High Precision - Repeatability ±0.01 mm
Parallel opening and closing mechanism utilizing a cross roller guide produces smooth operation without play, with high precision and long life.

Applicable for Clean Series.
Refer to “Pneumatic Clean Series” catalog for details.

Universal mounting
- Axial side mounting
- Vertical side mounting
- Lateral side mounting

Possible to mount solid state switch with indicator light D-M9. Easy to locate switch to optimum set point.

MDHR2  MDHR3
High rigidity
Fingers operate smoothly as the holder maintains the guide from the outside and prevents finger displacement.

Low profile
Using rotary actuators in the part of actuating portion enables a design compact.

Internal/External gripping capability

Connection port on 2 sides

Series Variations

Rotary actuated air gripper

<table>
<thead>
<tr>
<th>2 Finger</th>
<th>3 Finger</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHR2</td>
<td>MDHR2</td>
</tr>
<tr>
<td>MHR3</td>
<td>MDHR3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>Auto switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>P. 12-5-4</td>
</tr>
<tr>
<td>15</td>
<td>P. 12-5-17</td>
</tr>
<tr>
<td>20</td>
<td>P. 12-5-18</td>
</tr>
<tr>
<td>30</td>
<td>P. 12-5-26</td>
</tr>
</tbody>
</table>
## 2 Finger Rotary Actuated Air Gripper
### Series MHR2/MDHR2
Size: 10, 15, 20, 30

### How to Order

#### Without auto switch

<table>
<thead>
<tr>
<th>MHR</th>
<th>2</th>
<th>10</th>
<th>R</th>
</tr>
</thead>
</table>

#### With auto switch (Built-in magnet)

<table>
<thead>
<tr>
<th>MDHR</th>
<th>2</th>
<th>10</th>
<th>R</th>
<th>M9N</th>
<th>S</th>
</tr>
</thead>
</table>

- **With magnet** (For auto switch)
- **Number of fingers**: 2 fingers
- **Nominal size**: 10, 15, 20, 30
- **Auto switch**: Nil
- **Number of auto switches**: 2 pcs.

#### Connecting port

- **R**: Body side
- **E**: Axial side

### Applicable Auto Switch

Refer to page 12-13-1 for further information on auto switches.

<table>
<thead>
<tr>
<th>Type</th>
<th>Special function</th>
<th>Electrical entry</th>
<th>Indicator light</th>
<th>Wiring (Output)</th>
<th>Load voltage</th>
<th>Auto switch model</th>
<th>Lead wire length (m)*</th>
<th>Flexible lead wire (-61)</th>
<th>Pre-wire connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid state switch</td>
<td>—</td>
<td>Grommet</td>
<td>Yes</td>
<td>3-wire (NPN)</td>
<td>—</td>
<td>M9NV</td>
<td>M9N</td>
<td>Standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (PNP)</td>
<td>5 V</td>
<td>M9PV</td>
<td>M9P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-wire</td>
<td>12 V</td>
<td>M9BV</td>
<td>M9B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Lead wire length symbols**: 0.5 m = Nil (Example) M9N, 3 m = L (Example) M9NL, 5 m = Z (Example) M9NZ
- **Auto switches marked with a "○" symbol are produced upon receipt of order.**
- **Refer to page 12-13-25 for solid state switch with pre-wire connector.**
### Model/Specifications

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Action</strong></td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gripping force (N)</strong> (Effective value) at 0.5 MPa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External grip</td>
<td>12</td>
<td>24</td>
<td>33</td>
<td>58</td>
</tr>
<tr>
<td>Internal grip</td>
<td>12</td>
<td>25</td>
<td>34</td>
<td>59</td>
</tr>
<tr>
<td><strong>Opening/Closing stroke (Both sides)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger closing width (mm)</td>
<td>10</td>
<td>14</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Finger opening width (mm)</td>
<td>16</td>
<td>22</td>
<td>28</td>
<td>37</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td><strong>Weight (g)</strong> [2]</td>
<td>100 (95)</td>
<td>180 (175)</td>
<td>390 (380)</td>
<td>760 (740)</td>
</tr>
<tr>
<td><strong>Connection port</strong></td>
<td>M3 x 0.5</td>
<td>M5 x 0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>± 0.01 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fluid</strong></td>
<td>Air</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operating pressure</strong></td>
<td>0.2 to 0.6 MPa</td>
<td>0.15 to 0.6 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ambient and fluid temperature</strong></td>
<td>0 to 60°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max. operating frequency</strong></td>
<td>180 c.p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lubrication</strong></td>
<td>Non-lube</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Refer to page 12-5-7 “Effective Gripping Force” for details of Gripping force at each gripping point. Value of effective gripping force is measured at the middle of opening/closing stroke.

