180° Angular Type Air Gripper

MHY2/MHW2 Series

ø10, ø16, ø20, ø25
**180° Angular Type Air Gripper**

**MHY2/MHW2 Series**

**MHY2 Series/Cam Type**

Light and compact size in small bore sizes

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore size (mm)</th>
<th>Gripping moment * (N·m)</th>
<th>Over length L (mm)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHY2-10D</td>
<td>10</td>
<td>0.16</td>
<td>71</td>
<td>70</td>
</tr>
<tr>
<td>MHY2-16D</td>
<td>16</td>
<td>0.54</td>
<td>84</td>
<td>150</td>
</tr>
<tr>
<td>MHY2-20D</td>
<td>20</td>
<td>1.10</td>
<td>106</td>
<td>320</td>
</tr>
<tr>
<td>MHY2-25D</td>
<td>25</td>
<td>2.28</td>
<td>131</td>
<td>560</td>
</tr>
</tbody>
</table>

* At the pressure of 0.5 MPa

**Assembly**

Clamping workpiece

**Series Variations**

**Auto switch mounting at 4 locations**

**Resistance to dusty environments**

Reduced opening sizes helps prevent foreign objects from entering.

**Improved mounting repeatability**

Stainless steel fingers are standard.

**Cam Type**

MHY2 Series

**Rack & Pinion Type**

MHW2 Series

**Cam Type Rack & Pinion Type**

Light and compact size in small bore sizes

**MHY2/MHW2 Series**

**Auto switch mounting at 4 locations**

**Resistance to dusty environments**

Reduced opening sizes helps prevent foreign objects from entering.
MHW2 Series/Rack & Pinion Type

Unique seal design allows shorter total length construction and constant gripping force when opening and closing fingers. (PAT.PEND)

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore size (mm)</th>
<th>Gripping moment *(N·m)</th>
<th>Over length L(mm)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHW2-20D</td>
<td>20</td>
<td>0.30</td>
<td>68</td>
<td>300</td>
</tr>
<tr>
<td>MHW2-25D</td>
<td>25</td>
<td>0.73</td>
<td>78</td>
<td>510</td>
</tr>
<tr>
<td>MHW2-32D</td>
<td>32</td>
<td>1.61</td>
<td>93.5</td>
<td>905</td>
</tr>
<tr>
<td>MHW2-40D</td>
<td>40</td>
<td>3.70</td>
<td>117.5</td>
<td>2135</td>
</tr>
<tr>
<td>MHW2-50D</td>
<td>50</td>
<td>8.27</td>
<td>154</td>
<td>5100</td>
</tr>
</tbody>
</table>

*(At the pressure of 0.5 MPa)

Auto switch mounting at 4 locations

Key connection is ideal for impact resistance.
Key connection between finger and shaft prevents finger angle slippage during impact.

Two finger types available.
- Flat finger type
- Right angle finger type

Dustproof construction
Seal arrangement protects gripper from harsh dusty environments.

Bearings are standard.
MHY2/MHW2 Series
Model Selection

Model Selection

Selection Procedure

Step 1 Confirmation of Gripping Force

Confirmation of conditions → Calculation of required gripping force → Selection of model from gripping force graph

Step 2 Confirmation of gripping point

Step 3 Confirmation of moment of inertia of attachments

Example

Workpiece mass: 0.05 kg

Guidelines for the selection of the gripper with respect to workpiece mass

• 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 mass, or more.
• If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

Example) For setting the gripping force to be at least 20 times the work weight:

Required gripping force

\[ F = 0.05 \text{ kg} \times 20 \times 9.8 \text{ m/s}^2 = 10 \text{ N min.} \]

• When MHY2-16D is selected, the gripping force is determined to be 13 N according to the gripping point distance (L = 35 mm) and the pressure (0.4 MPa).
• The gripping force is 26 times the workpiece mass and therefore satisfies a gripping force setting value of 20 times or more.

Effective Gripping Force

MHY2/MHW2 Series Double Acting

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

Operating pressure: 0.4 MPa

Gripping point L = 35 mm

Example

MHY2-10D
MHY2-16D
MHY2-20D
MHY2-25D

External grip

Indication of effective gripping force
The effective gripping force shown in the graphs to the right is expressed as F, which is the impellent force of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.
**Step 2 Confirmation of Gripping Point**

- Workpiece should be held at a point within the range of overhanging distance (H) for a given pressure indicated in the tables on the right.
- When the workpiece is held at a point outside of the recommended range for a given pressure, it may cause adverse effect on the product life.
### Step 3 Confirmation of Moment of Inertia of Attachments

Confirm the moment of inertia for the attachment at one side. Calculate the moment of inertia for A and B separately as shown in the figures on the right.

