Series NA Heavy-Duty Piston Type Accumulator

Sturdy, compact, cylindrical design, built for heavy-duty Industrial Applications

Series NA Nitrogen-Oil Accumulator
3000 psi Piston Type

▸ Sturdy
▸ Compact
▸ Cylindrical design
▸ Dependable performance
Nitrogen Oil Accumulators

Nitrogen-over-oil Accumulators are designed for use over a wide range of industrial applications. Built to the same high quality standards maintained on Milwaukee Cylinder Air and Hydraulic Cylinders, Series NA Accumulator can be applied to:

- Simplify hydraulic circuit design
- Lower the hydraulic circuit horsepower requirements
- Improve hydraulic system operation
- Provide exceptionally fast cycle operation when in operation

### Operating Pressure:
- 3000 psi

### Proof Pressure:
- 6000 psi

### Operating Temperature:
- -20°F to +250°F

### NA SERIES ACCUMULATORS

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- Improve hydraulic system operation
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### Dimensional Data & Repair Kits

<table>
<thead>
<tr>
<th>Cylinder Code</th>
<th>Model No.</th>
<th>Size</th>
<th>Oil Capacity in³</th>
<th>Gas Capacity in³</th>
<th>Length A</th>
<th>Ø B</th>
<th>Ø C</th>
<th>Thread Hole Depth D</th>
<th>Thread E</th>
<th>Port *F NPT</th>
<th>Seal Kit Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3502-1005</td>
<td>NA2 - 05</td>
<td>½ Pint</td>
<td>14.5</td>
<td>16.2</td>
<td>8</td>
<td>2%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3502-0-40</td>
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<tr>
<td>3502-1001</td>
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<td>Pint</td>
<td>29</td>
<td>30.7</td>
<td>12%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
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<tr>
<td>3502-1002</td>
<td>NA2 - 2</td>
<td>Quart</td>
<td>58</td>
<td>59.7</td>
<td>22</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
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<tr>
<td>3504-1002</td>
<td>NA4 - 2</td>
<td>Quart</td>
<td>58</td>
<td>70</td>
<td>9%</td>
<td>4%</td>
<td>3 1/4</td>
<td>½</td>
<td>½ - 20</td>
<td>1¼</td>
<td>3504-0-40</td>
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<tr>
<td>3504-1004</td>
<td>NA4 - 4</td>
<td>½ Gal</td>
<td>116</td>
<td>128</td>
<td>14%</td>
<td>7</td>
<td>4%</td>
<td>¾</td>
<td>¾ - 18</td>
<td>1½</td>
<td>3506-0-40</td>
</tr>
<tr>
<td>3504-1008</td>
<td>NA4 - 8</td>
<td>1 Gal</td>
<td>231</td>
<td>243</td>
<td>23%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3504-1012</td>
<td>NA4 - 12</td>
<td>1½ Gal</td>
<td>347</td>
<td>359</td>
<td>32%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
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<tr>
<td>3504-1016</td>
<td>NA4 - 16</td>
<td>2 Gal</td>
<td>462</td>
<td>474</td>
<td>41%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3506-1008</td>
<td>NA6 - 8</td>
<td>1 Gal</td>
<td>231</td>
<td>273</td>
<td>15%</td>
<td>7</td>
<td>4%</td>
<td>¾</td>
<td>¾ - 18</td>
<td>1½</td>
<td>3506-0-40</td>
</tr>
<tr>
<td>3506-1012</td>
<td>NA6 - 12</td>
<td>1½ Gal</td>
<td>347</td>
<td>388</td>
<td>19%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3506-1016</td>
<td>NA6 - 16</td>
<td>2 Gal</td>
<td>462</td>
<td>503</td>
<td>23½%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
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</tr>
<tr>
<td>3506-1020</td>
<td>NA6 - 20</td>
<td>2½ Gal</td>
<td>578</td>
<td>619</td>
<td>27½%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3506-1032</td>
<td>NA6 - 32</td>
<td>4 Gal</td>
<td>924</td>
<td>965</td>
<td>39%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3506-1040</td>
<td>NA6 - 40</td>
<td>5 Gal</td>
<td>1155</td>
<td>1196</td>
<td>47%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3508-1040</td>
<td>NA8 - 40</td>
<td>5 Gal</td>
<td>1155</td>
<td>1226</td>
<td>33%</td>
<td>9½</td>
<td>5½</td>
<td>1</td>
<td>¾ - 16</td>
<td>2</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3508-1062</td>
<td>NA8 - 62</td>
<td>7½ Gal</td>
<td>1730</td>
<td>1801</td>
<td>44</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
<tr>
<td>3508-1080</td>
<td>NA8 - 80</td>
<td>10 Gal</td>
<td>2310</td>
<td>2381</td>
<td>55%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>¾</td>
<td>3508-0-40</td>
</tr>
</tbody>
</table>

* Available with SAE straight thread; O-Ring port at no additional cost.
NA SERIES PISTON-TYPE ACCUMULATORS

DESIGN FEATURES
Milwaukee Cylinder’s Series NA Piston-Type Accumulators are of a sturdy, compact, cylindrical design, built to provide dependable performance at long service life. Series NA features:

1. Honed steel barrel, welded to the hydraulic steel end cap.
2. