Air Grippers for Collaborative Robots

CE UKCA RoHS

New Tool changers (one-push and auto types) and a tool holder have been added.

Unitization of the peripheral devices required for gripper driving

Operation is possible simply by connecting 1 air supply tube and 1 electrical cable.

Built-in

- Solenoid valve
- Exhaust throttle valve with silencer
- Auto switch
- Fitting

* The attachment should be ordered separately by the customer.

3 types of grippers available for use with a variety of workpieces

Standard Type

RMHZ2 Series

3-Finger Type

RMHS3 Series

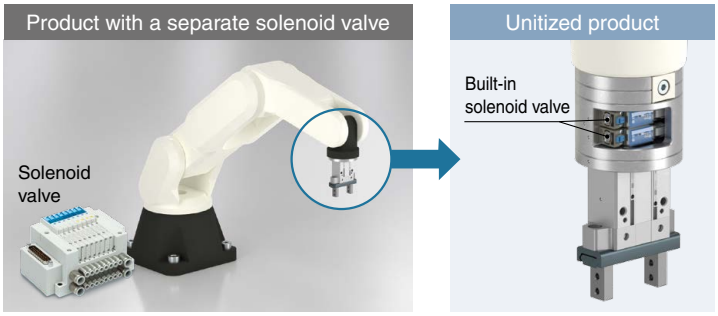
Long Stroke Type

RMHF2 Series

Can be used with the collaborative robots of 12 companies

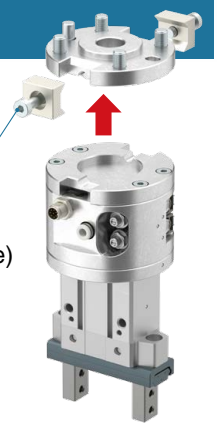
UNIVERSAL ROBOTS,
OMRON/TECHMAN ROBOT, FANUC,
YASKAWA Electric, Mitsubishi Electric,
HAN'S ROBOT, KUKA, DOOSAN ROBOTICS,
SIASUN, JAKA, AUBO, ABB

Air consumption reduced by up to 80%



Select from 3 types of tool changer. p. 3

Simple operation allows for easy tool changing.



- Clamp type (Manual override)
- New One-push type (Manual override)
- New Auto type

Allows for temporary workpiece drop prevention p. 4

When normally open (N.O.) or normally closed (N.C.) is selected for the valve and the power is cut off, the finger remains open or closed, respectively.

RMH□ Series

SMC

CAT.ES160-7B

Air Grippers for Collaborative Robots *RMH□*

Standard Type p. 17

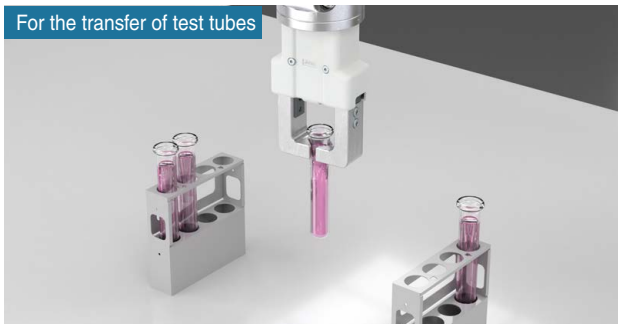
RMHZ2 Series

- High rigidity and precision are achieved by integrating the guide and finger.
- With high-precision linear guide

Specifications

Gripping force*1 Effective value per finger	External	54.2 N
	Internal	72.2 N
Opening/Closing stroke (Both sides)		14 mm
Weight		638 g*2

*1 Gripping force is measured at a pressure of 0.5 MPa.
*2 This is the value excluding the weights of the protective cover and connector cable.



3-Finger Type p. 25

RMHS3 Series

- Suitable for axial gripping of cylindrical workpieces

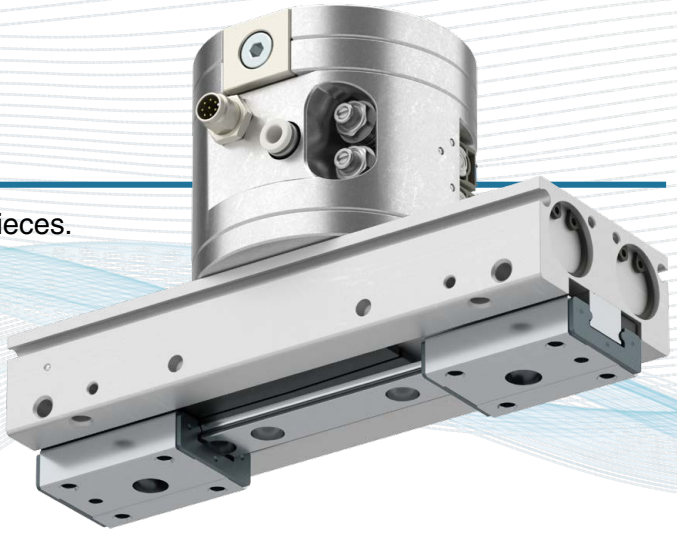
Specifications

Gripping force*1 Effective value per finger	External	118 N
	Internal	130 N
Opening/Closing stroke (Diameter)		8 mm
Weight		776 g*2

*1 Gripping force is measured at a pressure of 0.5 MPa.
*2 This is the value excluding the weights of the protective cover and connector cable.

Long Stroke Type p. 33

RMHF2 Series

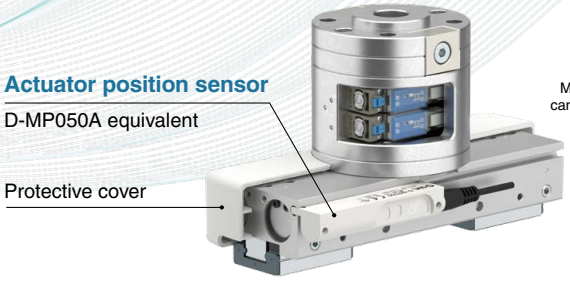


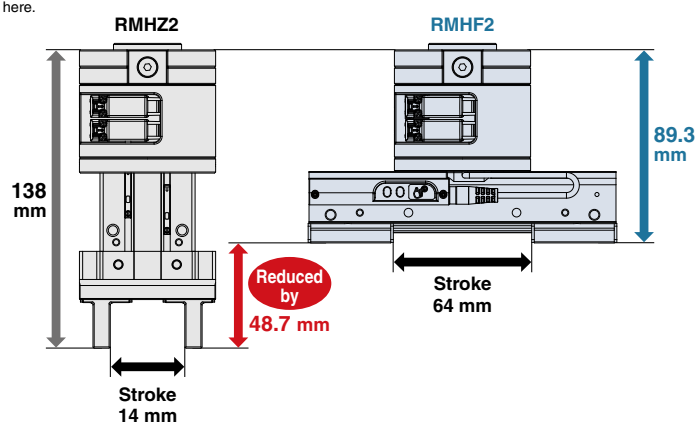
- The 64 mm long stroke is ideal for a variety of workpieces.
- Height reduced by approx. 35% (Compared with the standard type)
- Actuator position sensor mountable (Option)
  (Collaborative robot manufacturer: Compatible with robots from UNIVERSAL ROBOTS and FANUC CORPORATION)

Workpiece length measurement and discrimination can be performed.
- The stroke position is output with an analog signal.
- Repeatability: 0.1 mm

Click here for details.

More information can be viewed here.



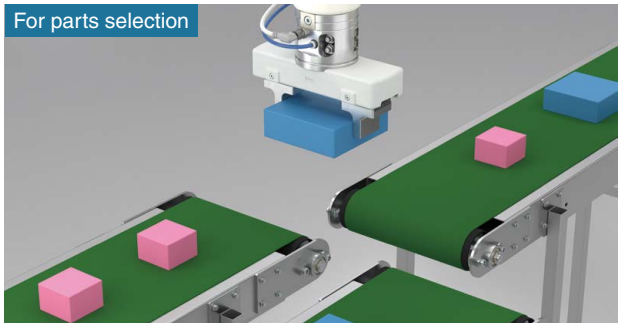


Specifications

Gripping force*1 Effective value per finger	90 N
Opening/Closing stroke (Both sides)	64 mm
Weight	945 g*2

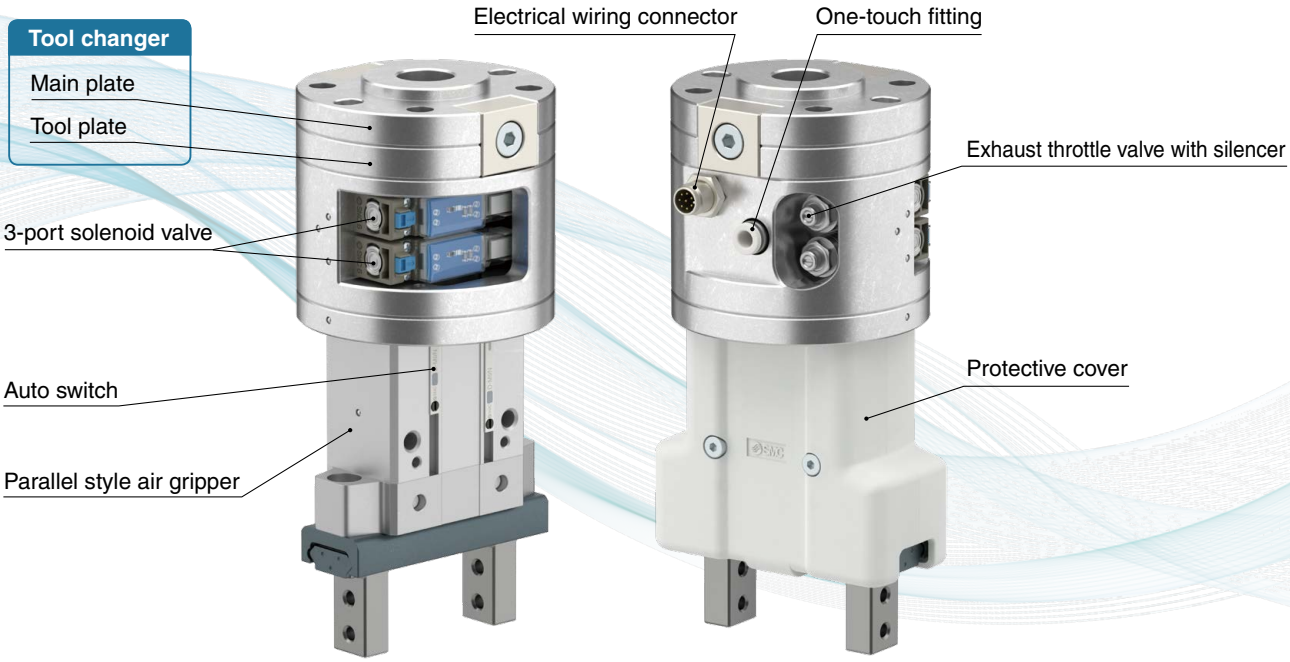
*1 Gripping force is measured at a pressure of 0.5 MPa.
*2 This is the value excluding the weights of the protective cover and connector cable.

For parts selection



Easier mounting and maintenance

- A split protective cover for easy air gripper maintenance
- Standards: ISO 9409-1-50-4-M6



Select from 3 types of tool changer. Reduced mounting and maintenance labor

Clamp Type (Manual override)	One-push Type (Manual override)	Auto Type
Hand tools can be attached/removed by clamper bolts (2 pcs).	Hand tools can be attached/removed by the push of a button (no tools required).	Allows for the easy automatic change of hand tools

Details of each gripper

· Standard Type p. 17 · 3-Finger Type p. 25 · Long Stroke Type p. 33

Options

Protective covers

For RMHZ2

For RMHS3

For RMHF2

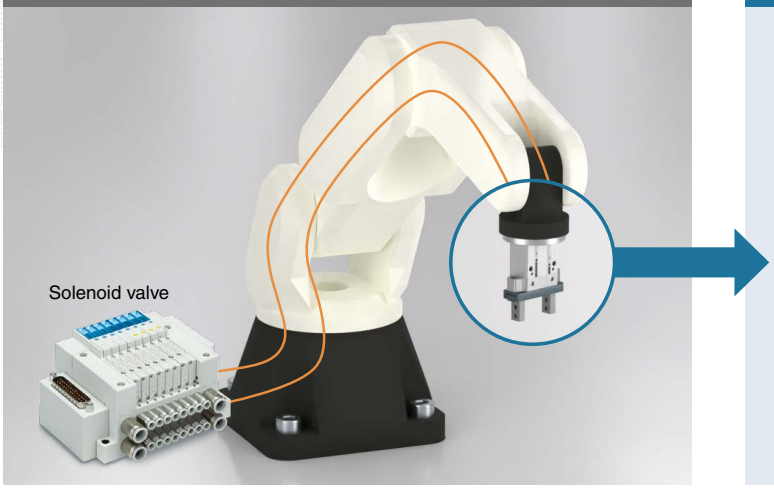
Connector cable

For applicable robots, refer to page 42.

Air consumption reduced by up to 80%

· Air consumption is significantly reduced compared to when the solenoid valve is installed separately for the same type of model.

Product with a separate solenoid valve



Unitized product

Consumption air can be reduced because long piping is not required.

Built-in solenoid valve

Air Consumption Reduction by Model (Per stroke)

	Air consumption reduction
RMHZ2	80%
RMHS3	60%
RMHF2	30%

∗ Conditions
· Piping I.D.: ø2.5 mm
· Piping length: 2 m
· Number of pipes: 2
· Supply pressure: 0.5 MPa

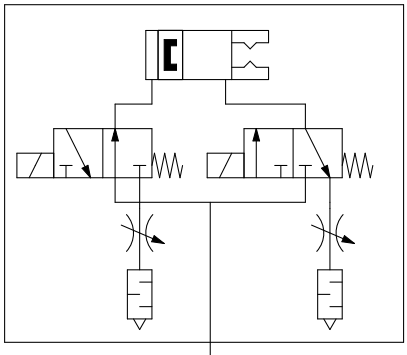
Allows for temporary workpiece drop prevention

· Valve option: Normally open, Normally closed

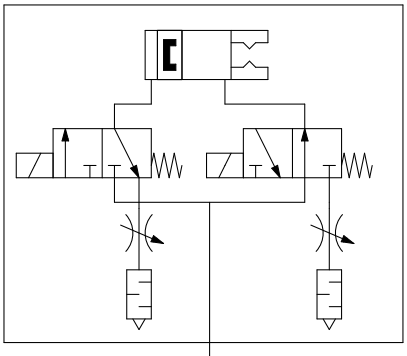
If power to the solenoid valve is cut off while air is being supplied, the finger remains open or closed depending on the valve option. It can be used as a workpiece drop prevention function during transportation when there is a power failure.

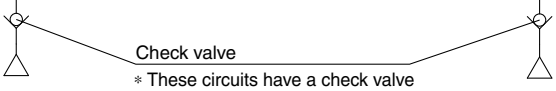
∗ The customer must install a check valve, etc., so that the air being supplied to the gripper is not exhausted when the power is cut off.
∗ After the power is cut off, the gripper gripping force may gradually decrease the longer it is without power. Therefore, even if the drop prevention function is activated, be sure to quickly move the workpiece to a safe position in the case of an emergency.

Normally open



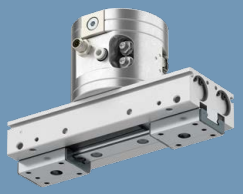
Normally closed





∗ These circuits have a check valve added on the RMH's symbol.

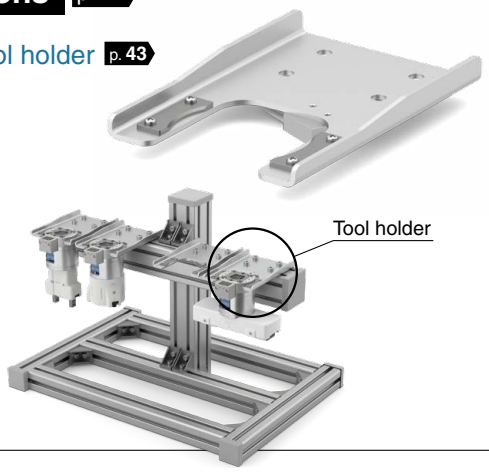
Series Variations

		Standard Type **RMHZ2 Series**  p. 17	3-Finger Type **RMHS3 Series**  p. 25	Long Stroke Type **RMHF2 Series**  p. 33
Number of fingers		2	3	2
Gripping force	External gripping force [N]	54.2	118	90
	Internal gripping force [N]	72.2	130	90
Opening/Closing stroke (Both sides) [mm]		14	8	64
Piping diameter [mm]		4	4	4
Weight [g]	Clamp type	638	776	945
	One-push type	645	783	952
	Auto type	948	1086	1255
Options	Protective cover	●	●	●
	Connector cable	●	●	●
	Actuator position sensor	—	—	●
	Built-in valve	●	●	●
	Tool changer/Clamp type	●	●	●
	Tool changer/One-push type	●	●	●
	Tool changer/Auto type	●*1	●*1	●*1
	Plug-in software	●	●	●
Compatible robot manufacturer		12 companies	12 companies	12 companies

*1 Compatible with robots from UNIVERSAL ROBOTS, OMRON Corporation/TECHMAN ROBOT, YASKAWA Electric Corporation DTP Series, and FANUC CORPORATION

Options p. 42

● Tool holder p. 43



● Robot manufacturer dedicated flanges p. 45

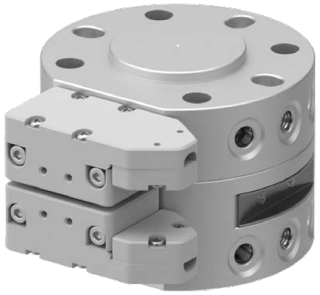
YASKAWA Electric, Mitsubishi Electric, OMRON/TECHMAN ROBOT

Tool Changer

Auto Type *RMTA Series*

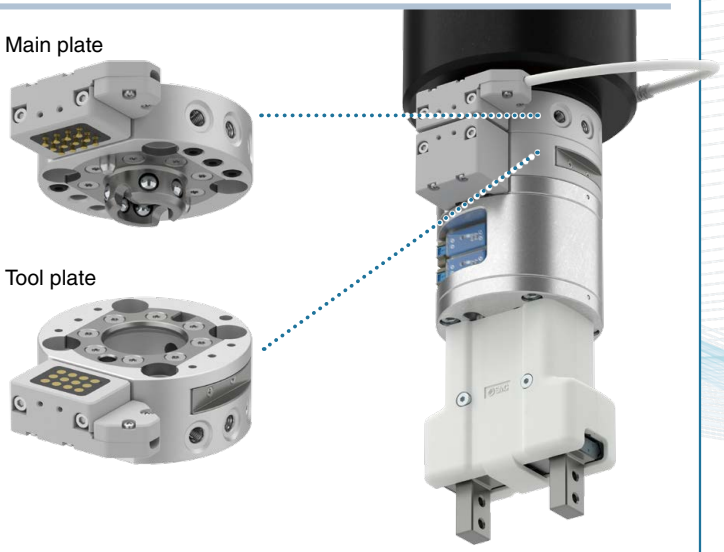
Robot hand tool automatic exchange

- Work load: 5 kg, 10 kg, 20 kg
- Standards: ISO9409-1 compliant
  Support for direct mounting on collaborative robots



Click here for details.