#### Procedure

<table>
<thead>
<tr>
<th></th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Check the operating conditions, dimensions of attachment, etc.</td>
</tr>
<tr>
<td>2.</td>
<td>Calculate the moment of inertia of attachment,</td>
</tr>
<tr>
<td>3.</td>
<td>Determine the allowable moment of inertia from the graph.</td>
</tr>
<tr>
<td>4.</td>
<td>Confirm the moment of inertia of one attachment is within the allowable range.</td>
</tr>
</tbody>
</table>

#### Calculation example

- **Operating model:** MHY2-16D
- **Opening time:** 0.15 s
- **Material of attachment:** Aluminum alloy (Specific gravity = 2.7)
- **Constants for unit conversion**
  - \( r_1 = 37 \text{ (mm)} \)
  - \( r_2 = 47 \text{ (mm)} \)

#### Calculation

- **A part**
  - 
  
<table>
<thead>
<tr>
<th>Calculation</th>
<th>Operating example</th>
</tr>
</thead>
<tbody>
<tr>
<td>( m_1 = a \times b \times c \times \text{Specific gravity} )</td>
<td>( m_1 = 40 \times 7 \times 8 \times 2.7 \times 10^{-6} = 0.006 \text{ (kg)} )</td>
</tr>
<tr>
<td>( I_{Z1} = \frac{m_1(a^2 + b^2)}{12} \times 10^{-6} )</td>
<td>( I_{Z1} = 0.006 \times \frac{(40^2 + 7^2)}{12} \times 10^{-6} = 0.8 \times 10^{-6} \text{ (kg-m^2)} )</td>
</tr>
<tr>
<td>( I_A = I_{Z1} + m_1r_1^2 \times 10^{-6} )</td>
<td>( I_A = 0.8 \times 10^{-6} + 0.006 \times 37^2 \times 10^{-6} = 9.0 \times 10^{-6} \text{ (kg-m^2)} )</td>
</tr>
</tbody>
</table>

- **B part**

  - **Calculation of weight**
    - \( m_2 = d \times e \times f \times \text{Specific gravity} \)
  - **Moment of inertia around \( Z_2 \) axis**
    - \( I_{Z2} = \frac{m_2(d^2 + e^2)}{12} \times 10^{-6} \)
  - **Moment of inertia around \( Z \) axis**
    - \( I_B = I_{Z2} + m_2r_2^2 \times 10^{-6} \)
  - **Total moment of inertia**
    - \( I = I_A + I_B \)  

#### Confirmation of Moment of Inertia of Attachments

- **Moment of inertia around \( Z_1 \) axis**
  - \( I_{Z1} = \frac{m_1(a^2 + b^2)}{12} \times 10^{-6} \)
- **Moment of inertia around \( Z \) axis**
  - \( I_A = I_{Z1} + m_1r_1^2 \times 10^{-6} \)
- **Total moment of inertia**
  - \( I = I_A + I_B \)

#### Step 4

- **Moment of inertia of attachment < Allowable moment of inertia**
  - \( 0.13 \times 10^{-4} \text{ (kg-m^2)} < 0.9 \times 10^{-4} \text{ (kg-m^2)} \)
  - Possible to use this model MHY2-16D completely.
### Allowable Range of Moment of Inertia of Attachment

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>Finger rotation axis</td>
<td>—</td>
</tr>
<tr>
<td>Z1</td>
<td>Axis on the center gravity of A part of attachment and parallel to Z</td>
<td>—</td>
</tr>
<tr>
<td>Z2</td>
<td>Axis on the center gravity of B part of attachment and parallel to Z</td>
<td>—</td>
</tr>
<tr>
<td>I</td>
<td>Total moment of inertia for attachment</td>
<td>kg·m²</td>
</tr>
<tr>
<td>IZ1</td>
<td>Inertia moment around the Z1 axis of A part of attachment</td>
<td>kg·m²</td>
</tr>
<tr>
<td>IZ2</td>
<td>Inertia moment around the Z2 axis of B part of attachment</td>
<td>kg·m²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>Moment of inertia around the Z axis of A part of attachment</td>
<td>kg·m²</td>
</tr>
<tr>
<td>IB</td>
<td>Moment of inertia around the Z axis of B part of attachment</td>
<td>kg·m²</td>
</tr>
<tr>
<td>M1</td>
<td>Weight of A part of attachment</td>
<td>kg</td>
</tr>
<tr>
<td>M2</td>
<td>Weight of B part of attachment</td>
<td>kg</td>
</tr>
<tr>
<td>R1</td>
<td>Distance between Z and Z1 axis</td>
<td>mm</td>
</tr>
<tr>
<td>R2</td>
<td>Distance between Z and Z2 axis</td>
<td>mm</td>
</tr>
</tbody>
</table>

**MHY2-10D**

**MHY2-16D**

**MHY2-20D**

**MHY2-25D**

**MHW2-20D**

**MHW2-25D**

**MHW2-32D**

**MHW2-40D**

**MHW2-50D**
**180° Angular Type Air Gripper**

**Cam Type**

**MHY2 Series**

ø10, ø16, ø20, ø25

---

**How to Order**

MHY 2-16 D 2-M9BW

**Number of fingers**

- 2 fingers

**Bore size**

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

**Action**

- D: Double acting

**Auto switch**

- Nil: Without auto switch (Built-in magnet)

