PARALLEL GRIPPERS

PH SERIES
STANDARD LINE
- Full range of sizes and strokes
- Adjustable finger stroke
- Robust design
- Durable construction with few moving parts
- Top and side mounting
- Optional cap styles
- Sensors Available

See Page 1-1.2 Miniature Parallels

LP SERIES
LOW PROFILE - WIDE STROKE
- Full range of sizes and strokes
- Robust design
- Extremely Durable construction
- Precision Top and side mounting
- Sensors ready

See Page 1-1.20

PH-20
STACKABLE
- Small center-to-center distance
- Adjustable finger stroke
- Robust design
- Durable construction with few moving parts
- Top and side mounting

See Page 1-1.27

JF-20
WIDE BODY
- Large stroke
- Adjustable finger stroke
- Robust design
- Durable construction with few moving parts
- Top and side mounting

See Page 1-1.33
**DURA-GRIP**

**PH-SERIES**

**DURA-GRIP PH** Series of Part Placement Devices is designed to provide a low cost gripping unit for use on transfer mechanisms. These air operated units grip parts internally or externally offering the designer a wide latitude in finger tooling arrangements. All units are shipped completely assembled, ready for mounting and attaching tooling.

**QUALITY CONSTRUCTION**

**DURA-GRIP PH** Series is ruggedly constructed with a minimum of moving parts. The body is hard coated, high strength aluminum and the fingers are hardened steel. A full range of finger strokes and gripping forces are available throughout the series. Both finger opening and closing position can be adjusted on the unit.

**MOUNTING INFORMATION**

**DURA-GRIP PH** Series can be mounted in any plane with standard dovetail or mounting holes on top, front and back of unit. These same holes can also be used to mount "stripper" devices. Optional Dowel holes (-D option) provide precision location of the units. Additional flat top cap styles are also available if dovetail is not necessary.

**OPTIONAL FEATURES**

Single Finger heads are available with either the left or right finger fixed and the other moving (-SFR or -SFL). Optional Magnetic or Inductive sensors are available on all heads. The sensors can be used to indicate finger position.

Use the PH Series of Parallel Grippers wherever you need durable and precise part placement.

---

### TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Pneumatic Specifications</th>
<th>ENGLISH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Range</td>
<td>40-100 psi</td>
<td>3-7 bar</td>
</tr>
<tr>
<td>Cylinder Type</td>
<td>Double Acting</td>
<td>Buna-N</td>
</tr>
<tr>
<td>Dynamic Seals</td>
<td>4-way, 2 position</td>
<td>20+ Million</td>
</tr>
<tr>
<td>Required Valves</td>
<td>-30 to 180 F</td>
<td>-35 to 80 C</td>
</tr>
<tr>
<td>Normal Cycle Life</td>
<td>-20 to 300 F</td>
<td>-30 to 150 C</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-20 to 300 F</td>
<td>-30 to 150 C</td>
</tr>
</tbody>
</table>

### OPERATING PRINCIPLES - STANDARD UNIT

- Air pressure drives double acting piston.
- Piston drives fingers through precision slots producing synchronized parallel motion.
- Gripper is capable of external and internal gripping.

**NEW**

**PH-5 / PH-10**

STROKE 0.125" [3.17mm] to 0.187" [4.75mm]

See Page 1-2.4

**PH-30 / PH-40**

STROKE 0.250" [6.35mm]

See Page 1-2.8

**PH-50 / PH-60**

STROKE 0.500" [12.7mm] to 0.520" [13.2mm]

See Page 1-2.13

**PH-70**

STROKE 1.000" [25.4mm]

See Page 1-2.17
PRODUCT FEATURES

- **Aircraft Grade Aluminum**
  - with black Hard coat

- **Simple and Highly Durable**
  - Time tested, field approved design

- **High Grip Force**
  - High gripping force-to-weight ratio

**Rugged One Piece Body**
- Extremely durable for high cycle life

**Multiple Top Caps**
- Dovetail and Flat top caps available throughout the series

**Fully Rebuildable**
- Fully field serviceable with factory repair kits

**Precision Components**
- Precision ground and hardened fingers for accurate tooling location

**Adjustable Finger Stops**
- For open and closed positions. Provides precise and accurate finger stroke control

**Available Magnetic Sensors**
- (-RM Option) for sensor ready unit. PH-5 & PH-10 units are sensor ready

**Multiple Mounting Features**
- Tapped holes for mounting the unit and additional stripper tooling. (-D Option) for Dowel holes for positive location

**U-cup & O-Ring Seals**
- High cycle life. Buna-N standard with optional Viton (-V Option)

**Engineered Surface Coating**
- Anti-Friction and Anti-Wear on fingers

**DESIGNED - MANUFACTURED - ASSEMBLED IN THE USA**

MOUNTING INFORMATION

Mounts and operates in any orientation

**MAIN BODY**

Mount up to Main body utilizing Dovetail or Tapped holes located on back, front, and top.

(-D) Option provides precision Dowel holes on the front and back side of the unit for positive location.

Mounting features vary, see product pages for specific mounting information

Additional Flat top cap available for a variety of mounting styles. See product pages for more information

**TOOLING**

Mount tooling to fingers using Tapped holes located on the bottom and sides of fingers

Key tooling to precision ground fingers for positive location.

Visiulization of main body and tooling components with mounting options.

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235
VISIT US AT www.RIMFG.com
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-5</th>
<th>MPH-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar]</td>
<td>6 lb</td>
<td>26 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.125 in</td>
<td>3.1 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.09 lb</td>
<td>0.04 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.015 in³</td>
<td>0.24 cm³</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>0.437 in</td>
<td>11.09 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.14 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**LOADING**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-5</th>
<th>MPH-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Force</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Static</td>
<td>25 lb</td>
<td>111 N</td>
</tr>
<tr>
<td>Dynamic</td>
<td>4 lb</td>
<td>17.8 N</td>
</tr>
<tr>
<td>Max Moment</td>
<td>Mₓᵧ₀ₓ₀</td>
<td></td>
</tr>
<tr>
<td>Static</td>
<td>15 lb-in</td>
<td>1.7 N-m</td>
</tr>
<tr>
<td>Dynamic</td>
<td>2.5 lb-in</td>
<td>0.3 N-m</td>
</tr>
</tbody>
</table>

**NOTE:** Loading based on utilization of both fingers

**METRIC SEALS**

- V - Viton (standard Buna - N)

**SAMPLE ORDER:** PH-5-V

*Ex) PH-5 With Viton seals*

**CUSTOM DESIGNS ALWAYS AVAILABLE**

**ACCESSORIES** (order separately)

- **PH-5 units are sensor ready for use with the sensors listed below**

**MAGNETIC SENSOR KITS (Round track mounted)**

- RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
- RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

**MAGNETIC SENSORS (Round track mounted)**

- RS-N - Magnetic Sensor NPN w/ quick disconnect
- RS-P - Magnetic Sensor PNP w/ quick disconnect

**SENSOR CABLE**

- SENCAB-5 - Quick Disconnect PUR Cable 5M Length

---

**FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235**

VISIT US AT www.RIMFG.com

11/09/13
**DIMENSIONAL DRAWING**

**SPECIFICATIONS**

- **PH-10**
  - Standard Grip Force @ 100 psi [7 bar]: 12 lbf, 53 N
  - Standard Stroke: 0.187 in, 4.7 mm
  - Base Weight: 0.15 lbs, 0.07 kg
  - Unit Displacement (grip and release): 0.05 in³, 0.77 cm³
  - Cylinder Bore Diameter: 0.625 in, 15.88 mm
  - Actuation Time (no load): 0.16 sec

