

Low Profile Air Gripper

MHF2 Series

ø8, ø12, ø16, ø20

RoHS

How to Order

MHF 2 — 12 D — M9BW

Number of fingers
2 2 finger

Bore size (mm)

8	8
12	12
16	16
20	20

Action
D Double acting

Stroke

Nil	Short stroke
1	Medium stroke
2	Long stroke

Auto switch

Nil	Without auto switch (Built-in magnet)
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Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Body option

Nil: Axial piping type

R: Side piping type

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	
							Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)				
					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)				M9PV	M9P	●	●	●	○	○	—	
				2-wire				M9BV	M9B	●	●	●	○	○	—	
	3-wire (NPN)			24 V	5 V, 12 V	M9NWV		M9NW	●	●	●	○	○	IC circuit		
	3-wire (PNP)					M9PWV		M9PW	●	●	●	○	○	—		
	2-wire					M9BWV		M9BW	●	●	●	○	○	—		
	3-wire (NPN)			24 V	5 V, 12 V	M9NAV**		M9NA**	○	○	●	○	○	IC circuit		
	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 * Auto switches marked with "O" are made to order specification.

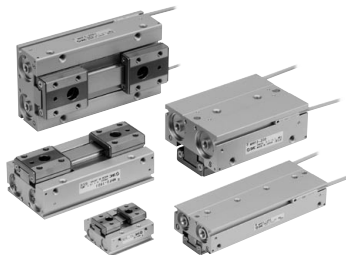
1 m M (Example) M9NWM

3 m L (Example) M9NWL

5 m Z (Example) M9NWZ

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

Specifications



Fluid		Air
Operating pressure		ø8: 0.15 to 0.7 MPa
		ø12 to 20: 0.1 to 0.7 MPa
Ambient and fluid temperature		-10 to 60°C (with no condensation)
Repeatability		±0.05 mm ^{Note 1)}
Maximum operating frequency	Short stroke	120 c.p.m.
	Medium stroke	120 c.p.m.
	Long stroke	60 c.p.m.
Lubrication		Not required
Action		Double acting
Auto switch (Option) ^{Note 2)}		Solid state auto switch (3-wire, 2-wire)

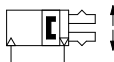
Note 1) This is the value when no offset load is applied to the finger.

When an offset load is applied to the finger, the maximum value is ±0.15 mm due to the influence of backlash of the rack and pinion.

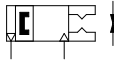
Note 2) Refer to pages 797 to 850 for further information on auto switches.

Symbol

Double acting:
Internal grip



Double acting:
External grip



Made to Order: Individual Specifications
(For details, refer to pages 492 to 494.)

Symbol	Specifications/Description
-X83	With an adjustable opening/closing finger positioning



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

Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X50	Without magnet
-X53	EPDM seal/Fluorine grease
-X63	Fluorine grease
-X79	Grease for food processing machines, Fluorine grease
-X79A	Grease for food processing machines
-X81A	Anti-corrosive treatment of finger
-X81B	Anti-corrosive treatment of finger, guide and joint
-X83	With an adjustable opening/closing finger positioning

Moisture Control Tube IDK Series



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [the IDK series in the Best Pneumatics No. 6](#).

Model

Action	Model	Cylinder bore (mm)	Note 1) Gripping force		Opening /closing stroke (Both sides) mm	Note 2) Weight (g)		Unobstructed capacity (cm³)	
			Effective gripping force per finger N			Finger open side	Finger close side		
Double acting	MHF2-8D	8	19		8			65	0.7
	MHF2-8D1				16	85	1.1	1.0	
	MHF2-8D2				32	120	2.0	1.9	
	MHF2-12D	12	48		12	155	1.9	1.6	
	MHF2-12D1				24	190	3.3	3.0	
	MHF2-12D2				48	275	6.1	5.8	
	MHF2-16D	16	90		16	350	4.9	4.1	
	MHF2-16D1				32	445	8.2	7.4	
	MHF2-16D2				64	650	14.9	14.0	
	MHF2-20D	20	141		20	645	8.7	7.3	
	MHF2-20D1				40	850	15.1	13.7	
	MHF2-20D2				80	1,225	28.0	26.6	

Note 1) At the pressure of 0.5 MPa, when gripping point L is 20 mm.

Note 2) Excluding the auto switch weight.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