Note 2) ( ) Value shows MDHR weight, but it does not include auto switch weight.

**Caution**

Be sure to read before handling. Refer to pages 12-15-3 to 12-15-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to pages 12-1-4 to 12-1-6 for Precautions on every series.
Gripping Point

- Workpiece gripping point should be within the gripping point range: The range shown for each operating pressure given in the graphs to the right.
- When the gripping point distance becomes large, the finger attachment applies an excessively large load to the finger sliding section, causing excessive play of the fingers and possibly leading to premature failure.

External grip

![Diagram of external grip]

L: Distance to the gripping point
H: Overhang distance

Internal grip

![Diagram of internal grip]

Series MHR2/MDHR2

Limitation of Gripping: External Grip/Internal Grip

<table>
<thead>
<tr>
<th>MHR2-10/MDHR2-10</th>
<th>MHR2-20/MDHR2-20</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="null" alt="Graph" /></td>
<td><img src="null" alt="Graph" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MHR2-15/MDHR2-15</th>
<th>MHR2-30/MDHR2-30</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="null" alt="Graph" /></td>
<td><img src="null" alt="Graph" /></td>
</tr>
</tbody>
</table>
2 Finger Rotary Actuated Air Gripper  Series MHR2/MDHR2

Effective Gripping Force

Guidelines for the selection of the gripper with respect to component weight
• Although conditions differ according to the workpiece shape and the coefficient of friction between the attachments and the workpiece, select a model that can provide a gripping force of 10 to 20 times the workpiece weight, or more.
• If high acceleration, deceleration or impact forces are encountered during motion a further margin of safety should be considered.

External grip

Internal grip

L: Gripping point length (mm)

• Indication of effective gripping force
The effective gripping force shown in the graphs to the right is expressed as \( F \), which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.

---

Guiding point length (mm) | Gripping force (N)
--- | ---
10 | 0.6 MPa
20 | 0.5 MPa
30 | 0.4 MPa
40 | 0.3 MPa
50 | 0.2 MPa

---

Pressure

0.6 MPa
0.5 MPa
0.4 MPa
0.3 MPa
0.2 MPa
## Series MHR2/MDHR2

### Construction

#### MHR2

![Diagram of MHR2]

#### MDHR2

![Diagram of MDHR2]

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>2</td>
<td>Adaptor body</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>3</td>
<td>Guide holder</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cam</td>
<td>Cold rolled steel</td>
<td>Nitrified</td>
</tr>
<tr>
<td>5</td>
<td>Finger assembly</td>
<td>Stainless steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>6</td>
<td>Guide</td>
<td>Stainless steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>7</td>
<td>Pin</td>
<td>Carbon steel</td>
<td>Heat treated, Electroless nickel plated</td>
</tr>
<tr>
<td>8</td>
<td>Pin roller</td>
<td>Stainless steel</td>
<td>Nitrified</td>
</tr>
<tr>
<td>9</td>
<td>Vane shaft</td>
<td>Stainless steel, NBR</td>
<td>M:\text{HR2-30 is carbon steel}</td>
</tr>
<tr>
<td>10</td>
<td>Joint bolt</td>
<td>Chrome molybdenum steel</td>
<td>Zinc chromated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Stopper</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Back-up ring</td>
<td>Stainless steel plate</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Hexagon socket head bolt</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Bearing</td>
<td>High carbon chrome bearing steel</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Cylindrical roller</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Magnet</td>
<td>Magnetic material</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Magnet holder</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>18</td>
<td>Roller</td>
<td>Stainless steel</td>
<td>Nitrided</td>
</tr>
<tr>
<td>19</td>
<td>O-ring</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Stopper packing</td>
<td>NBR</td>
<td></td>
</tr>
</tbody>
</table>
2 Finger Rotary Actuated Air Gripper

Series MHR2/MDHR2

Mounting of Auto Switch

To set the auto switch, insert the auto switch into the installation groove of the gripper from the direction indicated in the following drawing. After setting the position, tighten the attached switch mounting set screw with a flat head watchmakers’ screwdriver.