- **MPH-10**
  - Loading based on utilization of both fingers

**LOADING**

- **PH-10**
  - Max Force F: 50 lbf, 222 N
  - Max Moment M_{x,y,z}: 30 lbf-in, 3.4 N-m

- **MPH-10**
  - Max Moment M_{x,y,z}: 10 lbf-in, 0.6 N-m

**NOTE:** Loading between lower jaw surface - zero tooling length

**ACCESSORIES** (order separately)

- **PH-10** units are sensor ready for use with the sensors listed below

**MAGNETIC SENSOR KITS** (Round track mounted)
- **RSK-N** - Magnetic Sensor NPN w/ quick disconnect Kit
- **RSK-P** - Magnetic Sensor PNP w/ quick disconnect Kit

**MAGNETIC SENSORS** (Round track mounted)
- **RS-N** - Magnetic Sensor NPN w/ quick disconnect
- **RS-P** - Magnetic Sensor PNP w/ quick disconnect

**SENSOR CABLE**
- **SENCAB-5** - Quick Disconnect PUR Cable 5M Length

**HOW TO ORDER : BASIC UNIT**

- **METRIC**
  - **M** PH-10 - **V**

- **METRIC**
  - **M**
  - **SEALS**
  - **V** - Viton (standard Buna - N)

**SAMPLE ORDER:** MPH-10

- (Ex) Metric PH-10

**CUSTOM DESIGNS ALWAYS AVAILABLE PLEASE CONTACT US FOR INFORMATION**

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com
GRIP FORCE

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - $F$ is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

$$\text{English} \quad \text{Grip Force} - F \ (\text{lb}) = P_{\text{Air}} \ (\text{psi}) \times GF \times TF$$

$$\text{Metric} \quad \text{Grip Force} - F \ (\text{N}) = P_{\text{Air}} \ (\text{bar}) \times GF \times TF$$

- $P_{\text{Air}}$ = Air Pressure
- $GF$ = Grip Factor (see chart)
- $TF$ = Tooling Factor (see graph)

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.

<table>
<thead>
<tr>
<th>GRIP FACTOR $GF$</th>
<th>PH-5</th>
<th>MPH-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Unit</td>
<td>EXTERNAL</td>
<td>INTERNAL</td>
</tr>
<tr>
<td></td>
<td>0.058</td>
<td>3.73</td>
</tr>
<tr>
<td></td>
<td>0.034</td>
<td>2.19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRIP FACTOR $GF$</th>
<th>PH-10</th>
<th>MPH-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Unit</td>
<td>EXTERNAL</td>
<td>INTERNAL</td>
</tr>
<tr>
<td></td>
<td>0.119</td>
<td>7.67</td>
</tr>
<tr>
<td></td>
<td>0.076</td>
<td>4.89</td>
</tr>
</tbody>
</table>
## PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQ'D</th>
<th>NAME</th>
<th>PH-5</th>
<th>PH-10</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Body</td>
<td>PH-5-1</td>
<td>PH-10-1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Cylinder Cap *</td>
<td>PH-5-2</td>
<td>LP-100-6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Bottom Cap</td>
<td>PH-5-3</td>
<td>PH-10-3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Finger</td>
<td>PH-5-4</td>
<td>PH-10-4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Piston Shank</td>
<td>PH-5-5</td>
<td>PH-10-5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Piston</td>
<td>PH-5-6</td>
<td>PH-10-6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Pin *</td>
<td>PH-5-7</td>
<td>PH-10-7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Roller *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Piston Shank Seal*</td>
<td>ORG-008</td>
<td>ORG-010</td>
<td>-V¹</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Piston Seal *</td>
<td>ORG-011</td>
<td>ORG-014</td>
<td>-V¹</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>Cylinder Cap Seal*</td>
<td>ORG-013</td>
<td>ORG-016</td>
<td>-V¹</td>
</tr>
<tr>
<td>RK</td>
<td>1</td>
<td>Repair Kit * #</td>
<td>PH-5-RK</td>
<td>PH-10-RK</td>
<td>-V¹</td>
</tr>
</tbody>
</table>

### HOW TO ORDER PARTS

**SAMPLE ORDER:** PH-5-1  
Ex) PH-5 Body  

**OPTIONS**  
1 - V = Viton  

**NOTES**  
* - Metric code not required  
# - Repair Kits include req’d qty of parts marked with RK
**PH-30**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>PH-30</th>
<th>MPH-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar] *</td>
<td>21 lbf</td>
<td>93 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.25 in</td>
<td>6.4 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.31 lbs</td>
<td>0.14 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.12 in²</td>
<td>1.9 cm²</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>0.875 in</td>
<td>22.2 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.20 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**LOADING**

<table>
<thead>
<tr>
<th></th>
<th>Static</th>
<th>Dynamic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Force F</td>
<td>100 lbf</td>
<td>20 lbf</td>
</tr>
<tr>
<td>Max Moment Mx,y,z</td>
<td>444.5 N</td>
<td>88.9 N</td>
</tr>
</tbody>
</table>

**NOTE:** Loading based on utilization of both fingers

**METRIC**

<table>
<thead>
<tr>
<th>FINGER OPTIONS</th>
<th>SENSORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFR - Stationary Right Finger</td>
<td>RM - Magnetic Sensor Ready</td>
</tr>
<tr>
<td>SFL - Stationary Left Finger (oiler side)</td>
<td>Includes Sensor slots and Piston Magnet. Sensors sold separately</td>
</tr>
</tbody>
</table>

**TOP CAP STYLE**

<table>
<thead>
<tr>
<th>METRIC</th>
<th>TOP CAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>PH-30</td>
</tr>
<tr>
<td>30 - 60° Dovetail (shown above)</td>
<td></td>
</tr>
<tr>
<td>31 - Flat (see additional information section)</td>
<td></td>
</tr>
</tbody>
</table>

**DOWEL HOLES**

| D - Dowel Holes for positive location of unit |
| Includes tapped mounting holes |

**SEALS**

| V - Viton (standard Buna - N) |

**SENSE KIT S**

| RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit |
| RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit |

* Requires sensor ready (RM). Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS**

| RS-N - Magnetic Sensor NPN w/ quick disconnect |
| RS-P - Magnetic Sensor PNP w/ quick disconnect |

* Requires sensor ready (RM). Includes (1) sensor.

**SENSOR CABLE**

| SENCAB-5 - Quick Disconnect PUR Cable 5M Length |

**SAMPLE ORDER:** PH-31-D-RM

Ex) PH-31 (Flat Top Cap) With Dowel Holes and Sensor Ready

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com
The DURA-GRIP PH-30 series offers an additional flat top for further flexibility to meet your design requirements.

For further flexibility with the Dovetail, mount the PH-30 with custom dovetail tooling or use the DP-21 Universal receiver. Up to 2 PH-30 grippers can be mounted in the DP-21.