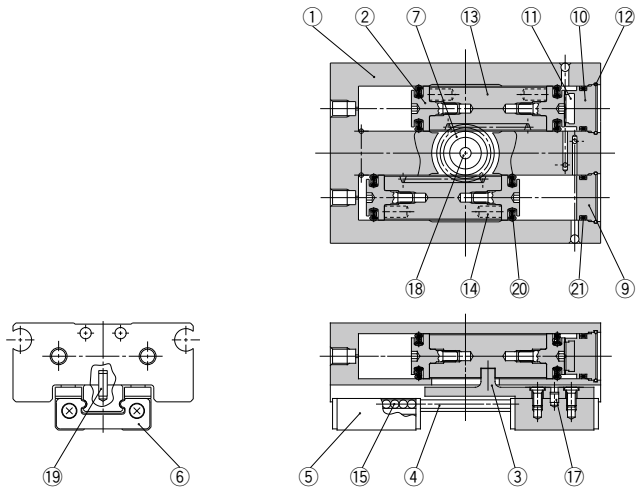
MA

D-□

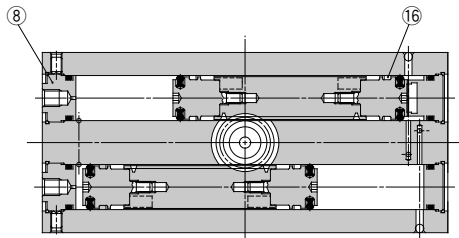
MHF2 Series

Construction

MHF2-8D,MHF2-8D1



MHF2-8D2



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Stainless steel	
3	Joint	Stainless steel	Heat treatment
4	Guide rail	Stainless steel	Heat treatment
5	Finger	Stainless steel	Heat treatment
6	Roller stopper	Stainless steel	
7	Pinion	Carbon steel	Nitriding
8	Cap A	Aluminum alloy	Clear anodized
9	Cap B	Aluminum alloy	Clear anodized
10	Cap C	Aluminum alloy	Clear anodized

Component Parts

No.	Description	Material	Note
11	Head damper	Urethane rubber	
12	Clip	Stainless steel wire	
13	Rack	Stainless steel	Nitriding
14	Magnet	—	Nickel plated
15	Steel balls	High carbon chromium bearing steel	
16	Wear ring	Synthetic resin	
17	Roller	High carbon chromium bearing steel	
18	Needle roller	High carbon chromium bearing steel	
19	Parallel pin	Stainless steel	
20	Piston seal	NBR	
21	Gasket	NBR	

Replacement Parts

Description	Kit no.			Contents
	MHF2-8D	MHF2-8D1	MHF2-8D2	
Seal kit	MHF8-PS	MHF8-PS	MHF8-PS-2	12, 20, 21
Finger assembly	MHF-A0802	MHF-A0802-1	MHF-A0802-2	3, 4, 5, 6, 15, 17, 19 Mounting screw

Replacement part/Grease pack part no.:

Guide unit: GR-S-010 (10 g)

Cylinder unit: GR-L-005 (5 g)

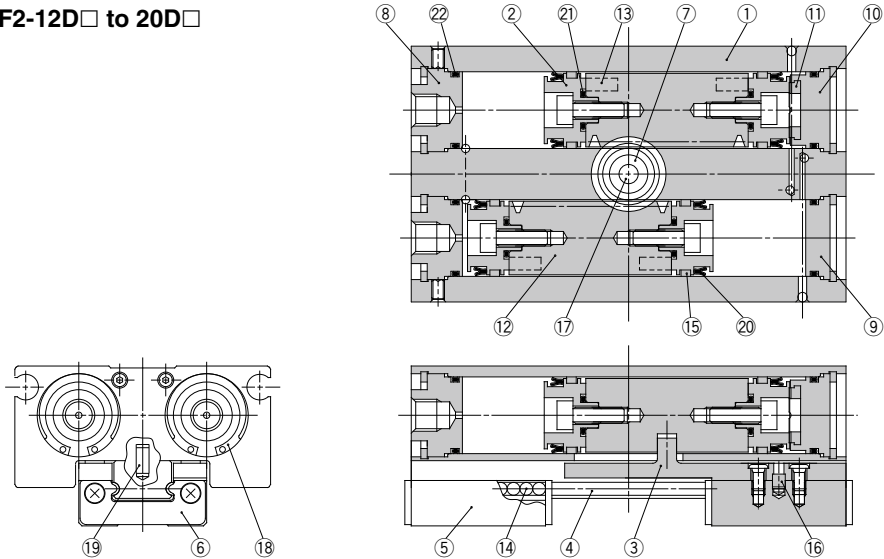
Bolts for Body Through-hole Mounting

Part no.	Number of pieces	
MHF-B08	MHF2-8D	2 pieces/unit
	MHF2-8D1	2 pieces/unit
	MHF2-8D2	4 pieces/unit

* The bolts for body through-hole mounting are attached to the product. They are also provided at an order of 1 piece or more with the above part numbers.

