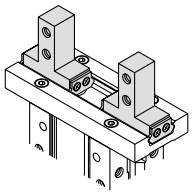
∗ Select an auto switch model from the table below.

Standard type

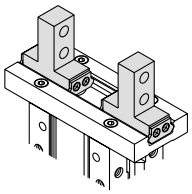
Nil: Basic type



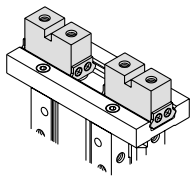
1: Side tapped mounting



2: Through holes in opening/closing direction



3: Flat type fingers



Applicable auto switches/ ∗ Refer to pages 48 through 60 for detailed auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch part no.		Lead wire length (m)∗			Note 2) Flexible lead wire (-61)	Applicable load		Applicable model	
					DC		AC	Electrical entry direction: Perpendicular	Electrical entry direction: In-line	0.5 (Nil)	3 (L)	5 (Z)				ø32	ø40
Solid state auto switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	**Y69A**	**Y59A**	●	●	○	Standard	IC circuit	Relay, PLC	●	●
						12V		**F9NV**	**F9N**	●	●	—	○	—		●	●
								F8N	—	●	●	○	○			●	●
				3 wire (PNP)		5V, 12V		**Y7PV**	**Y7P**	●	●	○	Standard	IC circuit		●	●
						12V		**F9PV**	**F9P**	●	●	—	○	—		●	●
								F8P	—	●	●	○	○			●	●
				2 wire		12V		**Y69B**	**Y59B**	●	●	○	○			●	●
								F9BV	**F9B**	●	●	—	○			●	●
								F8B	—	●	●	○	○			●	●
	Diagnostic indication (2 color indicator)			3 wire (NPN)		5V, 12V		**Y7NWV**	**Y7NW**	●	●	○	Standard	IC circuit		●	●
						12V		**F9NWV**	**F9NW**	●	●	○	○	—		●	●
				3 wire (PNP)		5V, 12V		**Y7PWV**	**Y7PW**	●	●	○	Standard	IC circuit		●	●
						12V		**F9PWV**	**F9PW**	●	●	○	○			●	●
				2 wire				**Y7BWV**	**Y7BW**	●	●	○	Standard	—		●	●
								F9BWV	**F9BW**	●	●	○	○			●	●

∗ Lead wire length symbols: 0.5m ..... Nil (Example) F9N
3m ..... L (Example) F9NL
5m ..... Z (Example) Y59AZ

∗ Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) Use caution regarding hysteresis in the 2 color indicator types. When using this type, refer to "Auto Switch Hysteresis" on page 56.

Note 2) Add "-61" at the end of the part number for the flexible lead wire.

(Examples)

When ordering with an air gripper

MHZ[ ]2-16D-F9NVS-[61]

Flexible lead wire

When ordering auto switches only

D-F9PL-[61]

Flexible lead wire

Note 3) Through hole mounting is not available when using auto switch types D-Y59, D-Y69, or D-Y7.

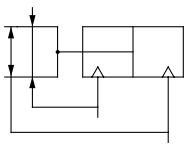
ø6

ø10 to ø25

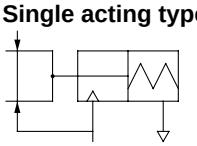
ø32, ø40

Symbols:

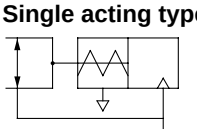
Double acting type



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	
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)

Note) Refer to pages 48 through 60 for details regarding auto switch specifications.

Models

Action		Model	Bore size (mm)	Gripping force Note 1) Gripping force per finger Effective value N External gripping force	 Internal gripping force	Opening/ Closing stroke (both sides) mm	Note 2) Weight g
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
		MHZ2-40D	40	254	318	30	1275
Single acting	Normally open	**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
		MHZ2-32S	32	131		22	760
		MHZ2-40S	40	217		30	1370
	Normally closed	**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 x 0.5		M5 x 0.8					●	●
E	Side ported	—	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 page 25.

Clean Room Series: Air Gripper

11– MHZ2 – □ D □ – F9N □

Clean room series
11-: Vacuum type

Bore size

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

Action

D	Double acting

Finger position/option*
* Refer to the "How to Order" section on page 11.

Auto switch type

Nil	Without auto switch (built-in magnet)

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

Number of auto switches*

Applicable auto switches/ * Refer to pages 48 through 60 for detailed auto switch specifications

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch part no.		Lead wire length (m)*			Note 2) Flexible lead wire (-61)	Applicable load	
					DC		AC	Electrical entry direction: Perpendicular	Electrical entry direction: In-line	0.5 (Nil)	3 (L)	5 (Z)			
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	**F9NV**	**F9N**	●	●	—	○	—	Relay, PLC
								F8N	**––**	●	●	○	○		
				3 wire (PNP)				**F9PV**	**F9P**	●	●	—	○		
								F8P	**––**	●	●	○	○		
				2 wire				**F9BV**	**F9B**	●	●	—	○		
								F8B	**––**	●	●	○	○		

* Lead wire length symbols: 0.5m ..... Nil (Example) F9N
3m ..... L (Example) F9NL
5m ..... Z (Example) F9NZ

* Auto switches marked with a "○" symbol are produced upon receipt of order.

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

Note 2) Add "-61" at the end of the part number for the flexible lead wire.

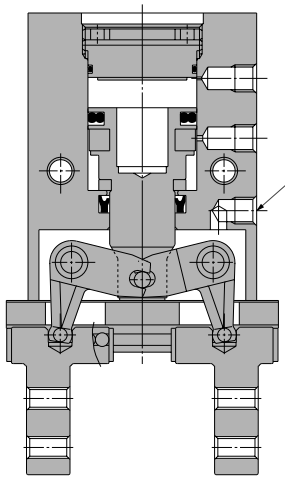
(Examples)

When ordering with an air gripper: MHZ□2-16D-F9NVS-61 (61: Flexible lead wire)

When ordering auto switches only: D-F9PL-61 (61: Flexible lead wire)

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 60°C
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)



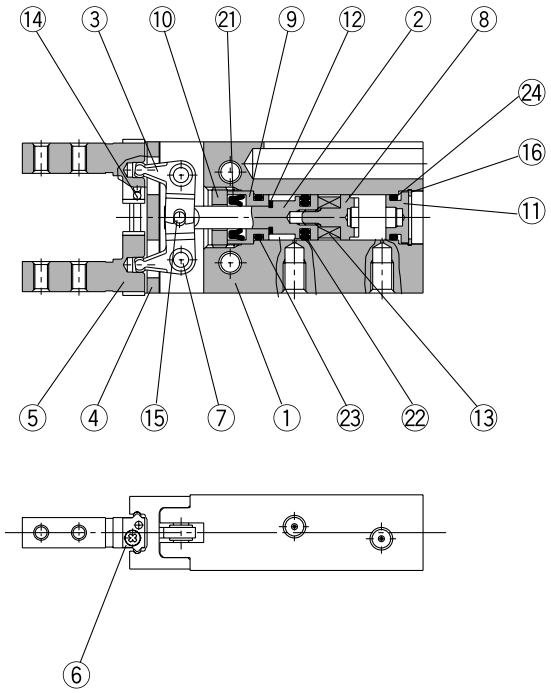
Relief port

The concentrated vacuuming of internally generated particulates prevents them from spreading into the clean room.

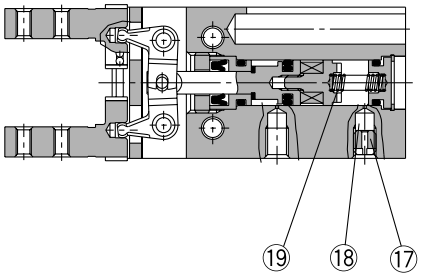
For details, refer to SMC Information "Clean Series: Air Gripper Series 11-MHZ2" (98-E461).

