

Rotary Gripper

Series MRHQ

Gripper Inside Diameter/Size: $\varnothing 10$, $\varnothing 16$, $\varnothing 20$, $\varnothing 25$

Rotary gripper suitable for holding and reversing workpieces on transfer lines

- Compact integration of gripping and rotating functions
- Eliminates the rotating deflection of piping and wiring caused by the combination of equipment (rotary table + adapter + air gripper)
- Longitudinal dimension reduced by approx. 20% compared with the combined product
- 2 standard rotation angles of 90° and 180°
- Equipped with standard magnet for auto switch retrofitting



Rotary Gripper MRHQ 10/16/20/25

Modular construction

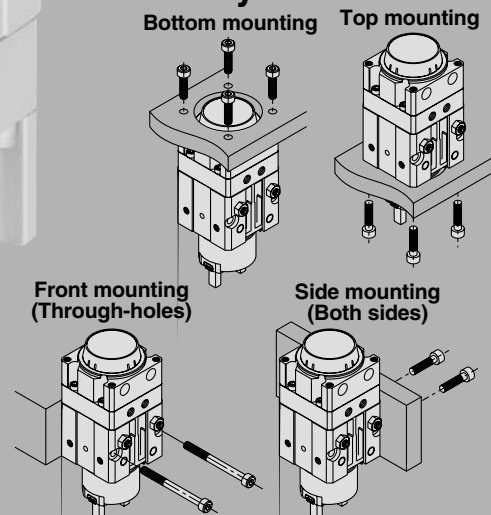
Gripper section is unitized for simple replacement.

Compact bearings add to a light weight and compact design

Simple alignment when mounting body

Provided with reference diameters at the top and bottom of the body, and mounting guide pin holes on three sides of the body along its center axis (aligned with center of body).

Easily mounted from 5 directions: 2 ends and 3 sides of the body



Easy adjustment of rotating range

A scale indicator on the side of the gripper unit allows easy angle adjustments and is useful for verification of rotating positions.

Angle adjustment bolts are standard

Angle adjustment bolts allow the rotation range of the gripper unit to be adjusted by $\pm 10^\circ$ for both 90° and 180° rotation angles. ($\pm 5^\circ$ at the end of rotation)

All piping and wiring centralized on one side for easy work operations

Auto switch capable

Switches can be installed to verify positions for opening and closing of the gripper and the end of rotation.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

MA

D-□

Rotary Gripper Series MRHQ

How to Order

MRH Q 10 D - 90 S - M9NV [] [] - M9N [] []

Rotary gripper

Gripper

Q Parallel type: 2 fingers

Gripper bore

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

Action

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

Rotation angle

90	90°
180	180°

Single vane

Lead wire length

Nil	0.5 m
L	3 m
Z	5 m

Type of auto switch for detecting rotation

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

Nil	2 pcs.
S	1 pc.

Applicable Auto Switch

Type	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch symbol			Lead wire length* (m)			Applicable load		Auto switch model
				DC	AC	Electrical entry	0.5 (Nil)	3 (L)	5 (Z)	IC	Relay PLC			
Solid state switches	Grommet	Yes	3-wire (NPN)	5V	M9N	●	●	○	IC	Relay	PLC	D-M9N□-746		
			3-wire (PNP)	12V		●	●	○					D-M9P□-746	
			2-wire	12V		●	●	○					D-M9B□-746	

* Lead wire length symbols: 0.5 m Nil (Example) M9N
3 m L M9NL
5 m Z M9NZ

* Refer to page 731 for further information on auto switches.
* Order with an auto switch part number when ordering a single auto switch unit.
* Auto switches marked with a "○" are made upon receipt of order.