More information can be viewed here.



One-push Type *RMTM1 Series*

Tools can be attached/removed by the push of a button (no tools required).

- Work load: 10 kg
- Repeatability: ±0.01 (Position reproducibility)

Click here for details.

More information can be viewed here.

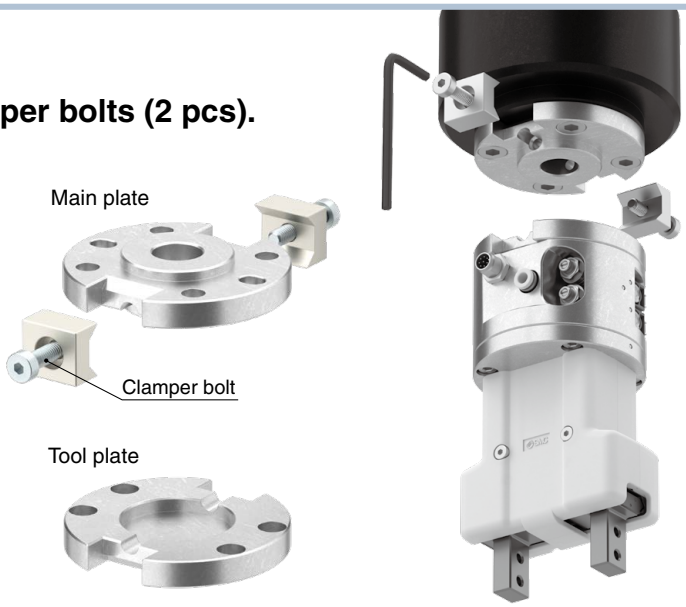
Clamp Type *RMTM2 Series*

Tools can be attached/removed by clamper bolts (2 pcs).

- Work load: 20 kg
- Repeatability: ±0.02 (Position reproducibility)

Click here for details.

More information can be viewed here.



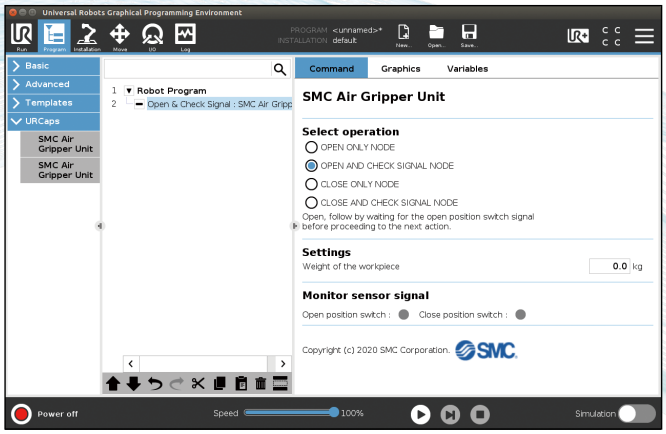
Plug-in Software

Compatible with robots from UNIVERSAL ROBOTS, OMRON Corporation/TECHMAN ROBOT, FANUC CORPORATION, and YASKAWA Electric Corporation

UNIVERSAL ROBOTS

URCap

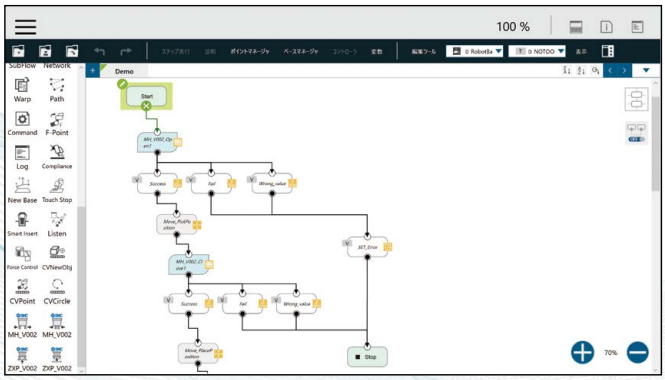
Air Gripper Program Screen



OMRON/TECHMAN ROBOT

TMComponent

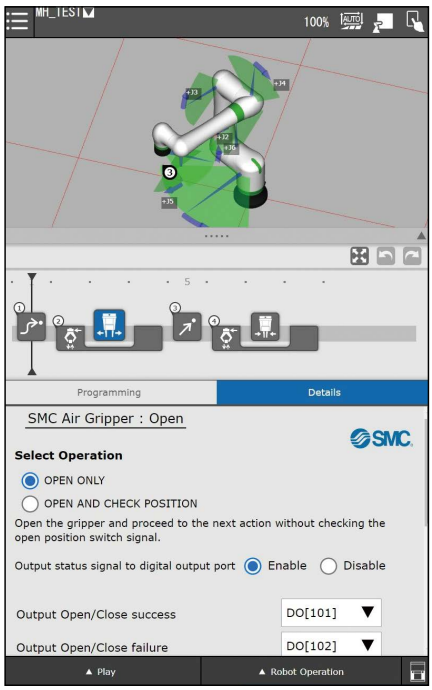
Air Gripper Program Screen



FANUC

CRX Plug-in

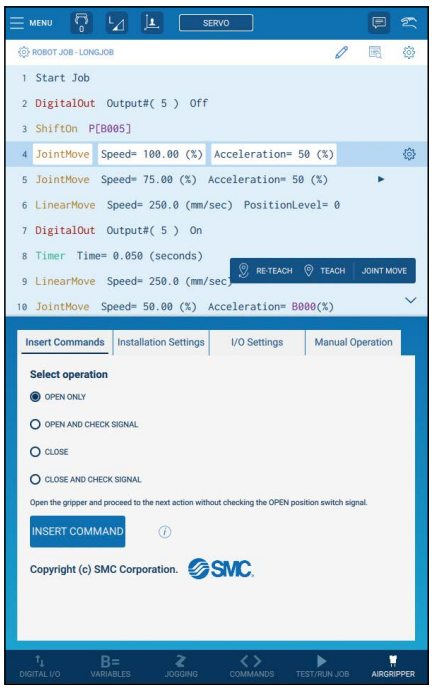
Tablet TP Editor Screen



YASKAWA Electric

YASKAWA Plug and Play Kit

Smart Pendant Program Screen



Compatible with the robots of 12 robot manufacturers

UNIVERSAL ROBOTS, OMRON/TECHMAN ROBOT, FANUC, YASKAWA Electric, Mitsubishi Electric, HAN'S ROBOT, KUKA, DOOSAN ROBOTICS, SIASUN, JAKA, AUBO, ABB

Related Products

Multi Hand Adapter
RMMA Series

Click here for details.

More information can be viewed here.

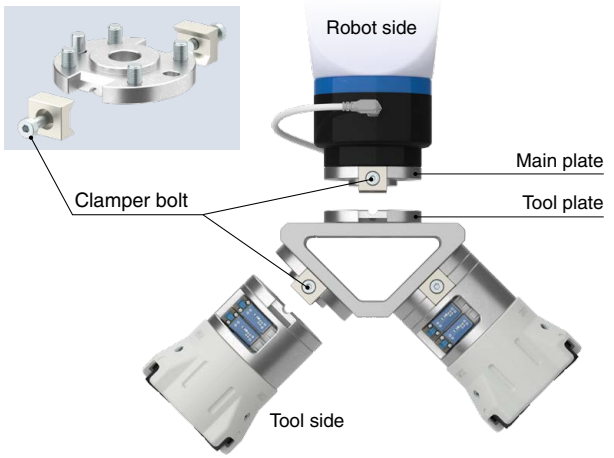
Allows for the handling of various workpieces by a single robot

Allows for the simultaneous transfer of multiple workpieces

- Up to 3 grippers can be mounted.
- Reduces tool changing time

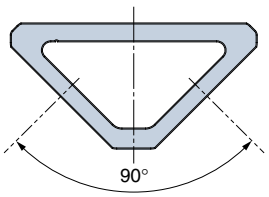
Robot arm end standards: Equivalent to ISO9409-1-50-4-M6

Mounting and removal are possible using the 2 clamper bolts.

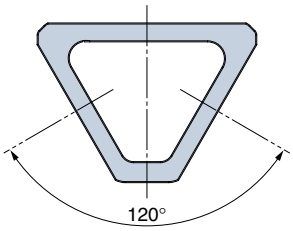


3 gripper mounting angles

90° type

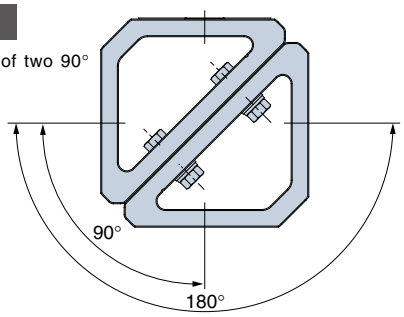


120° type



180° type

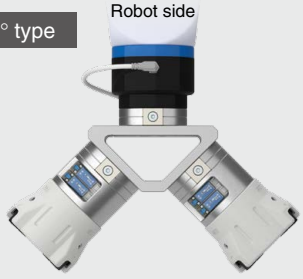
Combination of two 90° type adapters

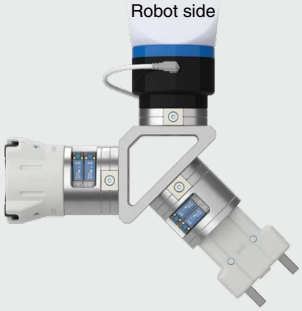


Gripper Mounting Example

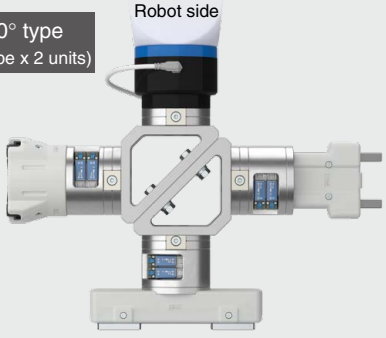
A wide range of combinations is possible. Mounting angles can be selected according to the specifications.

90° type





180° type (90° type x 2 units)



CONTENTS

Air Grippers for Collaborative Robots

RMH□ Series

Operation Manuals

RMHZ2 RMHS3 RMHF2

Click here for details.

RMH□ Series
Model Selection

Checking whether a workpiece can be transferred

Selection Procedure

Step 1 Check the effective gripping force. → **Step 2** Check the gripping point. → **Step 3** Check the external force on fingers.

Step 1 Check the gripping force.

Check the conditions. → Check the required gripping force. → Check whether it can be transferred or not from the gripping force graph.

Example

Workpiece mass: 0.2 kg

Gripping method: External gripping

Guidelines for gripping force with respect to workpiece mass

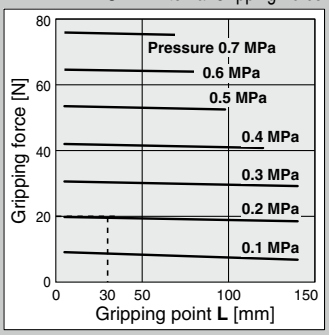
- Although conditions vary depending on the coefficient of friction between the attachment and the workpiece as well as the shape, adjust so that the gripping force is at least 5 to 10 times(*1) greater than the workpiece weight.
  *1 Refer to the gripping force calculation explanatory drawing for more information.
- Further allowance should be provided when great acceleration or impact is expected during workpiece transfer.

Example) For setting the gripping force to be at least 10 times greater than the workpiece weight:
Required gripping force = 0.2 kg x 10 x 9.8 m/s² ≈ 19.6 N or more

Gripping point: 30 mm

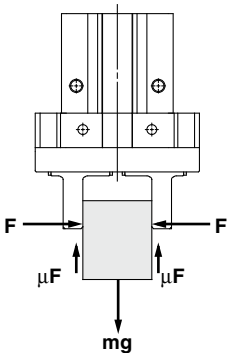
Operating pressure: 0.2 MPa

RMHZ2-20D External Gripping Force



- When the **RMHZ2-20D** is used
  A gripping force of 20 N is obtained from the intersection point of gripping point L = 30 mm and a pressure of 0.2 MPa.
- Since a gripping force of 20 N satisfies the required gripping force of 19.6 N or more, the workpiece can be transferred by the RMHZ2-20D.

Gripping force calculation explanatory drawing



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

F : Gripping force [N]
μ : Coefficient of friction between the attachments and the workpiece
m : Workpiece mass [kg]
g : Gravitational acceleration (= 9.8 m/s²)
mg : Workpiece weight [N]

the conditions under which the workpiece will not drop are

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

(2: Number of fingers)

and therefore,

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

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

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

"Gripping force at least 5 to 10 times greater than the workpiece weight"

· The "at least 5 to 10 times greater than the workpiece weight" recommended by SMC is calculated with a margin of "a" = 2, which allows for impacts that occur during transfer by collaborative robots, etc.

When μ = 0.2	When μ = 0.1
$F = \frac{mg}{2 \times 0.2} \times 2$	$F = \frac{mg}{2 \times 0.1} \times 2$
$= 5 \times mg$	$= 10 \times mg$
5 x Workpiece weight	10 x Workpiece weight

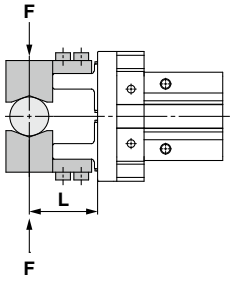
(*) · Even in cases where the coefficient of friction is greater than μ = 0.2, or the number of fingers is 3, for safety reasons, select a gripping force which is at least 5 to 10 times greater than the workpiece weight, as recommended by SMC.
· This product has a smaller margin than our standard grippers as it is designed for use with a collaborative robot (acceleration 1000 mm/s², speed 250 mm/s). However, the gripping force margin should be increased in the following cases.
· For large accelerations or impacts exceeding the above, a larger margin should be considered.
· If the finger and workpiece contact surfaces are small, even if the gripping force is 5 to 10 times the workpiece weight, there is a risk of the workpiece falling. A material with a high coefficient of friction such as rubber is recommended for the end of the finger.
· To check whether a workpiece can be transferred under the actual conditions (such as the finger shape, material, grip method, amount of acceleration, and ambient environment), the customer must conduct a workpiece transfer test.

Checking whether a workpiece can be transferred/RMHZ2

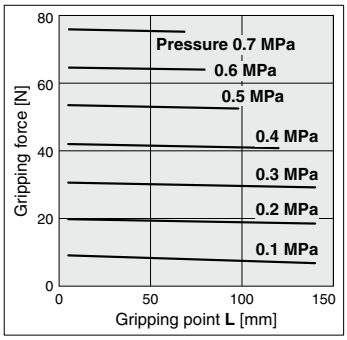
Step 1 Check the effective gripping force.

The gripping force shown in the graphs represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece.
F = One finger thrust

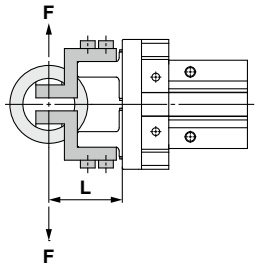
External gripping state



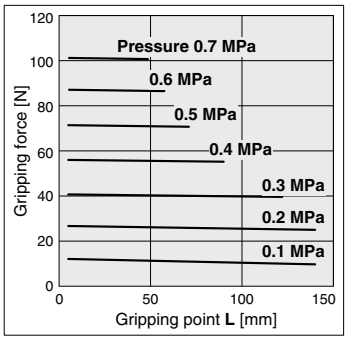
External Gripping Force



Internal gripping state



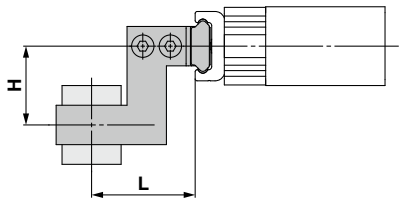
Internal Gripping Force



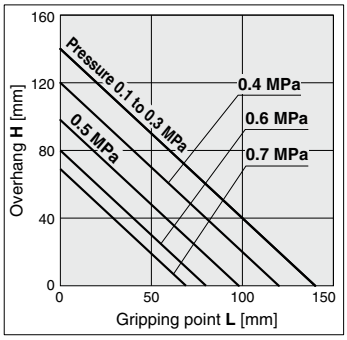
Step 2 Check the gripping point.

