Air Gripper with Finger Changer Function

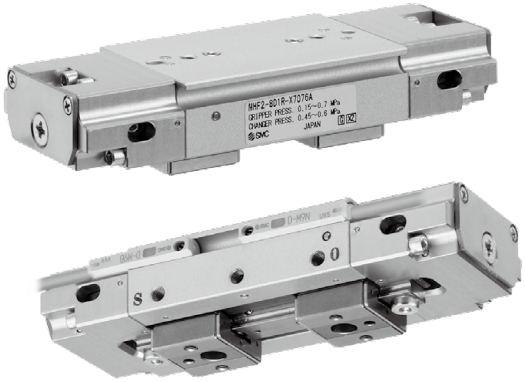
ø8

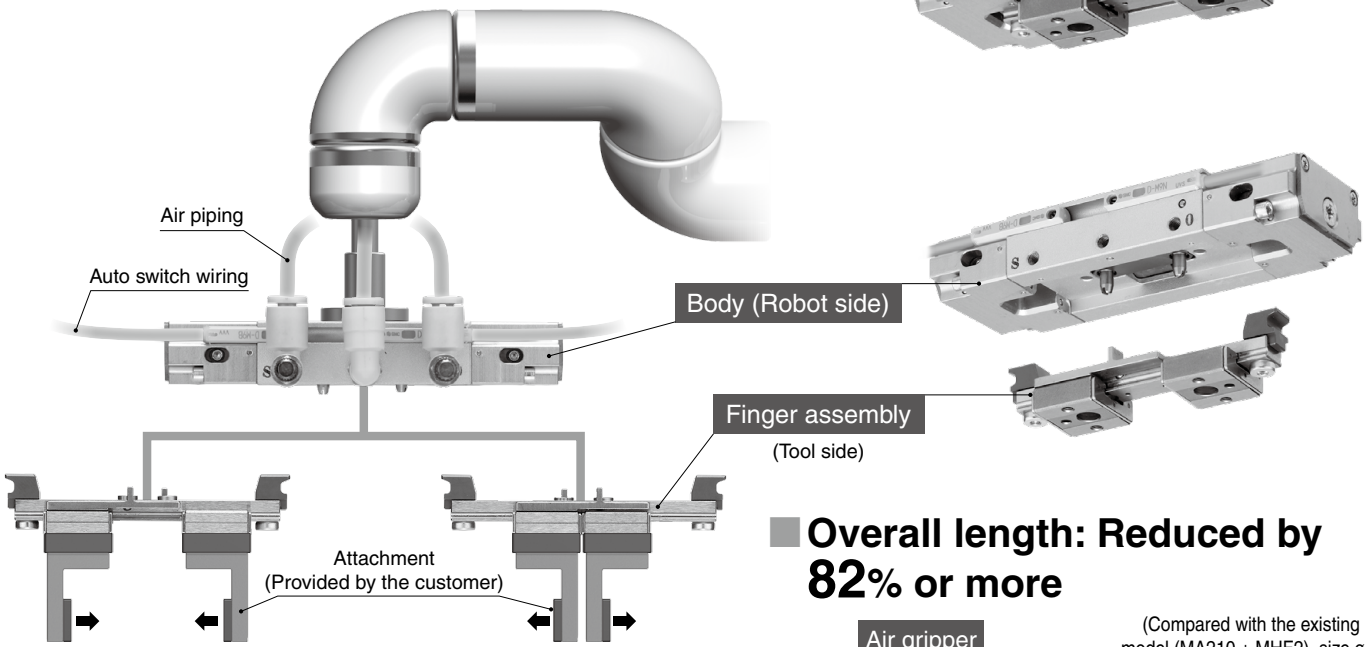
RoHS

Automatic tool changer unit for robots

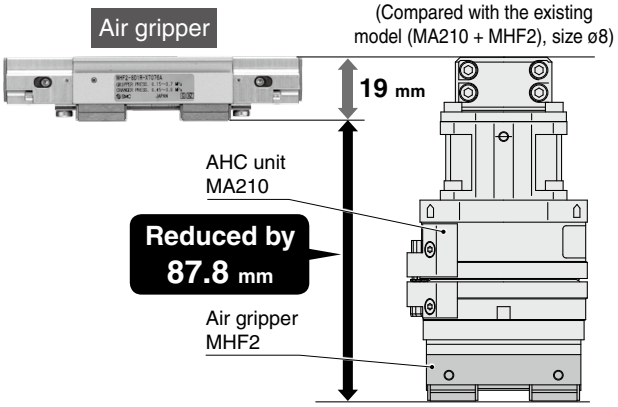
The wiring and piping are bundled together in the body of the air gripper (robot side).