Type of auto switch for gripper opening/closing

N	Without auto switch (Built-in magnet)
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Applicable Auto Switch

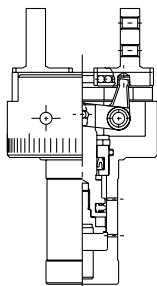
Type	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch symbol			Lead wire length* (m)			Applicable load		Auto switch model
				DC	AC	Electrical entry	0.5 (Nil)	3 (L)	5 (Z)	IC	Relay PLC			
Solid state switches	Grommet	Yes	3-wire (NPN)	5V	M9NV	●	●	○	IC	Relay	PLC	D-M9NV□		
			3-wire (PNP)	12V		●	●	○					D-M9PV□	
			2-wire	12V		●	●	○					D-M9BV□	

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
3 m L M9NVL
5 m Z M9NVZ

* Refer to page 774 for further information on auto switches.
* Please order with an auto switch part number when ordering a single auto switch unit.
* Auto switches marked with a "○" are made upon receipt of order.

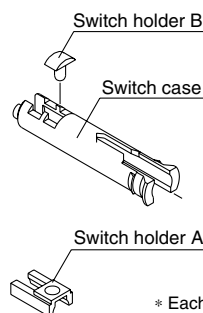
Unit list

Gripper unit



Model	Unit part no.
MRHQ10D	P407090-3D
MRHQ10S	P407090-3S
MRHQ10C	P407090-3C
MRHQ16D	P407060-3D
MRHQ16S	P407060-3S
MRHQ16C	P407060-3C
MRHQ20D	P407080-3D
MRHQ20S	P407080-3S
MRHQ20C	P407080-3C
MRHQ25D	P408080-3D
MRHQ25S	P408080-3S
MRHQ25C	P408080-3C

Switch mounting unit



Model	Unit part no.
MRHQ10□	P407090-1
MRHQ16□	P407060-1
MRHQ20□	
MRHQ25□	

* Each unit includes two of each of the parts indicated left.
* Auto switches are not included with a unit.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

MA

D-□

Series MRHQ



Specifications

Model		MRHQ10	MRHQ16	MRHQ20	MRHQ25
Fluid		Air			
Operating pressure	Rotary unit	0.25 to 0.7 MPa		0.25 to 1.0 MPa	
	Gripper unit	Double acting	0.1 to 0.7 MPa		
		Single acting	0.25 to 0.7 MPa		
Rotation angle		90° ±10°, 180° ±10° (Both ends of vibration ±5° adjustable)			
Gripper action		Double acting, Single acting			
Finger opening/closing repeatability		±0.01mm			
Gripper maximum operating frequency		180 c.p.m			
Ambient and fluid temperature		5 to 60°C			
Adjustable rotation time range ⁽¹⁾		0.07 to 0.3 s/90° (at 0.5 MPa)			
Allowable kinetic energy		0.0046 J	0.014 J	0.034 J	0.074 J
Auto switch	Rotary unit	Solid state auto switch (2-wire, 3-wire)			
	Gripper unit	Solid state auto switch (2-wire, 3-wire)			

Note 1) Operate within the speed adjustment range, as speed control exceeding the limit value of the low speed may cause sticking or failure to operate.

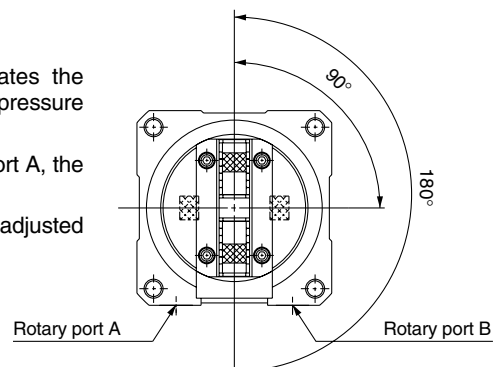
Model

Action	Model	Cylinder bore (mm)	Opening/Closing stroke (mm)	Rotating angle (°)	Mass (g) ⁽¹⁾
Double acting	MRHQ10D	10	4	90	306
				180	305
	MRHQ16D	16	6	90	593
				180	591
	MRHQ20D	20	10	90	1055
				180	1052
	MRHQ25D	25	14	90	1561
				180	1555
Single acting	MRHQ10S MRHQ10C	10	4	90	307
				180	306
	MRHQ16S MRHQ16C	16	6	90	594
				180	592
	MRHQ20S MRHQ20C	20	10	90	1060
				180	1057
	MRHQ25S MRHQ25C	25	14	90	1566
				180	1560

Note 1) Values do not include auto switch mass.