**ADDITIONAL INFORMATION**

**GRIP FORCE**

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - $F$ is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

$$ GRIP FORCE - F \ (\text{lbf}) = P_{\text{Air}} \times G_F \times T_F $$

**Tooling Length Factor**

$$ T_F = \frac{L}{\text{MAX JAW LENGTH}} $$

**English**

$ P_{\text{Air}} $ = Air Pressure

$ G_F $ = Grip Factor (see chart)

$ T_F $ = Tooling Factor (see graph)

**Metric**

$ F \ (\text{N}) = P_{\text{Air}} \ (\text{bar}) \times G_F \times T_F $

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.
**PARTS LIST**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQ'D</th>
<th>NAME</th>
<th>PH-30</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Top Cap</td>
<td>PH-30-1</td>
<td></td>
</tr>
<tr>
<td>2A</td>
<td>1</td>
<td>Dovetail Body</td>
<td>PH-30-2</td>
<td>-SFR<em>SFL</em>-<em>RM</em></td>
</tr>
<tr>
<td>2B</td>
<td>1</td>
<td>Flat Body</td>
<td>PH-31-2</td>
<td>-SFR<em>SFL</em>-<em>RM</em></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Bottom Cap</td>
<td>PH-30-3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Finger</td>
<td>PH-40-4</td>
<td>-SFR<em>SFL</em></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Piston Shank</td>
<td>PH-40-5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Piston</td>
<td>PH-40-6</td>
<td>-RM*</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Pin *</td>
<td>PH-40-7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Roller *</td>
<td>PH-40-8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Top Cap &amp; Piston Seal *</td>
<td>ORG-018</td>
<td>-V*</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Piston Shank Seal *</td>
<td>UCP-145</td>
<td>-V*</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>Oiler *</td>
<td>OIL-250</td>
<td></td>
</tr>
<tr>
<td>RK</td>
<td>1</td>
<td>Repair Kit * #</td>
<td>PH-30-RK</td>
<td>-V*</td>
</tr>
</tbody>
</table>

**HOW TO ORDER PARTS**

**SAMPLE ORDER:** PH-31-2

Ex) PH-31 (Flat Top) Body

**OPTIONS** (see product pages for information)

1. V = Viton
2. SFR / SFL = Stationary Finger Right or Left
3. D = Dowel Pins
4. RM = Magnetic Sensor Ready

**NOTES**

* Metric code not required
# Repair Kits include req’d qty of parts marked with RK
Note: Older models utilized an o-ring to seal the piston shank - This o-ring is also included in the repair kit.
**DURAGRIP PARALLEL GRIPPER**

**PH-40**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar] *</td>
<td>21 lbf</td>
<td>93 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.25 in</td>
<td>6.4 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.31 lbs</td>
<td>0.14 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.12 in²</td>
<td>1.9 cm²</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>0.875 in</td>
<td>22.2 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.20 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**LOADING**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Force F</td>
<td>100 lbf</td>
<td>444.5 N</td>
</tr>
<tr>
<td>Max Moment Mx,y,z</td>
<td>75 lbf-in</td>
<td>8.5 N-m</td>
</tr>
</tbody>
</table>

**METRIC M**

**TOP CAP STYLE**  M PH-40 - D V RM

**Dowel Holes**

<table>
<thead>
<tr>
<th>Metric</th>
<th>4X -</th>
<th>6-32 -</th>
<th>0.187 -</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3x0.5 -</td>
<td>4.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M4x0.7 -</td>
<td>6.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MAGNETIC SENSOR KITS * (Round track mounted)**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Requires sensor ready (RM). Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS * (Round track mounted)**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSN - Magnetic Sensor NPN w/ quick disconnect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSP - Magnetic Sensor PNP w/ quick disconnect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Requires sensor ready (RM). Includes (1) sensor.

**SENSOR CABLE**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENCAB-5 - Quick Disconnect PUR Cable 5M Length</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CUSTOM DESIGNS ALWAYS AVAILABLE**

**PLEASE CONTACT US FOR INFORMATION**

**HOW TO ORDER : BASIC UNIT**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Order: PH-40-V Ex) PH-40 (Dovetail Top Cap) With Viton Seals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ACCESSORIES (order separately)**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-40</th>
<th>MPH-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SAMPLE ORDER: PH-40-V**

Ex) PH-40 (Dovetail Top Cap) With Viton Seals

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11/09/13
The DURA-GRIP PH-40 series offers an additional flat top for further flexibility to meet your design requirements.

For further flexibility with the Dovetail, mount the PH-40 with custom dovetail tooling or use the DP-11 Universal receiver.

The Dovetail top cap on the PH-40 is designed to be rotated to allow either orientation shown.

See DURA-GRIP ACCESSORIES Page 1-3.1 for the DP-11 Universal Dovetail receiver

**ADDITIONAL INFORMATION**

**GRIP FORCE**

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - $F$ is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

**Grip Factor $G_F$**

<table>
<thead>
<tr>
<th>Standard Unit</th>
<th>External</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.214</td>
<td>0.125</td>
</tr>
<tr>
<td>English</td>
<td>13.76</td>
<td>8.08</td>
</tr>
<tr>
<td>Metric</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$F_{PAIR} = \frac{1}{2} \cdot PAIR \cdot G_F \cdot T_F$

$F_{PAIR} = \frac{1}{2} \cdot PAIR \cdot G_F \cdot T_F$

$F_{PAIR} = \frac{1}{2} \cdot PAIR \cdot G_F \cdot T_F$

$P_{AIR} = \text{Air Pressure}$

$G_F = \text{Grip Factor (see chart)}$

$T_F = \text{Tooling Factor (see graph)}$

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.
**DIMENSIONAL DRAWING**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>PH-50</th>
<th>MPH-50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar] *</td>
<td>20 lbf</td>
<td>89 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.40 in</td>
<td>10.2 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.81 lbs</td>
<td>0.37 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.31 in³</td>
<td>5.1 cm³</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>1.125 in</td>
<td>28.6 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.30 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**HOW TO ORDER : BASIC UNIT**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Top Cap Style</th>
<th>Dowel Holes</th>
<th>Finger Options</th>
<th>Seals</th>
<th>Sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>PH-50</td>
<td>D</td>
<td>V</td>
<td>RM</td>
<td></td>
</tr>
</tbody>
</table>

**METRIC TOP CAP STYLE**

- 50 - 60° Dovetail (shown above)
- 51 - Flat (see additional information section)

**FINGER OPTIONS**

- SFR - Stationary Right Finger
- SFL - Stationary Left Finger (oiler side)

**Dowel Holes**

- D - Dowel Holes for positive location of unit

**SEALS**

- V - Viton (standard Buna - N)

**SENSORS**

- RM - Magnetic Sensor Ready

Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

**SAMPLE ORDER:** PH-51-SFR

Ex) PH-51 (Flat Top Cap) With Stationary Right Finger

**ACCESSORIES** (order separately)

**MAGNETIC SENSOR KITS * (Round track mounted)**

- RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
- RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS * (Round track mounted)**

- RS-N - Magnetic Sensor NPN w/ quick disconnect
- RS-P - Magnetic Sensor PNP w/ quick disconnect

* Requires sensor ready (-RM). Includes (1) sensor.

**SENSOR CABLE**

- SENCAB-5 - Quick Disconnect PUR Cable 5M Length

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com
The DURA-GRIP PH-50 series offers an additional flat top for further flexibility to meet your design requirements.

For further flexibility with the Dovetail, mount the PH-50 with custom dovetail tooling or use the DP-21 Universal receiver.

The Dovetail top cap on the PH-50 is designed to be rotated to allow either orientation shown.