**Number of auto switches**

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

**Finger option**

- Nil: Standard tapped
- 2: Through-holes in mounting opening/closing direction

---

**Applicable Auto Switches**

Refer to pages 797 to 850 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>Pre-wired connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid state auto switch</td>
<td>Grommet</td>
<td>Yes</td>
<td>3-wire(NPN), 3-wire(PNP)</td>
<td>5 V, 12 V</td>
<td>M9NV, M9N</td>
<td>0.5 (Nil), 1 (M), 3 (L), 5 (Z)</td>
<td>IC circuit</td>
<td>Relay, PLC</td>
</tr>
<tr>
<td></td>
<td>Diagnosis (2-color indicator)</td>
<td></td>
<td></td>
<td>2-wire</td>
<td>12 V</td>
<td>M9P, M9P</td>
<td></td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water resistant (2-color indicator)</td>
<td></td>
<td></td>
<td>3-wire(NPN), 3-wire(PNP)</td>
<td>5 V, 12 V</td>
<td>M9BWV, M9BV</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>M9BWV</td>
<td></td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1)** When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.

---

**Made to Order**

Refer to page 705 for details.

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

**Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.**

**Lead wire length symbols:**

- 0.5 m ········· Nil (Example) M9NW
- 1 m ········· M (Example) M9NWM
- 3 m ········· L (Example) M9NWL
- 5 m ········· Z (Example) M9NWZ

**Note 1)** When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.
### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>0.1 to 0.6 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 60°C</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.2 mm</td>
</tr>
<tr>
<td>Max. operating frequency</td>
<td>60 c.p.m.</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Action</td>
<td>Double acting</td>
</tr>
<tr>
<td>Auto switch (Option)</td>
<td>Solid state auto switch (3-wire, 2-wire)</td>
</tr>
</tbody>
</table>

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

### Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore size (mm)</th>
<th>Effective gripping force (N·m)</th>
<th>Opening/Closing angle (Both sides)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHY2-10D</td>
<td>10</td>
<td>0.16</td>
<td>180°</td>
<td>-3°</td>
</tr>
<tr>
<td>MHY2-16D</td>
<td>16</td>
<td>0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHY2-20D</td>
<td>20</td>
<td>1.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHY2-25D</td>
<td>25</td>
<td>2.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) At the pressure of 0.5 MPa  
Note 2) Except auto switch

* Refer to “How to Select the Applicable Model” on page 700.  
* Refer to pages 700 and 701 for the details on effective gripping force and allowable overhanging distance.

### Made to Order

- **Symbol**: Double acting: External grip

- **Heat resistance (100°C)**
- **Fluororubber seal**
- **Without magnet**
- **EPDM for seals, Fluorine grease**
- **Fluorine grease**
- **Grease for food processing machines, Fluorine grease**
- **Grease for food processing machines**
- **Anti-corrosive treatment of finger**

---

**Moisture Control Tube**  
**IDK Series**

When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions. Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the IDK series in the Best Pneumatics No.6.
### MHY2 Series

#### Construction

**Closed condition**

- **ø10**
- **ø16**
- **ø20, ø25**

**Open condition**

---

#### 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>Piston</td>
<td>ø10: Stainless steel, ø16 to 25: Aluminum alloy</td>
<td>Chromated</td>
</tr>
<tr>
<td>3</td>
<td>Joint</td>
<td>Stainless steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>4</td>
<td>Finger</td>
<td>Stainless steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>5</td>
<td>Cap</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Wear ring</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Shaft</td>
<td>Stainless steel</td>
<td>Nitriding</td>
</tr>
<tr>
<td>8</td>
<td>Bushing A</td>
<td>Sintered alloy steel</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Bushing B</td>
<td>Sintered alloy steel</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>End plate</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

#### Replacement Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>MHY2-10</th>
<th>MHY2-16</th>
<th>MHY2-20</th>
<th>MHY2-25</th>
<th>Main parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal kit</td>
<td>MHY10-PS</td>
<td>MHY16-PS</td>
<td>MHY20-PS</td>
<td>MHY25-PS</td>
<td>&lt;ø10&gt;  Ø16  Ø19  Ø16  Ø20  Ø19  Ø20</td>
</tr>
<tr>
<td>Finger assembly</td>
<td>MHY-A1001</td>
<td>MHY-A1601</td>
<td>MHY-A2001</td>
<td>MHY-A2501</td>
<td>&lt;ø10&gt;  Ø16  Ø19  Ø16  Ø20  Ø19  Ø20</td>
</tr>
<tr>
<td>Joint assembly</td>
<td>MHY-A1001-2</td>
<td>MHY-A1601-2</td>
<td>MHY-A2001-2</td>
<td>MHY-A2501-2</td>
<td>&lt;ø10&gt;  Ø16  Ø19  Ø16  Ø20  Ø19  Ø20</td>
</tr>
<tr>
<td>Piston assembly</td>
<td>MHY-A1003</td>
<td>MHY-A1603</td>
<td>MHY-A2003</td>
<td>MHY-A2503</td>
<td>&lt;ø10&gt;  Ø16  Ø19  Ø16  Ø20  Ø19  Ø20</td>
</tr>
</tbody>
</table>

* Order 1 piece of finger assembly per one unit.

Replacement part/grease pack part no.: MH-G04 (30 g)
**Dimensions**

**MHY2-10D**

- 4 x M3 x 0.5 through (Thread for mounting attachment)
- 2 x M3 x 0.5 thread depth 4 (Mounting thread)
- 9
- 30
- 9
- 4

**Pin hole positioning**

- 2 x Ø3.4 through (Mounting hole)
- 12
- 3
- 6
- 6

**Limited area for mounting attachment**

- 4 x M3 x 0.5 through (Thread for mounting attachment)
- 2 x M3 x 0.5 thread depth 6 (Mounting thread)
- 2 x Ø3.4 through (Mounting hole)
- 2 x M3 x 0.5 depth 6 (Mounting thread)
- 24
- 30
- 15

**Positioning pin hole**

- M5 x 0.8 (Finger opening port)
- M5 x 0.8 (Finger closing port)
- 23
- 2

**Auto Switch Mounting Groove Dimensions**

- 4 x Ø3.4 through (Hole for mounting attachment)
- 24
- 30

**MHY2-10D2**

* Opening/Closing direction through-hole type

- Do not extend the attachment from limited area for mounting to avoid interference with the attachment or main body.
MHY2 Series

Dimensions

MHY2-16D

Pin hole positioning

Auto Switch Mounting Groove Dimensions

MHY2-16D2
Opening/Closing direction through-hole type

* Do not extend the attachment from limited area for mounting to avoid interference with the attachment or main body.
MHY2-20D

MHY2-20D2
Opening/Closing direction
through-hole type

Pin hole positioning

Auto Switch Mounting
Groove Dimensions

MHY2 Series
180° Angular Type Air Gripper
Cam Type

* Do not extend the attachment from limited area for mounting to avoid interference with the attachment or main body.
**MHY2 Series**

**Dimensions**

**MHY2-25D**

- 2 x M6 x 1 thread depth 10
  - (Mounting thread)

- 4 x M5 x 0.8 through
  - (Thread for mounting attachment)

- 2 x ø6.6 through
  - (Mounting hole)

- 4 x ø5.5 through
  - (Hole for mounting attachment)

- M5 x 0.8
  - (Finger opening port)

- M5 x 0.8
  - (Finger closing port)

**Pin hole positioning**

- 2 x M6 x 1 thread depth 12
  - (Mounting thread)

- 4 x M6 x 1 thread depth 12
  - (Mounting thread)

- 2 x M6 x 1 thread depth 12
  - (Mounting thread)

- ø26H9 + 0.052 depth 1.5

**Auto Switch Mounting Groove Dimensions**

- 4 x ø5.5 through
  - (Hole for mounting attachment)

**MHY2-25D2**

- Opening/Closing direction through-hole type

- Do not extend the attachment from limited area for mounting to avoid interference with the attachment or main body.
180° Angular Type Air Gripper

**MHW2 Series**

ø20, ø25, ø32, ø40, ø50

---

**How to Order**

**MHW2 - [Number of fingers] - [Bore size] - [Auto switch]**

- **Number of fingers**: 2 fingers
- **Bore size**: 20 mm, 25 mm, 32 mm, 40 mm, 50 mm
- **Auto switch**: M9BW

---

### Applicable Auto Switches

Refer to pages 797 to 850 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>Pre-wired connector</th>
<th>Applicable load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid state auto switch</td>
<td>Diagnosis (2-color indicator)</td>
<td>Grommet</td>
<td>Yes</td>
<td>3-wire (NPN)</td>
<td>24 V</td>
<td>M9NV, M9N</td>
<td>0.5 (NII)</td>
<td>1 (M)</td>
<td>3 (L)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (NP)</td>
<td></td>
<td>M9PV, 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, M9B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (NP)</td>
<td>5 V, 12 V</td>
<td>M9PW, M9P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (NP)</td>
<td>5 V, 12 V</td>
<td>M9BVW, M9BW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water resistant (2-color indicator)</td>
<td></td>
<td></td>
<td></td>
<td>2-wire</td>
<td>12 V</td>
<td>M9NVW, M9NW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (NPN)</td>
<td>5 V, 12 V</td>
<td>M9PA, M9PA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-wire (NP)</td>
<td>5 V, 12 V</td>
<td>M9BAV, M9BA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Note 1)** When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.

**Note 2)** When ordering the air gripper with the auto switch, the auto switch mounting bracket is included.

---

**Made to Order**

Refer to page 712 for details.