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

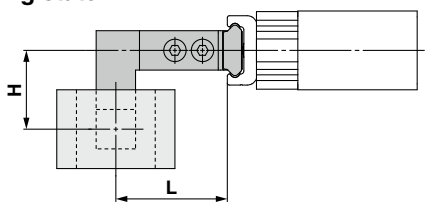
External gripping state



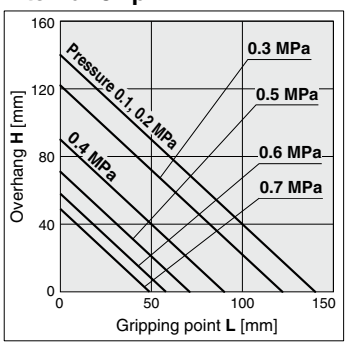
External Grip



Internal gripping state



Internal Grip

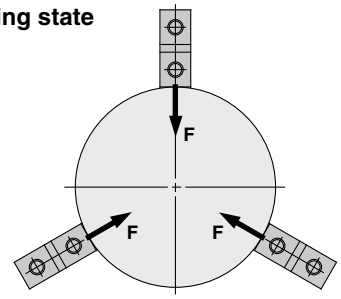


Checking whether a workpiece can be transferred/RMHS3

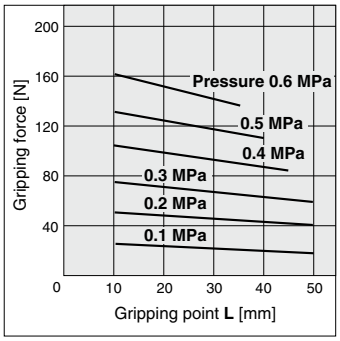
Step 1 Check the effective gripping force.

The gripping force shown in the graphs represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece.
F = One finger thrust

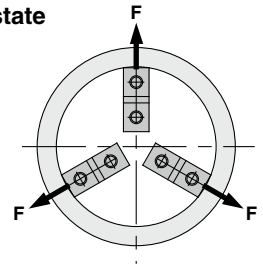
External gripping state



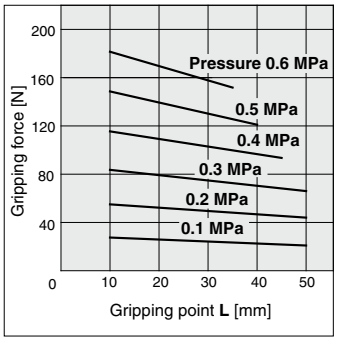
External Gripping Force



Internal gripping state



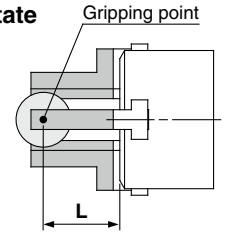
Internal Gripping Force



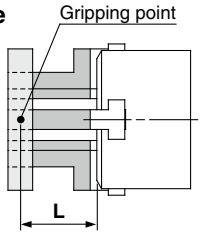
Step 2 Check the gripping point.

The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs (Step 1). If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.

External gripping state



Internal gripping state

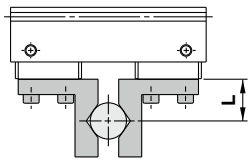


Checking whether a workpiece can be transferred/RMHF2

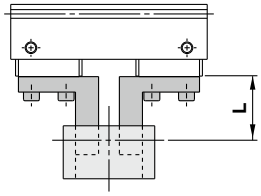
Step 1 Check the effective gripping force.

The gripping force shown in the graph represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece.
F = One finger thrust

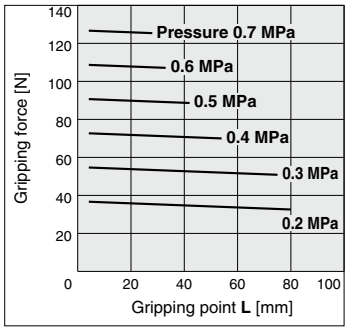
External gripping state



Internal gripping state



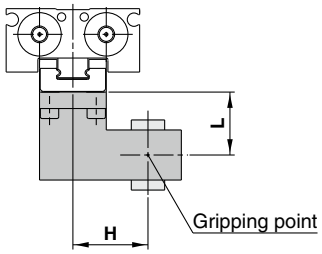
External/Internal Grip



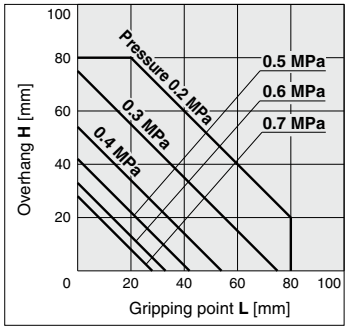
Step 2 Check the gripping point.

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

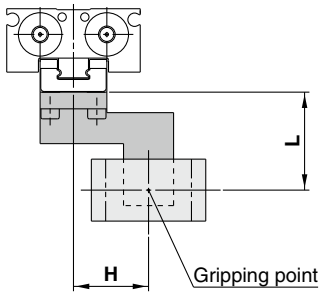
External gripping state



External/Internal Grip

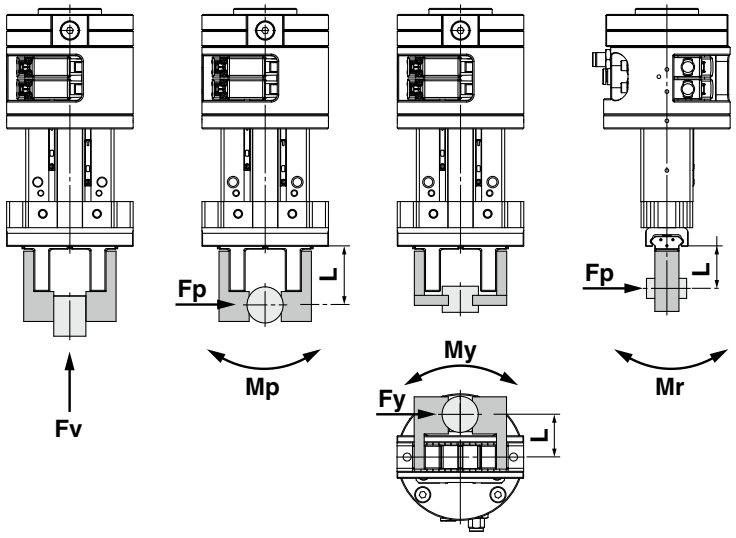


Internal gripping state



Checking whether a workpiece can be transferred

Step 3 Check the external force on fingers.



Model	Max. allowable moment/load*1, *2			
	Vertical load **Fvmax** [N]	Pitch moment **Mpmax** [N·m]	Yaw moment **Mymax** [N·m]	Roll moment **Mrmax** [N·m]
RMHZ2-20	176	2.1	2.1	4.2
RMHF2-16	176	1.4	1.4	2.8

*1 Inertial loads will be generated at the stroke end when the product is used for transportation. Consider the rate of acceleration.
*2 Ensure moments and loads are the allowable values or less.
* When combining a vertical load and moment, make sure the load factor is 1 or less according to the equation below.

Fv/**Fvmax** + **Mp**/**Mpmax** + **My**/**Mymax** + **Mr**/**Mrmax** ≤ 1 (Load factor)

* For the RMHS, the above definition of moment does not apply. After confirming the workpiece weight and gripping force, check whether the workpiece can be transferred using the actual device.

For the RMHZ2 and RMHF2

* The allowable values in the table vary from those of the single unit air gripper. For more information on single unit air grippers, refer to the JMHZ2-20D and MHF2-16D2 standard product catalogs.

Air Gripper for Collaborative Robots
Standard Type
RMHZ2 Series

How to Order

RMHZ2 – 20D – ☐ N O – N D E

❶ ❷ ❸ ❹ ❺ ❻

❶ Compatible robot

The symbols are shown in "Table 1 Compatible Robot List."

❷ Switch selection

N	Auto switch (NPN)
P	Auto switch (PNP)

❹ Connector cable

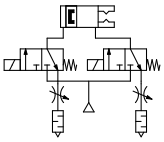
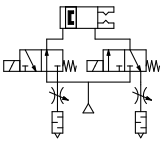
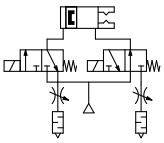
Nil	With connector cable
N	Without connection cable

∗ Only "N" is available for the auto type mounting interface.

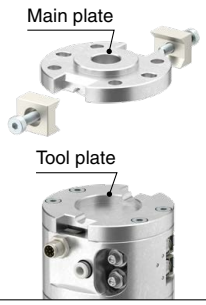
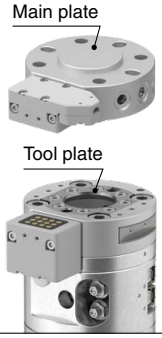
❺ Protective cover

Nil	Without protective cover	
D	With protective cover	

❸ Valve option

Nil	O	C
Basic type	Normally open	Normally closed
		

❻ Mounting interface/Tool changer

Symbol	With main plate		Symbol	Without main plate	
E	Clamp type		**F**	Clamp type	
E1	One-push type		**F1**	One-push type	
E2	Auto type		**F2**	Auto type	

∗ The main plate is required to mount the gripper to the robot.
Customers who already have a main plate can select "Without main plate".
∗ The main plates are not interchangeable between different product types.

Table 1 Compatible Robot List

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity	Mounting interface		
Identification	Switch selection					Clamp	One-push	Auto
011	P	UNIVERSAL ROBOTS	UR3e	PNP	–COM	○	○	○
			UR5e					
			UR10e					
			UR16e					
021	N	OMRON/ TECHMAN ROBOT	TM□	NPN	+COM	○	○	○*1
			TM□S					
031	N	Mitsubishi Electric	MELFA ASSISTA (RV-5AS-D)	NPN	+COM	○	○	—
	P			PNP	–COM			
041	N	YASKAWA Electric	MOTOMAN -HC10	NPN	+COM	○	○	—
	P			PNP	–COM			
042	N		MOTOMAN -HC10DT	NPN	+COM	○	○	—
	P			PNP	–COM			
043	N		MOTOMAN -HC10(S)DTP	NPN	+COM	○	○	○
			MOTOMAN -HC20(S)DTP					
	P		MOTOMAN -HC10(S)DTP	PNP	–COM			
			MOTOMAN -HC20(S)DTP					
051	P	FANUC	CRX-5iA	PNP	–COM	○	○	○
			CRX-10iA(L)					
			CRX-20iA					
			CRX-30iA					
061	P	KUKA	LBR-iiwa (Media flange: I/O Pneumatic)	PNP	–COM	○	○	—
071	P	Doosan Robotics	H2017	PNP	–COM	○	○	—
			H2515					
			M0609					
			M0617					
			M1013					
			M1509					
081	P	SIASUN	SCR3	PNP	–COM	○	○	—
			SCR5					
			GCR3-620					
			GCR5-910					
			GCR10-1300					
			GCR14-1400					
			GCR20-1100					
091	N	JAKA	JAKA Zu3	NPN	+COM	○	○	—
			JAKA Zu5					
			JAKA Zu7					
			JAKA Zu12					
	P		JAKA Zu3	PNP	–COM			
			JAKA Zu5					
			JAKA Zu7					
			JAKA Zu12					
101	N	AUBO	AUBO-i3	NPN	+COM	○	○	—
			AUBO-i5					
			AUBO-i10					
111	P	HAN'S ROBOT	E03	PNP	–COM	○	○	—
			E05					
			E10					
121	P	ABB	Gofa	PNP	–COM	○	○	—

*1 When using the tool holder on a robot with a camera, the tool holder will interfere with the camera, so be sure to use the extension flange (option). (Refer to page 46 for details.)

* Please contact our nearest sales office for the compatibility with robots not listed in the compatible robot list.

Specifications

Item			Specification
Common	**Standards**		Compliant with ISO 9409-1-50-4-M6∗1
	Fluid		Air
	Operating pressure		0.1 to 0.7 MPa
	Ambient and fluid temperatures		–10 to 50°C∗2
	Repeatability		±0.01 mm
	Max. operating frequency		120 C.P.M.
	Lubricant		Non-lube
	Action		Double acting
	Gripping force Effective value per finger	**External**	54.2 N∗3
		Internal	72.2 N∗3
	Opening/Closing stroke (Both sides)		14 mm
	Weight	**Clamp type**	638 g∗4
		One-push type	645 g∗4
		Auto type	948 g∗4
	Connector type		M8, 8-pin (Plug)
	Air pressure supply (P) port		One-touch fitting (ø4)
	Power supply voltage		24 VDC ±10%∗2
Solenoid valve	**Model**		V114/V124
Auto switch	**Model**		D-M9N/D-M9P
Exhaust throttle valve	**Model**		ASN2-M5-X937

∗1 Robots whose end effector mounting standard differs are equipped with a dedicated mounting flange. (Refer to pages 45 and 46.)
∗2 Only when the compatible robot is KUKA's LBR-iiwa, the power supply voltage is 24 VDC (–15%/+20%) and the max. operating temperature is 40°C.
∗3 These are values at the stroke center when the pressure is 0.5 MPa and the gripping point distance L is 20 mm.
∗4 This is the value excluding the weights of the protective cover and connector cable.

Valve Specifications

Operating temperature	–10 to 50°C (40°C∗1) No freezing
Manual override	Non-locking push type
Mounting orientation	Unrestricted (Based on gripper mounting orientation)
Enclosure	Dust-protected

∗1 For robot identification symbol 061P

Solenoid Specifications

Coil rated voltage	24 VDC
Allowable voltage fluctuation	–10 to +10% (–15% to +20%∗1)
Power consumption	0.4 W (0.55 W∗1)
Surge voltage suppressor	Varistor

∗1 For robot identification symbol 061P

Auto Switch Specifications

Output type	NPN/PNP (Depends on the robots)
Power supply voltage	24 VDC
Current consumption	10 mA or less
Load voltage	28 VDC or less (NPN)
Load current	40 mA or less
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)
Leakage current	100 μA or less at 24 VDC

Refer to page 12 for more information on model selection using the effective “gripping force” and “gripping point.”

Tool Changer/Auto Type Specifications

Operating pressure range	0.4 to 0.7 MPa
Withstand pressure	1.05 MPa
Repeatability (Position reproducibility)	±0.01 mm
Recommended clearance before coupling	1 mm

∗ For details, refer to the auto type tool changer in the **Web Catalog**.

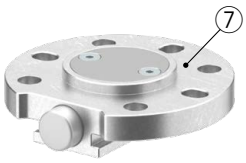
Click here for details.

More information can be viewed here.