ADDITIONAL INFORMATION

Grip Force

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - \( F \) is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

\[
G_{\text{F}} = \frac{\text{GRIP FORCE} - F}{\text{PAIR} \times \text{GF} \times \text{TF}}
\]

\[
\text{PAIR} = \text{Air Pressure} \times \text{GF} \times \text{TF}
\]

\[
\text{TOOLING LENGTH FACTOR} \cdot \text{TF}
\]

\[
\text{TOOLING FACTOR} \cdot \text{TF}
\]

English

\[
\text{GRIP FORCE} - F (\text{Ibf}) = P_{\text{AIR}} (\text{psi}) \times G_{\text{F}} \times T_{\text{F}}
\]

Metric

\[
\text{GRIP FORCE} - F (\text{N}) = P_{\text{AIR}} (\text{bar}) \times G_{\text{F}} \times T_{\text{F}}
\]

- \( P_{\text{AIR}} \) = Air Pressure
- \( G_{\text{F}} \) = Grip Factor (see chart)
- \( T_{\text{F}} \) = Tooling Factor (see graph)

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.
**HOW TO ORDER : BASIC UNIT**

**METRIC**

**TOP CAP STYLE**

M

PH-60

V

D

RM

**Dowel Holes**

SEALS

V - Viton (standard Buna - N)

D - Dowel Holes for positive location of unit

MAGNETIC SENSORS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/quick disconnect Kit

RSK-P - Magnetic Sensor PNP w/quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSOR KITS * (Round track mounted)**

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit

RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Requires sensor ready (-RM). Includes (1) sensor.

**SENSOR CABLE**

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

**SAMPLE ORDER: PH-60-D-RM**

Ex) PH-60 (Dovetail Top Cap) With Dowel Holes and Sensor Ready

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---

**LOADING**

**PH-60**

Max Force F 200 lbf 25 lbf

Max Moment Mx,y,z 125 lbf-in 14.1 N-m

**MPH-60**

889 N 111 N

14.1 N-m 2.8 N-m

**NOTE:** Loading based on utilization of both fingers

---

**DIMENSIONAL DRAWING**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>PH-60</th>
<th>MPH-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar] *</td>
<td>20 lbf</td>
<td>89 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.52 in</td>
<td>13.2 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.88 lbs</td>
<td>0.40 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.40 in³</td>
<td>6.6 cm³</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>1.125 in</td>
<td>28.6 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.40 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

---

**ACCESSORIES** (order separately)

**SEALS**

V - Viton (standard Buna - N)

**SENSORS**

RM - Magnetic Sensor Ready

Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

---

**CUSTOM DESIGNS ALWAYS AVAILABLE PLEASE CONTACT US FOR INFORMATION**
The DURA-GRIP PH-60 series offers an additional flat top for further flexibility to meet your design requirements.

The Dovetail top cap on the PH-60 is designed to be rotated to allow either orientation shown.

For further flexibility with the Dovetail, mount the PH-60 with custom dovetail tooling or use the DP-21 Universal receiver.

**ADDITIONAL INFORMATION**

**Grip Force**

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - $F$ is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

**Grip Factor** $G_F$

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

**English**

\[
F_{(lb)} = \text{PAIR} \times \text{GF} \times \text{TF}
\]

**Metric**

\[
F_{(N)} = \text{PAIR} \times \text{GF} \times \text{TF}
\]

$F_{(lb)}$ = Grip Force

$\text{PAIR} = \text{Air Pressure}$

$\text{GF} = \text{Grip Factor (see chart)}$

$\text{TF} = \text{Tooling Factor (see graph)}$

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.

**Tooling Length Factor** $T_F$

<table>
<thead>
<tr>
<th>Tooling Length Factor $T_F$</th>
<th>PH-60</th>
<th>MPH-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>External $T_F$</td>
<td>0.201</td>
<td>12.93</td>
</tr>
<tr>
<td>Internal $T_F$</td>
<td>0.361</td>
<td>23.28</td>
</tr>
</tbody>
</table>
**DIMENSIONAL DRAWING**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>PH-70</th>
<th>MPH-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar] *</td>
<td>50 lbf</td>
<td>222 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>1.00 in</td>
<td>25.4 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>1.75 lbs</td>
<td>0.79 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>1.58 in³</td>
<td>25.3 cm³</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>1.500 in</td>
<td>38.1 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.50 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**LOADING**

<table>
<thead>
<tr>
<th></th>
<th>PH-70</th>
<th>MPH-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Force F</td>
<td>250 lbf</td>
<td>1111 N</td>
</tr>
<tr>
<td>Static Dynamic</td>
<td>35 lbf</td>
<td>156.6 N</td>
</tr>
<tr>
<td>Max Moment Mx,y,z</td>
<td>200 lb-in</td>
<td>22.6 N-m</td>
</tr>
<tr>
<td>Static Dynamic</td>
<td>40 lb-in</td>
<td>4.5 N-m</td>
</tr>
</tbody>
</table>

**NOTE:** Loading based on utilization of both fingers

**METRIC M**

**TOP CAP STYLE**

- **70** - 60° Dovetail (shown above)
- **71** - Flat (see additional information section)

**SEALS**

- **V** - Viton (standard Buna - N)
- **D** - Dowel Holes for positive location of unit

**SENSORS**

- **RM** - Magnetic Sensor Ready
- **SENSORS**

Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

**SAMPLE ORDER: PH-71-RM**

Ex) PH-71 (Flat Top Cap) With Sensor Ready Option

**ACCESSORIES (order separately)**

**MAGNETIC SENSOR KITS * (Round track mounted)**

- **RSK-N** - Magnetic Sensor NPN w/ quick disconnect Kit
- **RSK-P** - Magnetic Sensor PNP w/ quick disconnect Kit

* Requires sensor ready (RM). Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS * (Round track mounted)**

- **RS-N** - Magnetic Sensor NPN w/ quick disconnect
- **RS-P** - Magnetic Sensor PNP w/ quick disconnect

* Requires sensor ready (RM). Includes (1) sensor.

**SENSOR CABLE**

- **SENCAB-5** - Quick Disconnect PUR Cable 5M Length

**CUSTOM DESIGNS ALWAYS AVAILABLE**

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VISIT US AT www.RIMFG.com

11/06/13
The DURA-GRIP PH-70 series offers an additional flat top for further flexibility to meet your design requirements.

For further flexibility with the Dovetail, mount the PH-70 with custom dovetail tooling or use the DP-21 Universal receiver.

The Dovetail top cap on the PH-70 is designed to be rotated to allow either orientation shown.

The grip force - $F$ is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

**Grip Force**

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The grip force - $F$ is calculated as follows:

$$F = PAIR (psi) \times GF \times TF$$

Where:
- $PAIR$ = Air Pressure
- $GF$ = Grip Factor (see chart)
- $TF$ = Tooling Factor (see graph)

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.

**Grip Factor**

<table>
<thead>
<tr>
<th>Standard Unit</th>
<th>EXTERNAL</th>
<th>INTERNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>0.498</td>
<td>0.470</td>
</tr>
<tr>
<td>Metric</td>
<td>32.06</td>
<td>42.76</td>
</tr>
</tbody>
</table>