Construction/MHZ2-6□

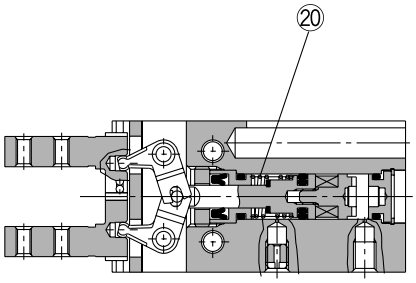
Double acting/with fingers open



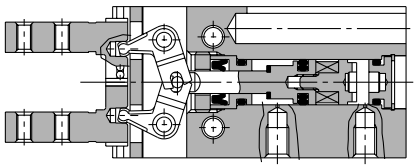
Single acting/normally open



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

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

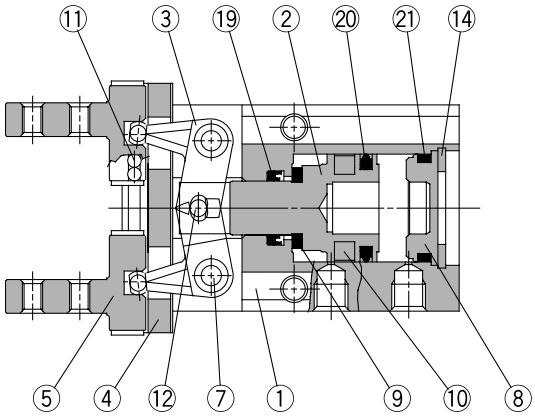
Seal kit no.	Description
MHZ6-PS	Kit includes items 21, 22, 23 and 24 from the table above.

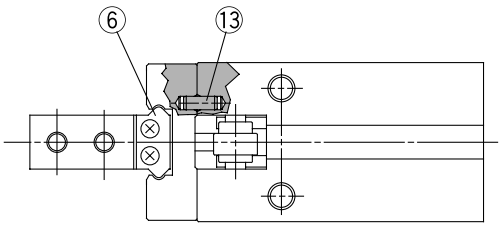
∗ Seal kits consist of items 21, 22, 23 and 24 in one kit, and can be ordered using the seal kit number.

Note) Contact SMC when replacing seals.

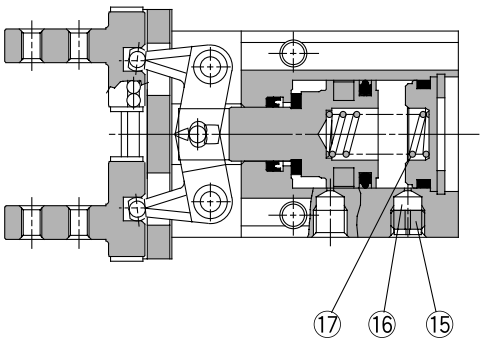
Construction/MHZ2-10□ to 40□

Double acting/with fingers open

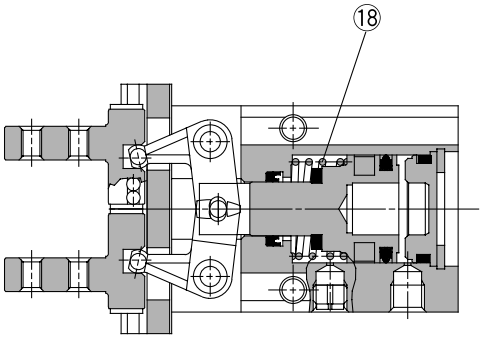




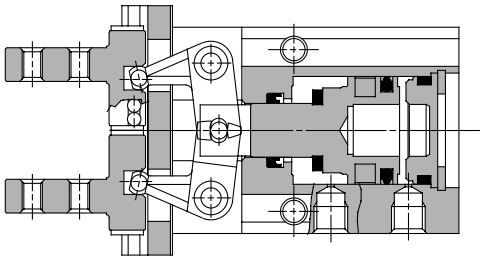
Single acting/normally open



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 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

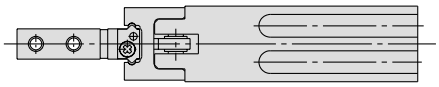
Seal kit no.						Description
MHZ2-10D	**MHZ2-16D**	**MHZ2-20D**	**MHZ2-25D**	**MHZ2-32D**	**MHZ2-40D**	Kits include items 19, 20 and 21 from the table above.
MHZ10-PS	MHZ16-PS	MHZ20-PS	MHZ25-PS	MHZ32-PS	MHZ40-PS	

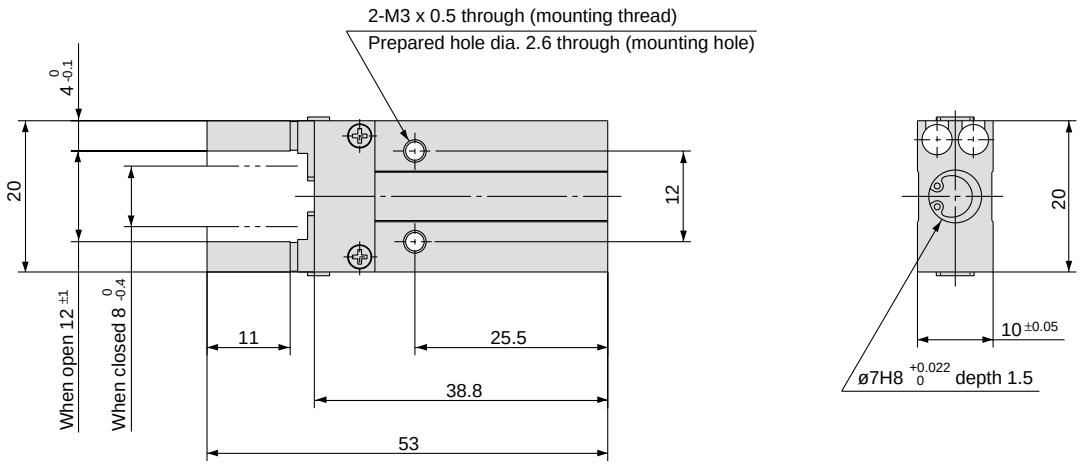
∗ Seal kits consist of items 19, 20 and 21 in one kit, and can be ordered using the seal kit number for each cylinder bore size.

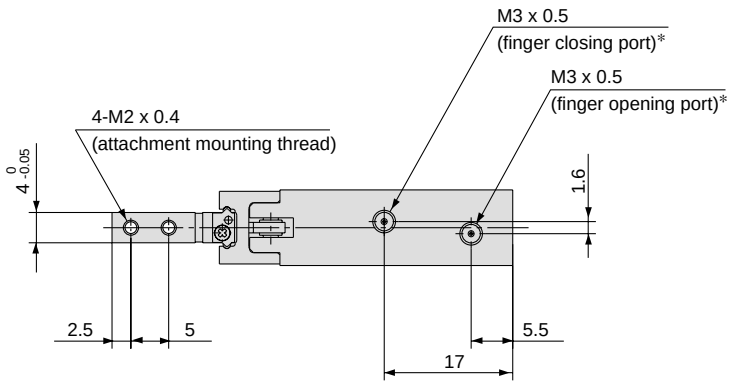
Dimensions

Scale: 100%

MHZ2-6□
Double acting/Single acting
Basic type

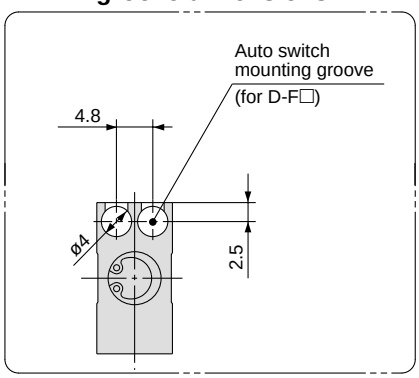






* For single action, the port on one side is a breathing hole.