Component Parts

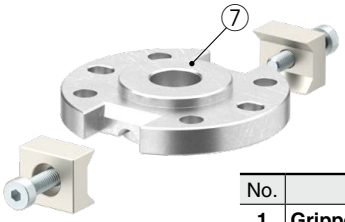
Clamp Type

One-push Type



Auto Type

Clamp Type



No.	Description
1	**Gripper**
2	**3-port solenoid valve**
3	**Exhaust throttle valve with silencer**
4	**One-touch fitting**
5	**Protective cover**
6	**Auto switch**
7	**Main plate**

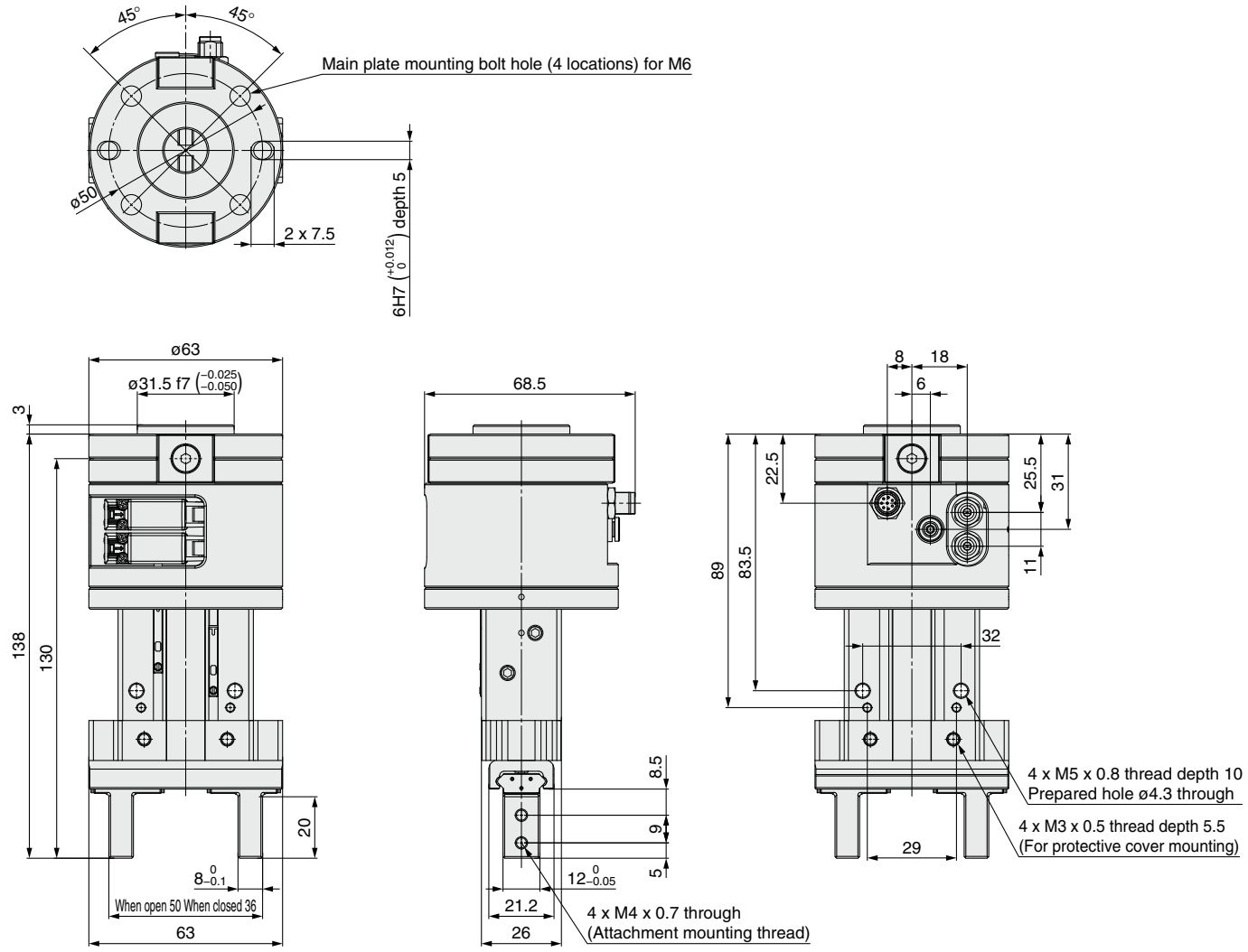
Replacement Parts

Description			Order number	Included parts
Gripper assembly			RMH-A13-01	①
Protective cover assembly			RMH-A13-08	⑤, Mounting screw
Dedicated flange	**Mitsubishi Electric: 031N, 031P**		JMHZ-A16-X7400-BRK-01	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 041N, 041P		JMHZ-A16-X7400-BRK-02	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 042N, 042P		JMHZ-A16-X7400-BRK-03	
Auto switch assembly*1	**PNP**		RMH-A00-05-P	⑥
	NPN		RMH-A00-05-N	
3-port solenoid valve	**Normally open*2**		V124-5MOU	②
	Normally closed		V114-5MOU	
	KUKA: 061P	**Normally open*2, *3**	V114-5MOU-X647	
		Normally closed*3	V124-5MOU-X647	
Main plate assembly (Clamp type)	**Other than the following**		RMH-A00-09-A	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N		RMH-A00-09-B	
	JAKA: 091N/091P ABB: 121P		RMH-A00-09-C	
Main plate (One-push type)	**Other than the following**		RMTM1-M1-X101	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N		RMTM1-M1-X101B	
	JAKA: 091N/091P ABB: 121P		RMTM1-M1-X101C	
Main plate (Auto type)	**UNIVERSAL ROBOTS: 011P YASKAWA Electric: 043N/043P FANUC: 051P**		RMTA1-10M1-C3	⑦
	OMRON/ TECHMAN ROBOT: 021N		RMTA1-10M1-C4	
Connector cable			Refer to page 42.	
Piping plate assembly*2			RMH-A00-06	Piping plate, Mounting bolt, O-ring
One-touch fitting			KQ2S04-M5N	④
Exhaust throttle valve with silencer			ASN2-M5-X937	③

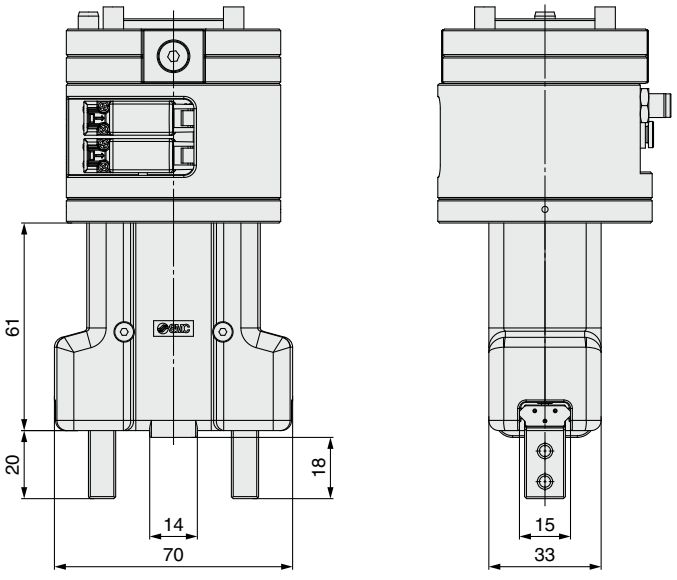
*1 An auto switch assembly is an assembly part in which 2 auto switches are integrated into one part. When replacing an auto switch, replacement is conducted in units of auto switch assembly. An individual auto switch cannot be replaced.
*2 When installing a normally-open valve, a piping plate assembly is necessary. For details, refer to the operation manual.
*3 When KUKA is used, a 3-port solenoid valve is available as a special order.
*4 Refer to page 45 for the shape and dimensions.

Dimensions/Clamp Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

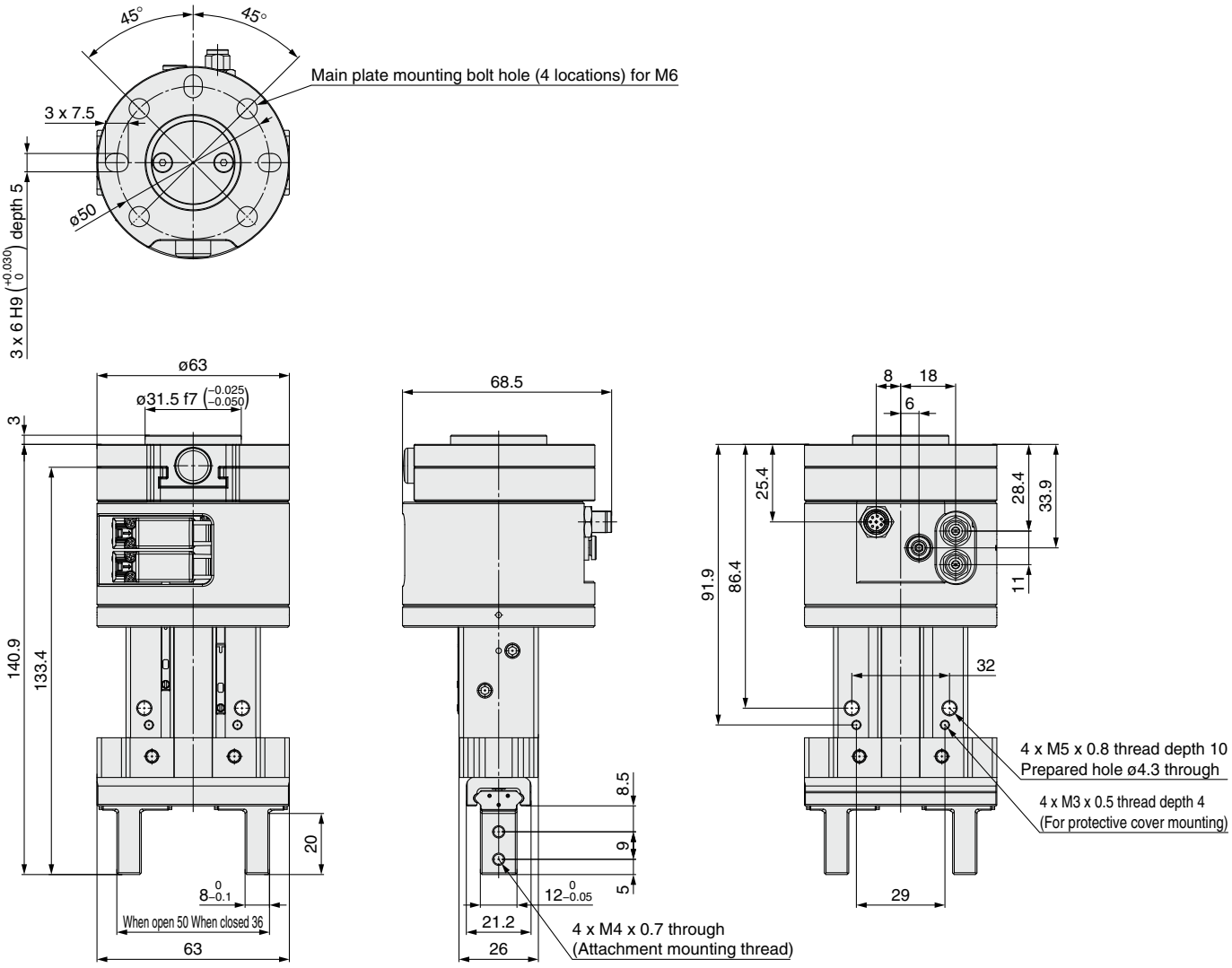


With protective cover mounted



Dimensions/One-push Type

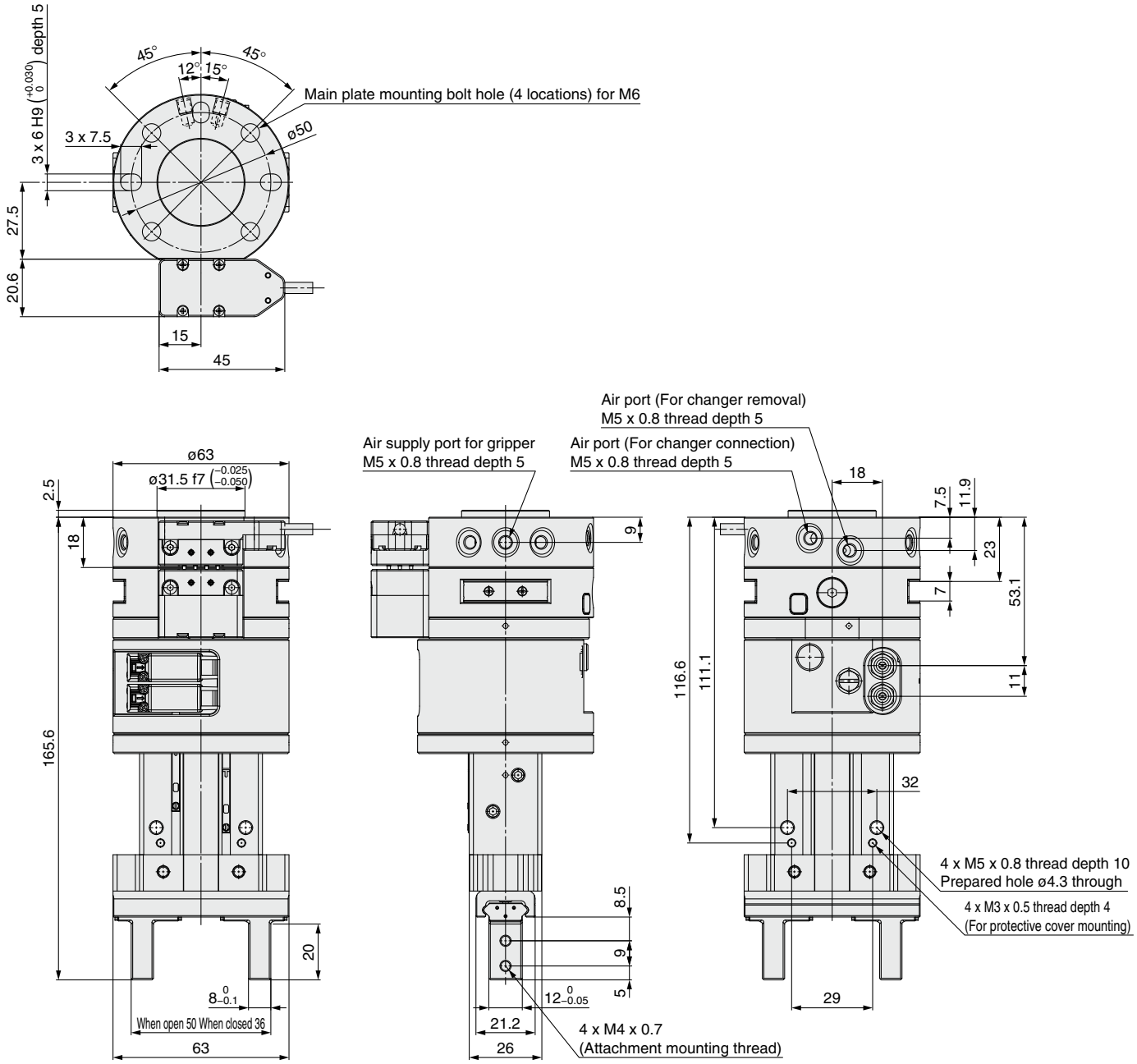
* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.



* **Refer to page 21 for the detailed dimensions of the type with a protective cover.**

Dimensions/Auto Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.



* **Refer to page 21 for the detailed dimensions of the type with a protective cover.**

RMHZ2 Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air gripper, auto switch, and fittings and tubing precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Operating Environment

⚠Caution

Use caution for the anti-corrosiveness of the linear guide unit.

Martensitic stainless steel is used for the finger guide. However, the anti-corrosiveness of this steel is inferior to that of austenitic stainless steel. In particular, rust may be generated in environments where waterdrops are likely to adhere to the product due to condensation, etc.

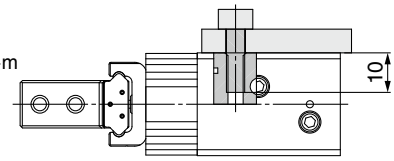
How to Use Body Tapped Holes

1. Do not scratch or dent the air gripper by dropping or bumping it when mounting.

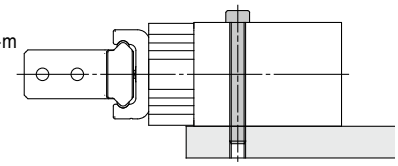
Even a slight deformation can cause inaccuracy or malfunction.

Body tapped hole

● **Body tapped**
Applicable bolt: M5 x 0.8
Tightening torque: 2.7 to 3.3 N·m
Max. screw-in depth: 10 mm



● **Body through-holes**
Applicable bolt: M4 x 0.7
Tightening torque: 1.35 to 1.65 N·m



Handling

⚠Caution

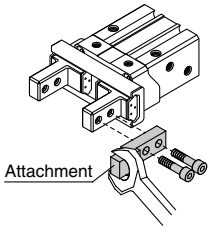
Finite orbit type guide is used in the actuator finger part. By using this, when there are inertial force which cause by movements or rotation to the actuator, steel ball will move to one side and this will cause a large resistance and degrade the accuracy. When there are inertial force which cause by movements or rotation to the actuator, operate the finger to full stroke.

How to Mount Attachments

1. Tighten the screw within the specified torque range when mounting the attachment.

Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

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



Applicable bolt	Tightening torque [N·m]
M4 x 0.7	1.35 to 1.65

Operation Manuals

RMHZ2

Click here for details.

Air Gripper for Collaborative Robots
3-Finger Type
RMHS3 Series

How to Order

RMHS3 – 40D – ❶ ❷ ❸ – ❹ ❺ ❻

❶ Compatible robot

The symbols are shown in "Table 1 Compatible Robot List."

❷ Switch selection

N	Auto switch (NPN)
P	Auto switch (PNP)

❹ Connector cable

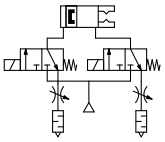
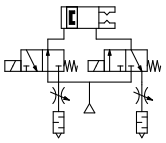
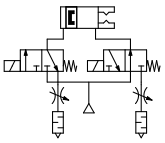
Nil	With connector cable
N	Without connection cable

∗ Only "N" is available for the auto type mounting interface.

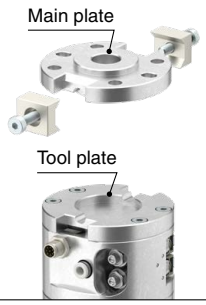
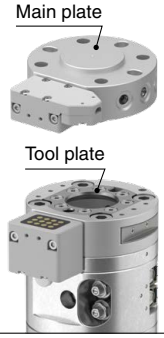
❺ Protective cover

Nil	Without protective cover	
D	With protective cover	

❸ Valve option

Nil	O	C
Basic type	Normally open	Normally closed
		

❻ Mounting interface/Tool changer

Symbol	With main plate		Symbol	Without main plate	
E	Clamp type		**F**	Clamp type	
E1	One-push type		**F1**	One-push type	
E2	Auto type		**F2**	Auto type	

∗ The main plate is required to mount the gripper to the robot.
Customers who already have a main plate can select "Without main plate".
∗ The main plates are not interchangeable between different product types.

