**HF Series Wide Opening Parallel Hand**

**Compact Design and No Adjustment for Multi-Purpose Application**

**Key Features**

- **High grip force to body weight ratio**
  Very efficient design using 2 cylinders
- **Easy mounting**
  3 gripper mounting and 2 jaw mounting surfaces offering flexible layout
- **No adjustment for multi-purpose application**
  Long jaw stroke and parallel clamping (centripetal motion) eliminates hassle and time-consuming adjustment
- **Slide bearing (option)**
  Ideal for use in fixtures that require locating and parallel accuracy
- **Switch slots available for sensing jaw position (open or closed)**
  All the sizes available for direct switch mount (up to 2 switches)

**How To Order**

**Standard**

- **HF-2MS**

**Option**

- **HF - 2MS - ET3S2 - B**
  Slide Bearing type HF-2MS with 2 of ET3 non-contact reed switches

**Specification**

<table>
<thead>
<tr>
<th>Model</th>
<th>HF-2MS</th>
<th>HF-3MS</th>
<th>HF-4MS</th>
<th>HF-5MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Pressure</td>
<td>Pneumatic</td>
<td>0.3 to 0.7MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not Required</td>
<td>or Turbine Oil Class 1 (ISOVG32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature (°C)</td>
<td>5 to 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Jaw Stroke (mm)</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Cylinder Diameter (mm)</td>
<td>dia.16X2</td>
<td>dia.25X2</td>
<td>dia.32X2</td>
<td>dia.40X2</td>
</tr>
<tr>
<td>Rod Diameter (mm)</td>
<td>dia.10</td>
<td>dia.12</td>
<td>dia.12</td>
<td>dia.18</td>
</tr>
<tr>
<td>Internal Volume [ml/min]</td>
<td>4.9</td>
<td>22.7</td>
<td>50.2</td>
<td>120.3</td>
</tr>
<tr>
<td>Repeatability (mm)</td>
<td>±0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.59</td>
<td>1.10</td>
<td>2.07</td>
<td>3.90</td>
</tr>
</tbody>
</table>

**Internal Structure / Parts & Seals**

**HF-2MS**

**HF-3MS-4MS-5MS**

**Parts List**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Material</th>
<th>No.</th>
<th>Name</th>
<th>Material</th>
<th>No.</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum</td>
<td>10</td>
<td>Gasket Housing B</td>
<td>Aluminum</td>
<td>19</td>
<td>Piston Seal</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Master (Base) Jaw R</td>
<td>Aluminum</td>
<td>11</td>
<td>Pinion Gear</td>
<td>Carbon Steel</td>
<td>20</td>
<td>Side Seal A</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Master (Base) Jaw L</td>
<td>Aluminum</td>
<td>12</td>
<td>Pinion Gear Shaft</td>
<td>Carbon Steel</td>
<td>21</td>
<td>Side Seal B</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Piston Rod A</td>
<td>Stainless Steel</td>
<td>13</td>
<td>Bearing Cover</td>
<td>Aluminum</td>
<td>22</td>
<td>Seal</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Piston Rod B</td>
<td>Stainless Steel</td>
<td>14</td>
<td>Bearing</td>
<td></td>
<td>23</td>
<td>Magnet</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Piston A</td>
<td>Aluminum</td>
<td>15</td>
<td>Bush A</td>
<td></td>
<td>24</td>
<td>Snap Ring</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>7</td>
<td>Piston B</td>
<td>Aluminum</td>
<td>16</td>
<td>Bush B</td>
<td></td>
<td>25</td>
<td>Sleeve B</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>8</td>
<td>Piston C</td>
<td>Aluminum</td>
<td>17</td>
<td>Piston Mount Spring</td>
<td>Stainless Steel</td>
<td>26</td>
<td>Washer</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>9</td>
<td>Gasket Housing A</td>
<td>Aluminum</td>
<td>18</td>
<td>Rod Seal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Seals List**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>MYA-10</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>MYA-12</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>S-16</td>
<td>S-24</td>
</tr>
<tr>
<td>21</td>
<td>MYA-15</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>S-6</td>
<td>S-8</td>
</tr>
</tbody>
</table>