Auto switch mounting groove dimensions

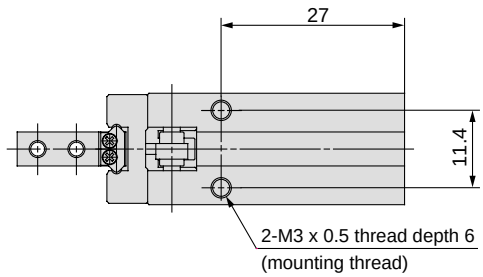


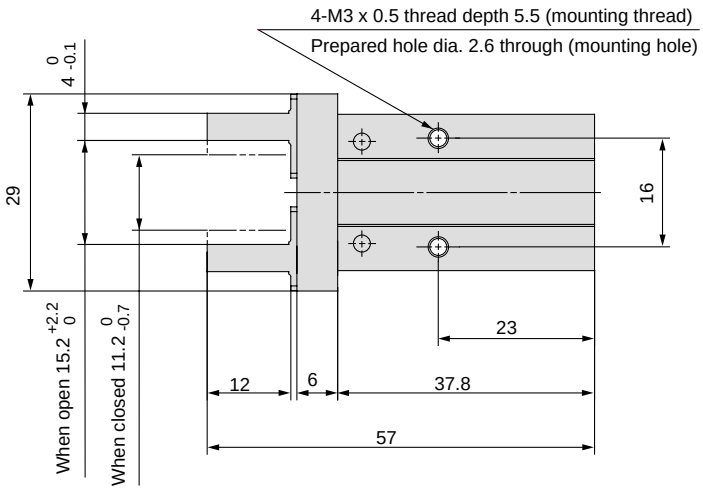
MHZ2-10□

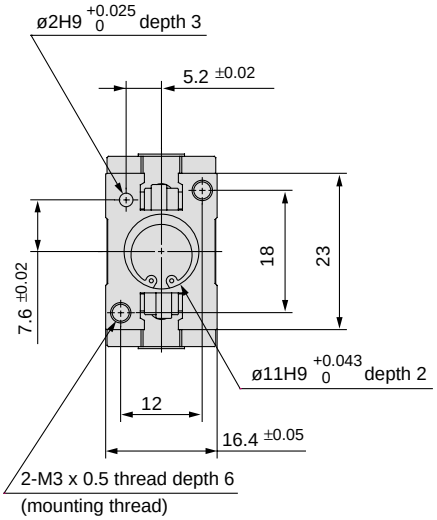
Scale: 90%

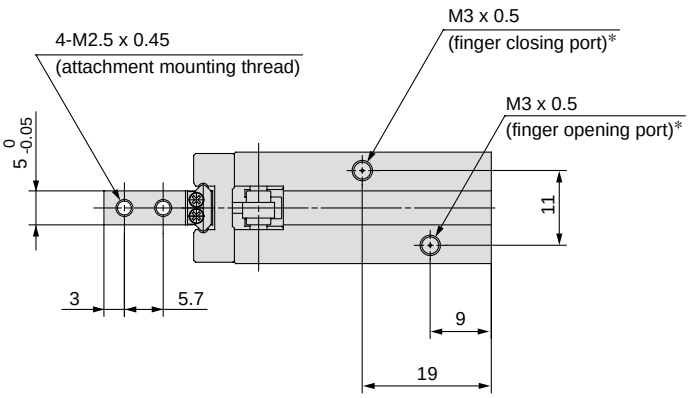
Double acting/Single acting

Basic type



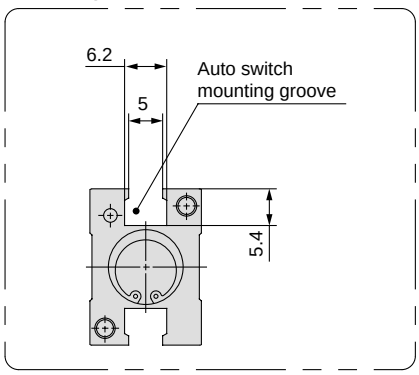






∗ For single action, the port on one side is a breathing hole.

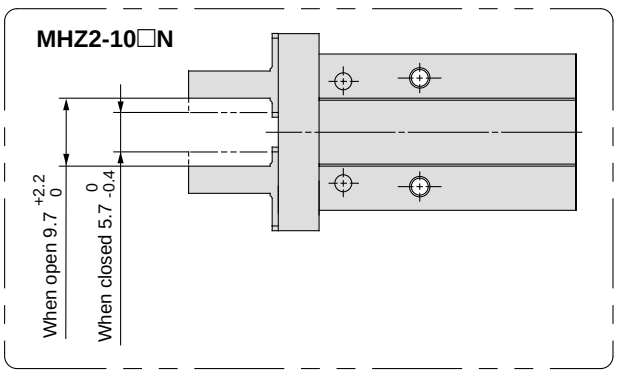
Auto switch mounting groove dimensions



Note) When using D-Y59, D-Y69 and D-Y7 type auto switches, through hole mounting is not possible.