Table 1 Compatible Robot List

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity	Mounting interface		
Identification	Switch selection					Clamp	One-push	Auto
011	P	UNIVERSAL ROBOTS	UR3e UR5e UR10e UR16e	PNP	–COM	○	○	○
021	N	OMRON/ TECHMAN ROBOT	TM□ TM□S	NPN	+COM	○	○	○*1
031	N	Mitsubishi Electric	MELFA ASSISTA (RV-5AS-D)	NPN	+COM	○	○	—
	P			PNP	–COM			
041	N	YASKAWA Electric	MOTOMAN -HC10	NPN	+COM	○	○	—
	P			PNP	–COM			
042	N		MOTOMAN -HC10DT	NPN	+COM	○	○	—
	P			PNP	–COM			
043	N		MOTOMAN -HC10(S)DTP MOTOMAN -HC20(S)DTP	NPN	+COM	○	○	○
	P		MOTOMAN -HC10(S)DTP MOTOMAN -HC20(S)DTP	PNP	–COM			
051	P	FANUC	CRX-5iA CRX-10iA(L) CRX-20iA CRX-30iA	PNP	–COM	○	○	○
061	P	KUKA	LBR-iiwa (Media flange: I/O Pneumatic)	PNP	–COM	○	○	—
071	P	Doosan Robotics	H2017 H2515 M0609 M0617 M1013 M1509	PNP	–COM	○	○	—
081	P	SIASUN	SCR3 SCR5 GCR3-620 GCR5-910 GCR10-1300 GCR14-1400 GCR20-1100	PNP	–COM	○	○	—
091	N	JAKA	JAKA Zu3 JAKA Zu5 JAKA Zu7 JAKA Zu12	NPN	+COM	○	○	—
	P		JAKA Zu3 JAKA Zu5 JAKA Zu7 JAKA Zu12	PNP	–COM			
101	N	AUBO	AUBO-i3 AUBO-i5 AUBO-i10	NPN	+COM	○	○	—
111	P	HAN'S ROBOT	E03 E05 E10	PNP	–COM	○	○	—
121	P	ABB	Gofa	PNP	–COM	○	○	—

*1 When using the tool holder on a robot with a camera, the tool holder will interfere with the camera, so be sure to use the extension flange (option). (Refer to page 46 for details.)

* Please contact our nearest sales office for the compatibility with robots not listed in the compatible robot list.

Specifications

Item			Specification
Common	**Standards**		Compliant with ISO 9409-1-50-4-M6*1
	Fluid		Air
	Operating pressure		0.1 to 0.6 MPa
	Ambient and fluid temperatures		–10 to 50°C*2
	Repeatability		±0.01 mm
	Max. operating frequency		60 C.P.M.
	Lubricant		Non-lube
	Action		Double acting
	Gripping force Effective value per finger	**External**	118 N*3
		Internal	130 N*3
	Opening/Closing stroke (Both sides)		8 mm
	Weight	**Clamp type**	776 g*4
		One-push type	783 g*4
		Auto type	1086 g*4
	Connector type		M8, 8-pin (Plug)
	Air pressure supply (P) port		One-touch fitting (ø4)
	Power supply voltage		24 VDC ±10%*2
Solenoid valve	**Model**		V114/V124
Auto switch	**Model**		D-M9N/D-M9P
Exhaust throttle valve	**Model**		ASN2-M5-X937

∗1 Robots whose end effector mounting standard differs are equipped with a dedicated mounting flange. (Refer to pages 45 and 46.)
∗2 Only when the compatible robot is KUKA's LBR-iiwa, the power supply voltage is 24 VDC (–15%/+20%) and the max. operating temperature is 40°C.
∗3 These are values at the stroke center when the pressure is 0.5 MPa and the gripping point distance L is 30 mm.
∗4 This is the value excluding the weights of the protective cover and connector cable.

Valve Specifications

Operating temperature	–10 to 50°C (40°C*1) No freezing
Manual override	Non-locking push type
Mounting orientation	Unrestricted (Based on gripper mounting orientation)
Enclosure	Dust-protected

∗1 For robot identification symbol 061P

Solenoid Specifications

Coil rated voltage	24 VDC
Allowable voltage fluctuation	–10 to +10% (–15% to +20%*1)
Power consumption	0.4 W (0.55 W*1)
Surge voltage suppressor	Varistor

∗1 For robot identification symbol 061P

Auto Switch Specifications

Output type	NPN/PNP (Depends on the robots)
Power supply voltage	24 VDC
Current consumption	10 mA or less
Load voltage	28 VDC or less (NPN)
Load current	40 mA or less
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)
Leakage current	100 μA or less at 24 VDC

Refer to page 13 for more information on model selection using the effective “gripping force” and “gripping point.”

Tool Changer/Auto Type Specifications

Operating pressure range	0.4 to 0.7 MPa
Withstand pressure	1.05 MPa
Repeatability (Position reproducibility)	±0.01 mm
Recommended clearance before coupling	1 mm

∗ For details, refer to the auto type tool changer in the **Web Catalog**.

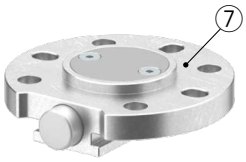
Click here for details.

More information can be viewed here.

Component Parts

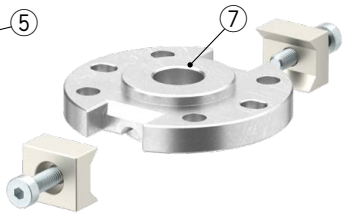
Clamp Type

One-push Type



Auto Type

Clamp Type



No.	Description
1	Gripper
2	3-port solenoid valve
3	Exhaust throttle valve with silencer
4	One-touch fitting
5	Protective cover
6	Auto switch
7	Main plate

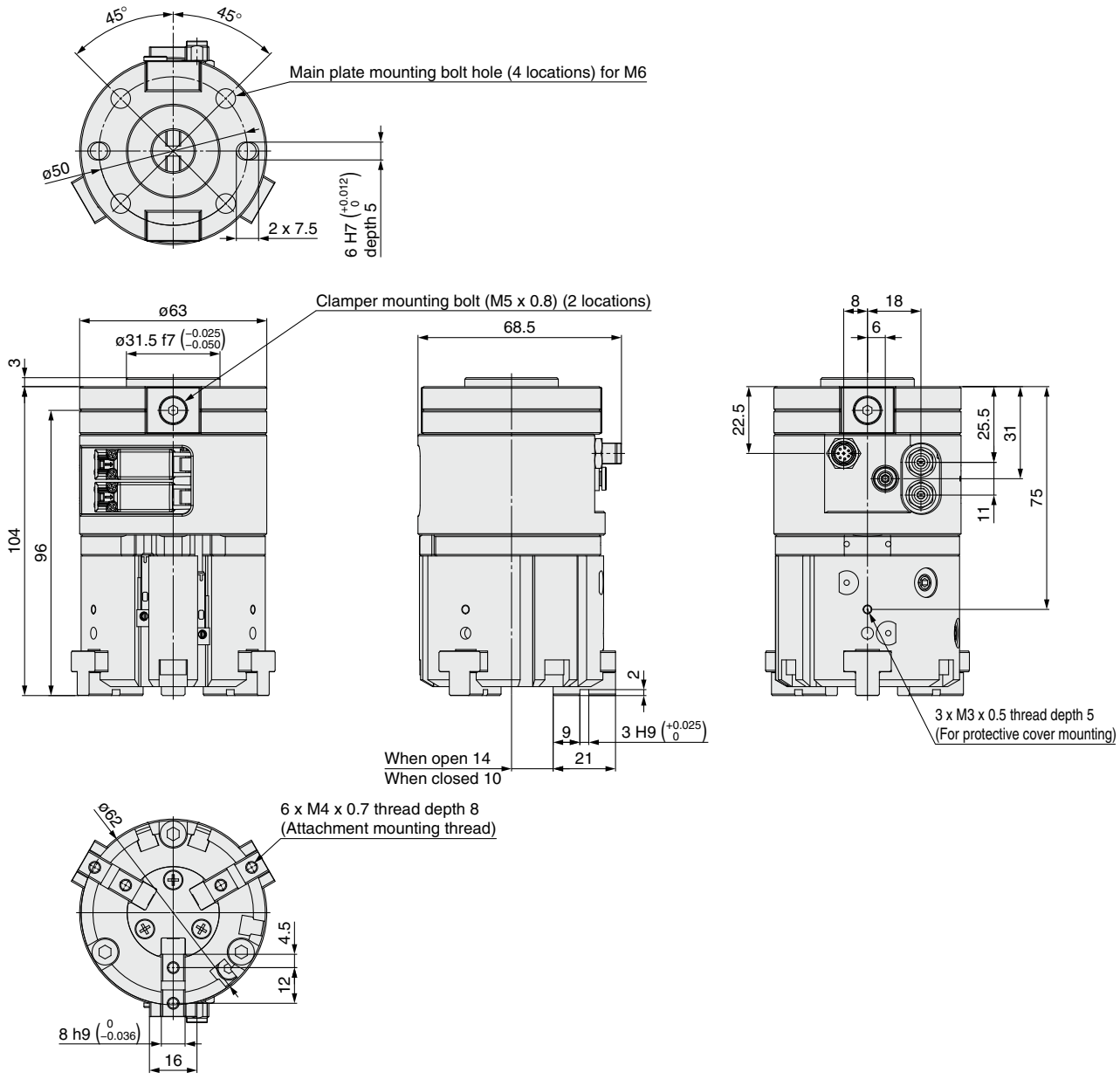
Replacement Parts

Description			Order number	Included parts
Gripper assembly			RMH-A26-01	①
Protective cover assembly			RMH-A26-08	⑤, Mounting screw
Dedicated flange	Mitsubishi Electric: 031N, 031P		JMHZ-A16-X7400-BRK-01	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 041N, 041P		JMHZ-A16-X7400-BRK-02	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 042N, 042P		JMHZ-A16-X7400-BRK-03	
Auto switch assembly*1	PNP		RMH-A00-05-P	⑥
	NPN		RMH-A00-05-N	
3-port solenoid valve	Normally open*2		V124-5MOU	②
	Normally closed		V114-5MOU	
	KUKA: 061P	Normally open*2, *3	V114-5MOU-X647	
		Normally closed*3	V124-5MOU-X647	
Main plate assembly (Clamp type)	Other than the following		RMH-A00-09-A	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N		RMH-A00-09-B	
	JAKA: 091N/091P ABB: 121P		RMH-A00-09-C	
Main plate (One-push type)	Other than the following		RMTM1-M1-X101	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N		RMTM1-M1-X101B	
	JAKA: 091N/091P ABB: 121P		RMTM1-M1-X101C	
Main plate (Auto type)	UNIVERSAL ROBOTS: 011P YASKAWA Electric: 043N/043P FANUC: 051P		RMTA1-10M1-C3	⑦
	OMRON/ TECHMAN ROBOT: 021N		RMTA1-10M1-C4	
Connector cable			Refer to page 42.	
Piping plate assembly*2			RMH-A00-06	Piping plate, Mounting bolt, O-ring
One-touch fitting			KQ2S04-M5N	④
Exhaust throttle valve with silencer			ASN2-M5-X937	③

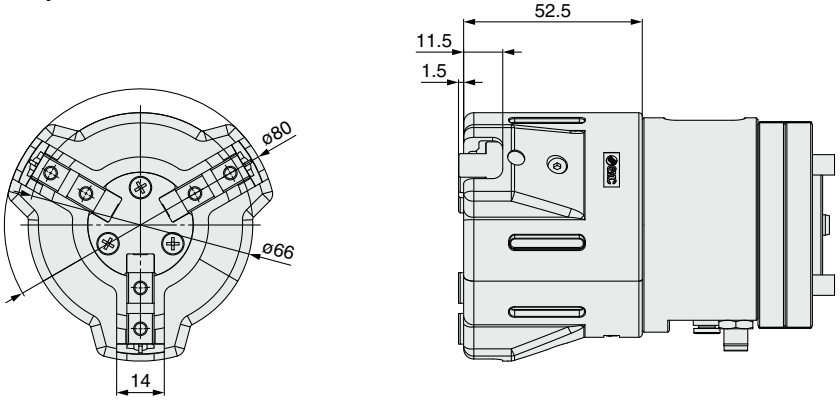
*1 An auto switch assembly is an assembly part in which 2 auto switches are integrated into one part. When replacing an auto switch, replacement is conducted in units of auto switch assembly. An individual auto switch cannot be replaced.
*2 When installing a normally-open valve, a piping plate assembly is necessary. For details, refer to the operation manual.
*3 When KUKA is used, a 3-port solenoid valve is available as a special order.
*4 Refer to page 45 for the shape and dimensions.

Dimensions/Clamp Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

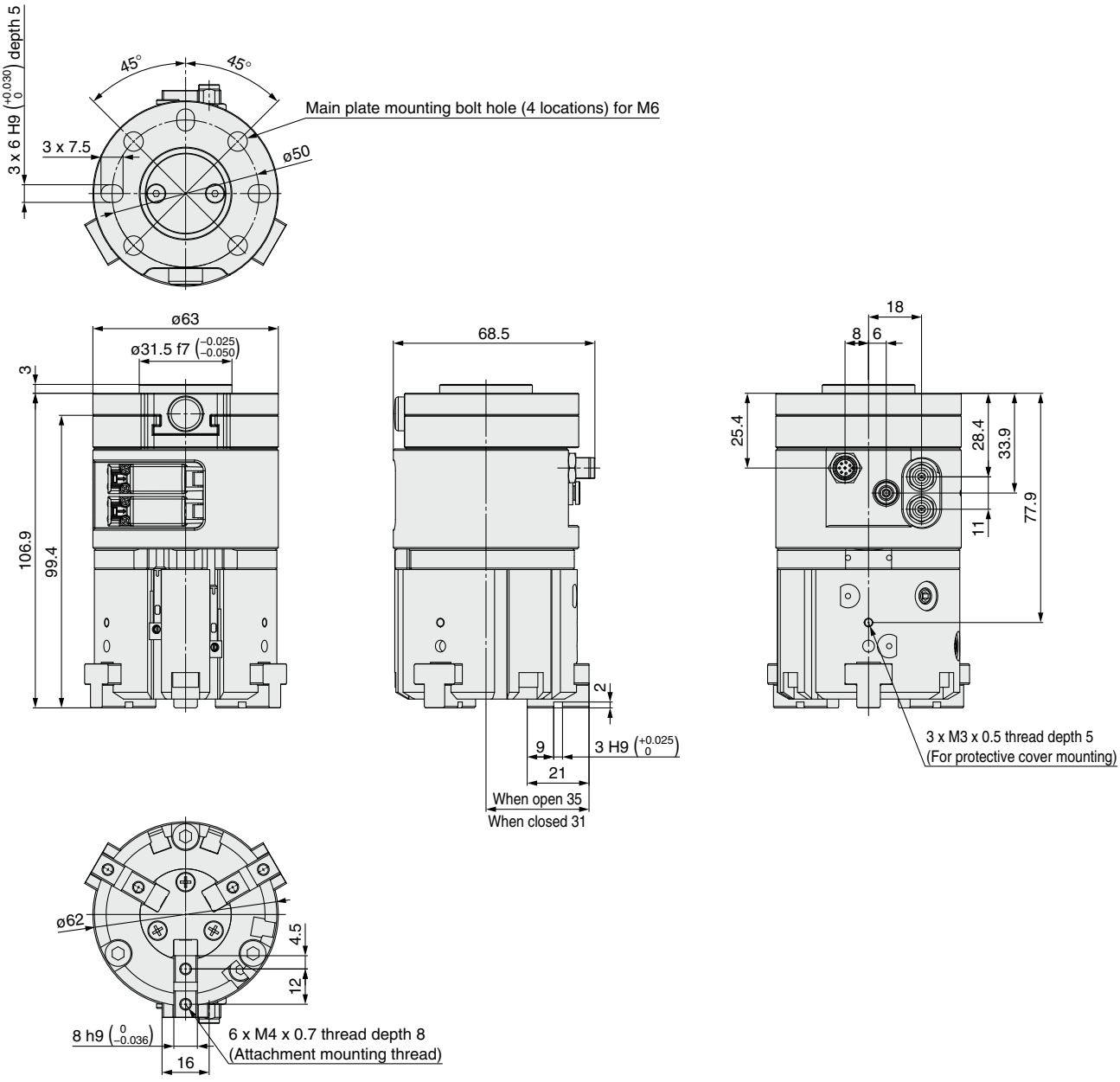


With protective cover mounted



Dimensions/One-push Type

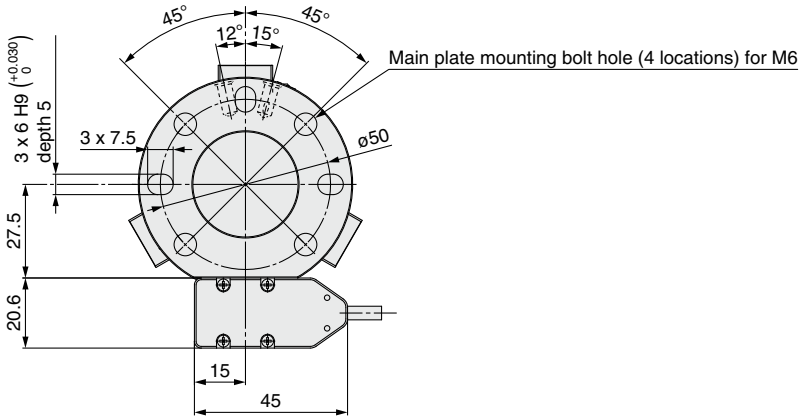
* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