Construction

MHF2-12D□ to 20D□



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Clear anodized
3	Joint	Stainless steel	Heat treatment
4	Guide rail	Stainless steel	Heat treatment
5	Finger	Stainless steel	Heat treatment
6	Roller stopper	Stainless steel	
7	Pinion	Carbon steel	Nitriding
8	Cap A	Aluminum alloy	Clear anodized
9	Cap B	Aluminum alloy	Clear anodized
10	Cap C	Aluminum alloy	Clear anodized
11	Head damper	Urethane rubber	
12	Rack	Stainless steel	Nitriding

No.	Description	Material	Note
13	Magnet	—	Nickel plated
14	Steel balls	High carbon chromium bearing steel	
15	Wear ring	Synthetic resin	
16	σ12: Roller	High carbon chromium bearing steel	
17	σ16 to 20: Parallel pin	Stainless steel	
18	Needle roller	High carbon chromium bearing steel	
19	σ12: R shape retaining ring	Carbon steel	Phosphate coated
20	σ16 to 20: Type C retaining ring	Carbon steel	Phosphate coated
21	Parallel pin	Stainless steel	
22	Piston seal	NBR	
23	Gasket	NBR	
24	Gasket	NBR	

Replacement Parts

Description	Kit no.			Contents
	MHF2-12D	MHF2-12D1	MHF2-12D2	
Seal kit	MHF12-PS	MHF12-PS	MHF12-PS	20, 21, 22
Finger assembly	MHF-A1202	MHF-A1202-1	MHF-A1202-2	3, 4, 5, 6, 14, 16, 19 Mounting screw

Description	Kit no.			Contents
	MHF2-16D	MHF2-16D1	MHF2-16D2	
Seal kit	MHF16-PS	MHF16-PS	MHF16-PS	20, 21, 22
Finger assembly	MHF-A1602	MHF-A1602-1	MHF-A1602-2	3, 4, 5, 6, 14, 16, 19 Mounting screw

Description	Kit no.			Contents
	MHF2-20D	MHF2-20D1	MHF2-20D2	
Seal kit	MHF20-PS	MHF20-PS	MHF20-PS	20, 21, 22
Finger assembly	MHF-A2002	MHF-A2002-1	MHF-A2002-2	3, 4, 5, 6, 14, 16, 19 Mounting screw

Replacement part/Grease pack part no.:

MHF2-□□D, D1 (σ12, 16, 20)	GR-S-010 (10 g) (Guide unit)
MHF2-□□D2 (σ12)	GR-L-005 (5 g) (Cylinder unit)
MHF2-□□D2 (σ16, 20)	GR-S-010 (10 g) (Guide unit)
	GR-L-010 (10 g) (Cylinder unit)

Bolts for Body Through-hole Mounting

Part no.	Number of pieces	
MHF-B12	MHF2-12D	2 pieces/unit
	MHF2-12D1	2 pieces/unit
	MHF2-12D2	4 pieces/unit

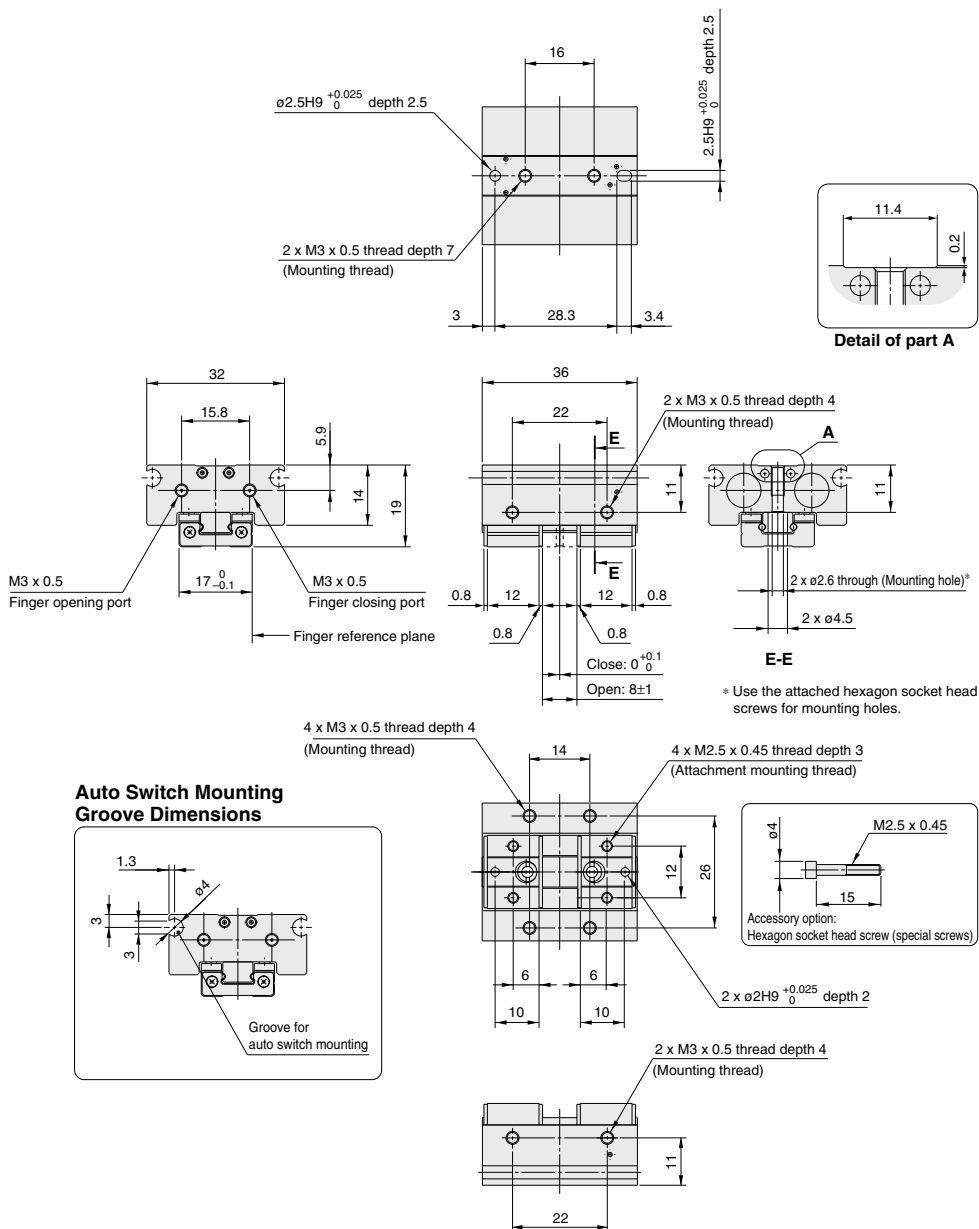
* The bolts for body through-hole mounting are attached to the product. They are also provided at an order of 1 piece or more with the above part numbers.