Finger position/Narrow type

MHZ2-10□N



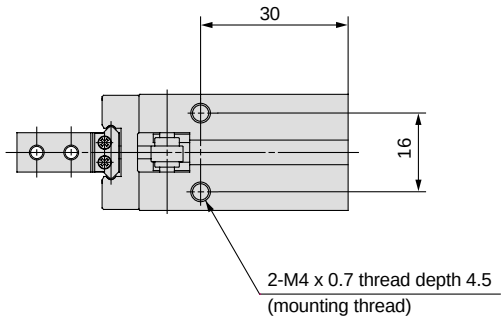
Dimensions

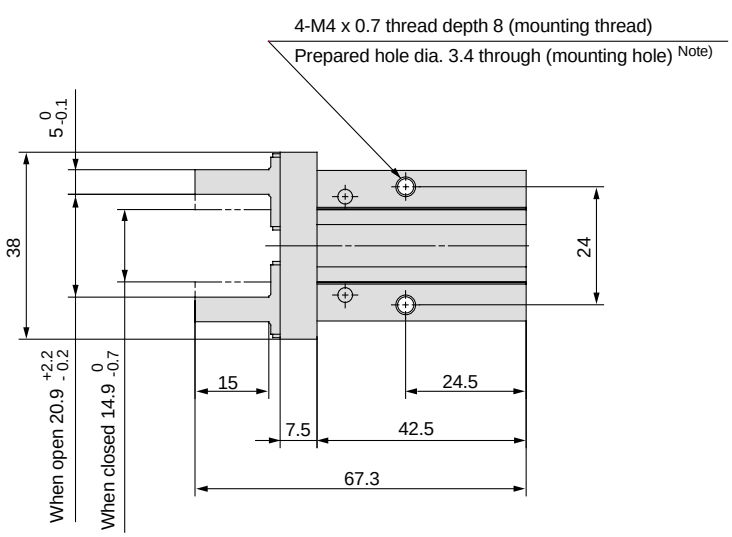
MHZ2-16□

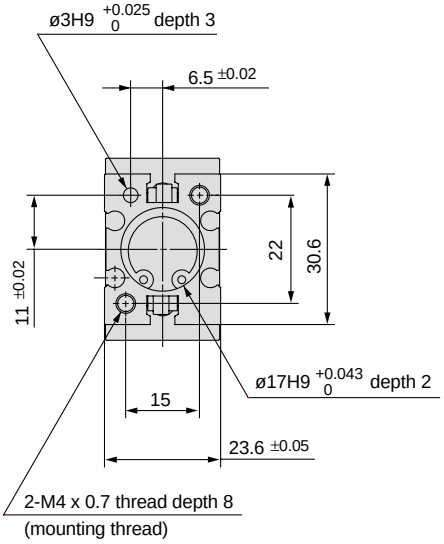
Scale: 65%

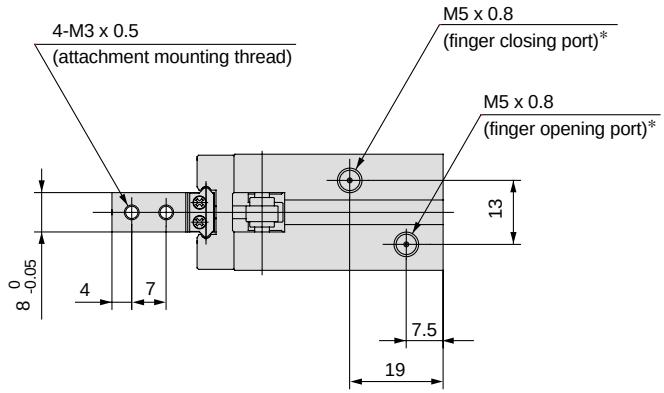
Double acting/Single acting

Basic type



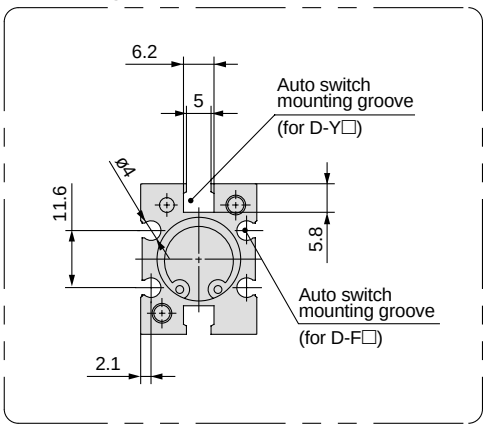






∗ For single action, the port on one side is a breathing hole.

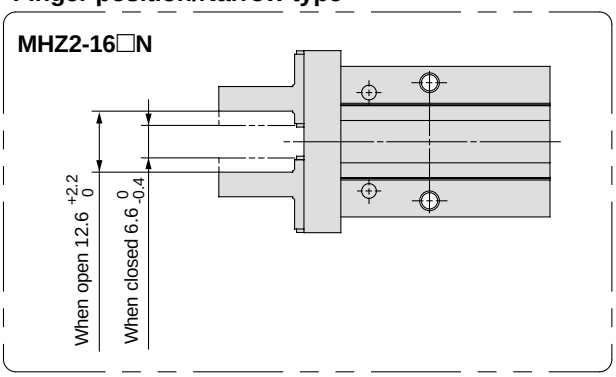
Auto switch mounting groove dimensions



Note) When using D-Y59, D-Y69 and D-Y7 type auto switches, through hole mounting is not possible.

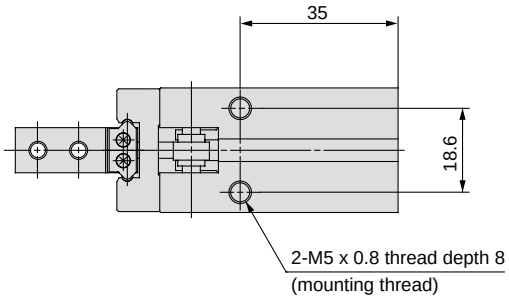
Finger position/Narrow type

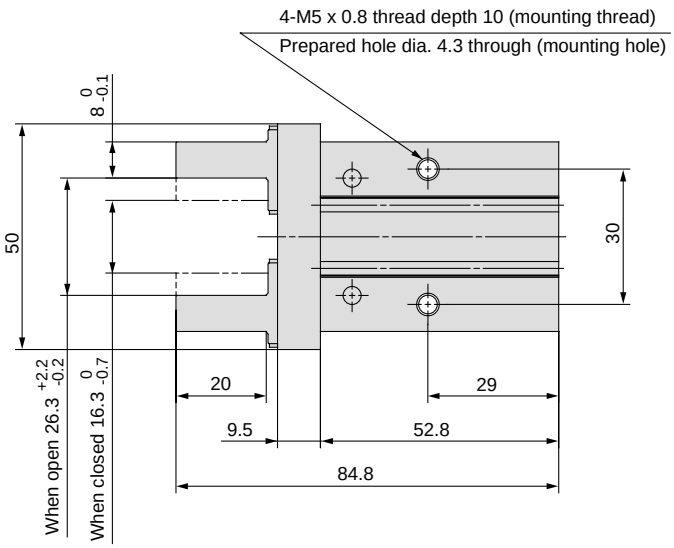
MHZ2-16□N

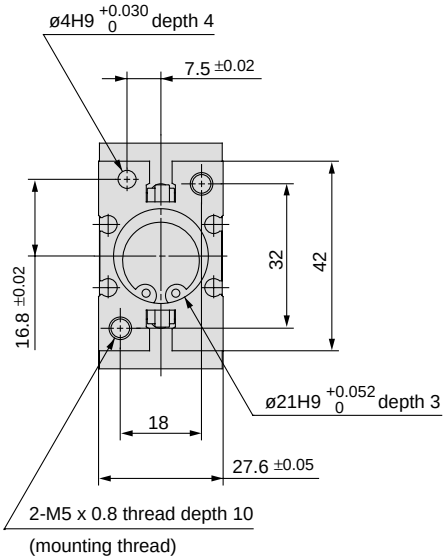


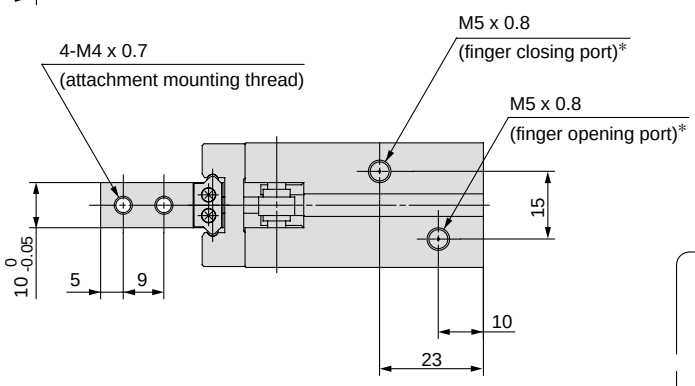
MHZ2-20□
Double acting/Single acting
Basic type

Scale: 60%



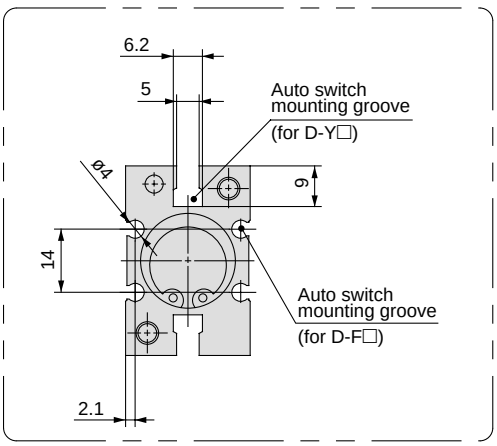






∗ For single action, the port on one side is a breathing hole.