Gripper Rotation Range/View from Gripper Side

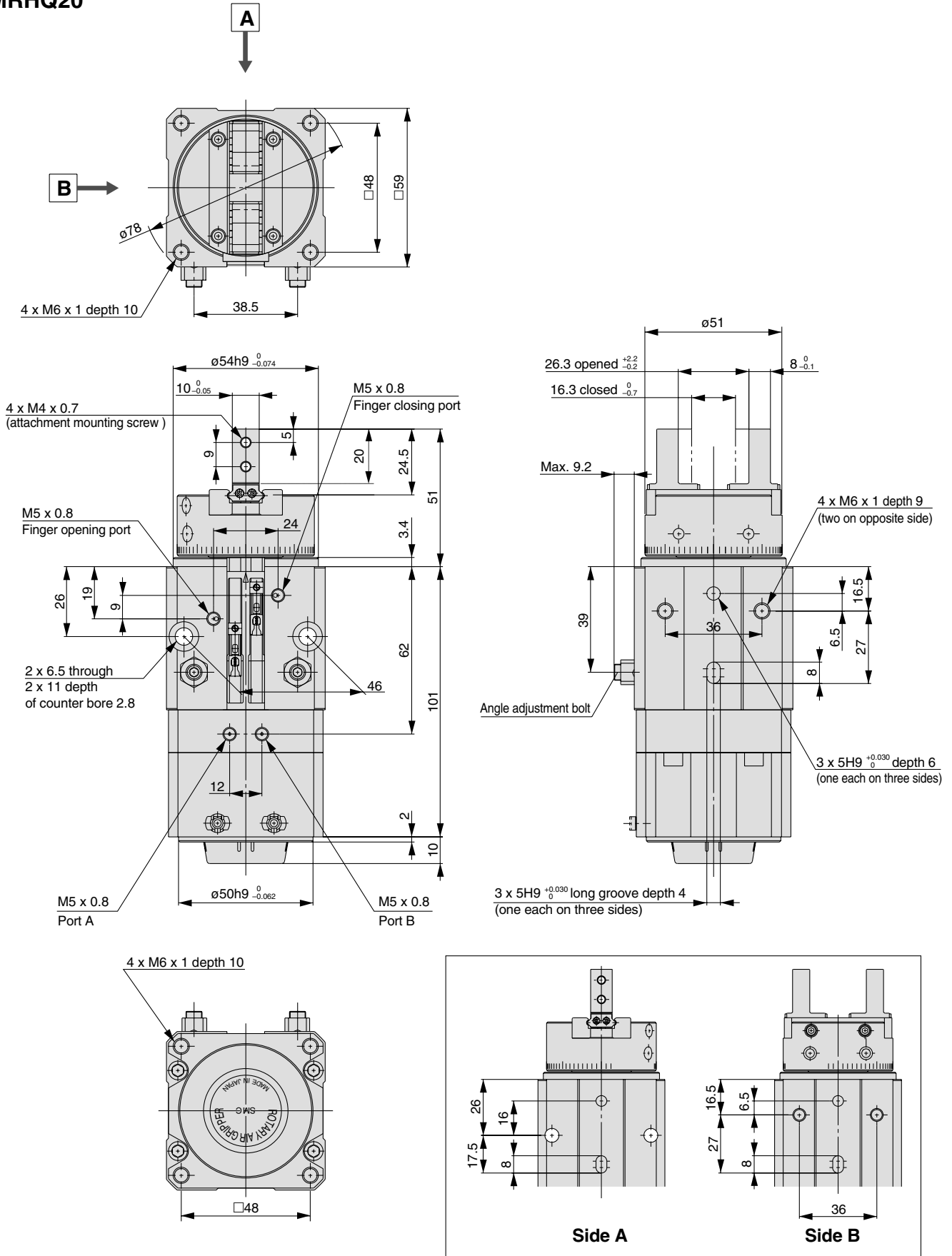
- The figure at the right indicates the position of the gripper when pressure is applied to port B.
- When pressure is applied to port A, the gripper rotates clockwise.
- Both ends of vibration can be adjusted ±5° with the adjusting bolt.