* When mounting MHF2-16D□ or MHF2-20D□ with the body through-holes, use hexagon socket head screws available on the market.

MHF2 Series

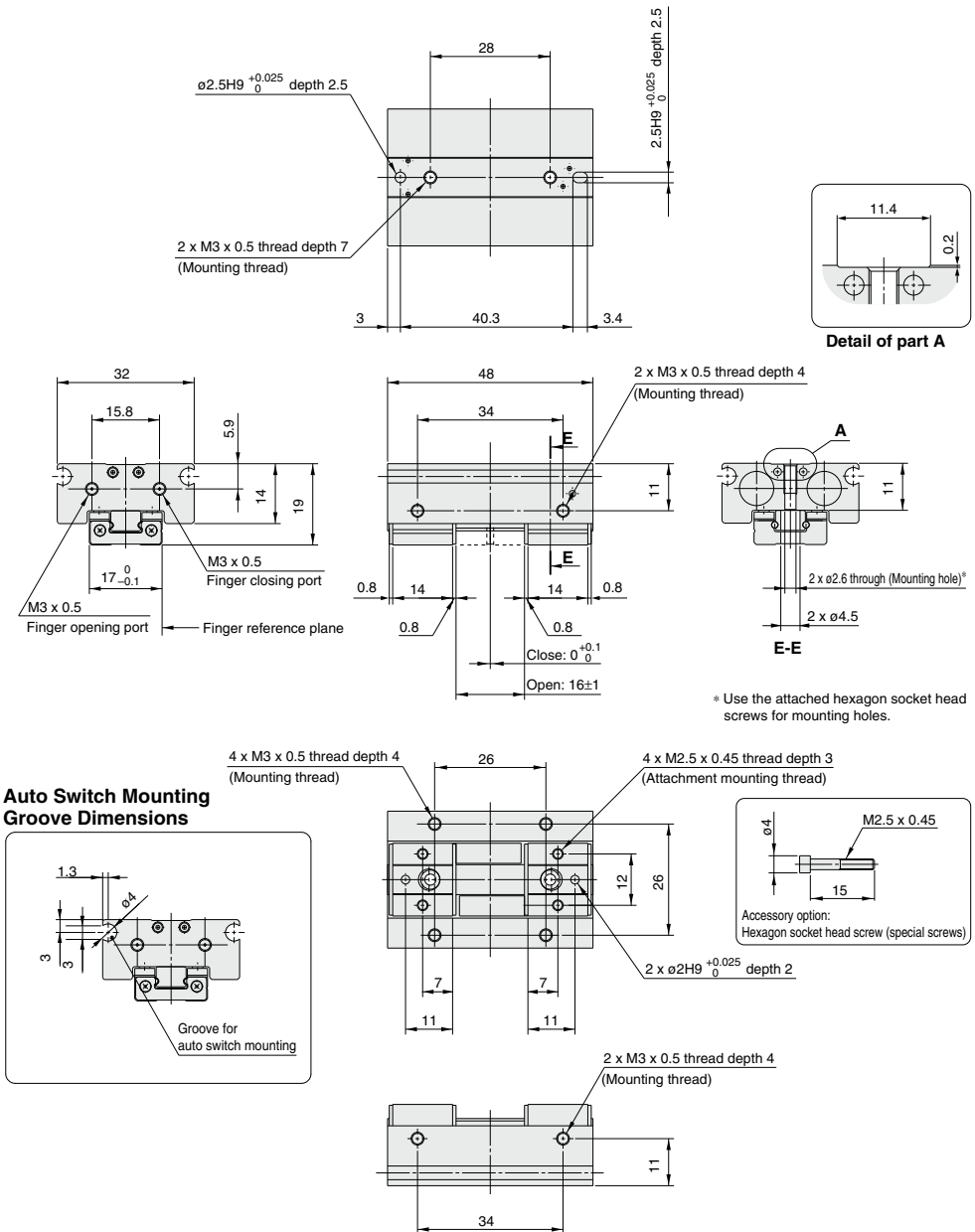