Auto switch Hysteresis

Please refer to the table as a guide when setting auto switch positions.

<table>
<thead>
<tr>
<th>Model</th>
<th>Hysteresis (Max.value) (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDHR2-10</td>
<td>0.4</td>
</tr>
<tr>
<td>MDHR2-15</td>
<td>0.5</td>
</tr>
<tr>
<td>MDHR2-20</td>
<td>0.4</td>
</tr>
<tr>
<td>MDHR2-30</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Note) Use a watchmakers’ screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.1 N·m. As a rule, it should be turned about 90° beyond the point at which tightening can be felt.

Protrusion of Auto Switch from Edge of Body

The maximum protrusion of an auto switch (when fingers are fully open) from the edge of the body is shown in the table below. Use the table as a guideline for mounting.

<table>
<thead>
<tr>
<th>Air gripper model</th>
<th>Auto switch model</th>
<th>D-M9</th>
<th>D-M9(\text{V})</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDHR2-10</td>
<td>L</td>
<td>2.6</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td></td>
<td>6.8</td>
</tr>
<tr>
<td>MDHR2-15</td>
<td>L</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H</td>
<td></td>
<td>6.8</td>
</tr>
</tbody>
</table>

Max. Protrusion of Auto Switch from Edge of Body: L, H (mm)

The auto switch will not protrude in the case of D-F9\(\text{V}\).
Without auto switch: MHR2-10R

**MHR2-10E Port Location**

- 3-M3 x 0.5 thread depth 6
- Finger opening port
- Finger closing port

**Nominal Size 10**

Series MHR2/MDHR2

1-M3 x 0.5 thread depth 6

Nominal Size 10 Series MHR2/MDHR2

Open: 16 Closed: 10

Thread for mounting attachment
2 Finger Rotary Actuated Air Gripper Series MHR2/MDHR2

With auto switch (Built-in magnet): MDHR2-10R

Dimensional Differences between MHR and MDHR

Regardless of auto switch installation, some body dimensions are different.

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHR2</td>
<td>-10R</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>-10E</td>
<td>—</td>
</tr>
<tr>
<td>MDHR2</td>
<td>-10R</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>-10E</td>
<td>—</td>
</tr>
</tbody>
</table>
Series MHR2/MDHR2

Nominal Size 15

Without auto switch: MHR2-15R

- 3-M3 x 0.5 thread depth 6
- P.C.D.29 (Mounting thread)

MHR2-15E Port Location

- M3 x 0.5 Finger closing port
- M3 x 0.5 Finger opening port

6-M3 x 0.5 thread depth 6 (A, B, C common view)

3-ø3 0.02 depth 6 (A, B, C common view)

2-M3 x 0.5 thread depth 6
(Threads for mounting attachment)
2 Finger Rotary Actuated Air Gripper Series MHR2/MDHR2

With auto switch (Built-in magnet): MDHR2-15R

MDHR2-15E Port Location

2-M3 x 0.5 thread depth 6
(Thread for mounting attachment)

A

B

C

M3 x 0.5
Finger closing port

M3 x 0.5
Finger opening port

P.C.D.29 (Mounting thread)

MDZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-
Series MHR2/MDHR2

Nominal Size 20

Without auto switch: MHR2-20R

MHR2-20E Port Location

(A, B, C common view)

3-ø4.0 +0.01 depth 8

3-M4 x 0.7 thread depth 8
P.C.D.36 (Mounting thread)

6-M4 x 0.7 thread depth 8
(A, B, C common view)

2-M4 x 0.7 thread depth 8
(Thread for mounting attachment)

Open: 28 Closed: 16

M5 x 0.8
Finger closing port

25°

M5 x 0.8
Finger opening port

M5 x 0.8
Finger closing port

25°

M5 x 0.8
Finger opening port

Open: 28 Closed: 16

Thread for mounting attachment

12-5-14
2 Finger Rotary Actuated Air Gripper Series MHR2/MDHR2

With auto switch (Built-in magnet): MDHR2-20R

MDHR2-20E Port Location

P.C.D.36 (Mounting thread)

M5 x 0.8
Finger closing port

M5 x 0.8
Finger opening port

Auto switch mounting groove

6-M4 x 0.7 thread depth 8
(A, B, C common view)

3-M4 x 0.7 thread depth 8
P.C.D.36 (Mounting thread)