**Tooling Length Factor**

$$TF = \frac{MAX \, JAW \, LENGTH}{L}$$

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com
## PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQ'D</th>
<th>NAME</th>
<th>PH-40</th>
<th>PH-50</th>
<th>PH-60</th>
<th>PH-70</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Dovetail Top Cap</td>
<td>PH-40-1</td>
<td>PH-50-1</td>
<td>PH-70-1</td>
<td>-RM²</td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>1</td>
<td>Flat Top Cap</td>
<td>PH-41-1</td>
<td>PH-51-1</td>
<td>PH-71-1</td>
<td>-D²-RM²</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Main Body</td>
<td>PH-40-2</td>
<td>PH-50-2</td>
<td>PH-60-2</td>
<td>PH-70-2</td>
<td>-SFR²-SFL²-D²-RM²</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Bottom Cap</td>
<td>PH-40-3</td>
<td>PH-50-3</td>
<td>PH-70-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Finger</td>
<td>PH-40-4</td>
<td>PH-50-4</td>
<td>PH-60-4</td>
<td>PH-70-4</td>
<td>-SFR²-SFL²</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Piston Shank</td>
<td>PH-40-5</td>
<td>PH-50-5</td>
<td>PH-60-5</td>
<td>PH-70-5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Piston</td>
<td>PH-40-6</td>
<td>PH-50-6</td>
<td>PH-70-6</td>
<td>-RM⁴</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Pin</td>
<td>PH-40-7</td>
<td>PH-50-7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Roller *</td>
<td>PH-40-8</td>
<td>PH-50-8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Stop Bushing</td>
<td>PH-40(41)²-9</td>
<td>PH-50(51)²-9</td>
<td>PH-70(71)²-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Piston Seal *</td>
<td>ORG-018</td>
<td>ORG-212</td>
<td>ORG-218</td>
<td></td>
<td>.V¹</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>Piston Shank Seal *</td>
<td>UCP-145</td>
<td>ORG-016</td>
<td>ORG-016</td>
<td></td>
<td>.V¹</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>Top Cap Seal *</td>
<td>ORG-018</td>
<td>ORG-022</td>
<td>ORG-028</td>
<td></td>
<td>.V¹</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>Oilier *</td>
<td>OIL-250</td>
<td>OIL-312</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RK</td>
<td>1</td>
<td>Repair Kit * #</td>
<td>PH-40-RK</td>
<td>PH-50-RK</td>
<td>PH-70-RK</td>
<td></td>
<td>.V¹</td>
</tr>
</tbody>
</table>

### OPTIONS (see product pages for information)

- **V**: Viton
- **SFR / SFL**: Stationary Finger Right or Left
- **D**: Dowel Holes
- **RM**: Magnetic Sensor Ready
- **TOP CAP STYLE**

### NOTES

- Metric code not required
- Repair Kits include req'd qty of parts marked with RK
- Older PH-40 models utilized an o-ring to seal the piston shank - This o-ring is also included in the repair kit.
**LP-SERIES - LOW PROFILE**

**DURA-GRIP LP** Series of Part Placement Devices is designed to provide a low cost gripping unit for use in applications where the minimum overall height is critical. The LP series provides an exceptional amount of finger stroke when compared to other units of similar height. These air operated units grip parts internally or externally offering the designer a wide latitude in finger tooling arrangements. All units are shipped completely assembled ready for mounting and attaching tooling.

**QUALITY CONSTRUCTION**

**DURA-GRIP LP** Series is ruggedly constructed with a minimum of moving parts. The high strength aluminum body is hard coated, and the fingers are hardened steel for excellent durability. The fingers are fully supported through their entire stroke providing high moment capacity and longer finger lengths.

**MOUNTING INFORMATION**

**DURA-GRIP LP** Series can be mounted and operated in any plane and orientation. Standard mounting holes and precision dowel holes are provided on top and back of unit for easy mounting.

**ADDITIONAL FEATURES**

**DURA-GRIP LP** Series is sensor ready for use with magnetic sensors to sense open and closed positions. Many finger options are available including synchronous, non-synchronous operations, and stationary fingers.

Use the LP Series of Parallel Grippers wherever you need low-profile, durable and precise part placement.

**TECHNICAL SPECIFICATION**

- **Pneumatic Specifications**
  - **ENGLISH**
    - Pressure Range: 40-100 psi
  - **METRIC**
    - Cylinder Type: 2 Double Acting
    - Dynamic Seals: Buna-N
    - Required Valves: 4-way, 2 position

- **Temperature Range**
  - Buna-N Seals (standard): -30 to 180 F, -35 to 80 C
  - Viton Seals (-V option): -20 to 300 F, -30 to 150 C

**OPERATING PRINCIPLES**

- Air pressure drives two double acting pistons which are directly connected to gripper fingers.
- Fingers are internally linked to provide synchronized motion.
- Precision t-slot guides fingers accurately and provides support through entire stroke.
- Gripper is capable of external and internal gripping.

**OPTIONAL OPERATIONS**

- **SYNCHRONOUS & NON-SYNCHRONOUS**
- **STATIONARY FINGERS**
PRODUCT FEATURES

- Aircraft Grade Aluminum
  Hard Coat Anodize

- Simple and Highly Durable
  Time tested, field approved design

- Low Profile
  Longer stroke with minimum height

Rugged Design
Extremely durable for high cycle life. Oversized components, hardened steel fingers, and Hard Coat anodized aluminum body.

Fully Rebuildable
Fully field serviceable with factory repair kits

Sensors Ready
Standard piston magnets for use with our RS style sensors. Sensors sold separately

Compact Design
Low profile and long stroke for height limited applications

U-cup Seals
High cycle life. Buna-N standard with optional Viton (-V Option)

Engineered Surface Coating
Anti-Friction and Anti-Wear on fingers

Multiple Finger Options
Standard synchronized motion with Optional non-synchronous operation, and stationary fingers

Precision Mounting Features
Dowels holes located on body and fingers for precision location of unit and tooling

U-cup Seals
High cycle life. Buna-N standard with optional Viton (-V Option)

Engineered Surface Coating
Anti-Friction and Anti-Wear on fingers

Multiple Finger Options
Standard synchronized motion with Optional non-synchronous operation, and stationary fingers

Precision Mounting Features
Dowels holes located on body and fingers for precision location of unit and tooling

Mounting INFORMATION

Mounts and operates in any orientation

MAIN BODY

Mount up to Main body with Tapped holes located on back, and top of unit.

Use standard precision Dowel holes on the top and back side of the unit for positive location.

TOOLING

Mount tooling to fingers using Tapped holes located on the bottom and sides of fingers

Key tooling to precision ground fingers or utilize dowel holes for positive location.

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235

VISIT US AT www.RIMFG.com

1-1.21
**SAMPLE ORDER: LP-75-NS**

Ex) LP-75 With Non-synchronous finger motion

**METRIC**

**FINGER OPTIONS**

- **M** LP-75
- **V** - Vilon (standard Buna - N)

**SEALS**

**ACCESSORIES** (order separately)

**MAGNETIC SENSOR KITS** * (Round track mounted)

- **RSK-N** - Magnetic Sensor NPN w/ quick disconnect Kit
- **RSK-P** - Magnetic Sensor PNP w/ quick disconnect Kit

* Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS** * (Round track mounted)

- **RS-N** - Magnetic Sensor NPN w/ quick disconnect
- **RS-P** - Magnetic Sensor PNP w/ quick disconnect

* Includes (1) sensor.

**SENSOR CABLE**

- **SENCAB-5** - Quick Disconnect PUR Cable 5M Length

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>LP-75</th>
<th>MLP-75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar]</td>
<td>25 lbf</td>
<td>111 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.75 in</td>
<td>19.1 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.9 lbs</td>
<td>0.41 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.46 in^2</td>
<td>7.5 cm^2</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>0.625 in</td>
<td>15.9 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.20 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**LOADING**

<table>
<thead>
<tr>
<th></th>
<th>Static</th>
<th>Dynamic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Tension T</td>
<td>225 lbf</td>
<td>30 lbf</td>
</tr>
<tr>
<td>Max Compression C</td>
<td>450 lbf</td>
<td>30 lbf</td>
</tr>
<tr>
<td>Max Moment Mx,y,z</td>
<td>215 lbf-in</td>
<td>35 lbf-in</td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**METRIC**

**FINGER OPTIONS**

- **M** LP-75
- **SFR** - Stationary Right Finger
- **SFL** - Stationary Left Finger
- **NS** - Non-synchronous finger motion

**SEALS**

- **V** - Vilon (standard Buna - N)
STATIONARY FINGER (-SFL / -SFR)

The LP series can be ordered with a stationary left finger (-SFL) or a stationary right finger (-SFR) for use when gripping parts that need to be referenced to a specific edge or surface. The stationary jaw will reference the edge or surface and the moving jaw can compensate for any change in material size. (-SFL Shown)

NON-SYNCHRONOUS OPERATION (-NS)

The LP series can be ordered with Non-Synchronous finger motion to permit the gripping of parts off centerline of the unit. Use this option whenever there is a miss-match between part centerline and gripper centerline.