Dimensions

MHF2-8D



Dimensions

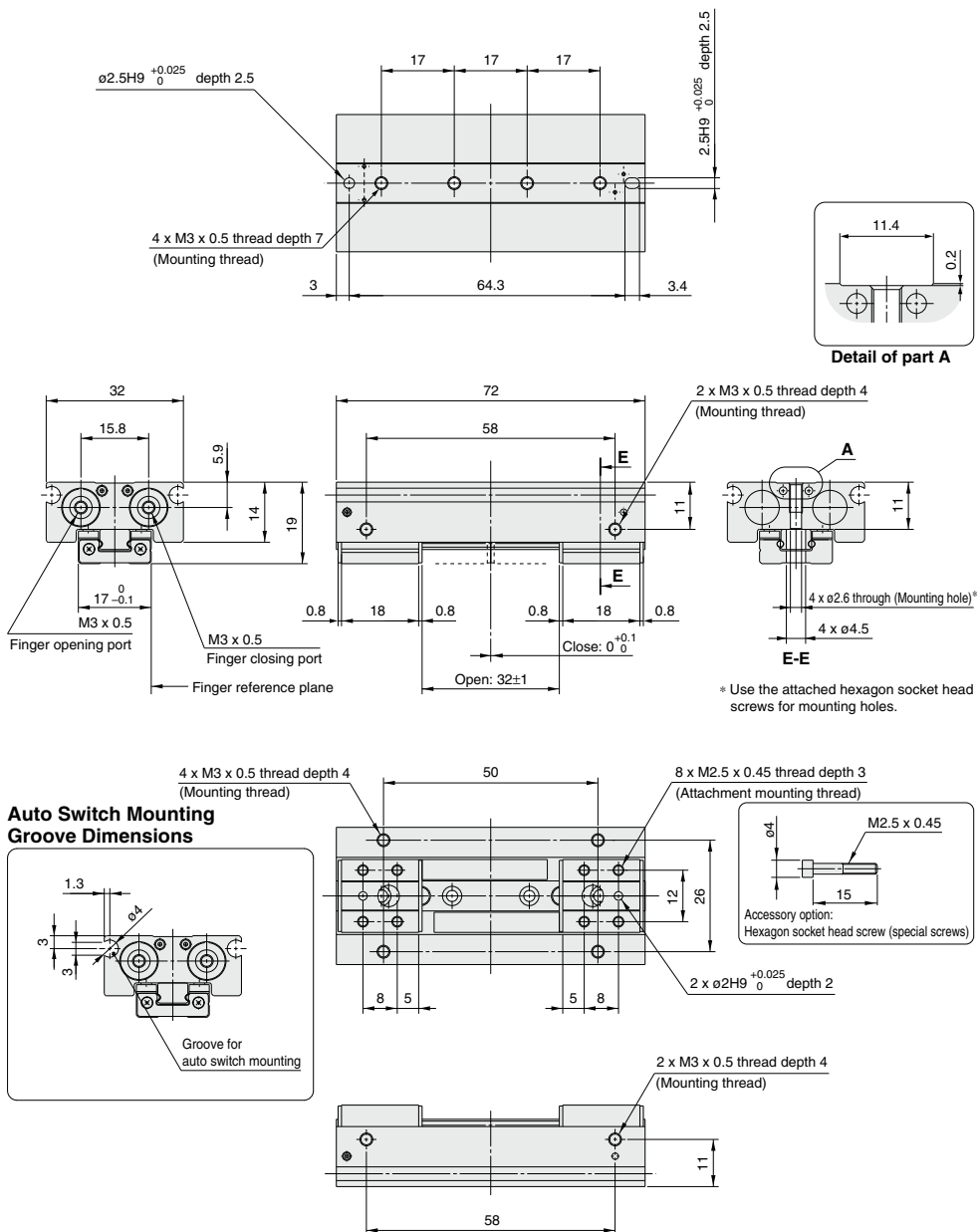
MHF2-8D1



MHF2 Series

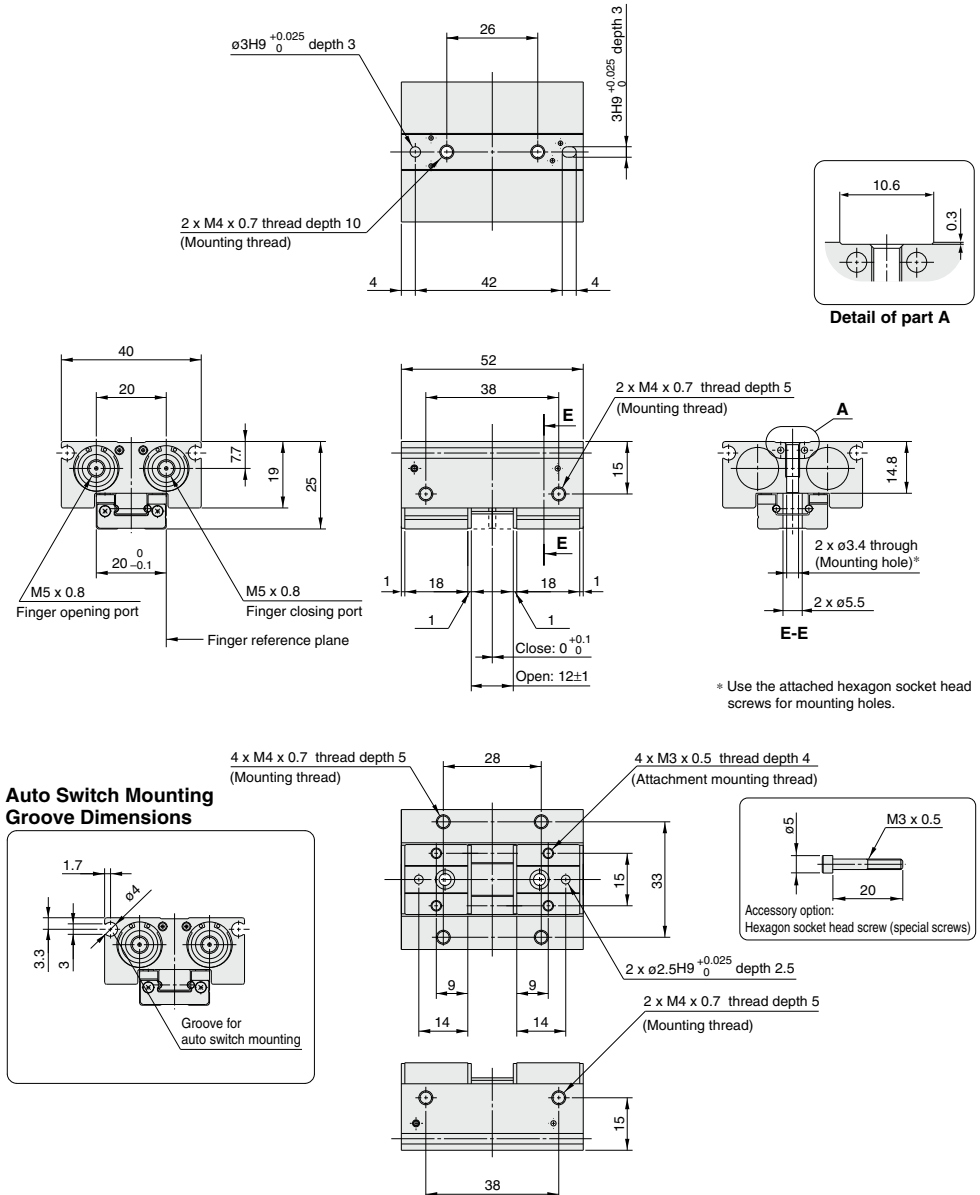