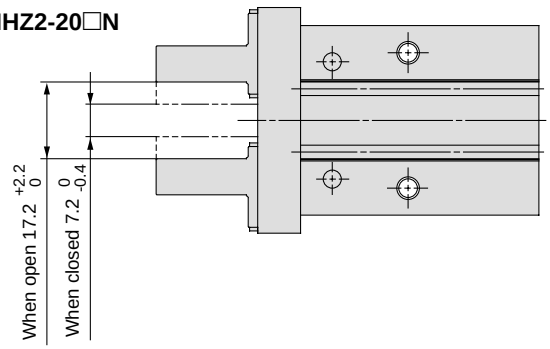
Auto switch mounting groove dimensions



Note) When using D-Y59, D-Y69 and D-Y7 type auto switches, through hole mounting is not possible.

Finger position/Narrow type

MHZ2-20□N



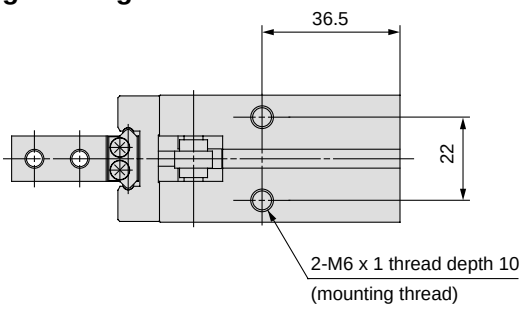
Dimensions

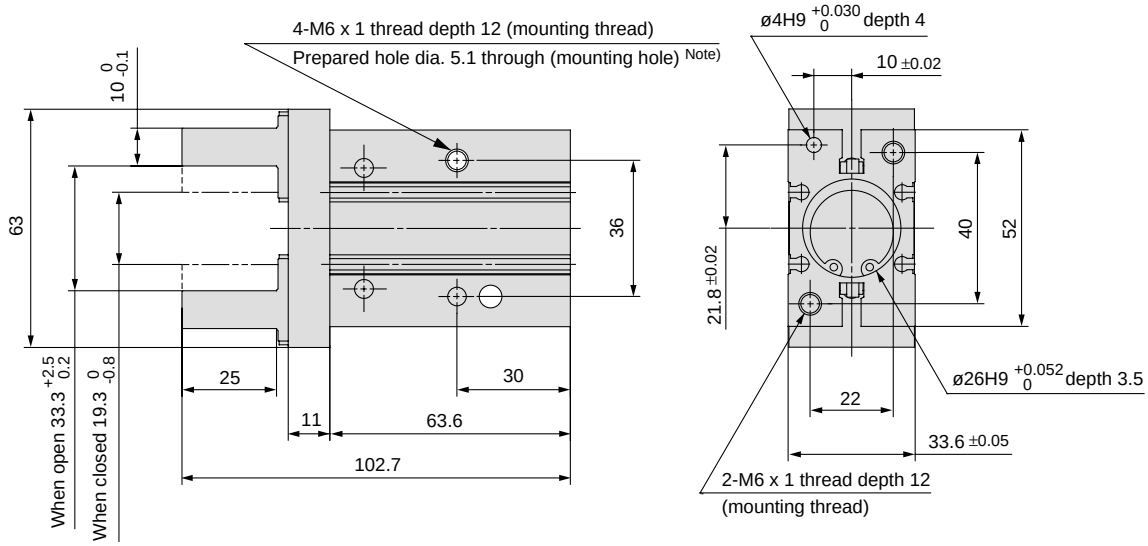
MHZ2-25□

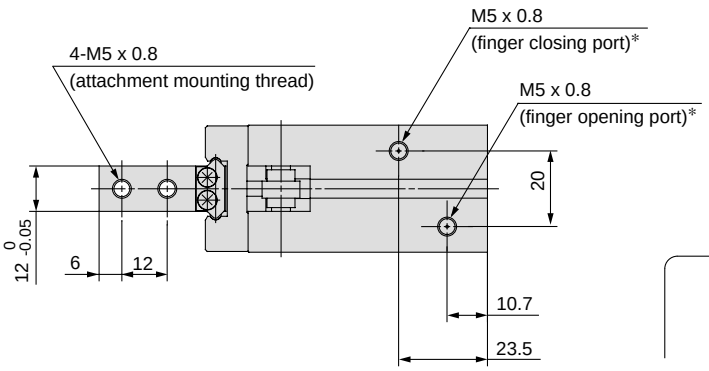
Scale: 50%

Double acting/Single acting

Basic type

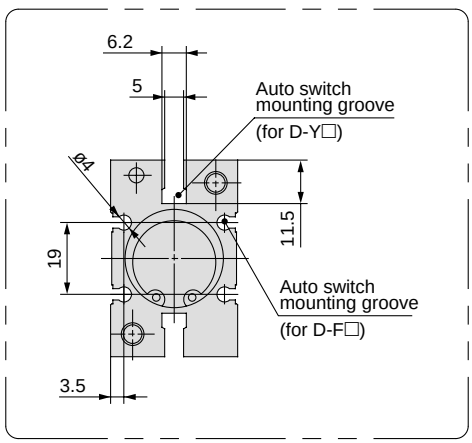






∗ For single action, the port on one side is a breathing hole.

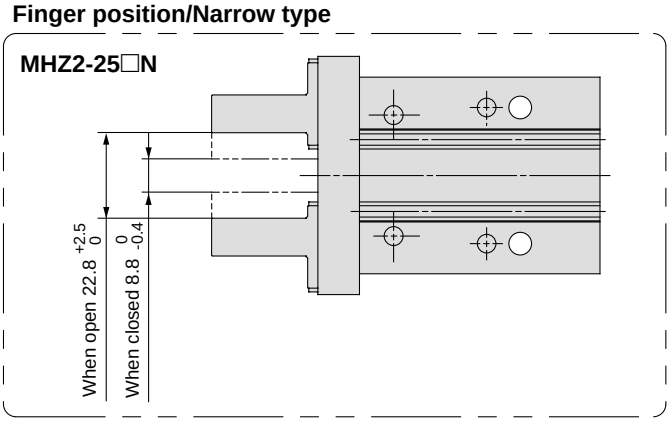
Auto switch mounting groove dimensions



Note) When using D-Y59, D-Y69 and D-Y7 type auto switches, through hole mounting is not possible.