Open: 28 Closed: 16

2-M4 x 0.7 thread depth 8
(Thread for mounting attachment)
Series MHR2/MDHR2

Nominal Size 30

Without auto switch: MHR2-30R

MHR2-30E Port Location

2-M5 x 0.8 thread depth 10  
(Thread for mounting attachment)

P.C.D.43 (Mounting thread)

6-M5 x 0.8 thread depth 10  
(A, B, C common view)

3-ø5 0-0.02 depth 10  
(A, B, C common view)

M5 x 0.8  
Finger opening port

M5 x 0.8  
Finger closing port

ø5  
Open: 37 Closed: 19

ø5 0-0.03

ø5 0-0.03

ø16h9 0-0.043
With auto switch (Built-in magnet): MDHR2-30R

MDHR2-30E Port Location

2-M5 x 0.8 thread depth 10
(Thread for mounting attachment)

Dimensional Differences between MHR and MDHR
Regardless of auto switch installation, some body dimensions are different.

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHR2-30</td>
<td>25</td>
</tr>
<tr>
<td>MDHR2-30</td>
<td>25.5</td>
</tr>
</tbody>
</table>
3 Finger Rotary Actuated Air Gripper

Series MHR3/MDHR3

Size: 10, 15

How to Order

Without auto switch

MHR 3 10 R

With auto switch (Built-in magnet)

MDHR 3 10 R M9N S

With magnet (For auto switch)

Number of fingers

3 3 fingers

Nominal size

10 15

Connecting port

R: Body side

Port

Number of auto switches

Nil 2 pcs.
S 1 pc.

Auto switch

Nil Without auto switch (Built-in magnet)

Applicable Auto Switch

Refer to page 12-13-1 for further information on auto switches.

<table>
<thead>
<tr>
<th>Type</th>
<th>Special function</th>
<th>Electrical entry</th>
<th>Indicator light</th>
<th>Wiring (Output)</th>
<th>Load voltage</th>
<th>Auto switch model</th>
<th>Lead wire length (m)</th>
<th>Flexible lead wire</th>
<th>Pre-wire connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid state switch</td>
<td>—</td>
<td>Grommet</td>
<td>Yes</td>
<td>3-wire (NPN)</td>
<td>24 V</td>
<td>M9NV</td>
<td>0.5 (Nil)</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (PNP)</td>
<td>12 V</td>
<td>M9NV</td>
<td>3 (L)</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-wire</td>
<td>12 V</td>
<td>M9BV</td>
<td>5 (Z)</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

* Lead wire length symbols: 0.5 m........ Nil (Example) M9N 3 m........ L (Example) M9NL 5 m........ Z (Example) M9N2

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

Refer to page 12-13-25 for solid state switch with pre-wire connector.
# Model/Specifications

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>10</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holding force (N) (Effective value) at 0.5 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External grip</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Internal grip</td>
<td>6.5</td>
<td>12</td>
</tr>
<tr>
<td>Opening/Closing stroke (Diameter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger closing width (mm)</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Finger opening width (mm)</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>120 (125)</td>
<td>225 (230)</td>
</tr>
<tr>
<td>Connection port</td>
<td>M3 x 0.5</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.01 mm</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Operating pressure</td>
<td>0.2 to 0.6 MPa</td>
<td>0.15 to 0.6 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>0 to 60°C</td>
<td></td>
</tr>
<tr>
<td>Max. operating frequency</td>
<td>180 c.p.m.</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Non-lube</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1)** Refer to page 12-5-20 “Effective Gripping Force” for details of gripping force at each gripping point.

**Note 2)** (    ) Value shows MDHR weight, but it does not include auto switch weight.

---

# Caution

Be sure to read before handling.

Refer to pages 12-15-3 to 12-15-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to pages 12-1-4 to 12-1-6 for Precautions on every series.
Gripping Point

External grip

Internal grip

Limitation of Gripping: External Grip/Internal Grip

- Workpiece gripping point should be within the gripping point range: L shown below, by operating pressure.
- When the gripping point distance becomes large, the finger attachment applies an excessively large load to the finger sliding section, causing excessive play of the fingers and possibly leading to premature failure.

effective gripping force

Guidelines for the selection of the gripper with respect to component weight

- Selection of the correct model depends upon the component weight, the coefficient of friction between the finger attachment and the component, and their respective configurations. A model should be selected with a gripping force of 7 to 14 times that of the component weight.
- If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