Dimensions

MHF2-8D2



Dimensions

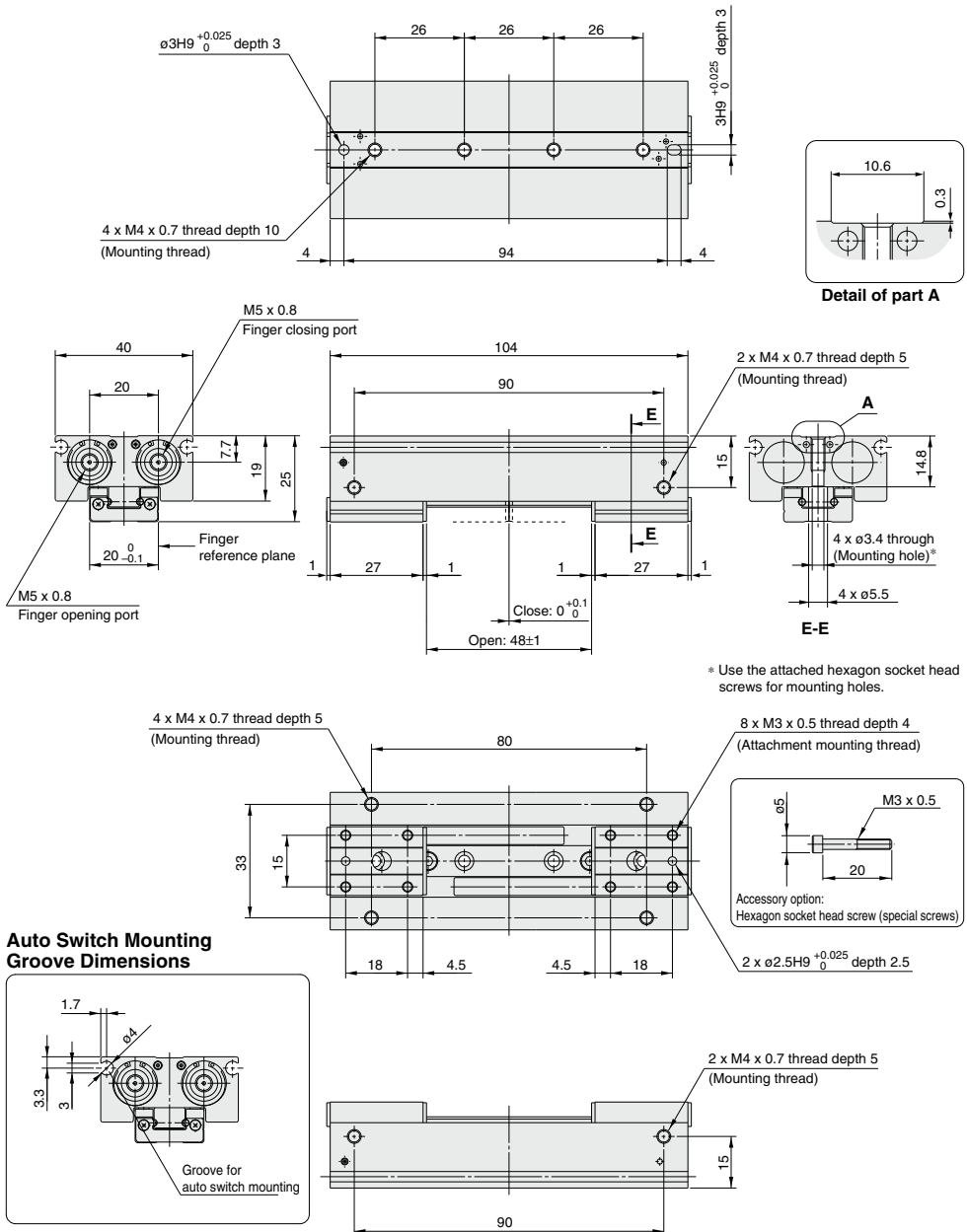
MHF2-12D



MHZ
MHF
MHL
MHR
MHK
MHS
MHC
MHT
MHY
MHW
-X□
MRHQ
MA
D-□

Dimensions