Finger position/Narrow type

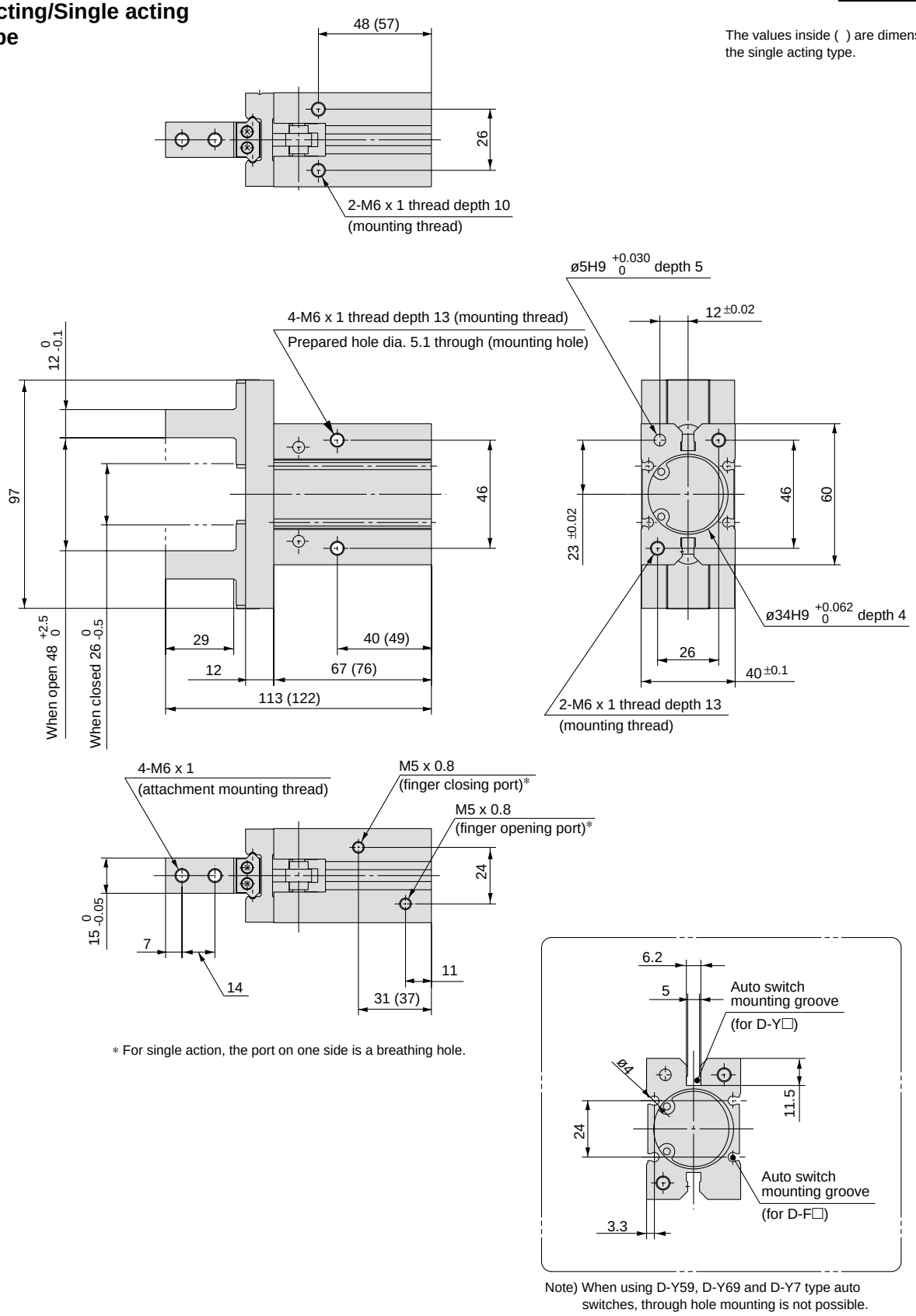
MHZ2-25□N



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.

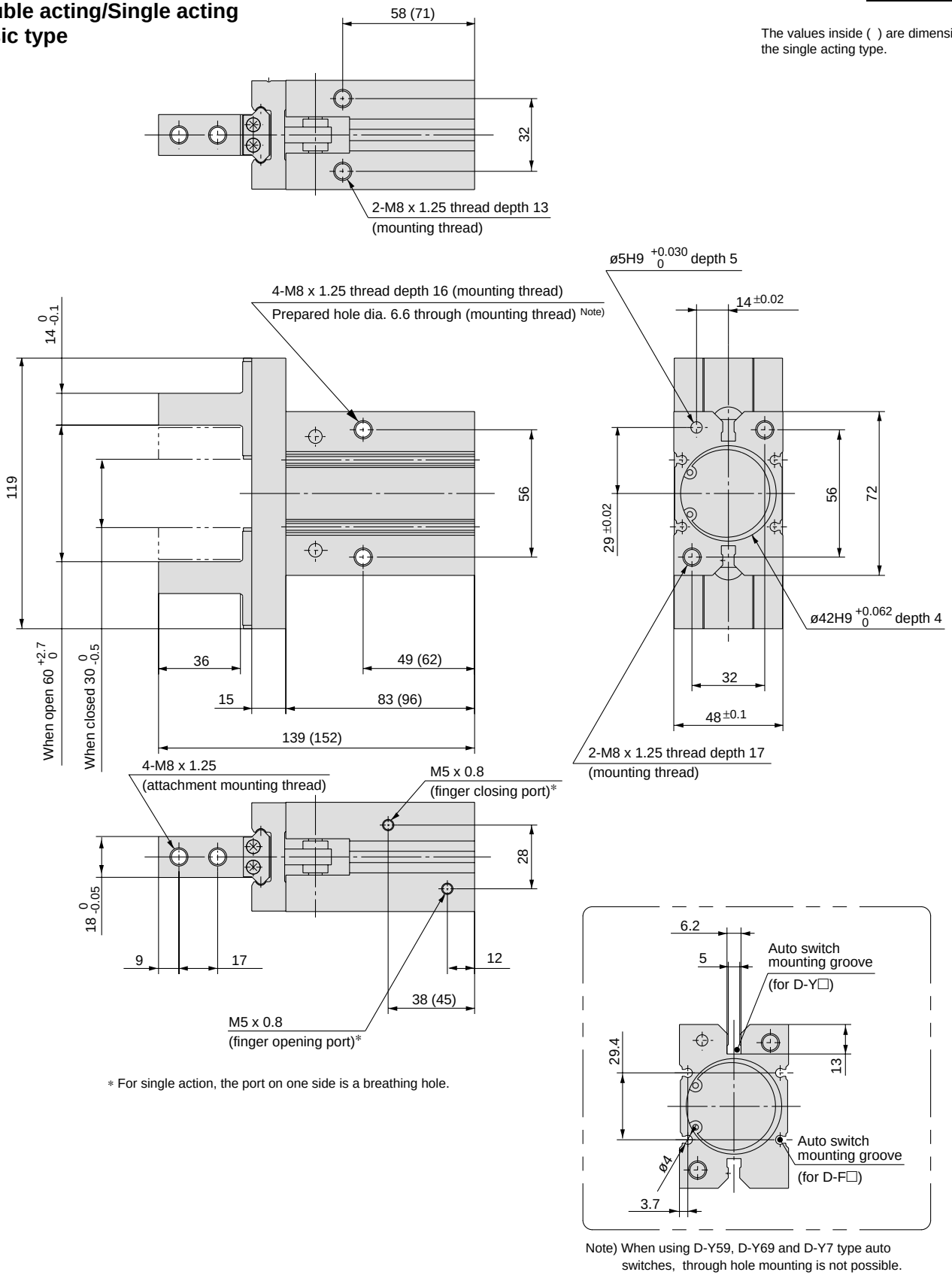
Note) When using D-Y59, D-Y69 and D-Y7 type auto switches, through hole mounting is not possible.

Dimensions

MHZ2-40□
Double acting/Single acting
Basic type

Scale: 40%

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

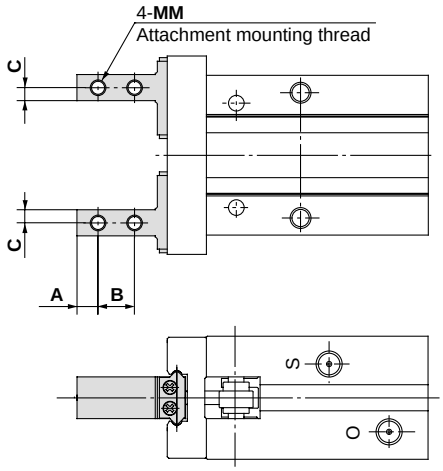


∗ For single action, the port on one side is a breathing hole.

Note) When using D-Y59, D-Y69 and D-Y7 type auto switches, through hole mounting is not possible.