External Grip

Internal Grip

Indication of effective gripping force

The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when three fingers and attachments are in full contact with the workpiece as shown in the figure to the right.
3 Finger Rotary Actuated Air Gripper  Series MHR3/MDHR3

Construction

MDHR3

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>2</td>
<td>Adaptor body</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>3</td>
<td>Guide holder</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cam</td>
<td>Cold rolled</td>
<td>Nitrided</td>
</tr>
<tr>
<td>5</td>
<td>Finger assembly</td>
<td>Stainless steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>6</td>
<td>Guide</td>
<td>Stainless steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>7</td>
<td>Pin</td>
<td>Carbon steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>8</td>
<td>Pin roller</td>
<td>Stainless steel</td>
<td>Nitrided</td>
</tr>
<tr>
<td>9</td>
<td>Vane shaft</td>
<td>Stainless steel, NBR</td>
<td>Nitrided</td>
</tr>
<tr>
<td>10</td>
<td>Joint bolt</td>
<td>Chrome molybdenum steel</td>
<td>Zinc chromated</td>
</tr>
<tr>
<td>11</td>
<td>Stopper</td>
<td>Resin</td>
<td></td>
</tr>
</tbody>
</table>

Replacement Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>MHR3-10</th>
<th>MHR3-15</th>
<th>Main parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>P3313128</td>
<td>P3313228</td>
<td>19</td>
</tr>
</tbody>
</table>
Series MHR3/MDHR3

Nominal Size 10

Without auto switch: MHR3-10R

3-M3 x 0.5 thread depth 6
P.C.D.24 (Mounting thread)

M3 x 0.5
Finger closing port

M3 x 0.5
Finger opening port

3-M3 x 0.5 thread depth 6
(Thread for mounting attachment)
With auto switch (Built-in magnet): MDHR3-10R

MDHR3-10E Port Location

Dimensional Differences between MHR and MDHR

Regardless of auto switch installation, some body dimensions are different.

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHR3-10R</td>
<td>5</td>
</tr>
<tr>
<td>MDHR3-10R</td>
<td>4.7</td>
</tr>
</tbody>
</table>
Nominal Size 15

Without auto switch: MHR3-15R

3-M3 x 0.5 thread depth 6
P.C.D.29 (Mounting thread)

M3 x 0.5
Finger closing port

M3 x 0.5
Finger opening port

Open: 13.5
Closed: 9.5

3-M3 x 0.5 thread depth 6
(Thread for mounting attachment)
3 Finger Rotary Actuated Air Gripper Series MHR3/MDHR3

With auto switch (Built-in magnet): MDHR3-15R

MDHR3-15E Port Location

Auto switch mounting groove

3-M3 x 0.5 thread depth 6
P.C.D.29 (Mounting thread)

3-M3 x 0.5
Finger closing port

M3 x 0.5
Finger opening port

Open: 13.5 Closed: 9.5

3-ø3 0.02 depth 6
(A, B, C common view)

6-M3 x 0.5 thread depth 6
(A, B, C common view)

Misc.

D-20-
**Mounting of Auto Switch**

To set the auto switch, insert the auto switch into the installation groove of the gripper from the direction indicated in the following drawing. After setting the position, tighten the attached switch mounting set screw with a flat head watchmakers' screwdriver.

![Auto switch and screwdriver diagram](image)

**Note:** Use a watchmakers' screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.1 N·m. As a rule, it should be turned about 90° beyond the point at which tightening can be felt.

**Protrusion of Auto Switch from Edge of Body**

The maximum protrusion of an auto switch (when fingers are fully open) from the edge of the body is shown in the table below. Use the table as a guideline for mounting.

<table>
<thead>
<tr>
<th>Auto switch model</th>
<th>D-M9N</th>
<th>D-M9□V</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td>2.3</td>
</tr>
</tbody>
</table>

**Max. Protrusion of Auto Switch from Edge of Body: L, H (mm)**

The auto switch will not protrude in the case of D-F9□.

---

**Auto Switch Hysteresis**

Please refer to the table as a guide when setting auto switch positions.

<table>
<thead>
<tr>
<th>Model</th>
<th>Hysteresis (Max.value) (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDHR3-10</td>
<td>0.3</td>
</tr>
<tr>
<td>MDHR3-15</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**MDHR3 Diagram**

- Hysteresis
- Switch operating position (ON)
- Switch reset position (OFF)

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**Series MHR3/MDHR3 12-5-26**