ADDITIONAL INFORMATION

GRIP FORCE

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - \( F \) is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

<table>
<thead>
<tr>
<th>GRIP FACTOR ( G_F )</th>
<th>LP-75</th>
<th>MLP-75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Unit</td>
<td>EXTERNAL 0.254</td>
<td>16.38</td>
</tr>
<tr>
<td></td>
<td>INTERNAL 0.254</td>
<td>16.38</td>
</tr>
</tbody>
</table>

\[ \text{English} \quad \text{Grip Force} - F \quad (\text{Ibf}) = \quad P_{AIR} \text{ (psi)} \times G_F \times T_F \]

\[ \text{Metric} \quad \text{Grip Force} - F \quad (\text{N}) = \quad P_{AIR} \text{ (bar)} \times G_F \times T_F \]

\( P_{AIR} \) = Air Pressure  
\( G_F \) = Grip Factor (see chart)  
\( T_F \) = Tooling Factor (see graph)

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.
**NEW** LP-100  
**DIMENSIONAL DRAWING**

**SPECIFICATIONS**  
**LP-100**  
Standard Grip Force @ 100 psi [7 bar] *  
25 lbf  
111 N

**MLP-100**  
Standard Stroke  
1.00 in  
25.4 mm

Base Weight  
1.1 lbs  
0.5 kg

Unit Displacement (grip and release)  
0.62 in³  
10.1 cm³

Cylinder Bore Diameter  
0.625 in  
15.9 mm

Actuation Time (no load)  
0.25 sec

* Loading between lower jaw surface - zero tooling length

**LOADING**  
**LP-100**  
Static  
Max Tension T  
250 lbf  
1111 N

Dynamic  
Max Compression C  
475 lb  
2111 N

Max Moment Mx,y,z  
235 lbf-in  
40 lbf-in

**MLP-100**  
Static  
Max Tension T  
1111 N  
156 N

Dynamic  
Max Compression C  
2111 N  
156 N

Max Moment Mx,y,z  
27 N-m  
4.5 N-m

NOTE: Loading based on utilization of both fingers

**SAMPLE ORDER: MLP-100-V**  
Ex) Metric LP-100 With Viton Seals

**ACCESSORIES** (order separately)

**MAGNETIC SENSOR KITS** * (Round track mounted)  
RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit  
RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS** * (Round track mounted)  
RS-N - Magnetic Sensor NPN w/ quick disconnect  
RS-P - Magnetic Sensor PNP w/ quick disconnect

* Includes (1) sensor.

**SENSOR CABLE**  
SENCAB-5 - Quick Disconnect PUR Cable 5M Length

**FINGER OPTIONS**  
METRIC M  
SFR - Stationary Right Finger  
SFL - Stationary Left Finger  
NS - Non-synchronous finger motion

SEALS V - Viton (standard Buna - N)

**FOR MORE INFORMATION CALL US AT**  
1-800-588-0174 OR 860-589-6364  
FAX: 860-589-6235  
VISIT US AT www.RIMFG.com

11/09/13
**STATIONARY FINGER (-SFL / -SFR)**

The LP series can be ordered with a stationary left finger (-SFL) or a stationary right finger (-SFR) for use when gripping parts that need to be referenced to a specific edge or surface. The stationary jaw will reference the edge or surface and the moving jaw can compensate for any change in material size. (-SFL Shown)

**NON-SYNCHRONOUS OPERATION (-NS)**

The LP series can be ordered with Non-Synchronous finger motion to permit the gripping of parts off centerline of the unit. Use this option whenever there is a miss-match between part centerline and gripper centerline.

**ADDITIONAL INFORMATION**

**GRIP FORCE**

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force \( F \) is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

\[
GRIP FORCE - F \text{ (Ibf)} = P_{\text{AIR}} \times GF \times TF
\]

\[
GRIP FORCE - F \text{ (N)} = P_{\text{AIR}} \times GF \times TF
\]

- **English**
  - \( P_{\text{AIR}} \) = Air Pressure
  - \( GF \) = Grip Factor (see chart)
  - \( TF \) = Tooling Factor (see graph)

- **Metric**
  - \( P_{\text{AIR}} \) = Air Pressure
  - \( GF \) = Grip Factor (see chart)
  - \( TF \) = Tooling Factor (see graph)

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.
**PARTS LIST**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQ'D</th>
<th>NAME</th>
<th>LP-75</th>
<th>LP-100</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Body</td>
<td>LP-75-1</td>
<td>LP-100-1</td>
<td></td>
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<tr>
<td>2</td>
<td>2</td>
<td>Finger</td>
<td>LP-75-2</td>
<td>LP-100-2</td>
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</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Bottom Cover</td>
<td>LP-100-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Connecting Rod</td>
<td>LP-75-4</td>
<td>LP-100-4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Piston *</td>
<td>LP-75-5</td>
<td>LP-100-5</td>
<td>SFR / SFL *</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Cylinder Cap *</td>
<td>LP-100-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Link Pin *</td>
<td>LP-100-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Link *</td>
<td>LP-100-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Finger Pin *</td>
<td>LP-100-9</td>
<td></td>
<td>SFR / SFL *</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Pivot Pin *</td>
<td>LP-100-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Plug *</td>
<td>LP-100-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>Cylinder Cap Seal *</td>
<td>ORG-016</td>
<td></td>
<td>V*</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
<td>Piston Seal *</td>
<td>UCP-130</td>
<td></td>
<td>V*</td>
</tr>
<tr>
<td>SK</td>
<td>1</td>
<td>Seal Kit **</td>
<td>LP-SK</td>
<td></td>
<td>V*</td>
</tr>
</tbody>
</table>

**SAMPLE ORDER:** LP-75-2

*Ex) LP-75 Finger*

**METRIC PART NUMBER**

**OPTIONS**

- V = Viton
- SFR / SFL = Stationary Finger Right or Left

**NOTES**

- Metric code not required
- Seal Kits include req’d qty of parts marked with SK

Consult Factory if option or part is not listed
**DURA-GRIP PH-20 - STACK PACK**

**DURA-GRIP PH-20** Part Placement Device is designed to provide a low cost, thin profile, stackable gripping unit for use on transfer mechanisms. The thin profile allows close center distance mounting for multiple head stacking as required in racking/deracking, palletizing/depalletizing or other similar applications. This air operated unit grips parts internally or externally offering the designer a wide latitude in finger tooling arrangements. All units are shipped completely assembled, ready for mounting and attaching tooling.

**QUALITY CONSTRUCTION**

**DURA-GRIP PH-20** is ruggedly constructed with a minimum of moving parts and utilizes the same field proven mechanism found in our other parallel grippers. The body is anodized high strength aluminum, fingers are hardened tool steel. Both finger opening and closing position can be adjusted on the unit. The unit can be mounted in any plane with standard mounting holes or with integral dovetail.