- **Improves electric contact during tool changes, reduces air leakage due to defective piping connections, etc.**
- **Various workpieces can be handled by a single robot.**
  Increased productivity due to reduced attachment replacement and positioning work





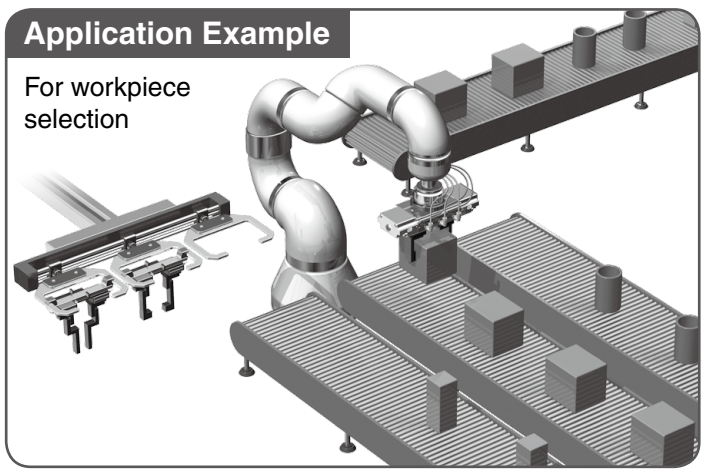
- **Overall length: Reduced by 82% or more**



- **Weight: Reduced by 69% or more**
  (485 g → **150 g**)
  (Compared with the existing model (MA210 + MHF2), size ø8)

Application Example

For workpiece selection

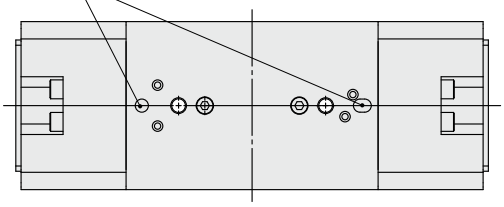


MHF2-X7076A

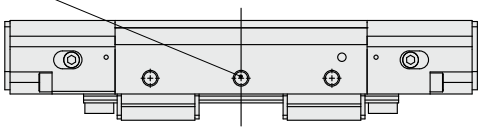
SMC

Configured for improved function and easier maintenance

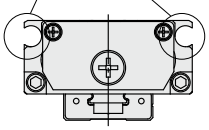
Improved mounting repeatability
With positioning pin holes



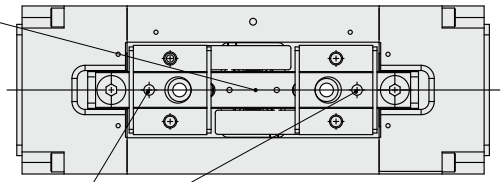
Finger assembly separation port
Separates when air pressure is supplied



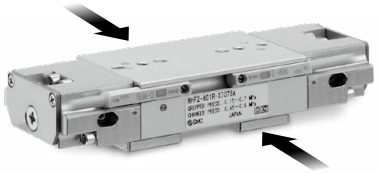
Auto switches can be mounted on both sides.



Linear guide provides:
High precision and high rigidity with martensitic stainless steel



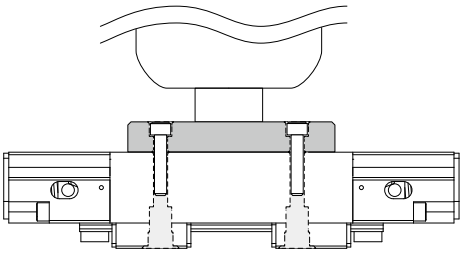
Applicable auto switch: **D-M9□**



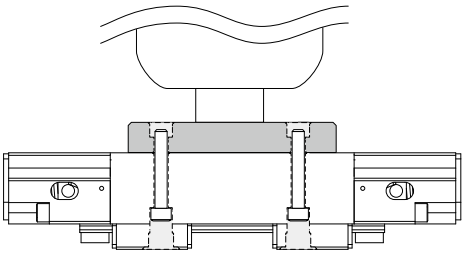
Easy positioning for mounting attachments
With positioning pin holes

Mounting is possible from 2 directions.