Finger Options

Side Tapped Mounting [1/N1]

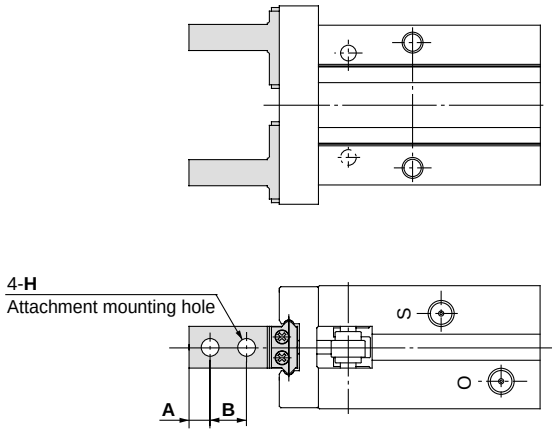


Unit: mm

Model	A	B	C	MM
MHZ2- 6□1	2.5	5	2	M2 x 0.4
MHZ2-10□$^{1}_{N1}$□	3	5.7	2	M2.5 x 0.45
MHZ2-16□$^{1}_{N1}$□	4	7	2.5	M3 x 0.5
MHZ2-20□$^{1}_{N1}$□	5	9	4	M4 x 0.7
MHZ2-25□$^{1}_{N1}$□	6	12	5	M5 x 0.8
MHZ2-32□1□	7	14	6	M6 x 1
MHZ2-40□1□	9	17	7	M8 x 1.25

∗ 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]

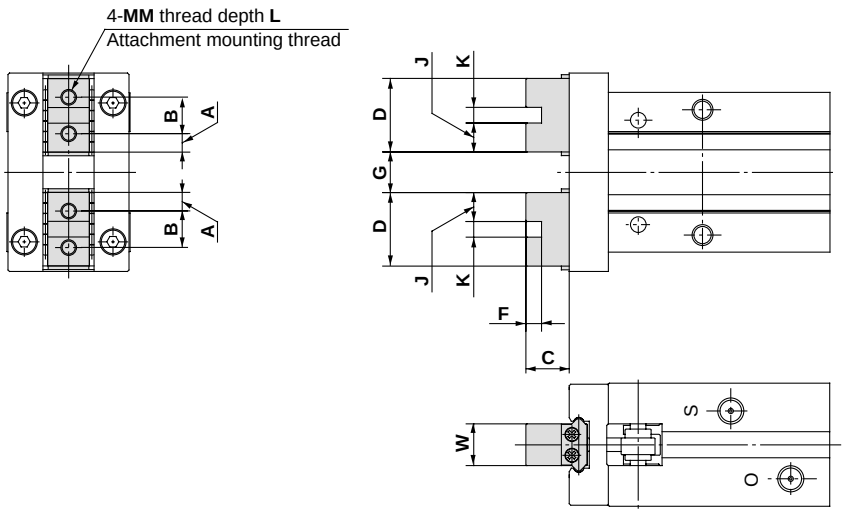


Unit: mm

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 Open	G Closed	J	K	MM	L	W	Weight g
MHZ2- 6□3 ∗1)	2	3.5	7.2	7.5	–	5 $^{+1.2}_{-0.8}$	1 $^{+0.2}_{0}$	–	–	M2 x 0.4	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 x 0.45	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 x 0.5	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 x 0.7	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 x 0.8	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 x 1	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 x 1.25	16	18 $^{0}_{-0.05}$	1335 (1430) ∗4)

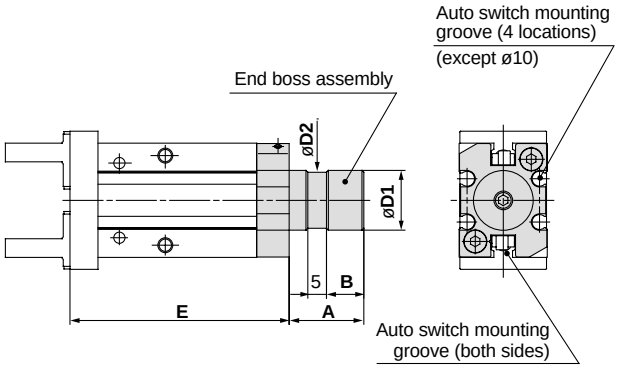
∗1) To mount attachments, use M2 hexagon socket head cap screws with ø3.3 top diameter, or JISB1101 type M2 round head screws.
∗2) Specifications and dimensions other than the above are the same as the basic type (including narrow type).
∗3) The overall length is the same as the MHQ(G) flat finger type.
∗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	
							Normally open	Normally closed
E	Side ported	M3 x 0.5	M5 x 0.8			●	●	●
W	Axial port	With ø4 One-touch fitting for coaxial tube				●	—	—
K		With ø4 One-touch fitting				—	●	●
M		M5 x 0.8				—	●	●

Side Ported [E]



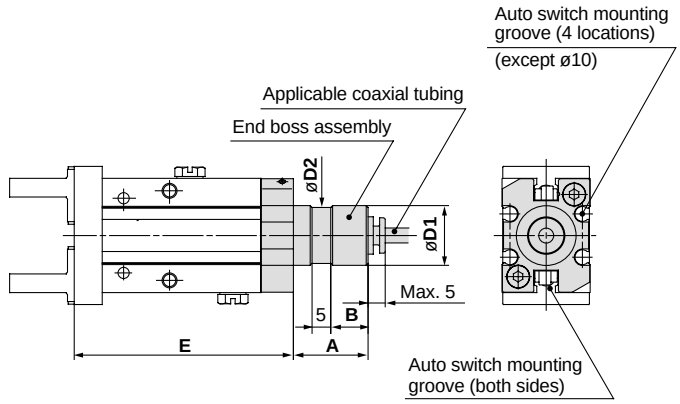
Unit: mm

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.

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

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



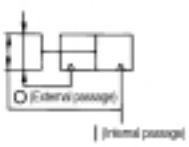
Unit: mm

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.

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

Reference symbol

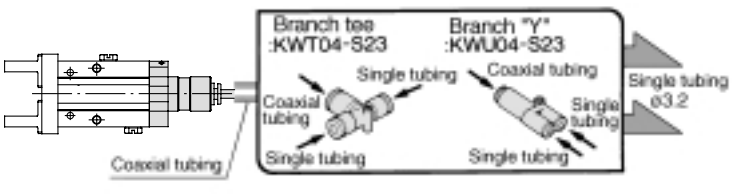


Applicable coaxial tubing

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

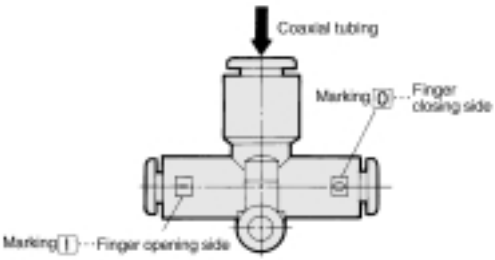
Changing from Coaxial to Single Tubing

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 ø3.2 will be necessary.

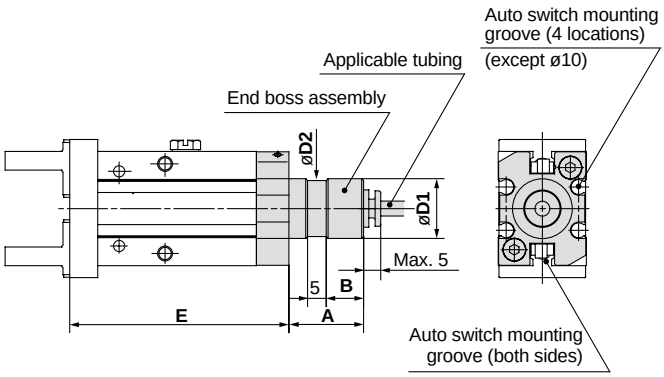


Branch tee, Different diameter tee, Branch "Y", Male run tee

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

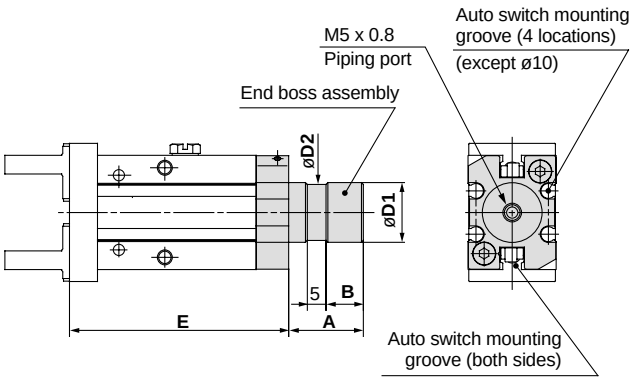
Other dimensions and specifications correspond to the standard type.