- **Number of auto switches**: Nil (2 pcs.), S (1 pc.), n (n pc.)
- **Auto switch**
  - Nil: Without auto switch (Built-in magnet)

---

**Finger option**

- n: Flat type fingers
- M: Right angle type fingers

---

**Port thread type**

- Nil
- RC ø20, ø25
- NPT ø32
- G ø40, ø50

---

**Action**

- D: Double acting

---

**Applicable Auto Switches**

- Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
- Lead wire length symbols: 0.5 m =尼 (Example) M9NW
- Auto switches marked with a “*” symbol are produced upon receipt of order.

---

**Solid state auto switch**

- Lead wire length symbols: 1 m = M (Example) M9NWM
- 3 m = L (Example) M9NWL
- 5 m = Z (Example) M9NWZ

---

**Application**

- Relay, PLC

---

**Note**

- When ordering the auto switch separately, the auto switch mounting bracket (BMG2-012) is required.
### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>0.15 to 0.7 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 60° C</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.2 mm</td>
</tr>
</tbody>
</table>
| Max. operating frequency | ø20, 25: 60 c.p.m.  
|                     | ø32 to 50: 30 c.p.m.  |
| Lubrication | Not required |
| Action | Double acting |
| Auto switch (Option) | Solid state auto switch (3-wire, 2-wire) |

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore size (mm)</th>
<th>Effective gripping force (N·m)</th>
<th>Opening angle (Both sides)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHW2-20D</td>
<td>20</td>
<td>0.30</td>
<td>–5°</td>
<td>300</td>
</tr>
<tr>
<td>MHW2-20D1</td>
<td></td>
<td></td>
<td>180°</td>
<td>320</td>
</tr>
<tr>
<td>MHW2-25D</td>
<td>25</td>
<td>0.73</td>
<td>–6°</td>
<td>510</td>
</tr>
<tr>
<td>MHW2-25D1</td>
<td></td>
<td></td>
<td>5°</td>
<td>540</td>
</tr>
<tr>
<td>MHW2-32D</td>
<td>32</td>
<td>1.61</td>
<td>–5°</td>
<td>910</td>
</tr>
<tr>
<td>MHW2-32D1</td>
<td></td>
<td></td>
<td>180°</td>
<td>950</td>
</tr>
<tr>
<td>MHW2-40D</td>
<td>40</td>
<td>3.70</td>
<td>–5°</td>
<td>2140</td>
</tr>
<tr>
<td>MHW2-40D1</td>
<td></td>
<td></td>
<td>4°</td>
<td>2270</td>
</tr>
<tr>
<td>MHW2-50D</td>
<td>50</td>
<td>8.27</td>
<td>–4°</td>
<td>5100</td>
</tr>
<tr>
<td>MHW2-50D1</td>
<td></td>
<td></td>
<td>180°</td>
<td>5350</td>
</tr>
</tbody>
</table>

Note: Refers to pages 797 to 850 for further information on auto switches.

### Made to Order
(Refer to pages 725 to 748 for the details.)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Specifications/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-X4</td>
<td>Heat resistance</td>
</tr>
<tr>
<td>-X5</td>
<td>Fluororubber seal</td>
</tr>
<tr>
<td>-X50</td>
<td>Without magnet</td>
</tr>
<tr>
<td>-X53</td>
<td>EPDM for seals, Fluorine grease</td>
</tr>
<tr>
<td>-X63</td>
<td>Fluorine grease</td>
</tr>
<tr>
<td>-X79</td>
<td>Grease for food processing machines, Fluorine grease</td>
</tr>
<tr>
<td>-X79A</td>
<td>Grease for food processing machines</td>
</tr>
</tbody>
</table>

### Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 366 to 374 for Air Gripper and Auto Switch Precautions.

### Warning

When using right angle finger tap mounting type, monitor the interference of the bolt with the speed controller.

### Mounting

Tighten the bolt from this side

Bolt interferes with speed controller
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>Piston</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>3</td>
<td>Pinion gear</td>
<td>Carbon steel</td>
<td>Heat treated</td>
</tr>
<tr>
<td>4</td>
<td>Seal cover</td>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Bumper</td>
<td>Urethane rubber</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Finger (A)</td>
<td>Carbon steel</td>
<td>Nitriding</td>
</tr>
<tr>
<td>7</td>
<td>Finger (B)</td>
<td>Carbon steel</td>
<td>Nitriding</td>
</tr>
<tr>
<td>8</td>
<td>Rubber magnet</td>
<td>Synthetic rubber</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Rack</td>
<td>Carbon steel</td>
<td>Nitriding</td>
</tr>
</tbody>
</table>