Top mounting (Body tapped)

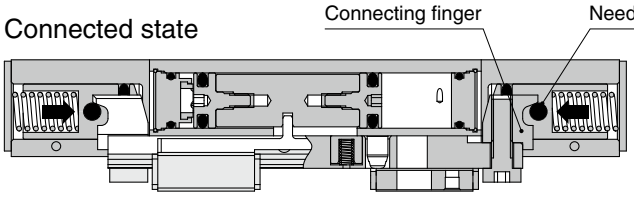


Body through-hole

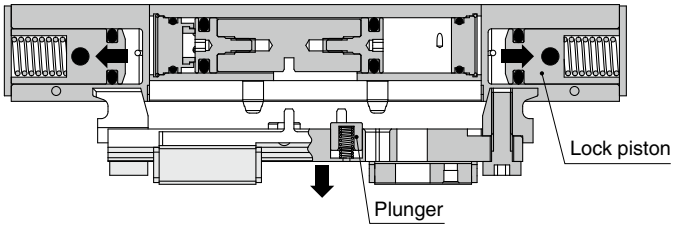


Working Principle

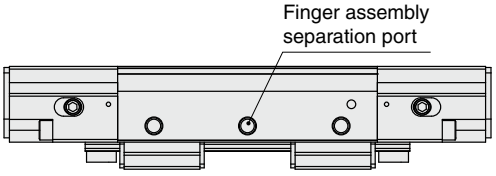
Connected state



When pressurized from the finger assembly separation port



The needle roller pushes the taper of the connecting finger with a spring force when pressure is not supplied to the finger assembly separation port to generate an axial force when connected to make the connection.



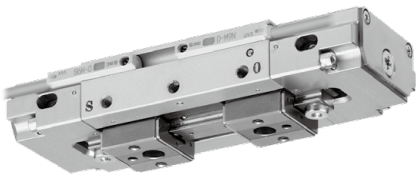
When pressure is supplied to the finger assembly separation port, while the lock piston moves outward, the finger assembly is separated by the spring force of the plunger.

How to Order

Air Gripper with Finger Changer Function

MHF 2 – 8 D 1 R – M9BW ☐ – X7076A

❶ ❷ ❸ ❹ ❺ ❻ ❼



❶ Number of fingers

2	2

❷ Bore size [mm]

8	8

❸ Action

D	Double acting

❹ Opening/Closing stroke (Both sides)

1	Medium stroke	16 mm

❺ Body option

R	Side piping type

❻ Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For applicable auto switches, refer to the table below.

❼ Number of auto switches

Nil	2
S	1
n	n

Finger assembly

MHF – A 08 02 – 1 – X7076A

❶ ❷

❶ Bore size [mm]

08	8

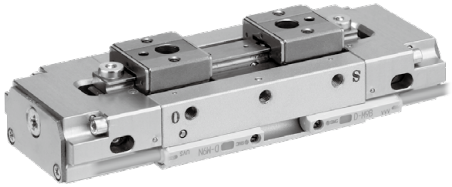
❷ Opening/Closing stroke (Both sides)

1	Medium stroke	16 mm

Applicable Auto Switches/Refer to the **Web Catalog** for further information on auto switches.

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

∗1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance.
∗ Auto switches marked with "○" are produced upon receipt of order.