Applicable tubing

Description/Model / Specification	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

SMC Information

SMC Corporation
1-16-4 Shinbashi, Minato-ku,
Tokyo 105-8659, Japan
URL: http://www.smcworld.com

'03-E503 Issued: December, 2003
D-YGA P-80(YGA)

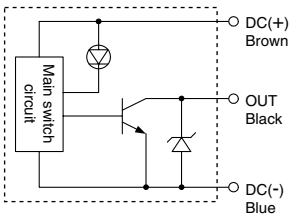
Solid-state Auto Switches for Direct Mounting
Series D-M9N(V)/D-M9P(V)/D-M9B(V)

Grommet

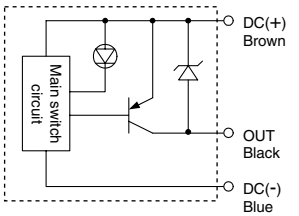
- Reduced load currents for two-wire model (2.5 to 40 mA)
- Compliance with lead-free requirements
- Use of UL-approved lead wires (style 2844)

Internal circuits

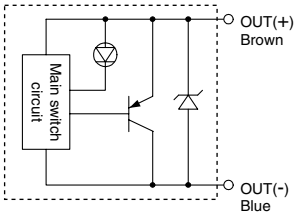
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□/D-M9□V (with Indicator light)						
Model number	**D-M9N**	**D-M9NV**	**D-M9P**	**D-M9PV**	**D-M9B**	**D-M9BV**
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring	Three-wire				Two-wire	
Output	NPN		PNP		—	
Applicable load	Integrated circuit, relay and PLC				24 V DC relay and PLC	
Power voltage	5, 12, or 24 V DC (4.5 to 28 V DC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 V DC or less		—		24 V DC (10 to 28 V DC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA max. at 24 V DC				0.8 mA or less	
Indicator light	Red LED lights when ON.					

• Lead wire: oil-proof heavy-duty vinyl cable
2.7 x 3.2 with elliptic cross-section, 0.15 mm^2, two cores (D-M9B),
or three cores (D-M9N and D-M9P)

Solid state switch specifications

Leakage current	3-wire: 100 μA or less; 2-wire: 0.8 mA max.
Operating time	1 ms or less
Impact resistance	1000 m/s^2
Insulation resistance	50 MΩ or more at 500 V DC (between lead wire and case)
Withstand voltage	1000 V AC for 1 min. (between lead wire and case)
Ambient temperature	−10°C to 60°C
Enclosure	IEC529 standard IP67, JIS C 0920 watertight construction

Weight

Unit: g

Model		D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length (m)	0.5	8	8	7
	3	41	41	38
	5	68	68	63

How to Order

Standard Model Number

D-M9 N V L

Series Model Number

Wiring and output

N	3-wire, NPN
P	2-wire, PNP
B	2-wire

Electrical entry

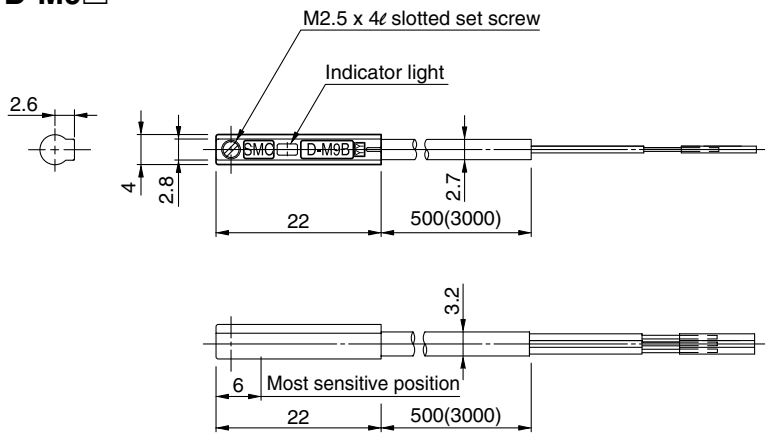
Nil	In-line
V	Perpendicular

Lead wire length

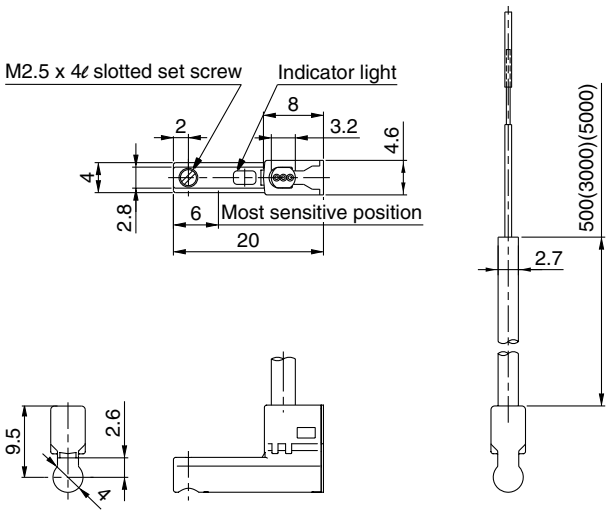
Nil	0.5m
L	3m
Z	5m

Auto Switch Dimensions

D-M9□



D-M9□V



⚠ Specific Product Precautions

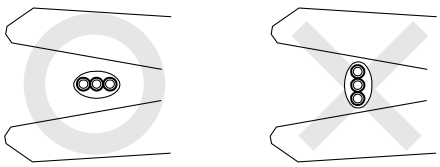
Be sure to read before handling. Contact SMC when the required specification is out of range.

Handling

⚠ Caution

Observe the following precautions when handling the product.

- The D-M9 series of auto switches is not overcurrent-protected.
  Faulty wiring or short circuit may result in breakage or burning-out of the switch.
- When stripping the cable clad, be careful about the orientation of the cable being stripped.
  The insulator may be accidentally torn or damaged depending on the orientation, as shown on the right.



● We recommend the following tools

Manufacturer	Product name	Product number
VESSEL	Wire stripper	No 3000G
Tokyo Ideal	Strip master	45-089

∗ The stripper for the round shape cords (ø2.0) is for a 2-wire style.

● Please do not attach the switch with any other screws than those already attached to the auto switch body.

The operation range is shorter than that of the conventional models.

If the auto switch replaces the conventional model, it may not function depending on its application because the operation range is shorter. Refer to the examples below.

- **In an application where at the end, the stopping position shifting range is larger than the operation range.**
  For example, pushing a work against something, or pressing a work into a hole, or clamping a work.
- **In an application where the auto switch is used to detect an intermediate stopping position. (Detecting time is shortened.)**

Note) Please contact SMC for the operation range details for each actuator.

The switch is damaged instantly when a load is shortened since short circuit protection is not built-in. Pay special attention to avoid reversing the connection of the brown lead of the power supply line and the black output line connection.