Use the PH-20 Parallel Gripper in some of the following applications or wherever you need durable and precise part placement with a thin profile:

- Racking / Deracking operations
- Palletizing / Depalletizing operations
- Small workpiece center to center distance

**TECHNICAL SPECIFICATION**

**Pneumatic Specifications**

<table>
<thead>
<tr>
<th>ENGLISH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Range</td>
<td>40-100 psi</td>
</tr>
<tr>
<td>Cylinder Type</td>
<td>Double Acting</td>
</tr>
<tr>
<td>Dynamic Seals</td>
<td></td>
</tr>
<tr>
<td>Required Valves</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>-30 to 180 F</th>
<th>-35 to 80 C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna-N Seals (standard)</td>
<td>-20 to 300 F</td>
<td>-30 to 150 C</td>
</tr>
</tbody>
</table>

**OPERATING PRINCIPLES - STANDARD UNIT**

- Air pressure drives double acting piston.
- Piston drives fingers through precision slots producing synchronized parallel motion.
- Gripper is capable of external and internal gripping

Finger closed and open position can be adjusted with set screws located in the bottom and top cap of the unit.

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com
PRODUCT FEATURES

- Aircraft Grade Aluminum
  2024 with black anodize

- Simple and Highly Durable
  Time tested, field approved design

- High Grip Force
  High gripping force-to-weight ratio

Stackable Design

Extremely Compact Design

Rugged One Piece Body
Extremely durable for high cycle life

Precision Components
Precision ground and hardened fingers for accurate tooling location

Adjustable Finger Stops
On both open and closed positions. Provides precise and accurate finger stroke control

FULLY REBUILDABLE

- Fully field serviceable with factory repair kits

Multiple Mounting Features
Tapped and Clearance holes for mounting the unit and additional stripper tooling. Integral Dovetail mounting on body

O-ring Seals
High cycle life. Buna-N standard with optional Viton (-V Option)

Engineered Surface Coating
Anti-Friction and Anti-Wear on fingers

DESIGNED - MANUFACTURED - ASSEMBLED IN THE USA

MOUNTING INFORMATION

Mounts and operates in any orientation

MAIN BODY

TOOLING

Mount up to Main body utilizing Tapped holes located on back, front, and side of unit. Mount thru unit with provided Clearance holes.

Utilizes integrated Dovetail in body for precision location and mounting

Mount tooling to fingers using Tapped holes

Key tooling to precision ground fingers for positive location.

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com

11/09/13
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>PH-20</th>
<th>MPH-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grip Force @ 100 psi [7 bar] *</td>
<td>9 lbf</td>
<td>40 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>0.26 in</td>
<td>6.6 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>0.29 lbs</td>
<td>0.13 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip and release)</td>
<td>0.06 in³</td>
<td>0.95 cm³</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>0.562 in</td>
<td>14.3 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.20 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Loading between lower jaw surface - zero tooling length

**HOW TO ORDER : BASIC UNIT**

**SAMPLE ORDER: PH-20-V**

Ex) PH-20 with Viton Seals

**CUSTOM DESIGNS ALWAYS AVAILABLE**

PLEASE CONTACT US FOR INFORMATION
ADDITIONAL MOUNTING INFORMATION

STACKABLE DESIGN

Use the Clearance holes to stack 2 or more gripping heads together.

ADDITIONAL INFORMATION

LOADING

<table>
<thead>
<tr>
<th>PH-20</th>
<th>PH-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>Dynamic</td>
</tr>
<tr>
<td>Max Force F</td>
<td>50 lbf</td>
</tr>
<tr>
<td>Max Moment Mx, My, Mz</td>
<td>50 lbf-in</td>
</tr>
</tbody>
</table>

NOTE: Loading based on utilization of both fingers.

GRIP FORCE

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - F is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.

\[
GRIP FORCE - F (\text{lb}) = P_{\text{air}} (\text{psi}) \times G_F \times T_F
\]

\[
GRIP FORCE - F (\text{N}) = P_{\text{air}} (\text{bar}) \times G_F \times T_F
\]

\[P_{\text{air}} = \text{Air Pressure} \]
\[G_F = \text{Grip Factor (see chart)} \]
\[T_F = \text{Tooling Factor (see graph)} \]

Use the DP-21 Universal Dovetail receiver to accurately hold and locate up to 4 PH-20 grippers. The DP-21 can then be modified to suit your application.

Use the Clearance holes to stack 2 or more gripping heads together.

LOADING

<table>
<thead>
<tr>
<th>PH-20</th>
<th>PH-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>Dynamic</td>
</tr>
<tr>
<td>Max Force F</td>
<td>50 lbf</td>
</tr>
<tr>
<td>Max Moment Mx, My, Mz</td>
<td>50 lbf-in</td>
</tr>
</tbody>
</table>

NOTE: Loading based on utilization of both fingers.

GRIP FACTOR \(G_F\)

<table>
<thead>
<tr>
<th>Standard Unit</th>
<th>EXTERNAL</th>
<th>INTERNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH-20</td>
<td>0.091</td>
<td>0.073</td>
</tr>
<tr>
<td>MPH-20</td>
<td>5.87</td>
<td>4.71</td>
</tr>
</tbody>
</table>

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.
**PARTS LIST**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQ'D</th>
<th>NAME</th>
<th>PH-20</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Top Cap</td>
<td>RB-94-2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Main Body</td>
<td>PH-20-2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Piston</td>
<td>PH-20-3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Finger</td>
<td>PH-20-4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Piston Shank</td>
<td>PH-20-5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Cylinder Bushing*</td>
<td>PH-20-6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Pin *</td>
<td>PH-40-7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Roller *</td>
<td>PH-20-8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Bottom Cap</td>
<td>PH-20-9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Piston Shank Seal*</td>
<td>ORG-010</td>
<td>-V¹</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Top Cap &amp; Piston Seal*</td>
<td>ORG-013</td>
<td>-V¹</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>Oiler *</td>
<td>OIL-250</td>
<td></td>
</tr>
<tr>
<td>RK</td>
<td>1</td>
<td>Repair Kit * #</td>
<td>PH-20-RK- V¹</td>
<td></td>
</tr>
</tbody>
</table>

**HOW TO ORDER PARTS**

**SAMPLE ORDER:** PH-20-4

*Ex) PH-20 Finger*

**OPTIONS (see product pages for information)**

- V = Viton

**NOTES**

- Metric code not required
- Repair Kits include req’d qty of parts marked with RK

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235

VISIT US AT www.RIMFG.com
**J F-20 - WIDE BODY**

**DURA-GRIP J F-20** Linear Gripping Device is designed to provide a low cost wide body gripper with the capability of handling large parts. The device can be used as part of a transfer mechanism or utilized at an assembly station to hold a work piece in place. Parts can be gripped internally or externally and the end blocks provide the tool engineer with several options for mounting the gripping fingers. The air operated unit is compact with operation controlled through a four-way air valve.

**QUALITY CONSTRUCTION**

**DURA-GRIP J F-20** main block provides the fixed support with mounting holes provided on the top and both sides of the block. The unit can be mounted in any plane. Both end blocks are machined on three sides to accept tooling with each block pinned to one of the ground steel rods. Slide rods are parallel to the mounting surface within .002” per foot. They are mounted on oil impregnated bronze bushings. Bushings are utilized rather than linear ball bearings because bushings distribute the load over a larger surface area resulting in less wear on the slide rods. The unit has been tested under actual operating conditions with up to 160 million inches accumulated travel with negligible wear. Stroke adjustment screws are included for separate adjustment of endblocks in closed and open positions.

Use the J F-20 Parallel Gripper wherever you need durable and precise part placement with large work envelope.