**How To Order**

- **HF-2MS**
  - Size
  - Sensor
  - Option

- **HF - 2MS - ET3S2 - B**
  - Slide Bearing type HF-2MS with 2 of ET3 non-contact reed switches

For sensor detail [277](#)

For option detail [36](#)
**HF Series**  Wide Opening Parallel Hand

**Compact Design and No Adjustment for Multi-Purpose Application**

**Key Features**

- **High grip force to body weight ratio**
  Very efficient design using 2 cylinders

- **Easy mounting**
  3 gripper mounting and 2 jaw mounting surfaces offering flexible layout

- **No adjustment for multi-purpose application**
  Long jaw stroke and parallel clamping (centripetal motion) eliminates hustle and time-consuming adjustment

- **Slide bearing (option)**
  Ideal for use in fixtures that require locating and parallel accuracy

- **Switch slots available for sensing jaw position (open or closed)**
  All the sizes available for direct switch mount (up to 2 switches)

**How To Order**

**Standard**

**HF-2MS**

**Option**

- **Size**
  - 2MS - 3MS - 4MS - 5MS

- **Sensor, Quantity**
  - ET3S2

- **Option**
  - B

Slide Bearing type HF-2MS with 2 of ET3 non-contact reed switches

**Specification**

<table>
<thead>
<tr>
<th>Model</th>
<th>HF-2MS</th>
<th>HF-3MS</th>
<th>HF-4MS</th>
<th>HF-5MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Pressure</td>
<td>For Layout Drawing</td>
<td>For Layout Drawing</td>
<td>For Layout Drawing</td>
<td>For Layout Drawing</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Pneumatic: 0.3 to 0.7MPa</td>
<td>Not Required or Turbine Oil Class 1 (ISOVG32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature (°C)</td>
<td>5 to 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Jaw Stroke (mm)</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Cylinder Diameter (mm)</td>
<td>dia.16x2</td>
<td>dia.25x2</td>
<td>dia.32x2</td>
<td>dia.40x2</td>
</tr>
<tr>
<td>Rod Diameter (mm)</td>
<td>dia.10</td>
<td>dia.12</td>
<td>dia.15</td>
<td>dia.18</td>
</tr>
<tr>
<td>Internal Volume (ml/hr)</td>
<td>4.9</td>
<td>22.7</td>
<td>50.2</td>
<td>120.3</td>
</tr>
<tr>
<td>Repeatability (±%)</td>
<td>±0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.59</td>
<td>1.10</td>
<td>2.07</td>
<td>3.90</td>
</tr>
</tbody>
</table>

**Internal Structure / Parts & Seals**

**HF-2MS**

**HF-3MS**

**HF-4MS**

**HF-5MS**

**Parts List**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Material</th>
<th>No.</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum</td>
<td>10</td>
<td>Gasket Housing B</td>
<td>Aluminum</td>
</tr>
<tr>
<td>2</td>
<td>Master (Base) Jaw R</td>
<td>Aluminum</td>
<td>11</td>
<td>Pinion Gear</td>
<td>Carbon Steel</td>
</tr>
<tr>
<td>3</td>
<td>Master (Base) Jaw L</td>
<td>Aluminum</td>
<td>12</td>
<td>Pinion Gear Shaft</td>
<td>Carbon Steel</td>
</tr>
<tr>
<td>4</td>
<td>Piston Rod A</td>
<td>Stainless Steel</td>
<td>13</td>
<td>Bearing Cover</td>
<td>Aluminum</td>
</tr>
<tr>
<td>5</td>
<td>Piston Rod B</td>
<td>Stainless Steel</td>
<td>14</td>
<td>Bearing</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Piston A</td>
<td>Aluminum</td>
<td>15</td>
<td>Bush A</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>7</td>
<td>Piston B</td>
<td>Aluminum</td>
<td>16</td>
<td>Bush B</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>8</td>
<td>Piston C</td>
<td>Aluminum</td>
<td>17</td>
<td>Piston Mount Spring</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>9</td>
<td>Gasket Housing A</td>
<td>Aluminum</td>
<td>18</td>
<td>Rod Seal</td>
<td></td>
</tr>
</tbody>
</table>