MHF2-12D2

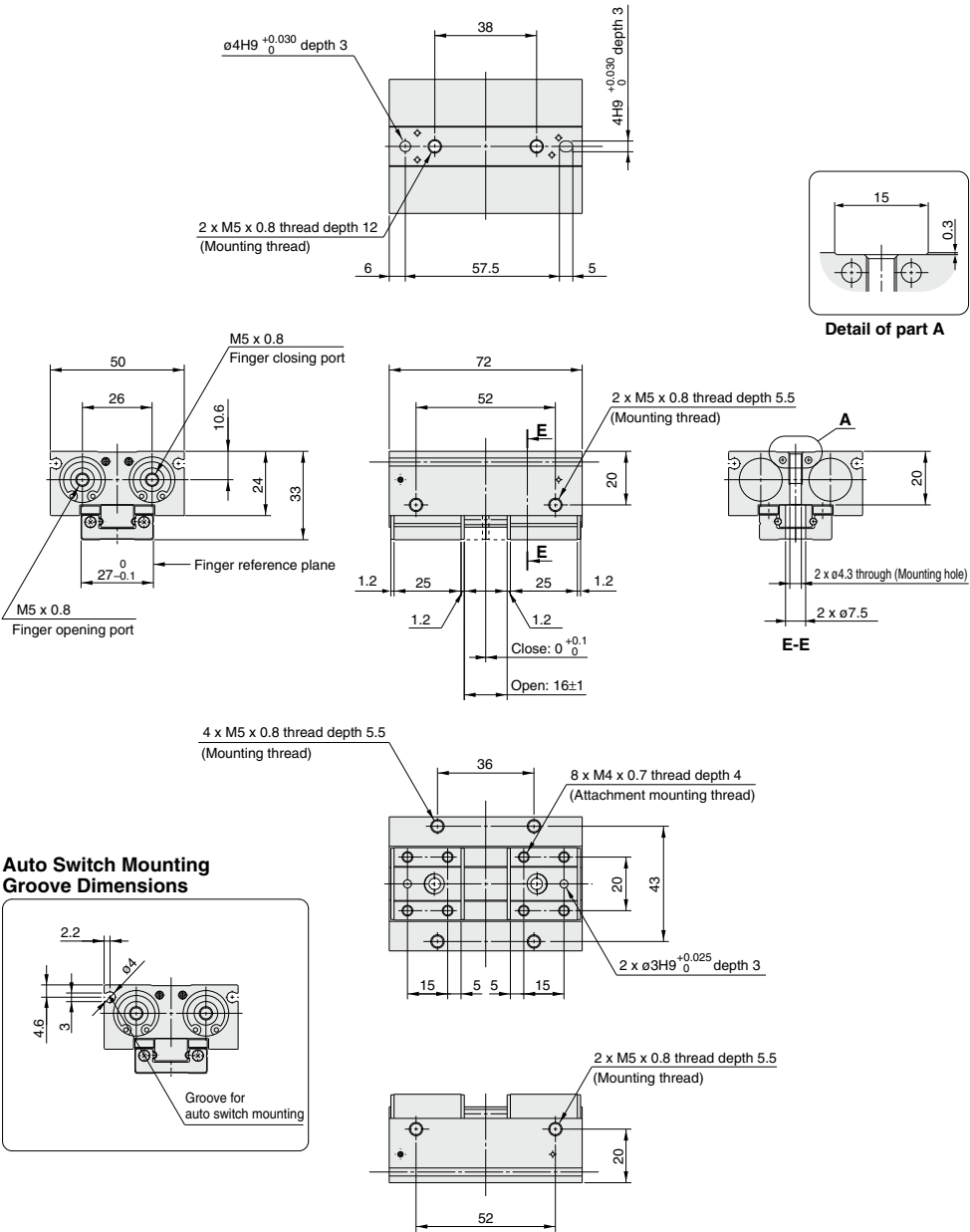


MHZ
MHF
MHL
MHR
MHK
MHS
MHC
MHT
MHY
MHW
-X□
MRHQ
MA
D-□

MHF2 Series

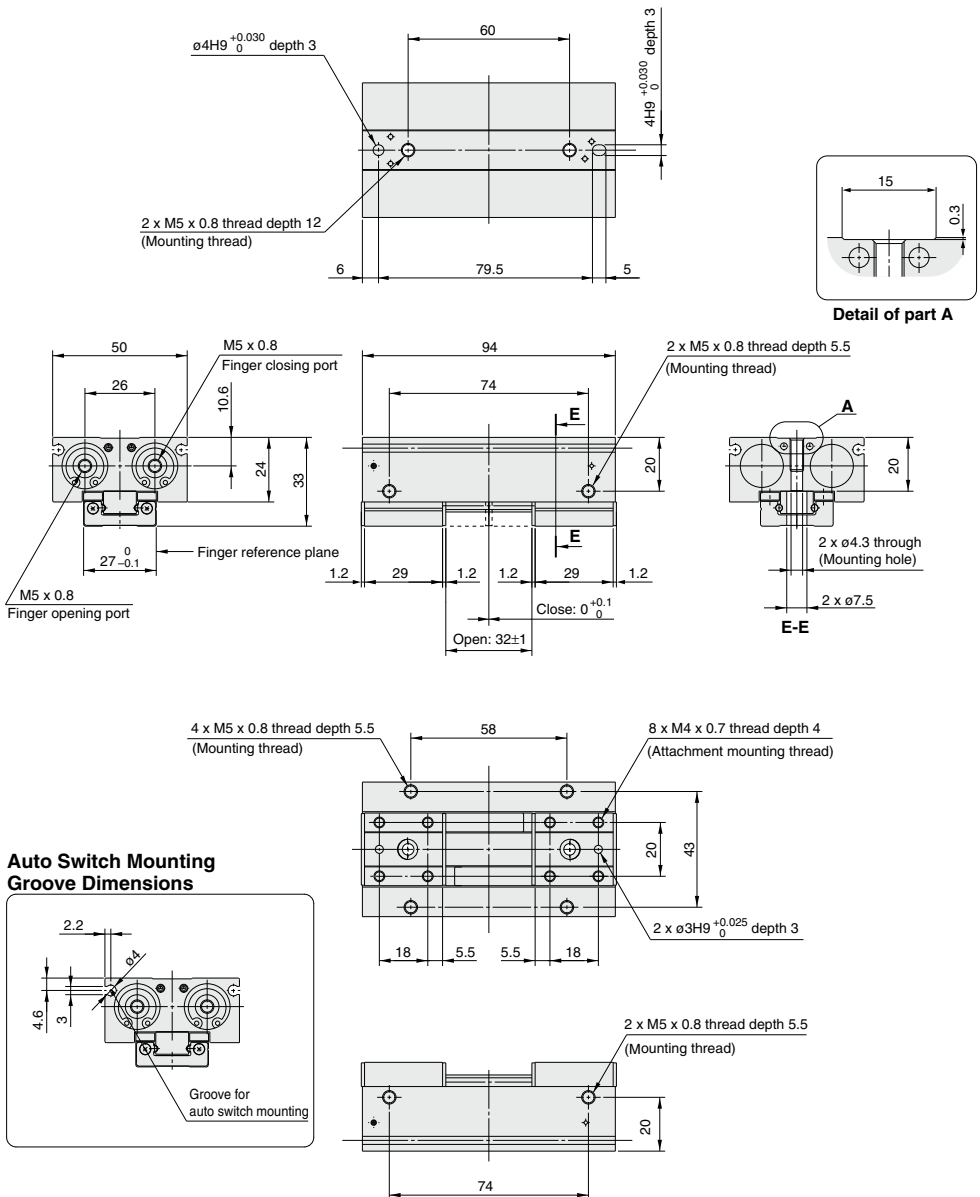
Dimensions

MHF2-16D



Dimensions

MHF2-16D1



MHZ
MHF
MHL
MHR
MHK
MHS
MHC
MHT
MHY
MHW
-X <input type="checkbox"/>
MRHQ
MA
D- <input type="checkbox"/>