Replacement Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>MHW2-20</th>
<th>MHW2-25</th>
<th>MHW2-32</th>
<th>MHW2-40</th>
<th>MHW2-50</th>
<th>Main parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal kit</td>
<td>MHW20-PS</td>
<td>MHW25-PS</td>
<td>MHW32-PS</td>
<td>MHW40-PS</td>
<td>MHW50-PS</td>
<td>6/19/15, 7/19/15, 8/19/15</td>
</tr>
<tr>
<td>Piston assembly</td>
<td>MHW-A2001</td>
<td>MHW-A2501</td>
<td>MHW-A3001</td>
<td>MHW-A4001</td>
<td>MHW-A5001</td>
<td>6/19/15, 7/19/15, 8/19/15</td>
</tr>
<tr>
<td>Finger assembly</td>
<td>MHW2-C</td>
<td>MHW2-A2002</td>
<td>MHW2-A2502</td>
<td>MHW2-A3002</td>
<td>MHW2-A4002</td>
<td>MHW2-A5002</td>
</tr>
<tr>
<td>Finger A assembly</td>
<td>MHW2-C1</td>
<td>MHW2-A2002-1</td>
<td>MHW2-A2502-1</td>
<td>MHW2-A302-1</td>
<td>MHW2-A402-1</td>
<td>MHW2-A502-1</td>
</tr>
<tr>
<td>Finger C assembly</td>
<td>MHW2-C</td>
<td>MHW2-A2006</td>
<td>MHW2-A2506</td>
<td>MHW2-A3006</td>
<td>MHW2-A4006</td>
<td>MHW2-A5006</td>
</tr>
<tr>
<td>Finger B assembly</td>
<td>MHW2-C</td>
<td>MHW2-A2006-1</td>
<td>MHW2-A2506-1</td>
<td>MHW2-A302-1</td>
<td>MHW2-A402-1</td>
<td>MHW2-A502-1</td>
</tr>
</tbody>
</table>

* Please order 1 piece finger assembly per one unit.

Replacement part/grease pack part no.:
- ø20, ø25, ø32 : GR-S-010(10 g)
- ø40, 50 : GR-S-020(20 g)
**MHW2 Series**

**Dimensions**

**MHW2-20D**
Flat finger type (Standard)

- **MHW2-20D1**
Right angle finger type

---

**Auto Switch Mounting Groove Dimensions**

---

**Thread for mounting attachment**

---

**Mounting thread**

---

**Mounting hole**

---

**Finger opening port**

---

**Finger closing port**

---

**Thread for mounting attachment**

---
**Dimensions**

**MHW2-25D**

Flat finger type (Standard)

![Diagram of MHW2-25D](image)

- **2 x M6 x 1 thread depth 10 (Mounting thread)**
- **4 x M6 x 1 thread depth 12 (Mounting thread)**
- **Bottom through hole dia. 5.1 (Mounting hole)**
- **2 x M6 x 1 thread depth 12 (Mounting thread)**
- **M5 x 0.8 (Finger opening port)**
- **M5 x 0.8 (Finger closing port)**

**MHW2-25D1**

Right angle finger type

![Diagram of MHW2-25D1](image)

- **4 x M5 x 0.8 through (Thread for mounting attachment)**
- **4 x M5 x 0.8 thread depth 6 (Thread for mounting attachment)**
- **M5 x 0.8 (Finger opening port)**
- **M5 x 0.8 (Finger closing port)**

**Auto Switch Mounting Groove Dimensions**

![Diagram of Auto Switch Mounting Groove Dimensions](image)
### MHW2 Series

#### Dimensions

**MHW2-32D**

Flat finger type (Standard)

![Diagram of MHW2-32D]

- **2 x M6 x 1 thread depth 10** (Mounting thread)
- **4 x M6 x 1 thread depth 7** (Thread for mounting attachment)
- **ø34H9 +0.062 depth 4**
- **2 x M6 x 1 thread depth 12** (Mounting thread)
- **Bottom through hole dia. 5.1 (Mounting hole)**
- **Rc 1/8 (G1/8, NPT1/8)** (Finger opening port)
- **Rc 1/8 (G1/8, NPT1/8)** (Finger closing port)

**MHW2-32D1**

Right angle finger type

![Diagram of MHW2-32D1]

- **4 x M6 x 1 thread depth 12** (Mounting thread)
- **Bottom through hole dia. 5.1 (Mounting hole)**
- **2 x M6 x 1 thread depth 12** (Mounting thread)
- **ø34H9 +0.062 depth 4**

**Auto Switch Mounting Groove Dimensions**

![Diagram of Auto Switch Mounting Groove Dimensions]

- **ø6.45 5.5 11 11 11**
Dimensions

MHW2-40D
Flat finger type (Standard)

MHW2-40D1
Right angle finger type
**MHW2 Series**

**Dimensions**

**MHW2-50D**
Flat finger type (Standard)

![Diagram of MHW2-50D](image)

**Auto Switch Mounting Groove Dimensions**

**MHW2-50D1**
Right angle finger type

![Diagram of MHW2-50D1](image)
**MHY2/MHW2 Series**

**Auto Switch Installation Examples and Mounting Positions**

Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.