Series MRHQ

Dimensions

MRHQ20





Series MRHQ Specific Product Precautions 1

Be sure to read before handling. Refer to front matters 38 and 39 for Safety Instructions and pages 358 to 365 for Rotary Actuator, Air Gripper and Auto Switch Precautions.

Selection

⚠ Warning

1. Keep the load energy within the product's allowable energy value.

Operation with a load kinetic energy exceeding the allowable value can cause human injury and/or damage to equipment or machinery. (Refer to "Model Section" procedures in this catalog.)

⚠ Caution

1. When there are load fluctuations, allow a sufficient margin in the actuator torque.

In the case of horizontal mounting (operation with product facing sideways), malfunction may occur due to load fluctuations.

Mounting

⚠ Caution

1. Adjust the rotation angle within the prescribed ranges: 90° ±10°; 180° ±10° (±5° at end of rotation).

Adjustment outside the prescribed ranges may cause malfunction of the product or failure of switches to operate.

2. Adjust the opening/closing speed of the fingers with a speed controller so that they do not operate any faster than necessary.

When fingers open and close faster than necessary, impact on the fingers and other parts increases, causing poor repeatability when gripping workpieces and danger of an adverse effect on the product's life.

Adjustment of Finger Opening/Closing Speed

Double acting	Install two speed controllers and adjust with meter-out throttling.
Single acting	Install one speed controller and adjust with meter-in throttling. For external gripping – connect to closing port For internal gripping – connect to opening port

3. Adjust the rotation time within the prescribed values using a speed controller. (0.07 to 0.3 s/90°)

Adjustment to a speed slower than 0.3 s/90° can cause sticking and slipping or stopping of operation.

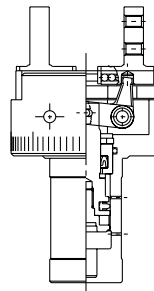
Maintenance

⚠ Caution

1. Gripper unit

Replace a gripper unit. When replacing it follow the gripper unit replacement procedures on the next page. Confirm the correct unit part number.

Gripper unit



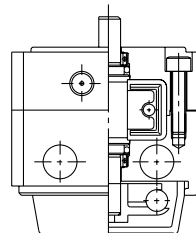
Model	Unit part no.
MRHQ10D	P407090-3D
MRHQ10S	P407090-3S
MRHQ10C	P407090-3C
MRHQ16D	P407060-3D
MRHQ16S	P407060-3S
MRHQ16C	P407060-3C
MRHQ20D	P407080-3D
MRHQ20S	P407080-3S
MRHQ20C	P407080-3C
MRHQ25D	P408080-3D
MRHQ25S	P408080-3S
MRHQ25C	P408080-3C

* A gripper unit includes not only an air gripper, but also three O-rings (12) and three hexagon socket head cap screws (15) as shown in the construction on page 725.

2. Rotary unit

Replace a rotary unit.

Rotary unit



Model	Unit part no.
MRHQ10□- 90S	P406090-2A
MRHQ10□-180S	P406090-2B
MRHQ16□- 90S	P406060-2A
MRHQ16□-180S	P406060-2B
MRHQ20□- 90S	P407080-2A
MRHQ20□-180S	P407080-2B
MRHQ25□- 90S	P408080-2A
MRHQ25□-180S	P408080-2B

* Note that the rotation angle cannot be changed even though the rotary unit has been changed.

For maintenance, order units with a part number suitable for the model being used.

3. O-ring in the body C

((12) O-ring in the construction on page 725: 3 pcs.)

Model	Seal kit part no.
MRHQ10□	MRHQ10S-PS
MRHQ16□	MRHQ16S-PS
MRHQ20□	MRHQ20S-PS
MRHQ25□	MRHQ25S-PS

* Special grease is applied.

* This O-ring is included in the gripper unit.