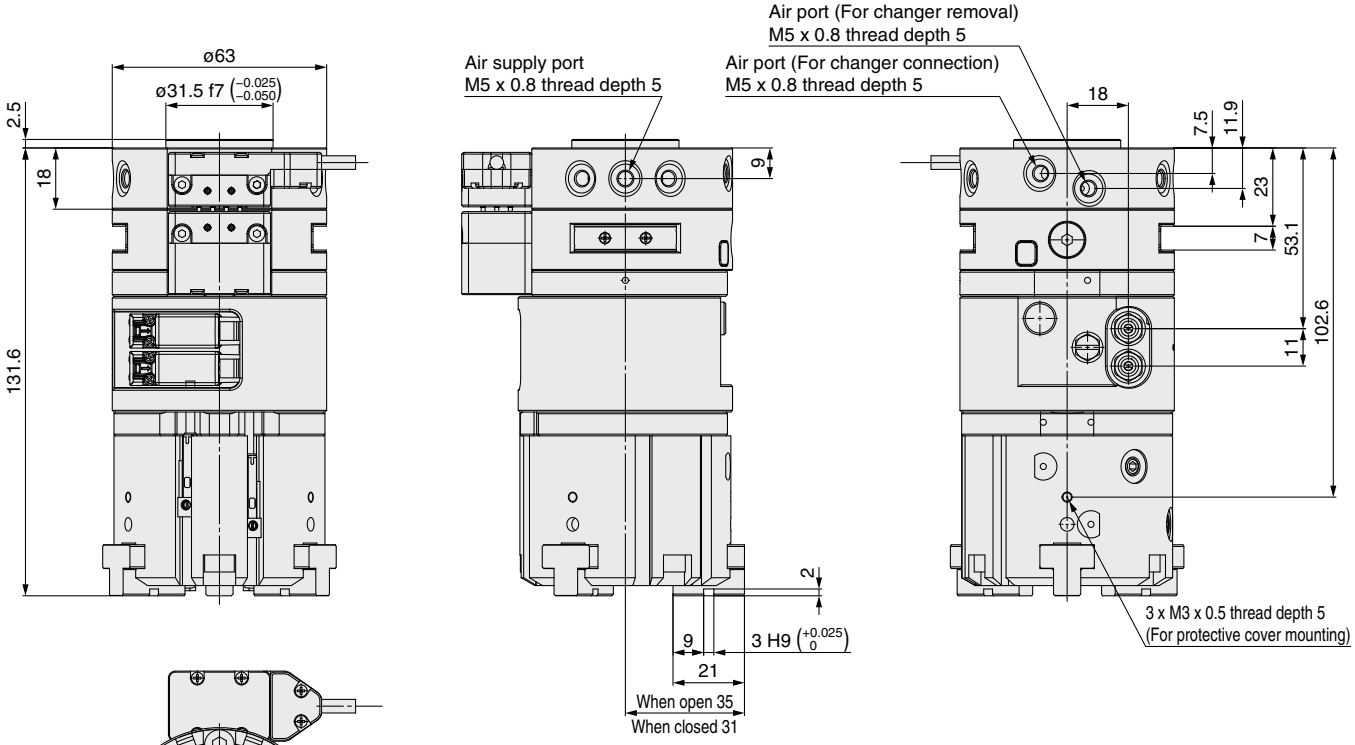


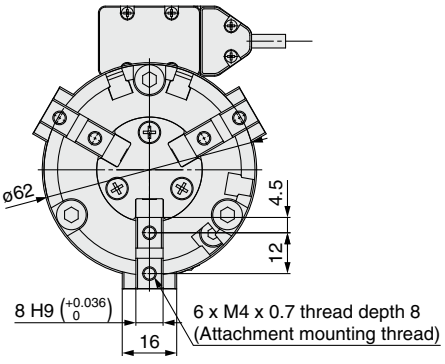
* **Refer to page 29 for the detailed dimensions of the type with a protective cover.**

Dimensions/Auto Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.







* **Refer to page 29 for the detailed dimensions of the type with a protective cover.**

RMHS3 Series
Specific Product Precautions

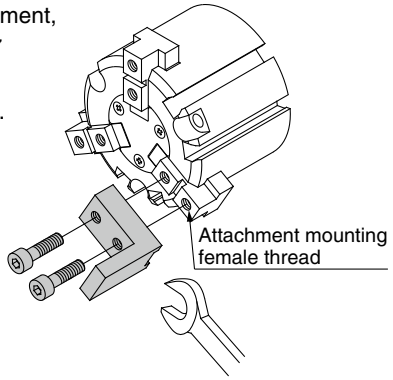
Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air gripper, auto switch, and fittings and tubing precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

How to Mount Attachments

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

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

When mounting the attachment, make sure to use M4 x 0.7 screws and a tightening torque of 1.35 to 1.65 N·m.



Operation Manuals

RMHS3

Click here for details.

Air Gripper for Collaborative Robots
Long Stroke Type
RMHF2 Series

How to Order

RMHF2 – 16D2 – ☐ N O – N D E

❶ ❷ ❸ ❹ ❺ ❻

❶ Compatible robot

The symbols are shown in “Table 1 Compatible Robot List.”

❷ Switch selection

N	Auto switch (NPN)
P	Auto switch (PNP)
A	Actuator position sensor (D-MP)

❹ Connector cable

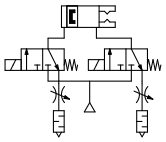
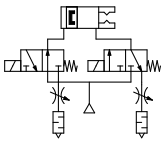
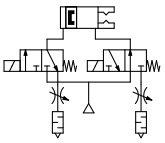
Nil	With connector cable
N	Without connection cable

∗ Only “N” is available for the auto type mounting interface.

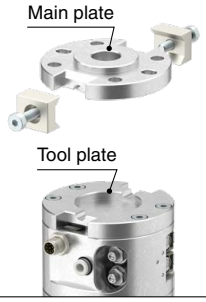
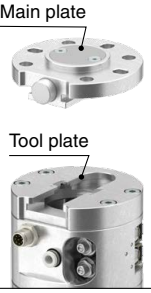
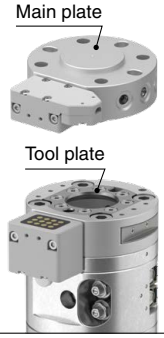
❺ Protective cover

Nil	Without protective cover	
D	With protective cover	

❸ Valve option

Nil	O	C
Basic type	Normally open	Normally closed
		

❻ Mounting interface/Tool changer

Symbol	With main plate		Symbol	Without main plate	
E	Clamp type		**F**	Clamp type	
E1	One-push type		**F1**	One-push type	
E2	Auto type		**F2**	Auto type	

∗ The main plate is required to mount the gripper to the robot.
Customers who already have a main plate can select “Without main plate”.
∗ The main plates are not interchangeable between different product types.

Table 1 Compatible Robot List

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity	Mounting interface		
Identification	Switch selection					Clamp	One-push	Auto
011	A	UNIVERSAL ROBOTS	UR3e	Analog	–COM	○	○	○
			UR5e					
			UR10e					
			UR16e					
011	P		UR3e	PNP	–COM	○	○	○
			UR5e					
			UR10e					
			UR16e					
021	N	OMRON/ TECHMAN ROBOT	TM□	NPN	+COM	○*1	○	○*2
			TM□S					
031	N	Mitsubishi Electric	MELFA ASSISTA (RV-5AS-D)	NPN	+COM	○	○	—
	P			PNP	–COM			
041	N	YASKAWA Electric	MOTOMAN -HC10	NPN	+COM	○	○	—
	P			PNP	–COM			
042	N		MOTOMAN -HC10DT	NPN	+COM	○	○	—
	P			PNP	–COM			
043	N		MOTOMAN -HC10(S)DTP	NPN	+COM	○	○	○
			MOTOMAN -HC20(S)DTP					
	P		MOTOMAN -HC10(S)DTP	PNP	–COM			
			MOTOMAN -HC20(S)DTP					
051	A	FANUC	CRX-5iA	Analog	–COM	○	○	○
			CRX-10iA(L)					
			CRX-20iA					
			CRX-30iA					
051	P		CRX-5iA	PNP	–COM	○	○	○
			CRX-10iA(L)					
			CRX-20iA					
			CRX-30iA					
061	P	KUKA	LBR-iiwa (Media flange: I/O Pneumatic)	PNP	–COM	○	○	—
071	P	Doosan Robotics	H2017	PNP	–COM	○	○	—
			H2515					
			M0609					
			M0617					
			M1013					
			M1509					
081	P	SIASUN	SCR3	PNP	–COM	○	○	—
			SCR5					
			GCR3-620					
			GCR5-910					
			GCR10-1300					
			GCR14-1400					
			GCR20-1100					
091	N	JAKA	JAKA Zu3	NPN	+COM	○	○	—
			JAKA Zu5					
			JAKA Zu7					
			JAKA Zu12					
	P		JAKA Zu3	PNP	–COM			
			JAKA Zu5					
			JAKA Zu7					
			JAKA Zu12					
101	N	AUBO	AUBO-i3	NPN	+COM	○	○	—
			AUBO-i5					
			AUBO-i10					
111	P	HAN'S ROBOT	E03	PNP	–COM	○	○	—
			E05					
			E10					
121	P	ABB	Gofa	PNP	–COM	○	○	—

*1 When using a robot with a camera, a short neck hex wrench is required to attach or remove the product.
*2 When using the tool holder on a robot with a camera, the tool holder will interfere with the camera, so be sure to use the extension flange (option). (Refer to page 46 for details.)
* Please contact our nearest sales office for the compatibility with robots not listed in the compatible robot list.

Specifications

Item			Specification
Common	Standards		Compliant with ISO 9409-1-50-4-M6*1
	Fluid		Air
	Operating pressure		0.1 to 0.7 MPa
	Ambient and fluid temperatures		–10 to 50°C*2
	Repeatability		±0.05 mm
	Max. operating frequency		60 C.P.M.*5
	Lubricant		Non-lube
	Action		Double acting
	Gripping force Effective value per finger	External	90 N*3
		Internal	90 N*3
	Opening/Closing stroke (Both sides)		64 mm
	Weight	Clamp type	945 g (960 g)*4
		One-push type	952 g (967 g)*4
		Auto type	1255 g (1270 g)*4
	Connector type		M8, 8-pin (Plug)
	Air pressure supply (P) port		One-touch fitting (ø4)
	Power supply voltage		24 VDC ±10%*2
Solenoid valve	Model		V114/V124
Auto switch	Model		D-M9N/D-M9P
Position sensor	Model		D-MP
Exhaust throttle valve	Model		ASN2-M5-X937

∗1 Robots whose end effector mounting standard differs are equipped with a dedicated mounting flange. (Refer to pages 45 and 46.)
∗2 Only when the compatible robot is KUKA's LBR-iiwa, the power supply voltage is 24 VDC (–15%/+20%) and the max. operating temperature is 40°C.
∗3 These are values at the stroke center when the pressure is 0.5 MPa and the gripping point distance L is 20 mm.
∗4 This is the value excluding the weights of the protective cover and connector cable. The values in brackets are for when the actuator position sensor (D-MP) is selected.
∗5 Normally open (N.O.) and normally closed (N.C.) specifications are 50 C.P.M.

Valve Specifications

Operating temperature	–10 to 50°C (40°C*1) No freezing
Manual override	Non-locking push type
Mounting orientation	Unrestricted (Based on gripper mounting orientation)
Enclosure	Dust-protected

∗1 For robot identification symbol 061P

Solenoid Specifications

Coil rated voltage	24 VDC
Allowable voltage fluctuation	–10 to +10% (–15% to +20%*1)
Power consumption	0.4 W (0.55 W*1)
Surge voltage suppressor	Varistor

∗1 For robot identification symbol 061P

Auto Switch Specifications

Output type	NPN/PNP (Depends on the robots)
Power supply voltage	24 VDC
Current consumption	10 mA or less
Load voltage	28 VDC or less (NPN)
Load current	40 mA or less
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)
Leakage current	100 μA or less at 24 VDC

Refer to page 14 for more information on model selection using the effective “gripping force” and “gripping point.”

Actuator Position Sensor

Model		D-MP050□
Power supply voltage		15 to 30 VDC, Ripple (p-p) 10% or less (with power supply polarity protection)
Current consumption		48 mA or less (when no load is applied)
Repeatability∗1		0.1 mm (Ambient temperature: 25°C)
Resolution		0.05 mm
Linearity		±0.3 mm (Ambient temperature: 25°C)
Analog voltage output	Output voltage	0 to 10 V
	Min. load resistance	2 kΩ

∗1 Repeatability of magnetic movement in one direction
∗ For details on the actuator position sensor (D-MP series), refer to the operation manual on the SMC website.

Click here for details.

More information can be viewed here.

Tool Changer/Auto Type Specifications

Operating pressure range	0.4 to 0.7 MPa
Withstand pressure	1.05 MPa
Repeatability (Position reproducibility)	±0.01 mm
Recommended clearance before coupling	1 mm

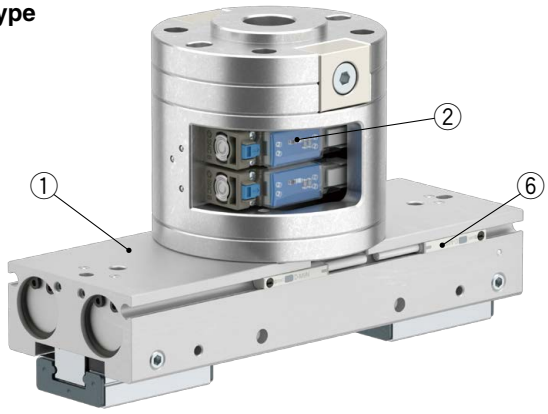
∗ For details, refer to the auto type tool changer in the **Web Catalog**.

Click here for details.

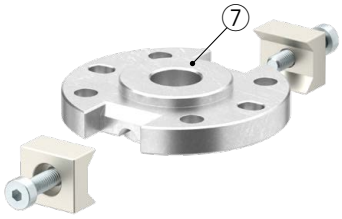
More information can be viewed here.

Component Parts

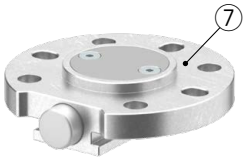
Clamp Type



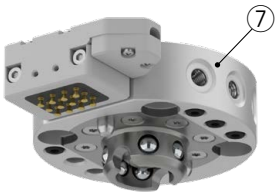
Clamp Type



One-push Type



Auto Type



No.	Description
1	**Gripper**
2	**3-port solenoid valve**
3	**Exhaust throttle valve with silencer**
4	**One-touch fitting**
5	**Protective cover**
6	**Auto switch**
7	**Main plate**

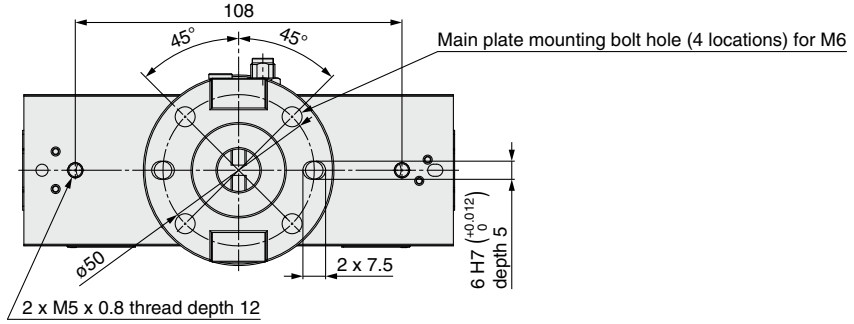
Replacement Parts

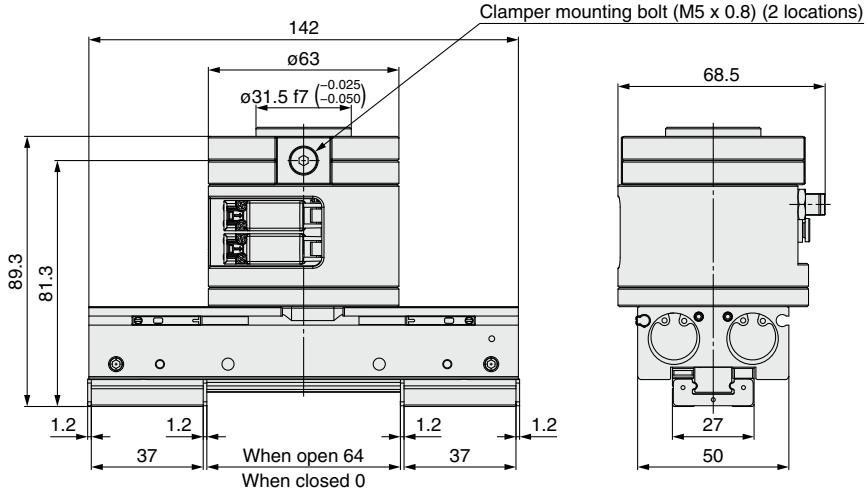
Description			Order number	Included parts
Gripper assembly			RMH-A32-01	①
Protective cover assembly			RMH-A32-08	⑤, Mounting screw
Dedicated flange	**Mitsubishi Electric: 031N, 031P**		JMHZ-A16-X7400-BRK-01	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 041N, 041P		JMHZ-A16-X7400-BRK-02	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 042N, 042P		JMHZ-A16-X7400-BRK-03	
Auto switch assembly*1	**PNP**		RMH-A00-05-P	⑥
	NPN		RMH-A00-05-N	
3-port solenoid valve	**Normally open***2		V124-5MOU	②
	Normally closed		V114-5MOU	
	KUKA: 061P	**Normally open***2, *3	V114-5MOU-X647	
		Normally closed*3	V124-5MOU-X647	
Main plate assembly (Clamp type)	**Other than the following**		RMH-A00-09-A	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N		RMH-A00-09-B	
	JAKA: 091N/091P ABB: 121P		RMH-A00-09-C	
Main plate (One-push type)	**Other than the following**		RMTM1-M1-X101	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N		RMTM1-M1-X101B	
	JAKA: 091N/091P ABB: 121P		RMTM1-M1-X101C	
Main plate (Auto type)	**UNIVERSAL ROBOTS: 011P YASKAWA Electric: 043N/043P FANUC: 051P**		RMTA1-10M1-C3	⑦
	OMRON/ TECHMAN ROBOT: 021N		RMTA1-10M1-C4	
Connector cable			Refer to page 42.	
Piping plate assembly*2			RMH-A00-06	Piping plate, Mounting bolt, O-ring
One-touch fitting			KQ2S04-M5N	④
Exhaust throttle valve with silencer			ASN2-M5-X937	③

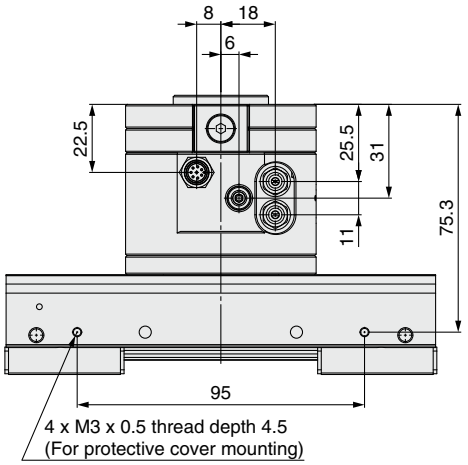
*1 An auto switch assembly is an assembly part in which 2 auto switches are integrated into one part. When replacing an auto switch, replacement is conducted in units of auto switch assembly. An individual auto switch cannot be replaced.
*2 When installing a normally-open valve, a piping plate assembly is necessary. For details, refer to the operation manual.
*3 When KUKA is used, a 3-port solenoid valve is available as a special order.
*4 Refer to page 45 for the shape and dimensions.