### Detection when Gripping Exterior of Workpiece

<table>
<thead>
<tr>
<th>Detection example</th>
<th>1. Confirmation of the fingers in reset position</th>
<th>2. Confirmation of work held</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position to be detected</td>
<td><img src="image" alt="Position of fingers fully opened" /></td>
<td><img src="image" alt="Position when gripping a workpiece" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation of auto switch</th>
<th>Auto Switch turned ON when fingers return. (Light ON)</th>
<th>Auto Switch turned ON when gripping a workpiece. (Light ON)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to determine auto switch installation position</td>
<td><img src="image" alt="Step 1) Completely open the fingers." /></td>
<td><img src="image" alt="Step 1) Position fingers for gripping a workpiece." /></td>
</tr>
</tbody>
</table>

**At no pressure or low pressure, connect the auto switch to a power supply, and follow the directions.**

<table>
<thead>
<tr>
<th>Step 2) Insert the auto switch into the switch groove in the direction shown in the drawing.</th>
<th><img src="image" alt="Step 2) Insert the auto switch into the switch groove in the direction shown in the drawing." /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.</td>
<td><img src="image" alt="Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates." /></td>
</tr>
<tr>
<td>Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out.</td>
<td><img src="image" alt="Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out." /></td>
</tr>
<tr>
<td>Step 5) Move the auto switch in the opposite direction and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates.</td>
<td><img src="image" alt="Step 5) Move the auto switch in the opposite direction and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates." /></td>
</tr>
</tbody>
</table>

**Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.**
**Auto Switch Mounting**

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 auto switch mounting set screw with a flat head watchmaker’s screwdriver.

![Auto Switch Mounting Diagram]

Note) Use a watchmaker’s 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 0.15 N·m.

* Refer to the page 804 for the details on “Auto Switches Connection and Example”.

---

**Auto Switch Hysteresis**

Auto switches have hysteresis similar to micro switches. Use the table below as a guide when adjusting auto switch positions, etc.

![Auto Switch Hysteresis Diagram]

---

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

The projection of an auto switch from the edge of the body is shown in the table below. Use the table as a guideline for mounting.

Note) 2-color indicator type and perpendicular entry type protrude in the direction of the lead wire entry.

![Protrusion of Auto Switch from Edge of Body Diagram]

---

**Max. Protrusion of Auto Switch from Edge of Body (L)**

<table>
<thead>
<tr>
<th>Air gripper model</th>
<th>Finger position</th>
<th>Protrusion</th>
<th>Auto switch model</th>
<th>In-line</th>
<th>Perpendicular</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>D-M9□</td>
<td>D-M9□W</td>
<td>D-M9□WV</td>
</tr>
<tr>
<td>MHY2-10D</td>
<td>Open Closed</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MHY2-16D</td>
<td>Open Closed</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MHY2-20D</td>
<td>Open Closed</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MHY2-25D</td>
<td>Open Closed</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

---

**D-M9□(V) D-M9□W(V)/M9A(V)**

- MHY2-10D: Finger fully closed 2°, Finger fully open 4°
- MHY2-16D: Finger fully closed 2°, Finger fully open 3°
- MHY2-20D: Finger fully closed 2°, Finger fully open 3°
- MHY2-25D: Finger fully closed 1°, Finger fully open 2°
**Auto Switch Mounting**

(1) Insert the auto switch bracket into the installation groove of the gripper as shown below and roughly set it.
(2) Insert the auto switch into the auto switch bracket installation groove.
(3) After confirming the detecting position, tighten the set screws (M2.5) attached to the auto switch and set it.
(4) Be sure to change the detecting position in the state of (2).

**Auto Switch Hysteresis**

Auto switches have hysteresis similar to micro switches. Use the table below as a guide when adjusting auto switch positions, etc.

**Auto Switch Mounting Bracket: Part No.**

<table>
<thead>
<tr>
<th>Auto switch part no.</th>
<th>Auto switch mounting bracket part no.</th>
<th>BMG2-012</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-M9:V/M9:A(W)/V7P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-M9:V/M9:A(W)/M9:A(V)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Use a screwdriver with a grip diameter of 5 to 6 mm to tighten the set screws (M2.5). The tightening torque should be 0.5 to 1 N-m. As a rule, it should be turned about 90° beyond the point at which tightening can be felt.

**Handling of Mounting Brackets**

When auto switch is set on mounting side as shown below, allow at least 2 mm run off space on mounting late since the auto switch is protruded from the gripper edge.

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

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

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

<table>
<thead>
<tr>
<th>Air gripper model</th>
<th>Finger position</th>
<th>Auto switch model</th>
<th>Max. hysteresis (Max. value)</th>
<th>Auto switch hysteresis (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Mounting Air Grippers/MHY2 Series**

Possible to mount from 3 directions.