**TECHNICAL SPECIFICATION**

<table>
<thead>
<tr>
<th>Pneumatic Specifications</th>
<th>ENGLISH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Range</td>
<td>40-100 psi</td>
<td>3-7 bar</td>
</tr>
<tr>
<td>Required Valves</td>
<td>4-way, 2 position</td>
<td></td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-30 to 180 F</td>
<td>-35 to 80 C</td>
</tr>
<tr>
<td>Buna-N Seals (standard)</td>
<td>-20 to 300 F</td>
<td>-30 to 150 C</td>
</tr>
<tr>
<td>Viton Seals (-V option)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Construction**

- Travel Tolerance: +0.005” / - 0.005” [+0.13 / 0.130mm]
- Cylinder Type: Double Acting
- Dynamic Seals: Buna-N
- Maintenance: Field Repairable

**OPERATING PRINCIPLES**

- Air pressure drives a double acting cylinder directly connected to each endblock
- Each endblock is pinned to one rod, the other rod slides through opposing endblock
- Rods are connected via a hardened steel link to produce synchronized endblock motion.

Closed and open position can be adjusted with set screws located in the Main body of the unit. The set screws act directly on the link.
PRODUCT FEATURES

- **Aircraft Grade Aluminum**
  2024 with black anodize

- **Simple and Highly Durable**
  Time tested, field approved design

- **High Grip Force**
  High gripping force-to-weight ratio

**Fully Field Serviceable**
Available parts and repair kits

**Magnetic Sensors available**
Clamp-on with Quick Disconnect

**Multiple Mounting Features**
Wide variety of tapped holes available for mounting and custom tooling

**Bronze Bushings**
Oil impregnated bronze bushing for high load and low wear. Used in main body and endblocks

**Precision Ground Shafting**
Case hardened to 60-62 Rc, provides smooth and precise motion

**Adjustable Stops**
On both open and closed positions. Provides precise and accurate stroke control

**DESIGNED - MANUFACTURED - ASSEMBLED IN THE USA**

MOUNTING INFORMATION

Mounts and operates in any orientation

**MAIN BODY**
Mount up to Main body utilizing Tapped holes located on both sides of unit. Mount thru unit with provided Clearance holes.

**TOOLING**
Mount tooling to bottom or sides of endblocks utilizing Tapped holes. Key tooling to slots in endblocks for positive location.
**HOW TO ORDER: BASIC UNIT**

**BASE MODEL**

<table>
<thead>
<tr>
<th>METRIC</th>
<th>BASE MODEL</th>
<th>SENSORS</th>
<th>SEALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>JF-20</td>
<td>V</td>
<td>RM</td>
</tr>
</tbody>
</table>

**SEALS**

V - Viton (standard Buna - N)

**SENSORS**

RM - Magnetic Sensor Ready

Includes Platin Magnet. Sensors sold separately - see Magnetic Sensors

**SAMPLE ORDER: JF-20-V**

Ex) JF-20 with Viton Seals

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>JF-20</th>
<th>MJF-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grip Force @ 100 psi [7 bar]</td>
<td>33 lbf</td>
<td>147 N</td>
</tr>
<tr>
<td>Standard Stroke</td>
<td>1.750 in</td>
<td>44.5 mm</td>
</tr>
<tr>
<td>Base Weight</td>
<td>3.75 lbs</td>
<td>1.70 kg</td>
</tr>
<tr>
<td>Unit Displacement (grip / release)</td>
<td>1.46 in³</td>
<td>23.9 cm³</td>
</tr>
<tr>
<td>Cylinder Bore Diameter</td>
<td>0.750 in</td>
<td>19.05 mm</td>
</tr>
<tr>
<td>Actuation Time (no load)</td>
<td>0.40 sec</td>
<td></td>
</tr>
</tbody>
</table>

*Loading at bottom jaw surface - external grip*

---

**ACCESSORIES** (order separately)

**MAGNETIC SENSOR KITS** *(Cylinder clamp mounted)*

- CSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
- CSK-P - Magnetic Sensor PNP w/ quick disconnect Kit
- CSK-R - Magnetic Sensor REED output w/ quick disconnect Kit

*Requires sensor ready (RM). Sensor kits include (2) sensors and (2) 5 meter cables.

**MAGNETIC SENSORS** *(Cylinder clamp mounted)*

- CS-N - Magnetic Sensor NPN w/ quick disconnect
- CS-P - Magnetic Sensor PNP w/ quick disconnect
- CS-R - Magnetic Sensor REED output w/ quick disconnect

*Requires sensor ready (RM). Includes (1) sensor.

**SENSOR CABLE**

- SENCAB-5 - Quick Disconnect PUR Cable 5M Length
GRIP FORCE

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below and the application variables to determine the proper sizing of the gripper.

The Grip force - F is defined as the maximum force that can be applied to the end blocks without moving. The force is analytically determined and will vary slightly with friction.

<table>
<thead>
<tr>
<th>LOADING</th>
<th>JF-20 Static</th>
<th>Dynamic</th>
<th>MJF-20 Static</th>
<th>Dynamic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Force F</td>
<td>100 lbf (444.5 N)</td>
<td>20 lbf</td>
<td>444.5 N (88.9 N)</td>
<td>88.9 N</td>
</tr>
<tr>
<td>Max Moment Mx, My</td>
<td>125 lbf-in (14.1 N-m)</td>
<td>30 lbf-in</td>
<td>14.1 N-m (3.4 N-m)</td>
<td>3.4 N-m</td>
</tr>
<tr>
<td>Max Moment Mz</td>
<td>200 lbf-in (22.6 N-m)</td>
<td>65 lbf-in</td>
<td>22.6 N-m (7.3 N-m)</td>
<td>7.3 N-m</td>
</tr>
</tbody>
</table>

NOTE: Loading based on utilization of both endblocks.

English

\[ \text{Grip Force} - F (\text{lb}) = P_{\text{AIR}} (\text{psi}) \times G_F \times T_F \]

Metric

\[ \text{Grip Force} - F (\text{N}) = P_{\text{AIR}} (\text{bar}) \times G_F \times T_F \]

\[ P_{\text{AIR}} = \text{Air Pressure} \]
\[ G_F = \text{Grip Factor (see chart)} \]
\[ T_F = \text{Tooling Factor (see graph)} \]

It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.

FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235 VISIT US AT www.RIMFG.com

11/09/13
**PARTS LIST**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQ'D</th>
<th>NAME</th>
<th>JF-20</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Main Body</td>
<td>JF-20-1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>End Block</td>
<td>JF-20-2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Top Cover</td>
<td>JF-20-3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Bottom Cover</td>
<td>JF-20-4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Bracket</td>
<td>JF-20-5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>Main Body Bushing*</td>
<td>JF-20-6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>End Block Bushing*</td>
<td>JF-20-7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Link*</td>
<td>JF-20-8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Rod*</td>
<td>JF-20-9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>Cam Follower*</td>
<td>CF-350</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Pivot Pin*</td>
<td>FPP-305</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>Air Cylinder*</td>
<td>DXP-75</td>
<td>-V1,RM²</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>Rod End*</td>
<td>RE-200</td>
<td></td>
</tr>
<tr>
<td>RK</td>
<td>1</td>
<td>Repair Kit*</td>
<td>JF-20-RK-V</td>
<td></td>
</tr>
</tbody>
</table>

**HOW TO ORDER PARTS**

**SAMPLE ORDER:** JF-20-8

Ex) JF-20 Link

**OPTIONS** (see product pages for information)

1. V = Viton
2. RM = Magnetic Sensor Ready

**NOTES**

* = Metric code not required
# = Repair Kits include req'd qty of parts marked with RK