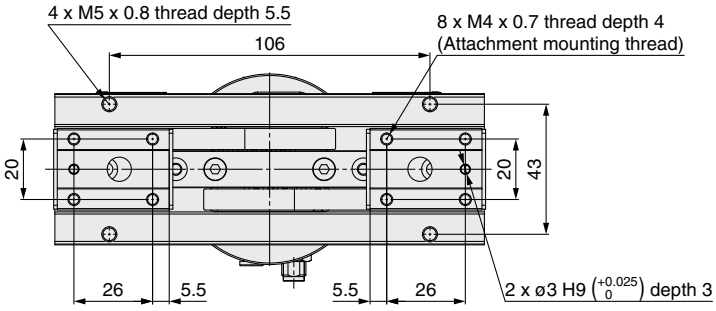
Dimensions/Clamp Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

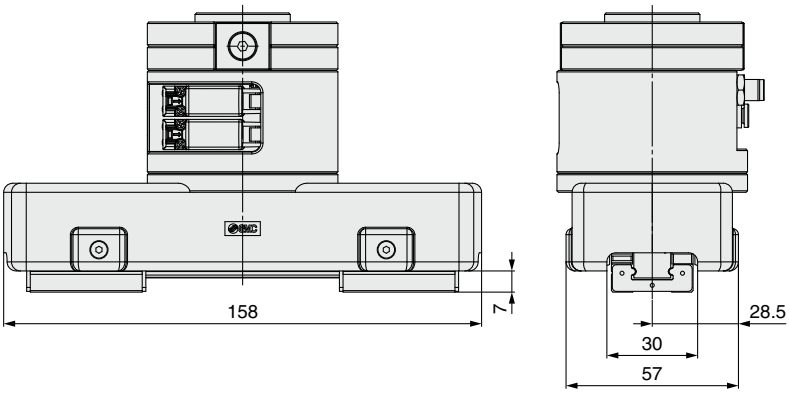






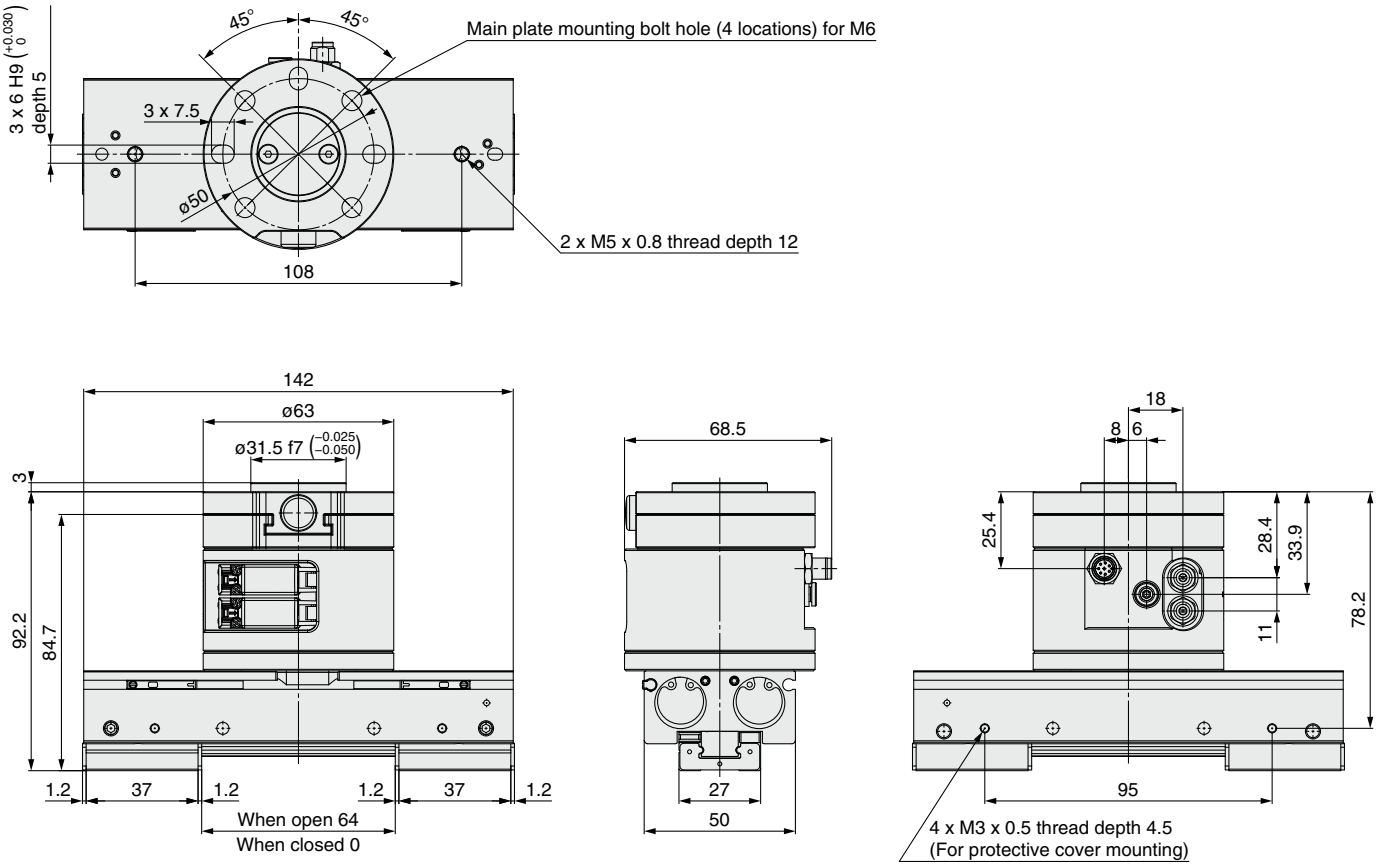


With protective cover mounted



Dimensions/One-push Type

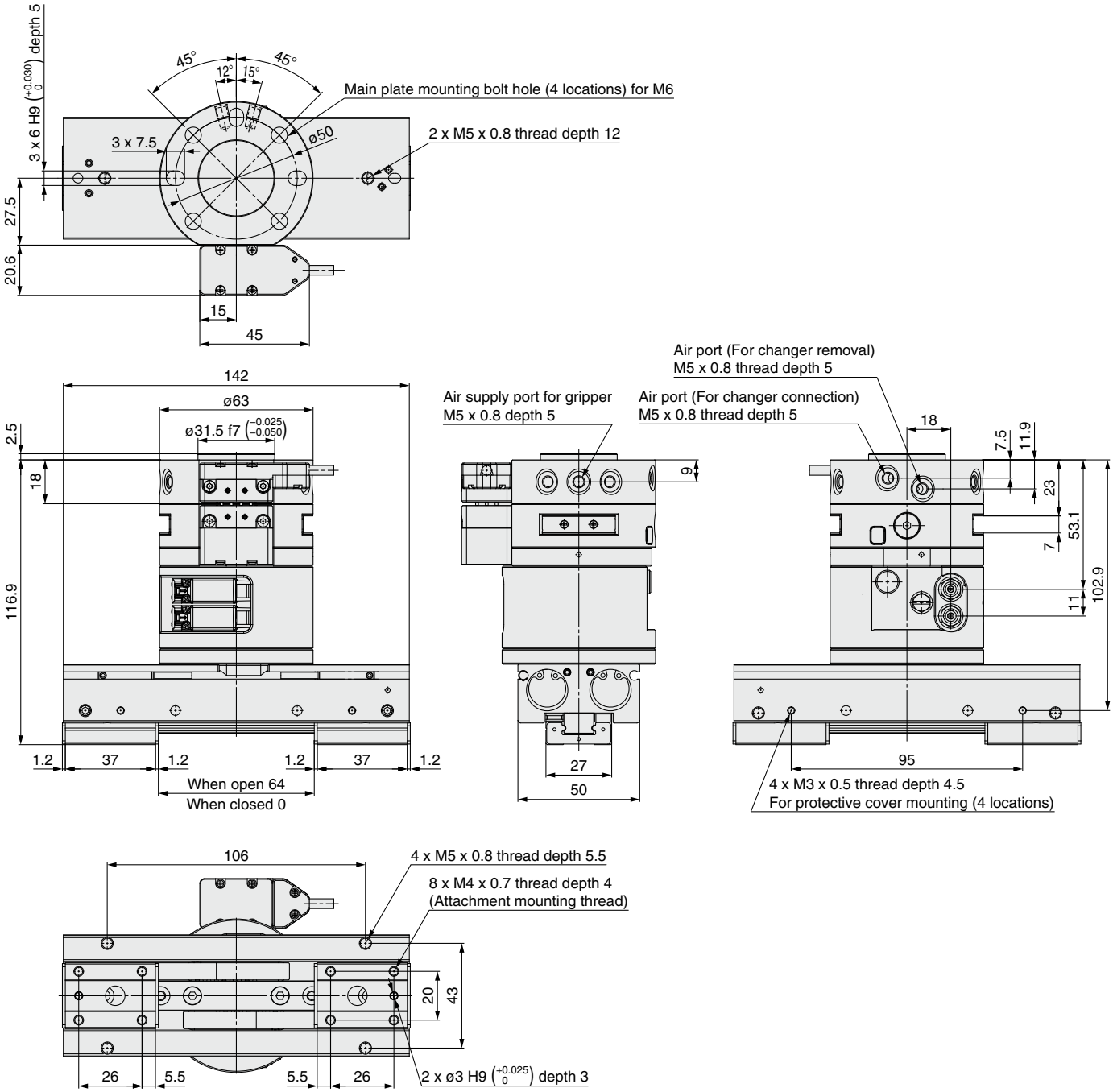
* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.



* **Refer to page 37 for the detailed dimensions of the type with a protective cover.**

Dimensions/Auto Type

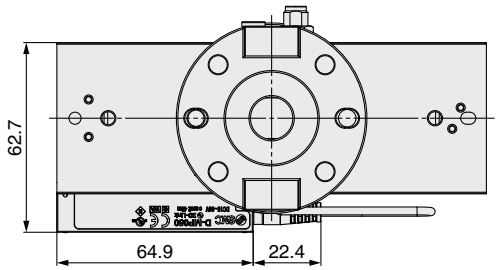
* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

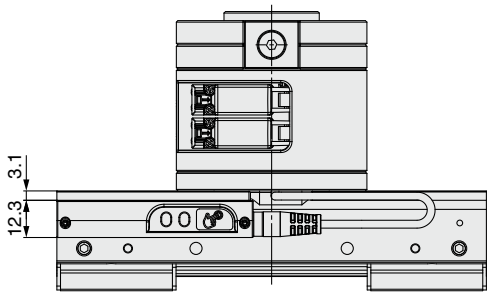


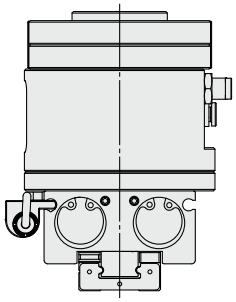
* **Refer to page 37 for the detailed dimensions of the type with a protective cover.**

Dimensions: With Actuator Position Sensor

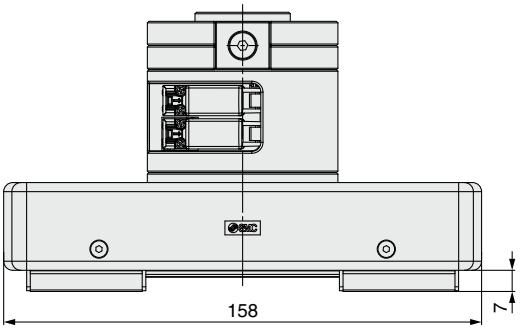
∗ Dimensions other than those shown below are the same as those shown on page 37.

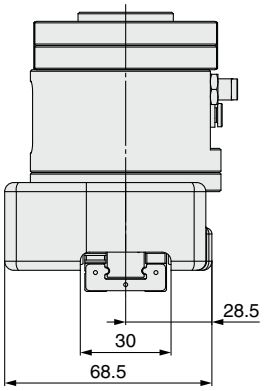






With protective cover mounted





RMHF2 Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air gripper, auto switch, and fittings and tubing precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

How to Use Body Tapped Holes

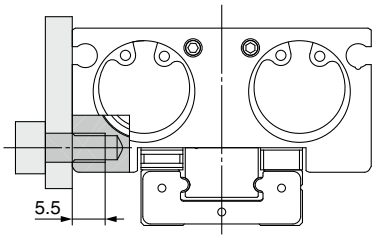
1. Do not scratch or dent the air gripper by dropping or bumping it when mounting.

Even a slight deformation can cause inaccuracy or malfunction.

Body tapped hole

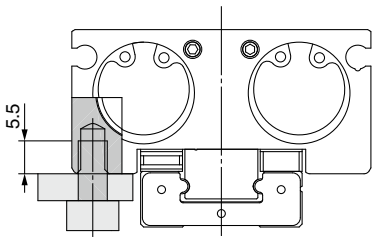
● Lateral mounting (Body tapped)

Applicable bolt: M5 x 0.8
Tightening torque: 2.7 to 3.3 N·m
Max. screw-in depth: 5.5 mm



● Bottom mounting (Body tapped)

Applicable bolt: M5 x 0.8
Tightening torque: 2.7 to 3.3 N·m
Max. screw-in depth: 5.5 mm



Handling

⚠ Caution

Finite orbit type guide is used in the actuator finger part. By using this, when there are inertial force which cause by movements or rotation to the actuator, steel ball will move to one side and this will cause a large resistance and degrade the accuracy. When there are inertial force which cause by movements or rotation to the actuator, operate the finger to full stroke.

Operating Environment

⚠ Caution

Use caution for the anti-corrosiveness of the linear guide unit.

Martensitic stainless steel is used for the finger guide rail. However, the anti-corrosiveness of this steel is inferior to that of austenitic stainless steel. In particular, rust may be generated in environments where water droplets are likely to adhere due to condensation, etc.

How to Mount Attachments

1. Tighten the screw within the specified torque range when mounting the attachment.

Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

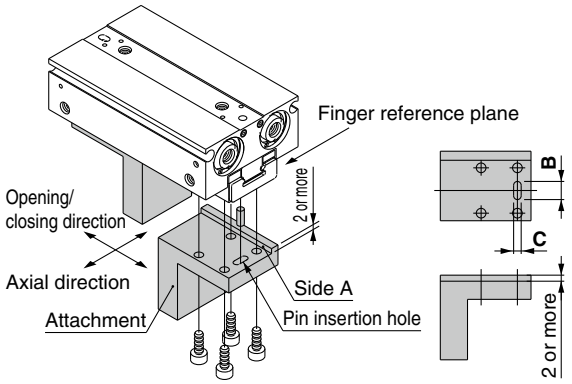
● Positioning in the finger's open/close direction

Position the finger and the attachment by inserting the finger's pin into the attachment's pin insertion hole.

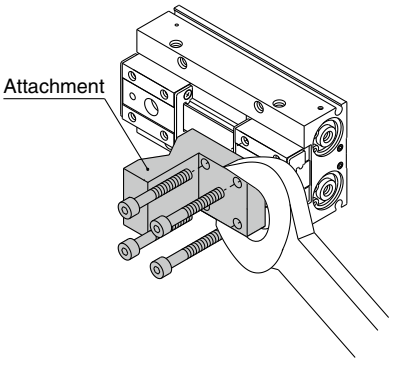
Provide the following pin insertion hole dimensions: shaft-basis fitting dimension **C** for the open/close direction; slotted hole with relief **B** for the axial direction.

● Positioning in the finger's axial direction

Perform the positioning from the reference plane of the finger and the side A of the attachment.



Make sure to mount the attachments on fingers with a tightening torque of 1.35 to 1.65 N·m by using M4 x 0.7 bolts, etc., for the female threads on fingers.



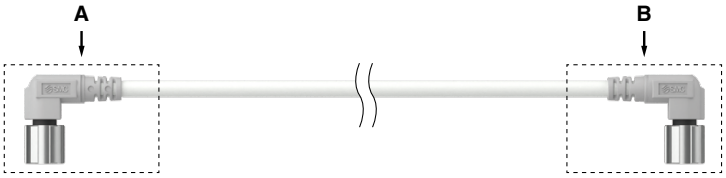
Operation Manuals

RMHF2

Click here for details.