Specifications

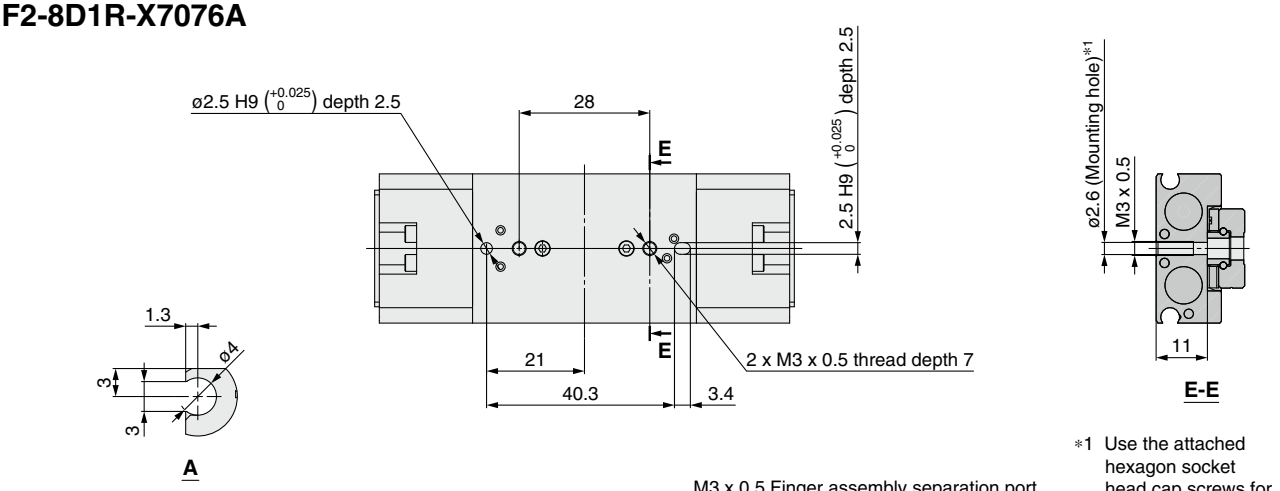
Bore size [mm]		8
Fluid		Air
Action	**Gripper unit**	Double acting
	Changer unit	Single acting (Normally connected)
Operating pressure [MPa]	**Gripper unit**	0.15 to 0.7
	Changer unit	0.45 to 0.6
Ambient temperature [°C]		–10 to 60
Axial force when connected (Theoretical value) [N]		98
Finger position holding force [N]∗1	**Position of fingers when fully open**	4.3
	Position of fingers when not fully open	0.6
Gripping force per finger at 0.5 MPa (Effective value) [N]		19
Opening/Closing stroke (Both sides) [mm]		16
Max. operating frequency [c.p.m]		120
Lubricant		Non-lube
Weight [g]		150 (Finger assembly: 38)

∗1 The theoretical holding force (reference value) which fixes the finger position when the finger assembly is separated

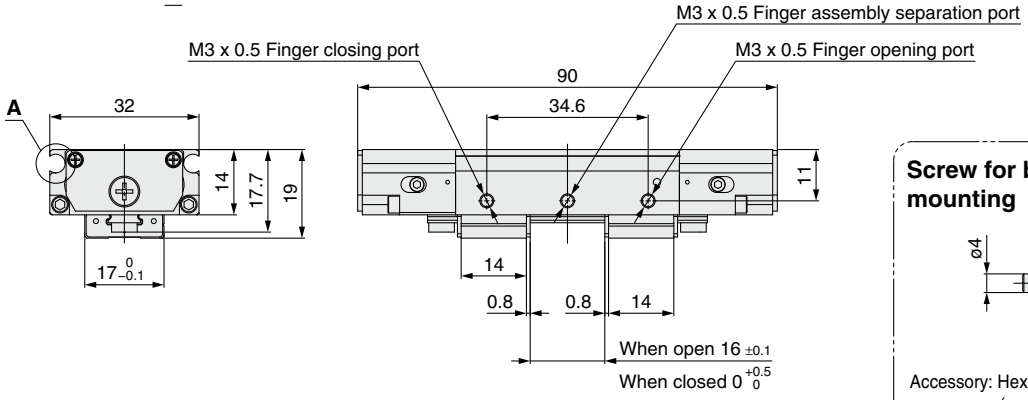
MHF2-X7076A

Dimensions

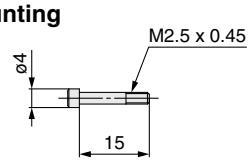
Air Gripper with Finger Changer Function
MHF2-8D1R-X7076A



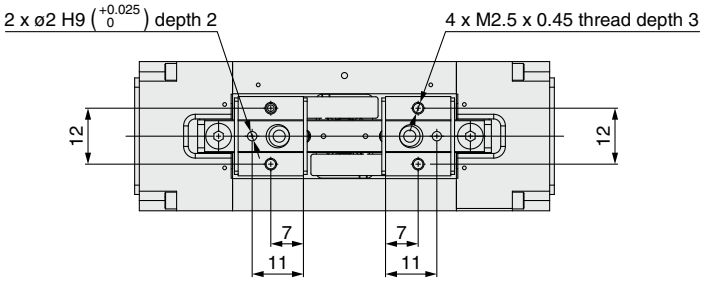
*1 Use the attached hexagon socket head cap screws for mounting holes.