**Seals List**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>MYA-10</td>
<td>MYA-12</td>
</tr>
<tr>
<td>19</td>
<td>PSD-16</td>
<td>PSD-25</td>
</tr>
<tr>
<td>20</td>
<td>S-16</td>
<td>S-24</td>
</tr>
<tr>
<td>21</td>
<td>MYA-12</td>
<td>S-20</td>
</tr>
<tr>
<td>22</td>
<td>S-6</td>
<td>S-8</td>
</tr>
</tbody>
</table>

**How To Order**

- **Size**
  - 2MS - 3MS - 4MS - 5MS

- **Sensor, Quantity**
  - ET3S2

- **Option**
  - B

Slide Bearing type HF-2MS with 2 of ET3 non-contact reed switches

For sensor detail [1237]

For option detail [360]
HF Series  Wide Opening Parallel Hand

Performance Data

Grip Force
The graph shows grip force in opening and closing with effective external finger lengths from gripper cover surface under different air pressure (MPa).

Open (○)  Closed (●)

- HF-2MS
- HF-3MS
- HF-4MS
- HF-5MS

 Layout Drawing

HF-2MS (Optimal Grip Force 40N to 70N)

HF-2MS Standard

For CAD data, please go to ﬁle.

HF-2MS

HF-2MS-B

HF-2MS-E

Hand (2-Jaw)
**Performance Data**

- **Grip Force**

  The graph shows grip force in opening and closing with effective external finger lengths $e$ from gripper cover surface under different air pressure (MPa)

<table>
<thead>
<tr>
<th>Open</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>( )</td>
<td>(●)</td>
</tr>
</tbody>
</table>

**Grip Force Graphs**

- **HF-2MS**
- **HF-3MS**
- **HF-4MS**
- **HF-5MS**

**HF-2MS**

![HF-2MS Graph](image1)

**HF-3MS**

![HF-3MS Graph](image2)

**HF-4MS**

![HF-4MS Graph](image3)

**HF-5MS**

![HF-5MS Graph](image4)

---

**Layout Drawing**

**HF-2MS** (Optimal Grip Force 40N to 70N)

**HF-2MS Standard**

![HF-2MS Standard Layout](image5)

**HF-2MS-E**

![HF-2MS-E Layout](image6)

**HF-2MS-B**

![HF-2MS-B Layout](image7)
HF Series  Wide Opening Parallel Hand

**HF-3MS** (Optimal Grip Force 60N to 170N)

**HF-4MS** (Optimal Grip Force 120N to 300N)
**HF Series**  
Wide Opening Parallel Hand

### HF-3MS
- **Standard**
- **Optimal Grip Force 60N to 170N**

### HF-4MS
- **Standard**
- **Optimal Grip Force 120N to 300N**

For CAD data, please go to [URL]
**HF Series**  Wide Opening Parallel Hand

**HF-2MS/3MS/4MS/5MS**

For CAD data, please go to [CAD data link]

---

**Layout Drawing**

**HF-5MS (Optimal Grip Force 200N to 700N)**

**HF-5MS Standard**

---

**HF-5MS-E_S**

**HF-5MS-B**
HF Series  Wide Opening Parallel Hand

**HF-5MS** (Optimal Grip Force 200N to 700N)

**HF-5MS Standard**

**HF-5MS-E**

**HF-5MS-B**

For CAD data, please go to 1516.