Options

Connector Cable



Identification symbol	Robot manufacturer	**A** Air gripper side	**B** Robot side	Part no.
011P, 011A	UNIVERSAL ROBOTS	M8 8-pin connector (Socket)	M8 8-pin connector (Socket)	RMH-A00-11-A
021N	OMRON/TECHMAN ROBOT		M8 8-pin connector (Plug)	RMH-A00-11-B
031N	Mitsubishi Electric		M12 8-pin connector (Plug)	RMH-A00-11-C
031P				
041N	YASKAWA Electric		51227-0800 made by MOLEX	MH-7400-ADP-D-01
041P				
042N				
042P				
043N			M8 8-pin connector (Socket)	RMH-A00-11-A
043P				
051P, 051A	FANUC		M8 8-pin connector (Socket)	RMH-A00-11-A
061P	KUKA		M8 8-pin connector (Plug)	RMH-A00-11-B
071P	DOOSAN ROBOTICS		M8 8-pin connector (Socket)	RMH-A00-11-B
081P	SIASUN		M8 8-pin connector (Socket)	RMH-A00-11-A
091N	JAKA		M8 8-pin connector (Plug)	RMH-A00-11-B
091P				
101N	AUBO		M8 8-pin connector (Socket)	RMH-A00-11-A
101P				
111P	HAN'S ROBOT		M12 12-pin connector (Plug)	RMH-A00-11-D
121P	ABB		M8 3-pin, M8 4-pin connector (Plug)	RMH-A00-11-E

Tool holder

· The tool changer supports a work load range from 10 kg.
· Holder attachment confirmation can be detected with the auto switch.

How to Order

RMTA1 – 10 S1 A – M9N

Tool changer work load

10	10 kg

Switch holder

Nil	None
A	With switch holder

Auto switch type

Nil	Without auto switch
M9□	With auto switch

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

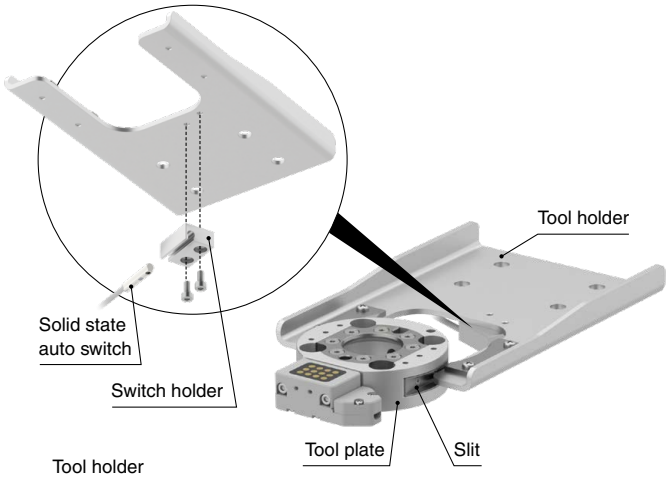
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length [m] 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 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**	●	●	●	○	○	—	

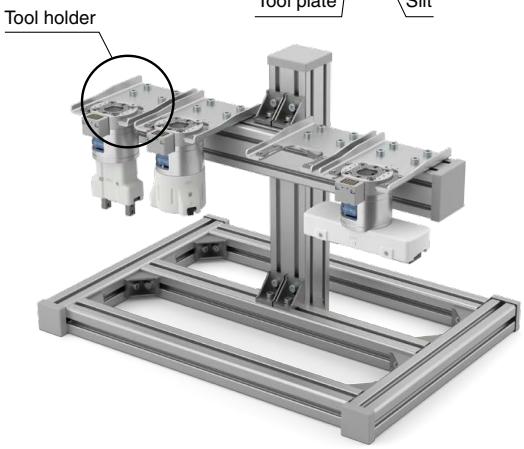
∗ Solid state auto switches marked with a "○" are produced upon receipt of order.
∗ Auto switches are shipped together with the product but do not come assembled.

∗ 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

Application Example

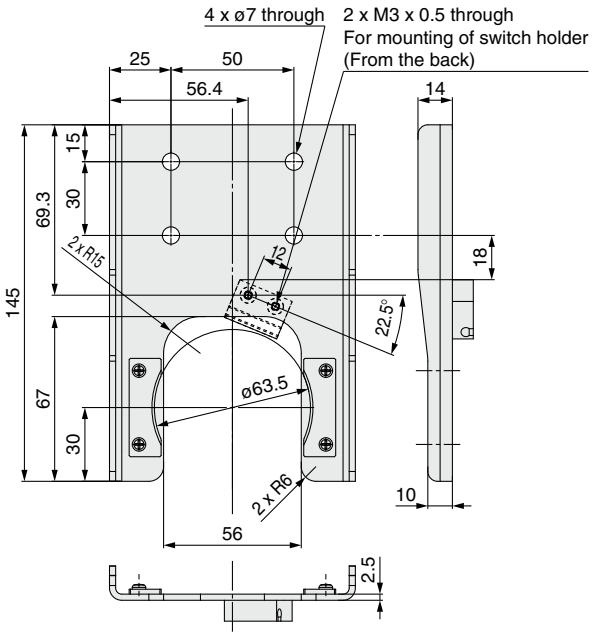
· The auto switch can detect whether there is a tool plate or not.





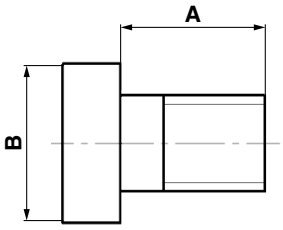
∗ The base and stand need to be prepared by the user.

Dimensions

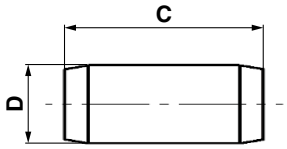


Replacement Parts

Main plate assembly mounting bolt



Positioning pin



Dimensions

Part no.	Description	A	B	C	D
RMH-A00-14	Hexagon socket head cap screw	10	10	—	—
RMH-A00-15		8	10	—	—
RMH-A00-16	Positioning pin	—	—	10	6h8
RMH-A00-17		—	—	15	6h8

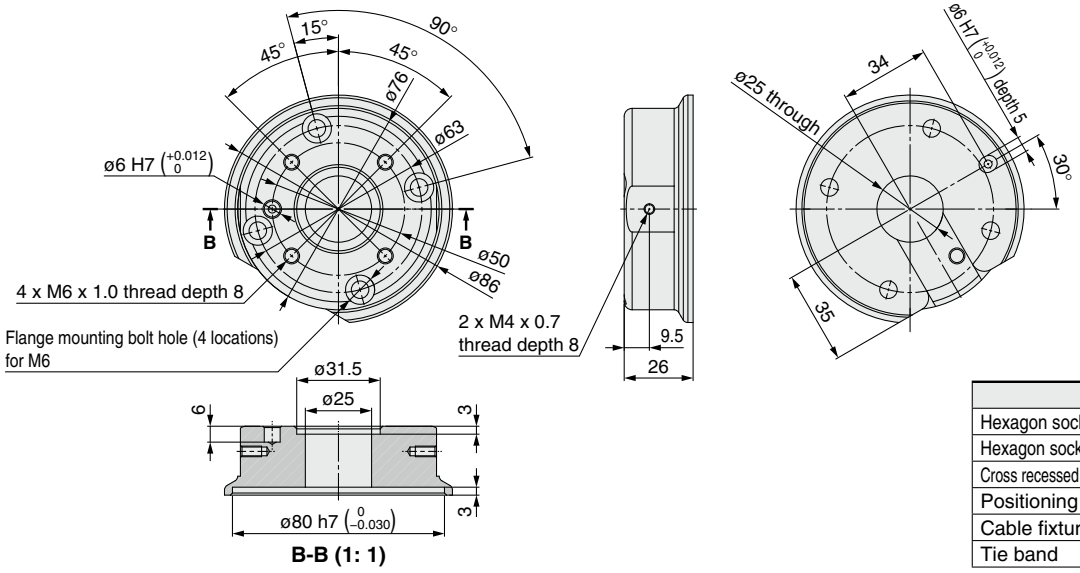
* Bolts and positioning pins for main plate assembly are included with the main plate assembly, but can be ordered in quantities of 1 or more by the part numbers listed below.

Compatible robot identification symbol	Hexagon socket thin head cap screw		Positioning pin	
	Part no.	Quantity	Part no.	Quantity
011	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
021	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
031	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
041	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
042	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
043	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
051	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
061	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
071	RMH-A00-15	4 pcs./unit	RMH-A00-16	1 pc./unit
081	RMH-A00-15	4 pcs./unit	RMH-A00-16	1 pc./unit
091	RMH-A00-14	4 pcs./unit	RMH-A00-17	1 pc./unit
101	RMH-A00-15	4 pcs./unit	RMH-A00-16	1 pc./unit
111	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
121	RMH-A00-14	4 pcs./unit	RMH-A00-17	1 pc./unit

Robot Manufacturer Dedicated Flanges

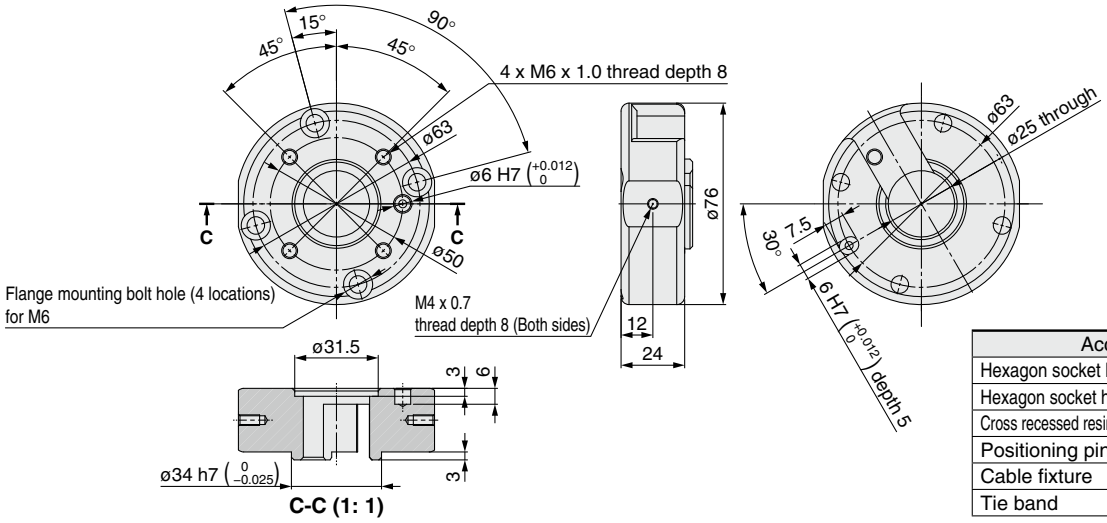
By selecting a robot identification symbol and the manual changer option "E" (With main plate assembly), a dedicated flange for the corresponding robot will be shipped with the product.

■ Flange for MOTOMAN-HC10 from YASKAWA Electric (Robot identification symbol: 041N, 041P)



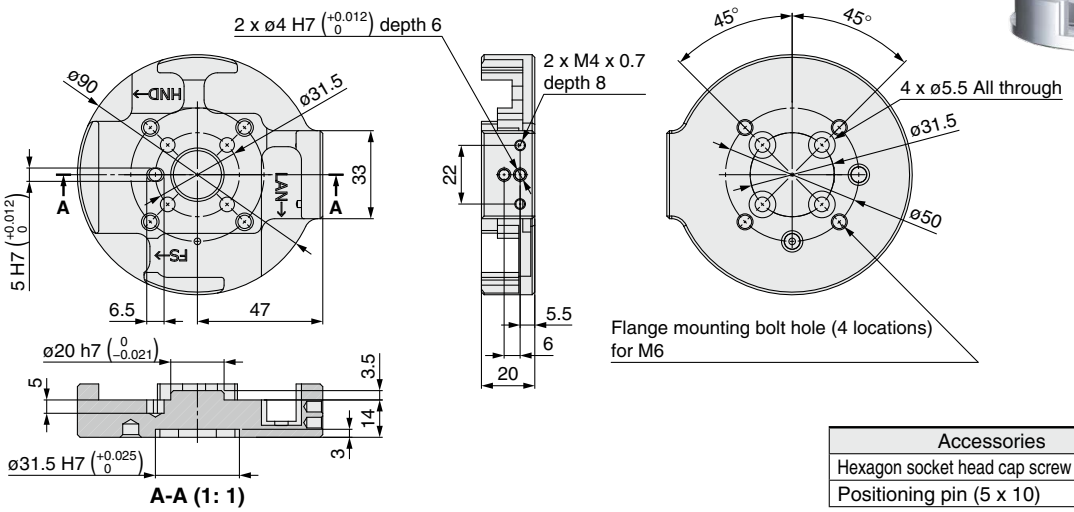
Accessories	Quantity
Hexagon socket head cap screw (M4 x 8)	2 pcs.
Hexagon socket head cap screw (M6 x 12)	4 pcs.
Cross recessed resin round head screw (M4 x 6)	2 pcs.
Positioning pin (6 x 10)	1 pc.
Cable fixture	2 pcs.
Tie band	2 pcs.

■ Flange for MOTOMAN-HC10DT from YASKAWA Electric (Robot identification symbol: 042N, 042P)



Accessories	Quantity
Hexagon socket head cap screw (M4 x 8)	2 pcs.
Hexagon socket head cap screw (M6 x 12)	4 pcs.
Cross recessed resin round head screw (M4 x 6)	2 pcs.
Positioning pin (6 x 10)	1 pc.
Cable fixture	2 pcs.
Tie band	2 pcs.

■ Flange for ASSISTA from Mitsubishi Electric (Robot identification symbol: 031N, 031P)



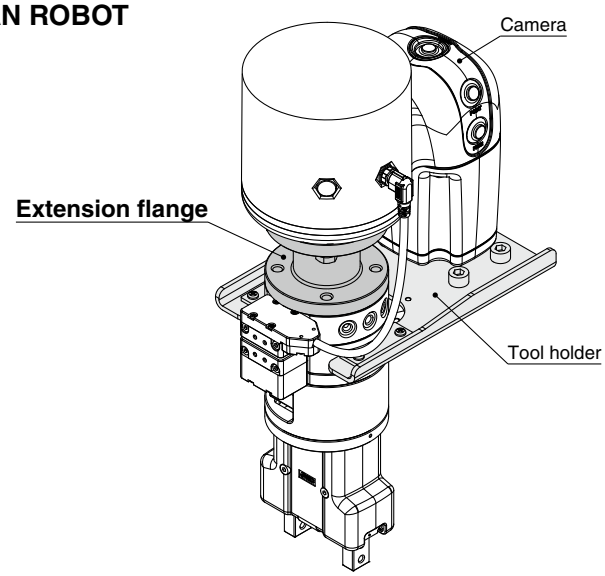
Accessories	Quantity
Hexagon socket head cap screw (M5 x 10)	4 pcs.
Positioning pin (5 x 10)	1 pc.

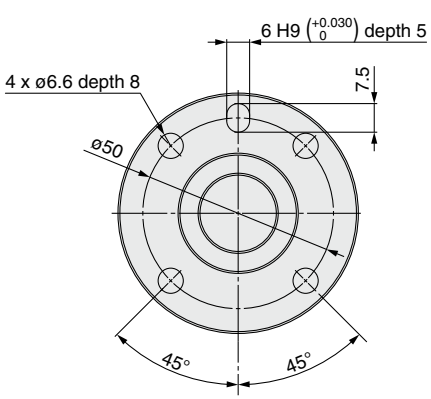
Robot Manufacturer Dedicated Flange

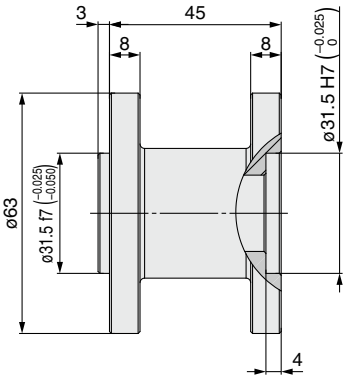
■Dedicated extension flange for the OMRON/TECHMAN ROBOT

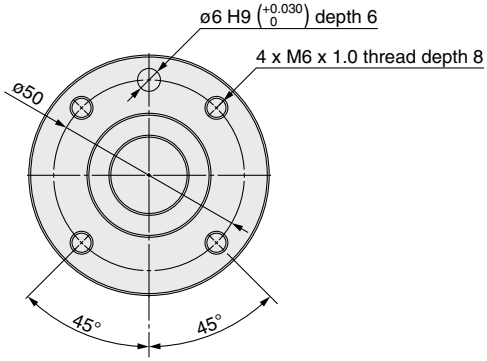
When using the tool holder on an OMRON/TECHMAN ROBOT with a camera, be sure to use the extension flange to prevent interference with the camera.

Description	Part no.
Extension flange	**RMH-A00-20**









Accessories	Q'ty
Hexagon bolt (M6 x 15)	4
Flat washer (M6)	4
Parallel pin (6 x 10)	1

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

⚠ Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not allowed.
Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country.
The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**
A suction cup (vacuum pad) is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Revision History

Edition B
* Tool changers (one-push and auto types) and a tool holder have been added.
* A drop prevention circuit has been added.
* The number of pages has been increased from 36 to 48.

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