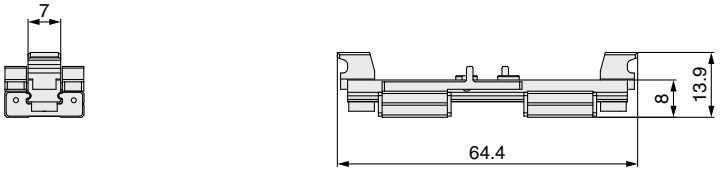
Screw for body through-hole mounting



Accessory: Hexagon socket head cap screw (special screws)



Finger assembly
MHF-A08021-X7076A



MHF2-X7076A
Specific Product Precautions

Be sure to read this before handling the products.

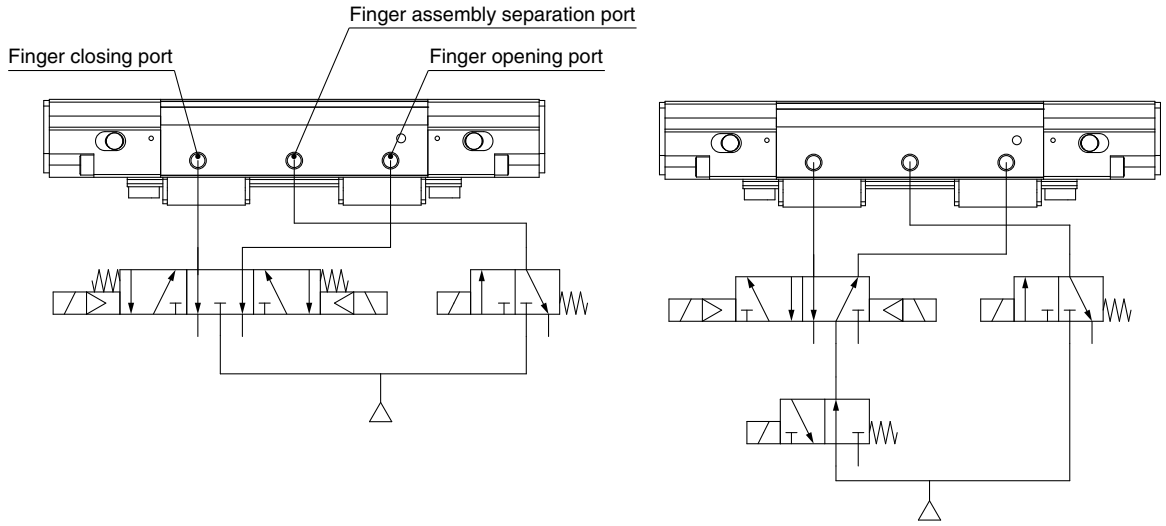
Handling

⚠ Caution

1. While pressure is being supplied to the finger opening/closing ports, the finger assembly may be difficult to separate.

Use the exhaust center solenoid valve or 3-port solenoid valve together to separate the finger assembly after the pressure from the finger opening/closing ports has been released.

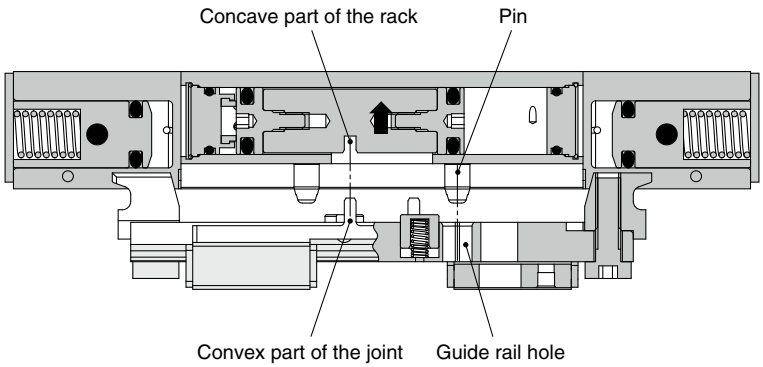
Recommended Circuit Examples



2. It is recommended that the finger assembly be separated while the fingers are in a fully open state.

(If the finger assembly is separated while the fingers are not in a fully open state, the force to fix the finger position will be reduced.)

3. When connecting, align the guide rail holes and pins (2 locations), and confirm that the convex part of each joint is aligned with the concave part of the rack. Then, tightly connect the body and guide rail.



Connection Method

4. If the separated state is not maintained, such as when the fingers or piston are operated while the finger assembly is separated, the pieces will no longer be able to connect as is.

Align the convex part of each joint and the concave part of the rack to make the connection.

⚠ **Safety Instructions**	Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.