**Axial Mounting**
- **(Body Tapped)**
  - Use the hole at the end of the body for positioning, etc.

**Lateral mounting**
- **(Body Tapped, Body through-hole)**
  - Body tapped

**Vertical Mounting**
- **(Body Tapped)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable bolts</th>
<th>Max. tightening torque (N·m)</th>
<th>Max. screw-in depth (Lmm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHY2-10D</td>
<td>M3 x 0.5</td>
<td>0.88</td>
<td>6</td>
</tr>
<tr>
<td>MHY2-16D</td>
<td>M4 x 0.7</td>
<td>2.1</td>
<td>8</td>
</tr>
<tr>
<td>MHY2-20D</td>
<td>M5 x 0.8</td>
<td>4.3</td>
<td>10</td>
</tr>
<tr>
<td>MHY2-25D</td>
<td>M6 x 1</td>
<td>7.4</td>
<td>12</td>
</tr>
</tbody>
</table>

**Body through-hole**

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable bolts</th>
<th>Max. tightening torque (N·m)</th>
<th>Max. screw-in depth (Lmm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHY2-10D</td>
<td>M3 x 0.5</td>
<td>0.88</td>
<td>6</td>
</tr>
<tr>
<td>MHY2-16D</td>
<td>M4 x 0.7</td>
<td>2.1</td>
<td>8</td>
</tr>
<tr>
<td>MHY2-20D</td>
<td>M5 x 0.8</td>
<td>4.3</td>
<td>10</td>
</tr>
<tr>
<td>MHY2-25D</td>
<td>M6 x 1</td>
<td>7.4</td>
<td>12</td>
</tr>
</tbody>
</table>

**Operating Environment/ MHY2 Series**

⚠️ **Caution**

Use caution for the anti-corrosiveness of finger guide section.

Martensitic stainless steel is used for the finger. However, be aware that its anti-corrosion performance is inferior to austenitic stainless steel. In particular, the finger might be rusted in an environment where water droplets are adhered to it due to dew condensation.
**MHY2/MHW2 Series**  
Specific Product Precautions 2  
Be sure to read this before handling the products.

### Mounting Air Grippers/MHW2 Series

#### Axial Mounting  
(Body Tapped)

![Diagram of Axial Mounting](image)

#### Lateral Mounting  
(Body Tapped, Body through-hole)

![Diagram of Lateral Mounting](image)

#### Vertical Mounting  
(Body Tapped)

![Diagram of Vertical Mounting](image)

### How to Mount the Attachment to the Finger

1. To mount the attachment to the finger, make sure to use a wrench to support the attachment so as not to apply undue strain on the finger.
2. Refer to the table below for the proper tightening torque on the bolt used for securing the attachment to the finger.

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable bolts</th>
<th>Max. tightening torque (N·m)</th>
<th>Max. screw-in depth (Lmm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHW2-20D</td>
<td>M5 x 0.8</td>
<td>4.3</td>
<td>10</td>
</tr>
<tr>
<td>MHW2-25D</td>
<td>M6 x 1</td>
<td>7.4</td>
<td>12</td>
</tr>
<tr>
<td>MHW2-32D</td>
<td>M6 x 1</td>
<td>7.4</td>
<td>12</td>
</tr>
<tr>
<td>MHW2-40D</td>
<td>M8 x 1.25</td>
<td>17.7</td>
<td>16</td>
</tr>
<tr>
<td>MHW2-50D</td>
<td>M10 x 1.5</td>
<td>37.2</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable bolts</th>
<th>Max. tightening torque (N·m)</th>
<th>Max. screw-in depth (Lmm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHW2-20D</td>
<td>M5 x 0.8</td>
<td>2.5</td>
<td>7</td>
</tr>
<tr>
<td>MHW2-25D</td>
<td>M6 x 1</td>
<td>5.9</td>
<td>10</td>
</tr>
<tr>
<td>MHW2-32D</td>
<td>M6 x 1</td>
<td>5.9</td>
<td>10</td>
</tr>
<tr>
<td>MHW2-40D</td>
<td>M8 x 1.25</td>
<td>17.7</td>
<td>15</td>
</tr>
<tr>
<td>MHW2-50D</td>
<td>M10 x 1.5</td>
<td>37.2</td>
<td>20</td>
</tr>
</tbody>
</table>

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Possible to mount from 3 directions.

**MHY2/MHW2 Series**

- **Specific Product Precautions 2**
  - Be sure to read this before handling the products.

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore(mm)</th>
<th>Hole depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHW2-20D</td>
<td>ø21H9</td>
<td>3</td>
</tr>
<tr>
<td>MHW2-25D</td>
<td>ø26H9</td>
<td>3</td>
</tr>
<tr>
<td>MHW2-32D</td>
<td>ø34H9</td>
<td>4</td>
</tr>
<tr>
<td>MHW2-40D</td>
<td>ø42H9</td>
<td>4</td>
</tr>
<tr>
<td>MHW2-50D</td>
<td>ø52H9</td>
<td>5</td>
</tr>
</tbody>
</table>

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**MHZ**  
**MHF**  
**MHL**  
**MHR**  
**MHK**  
**MHS**  
**MHC**  
**MHT**  
**MHY**  
**MHW**  
**MRHQ**  
**MA**  
**D**

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**SMC**

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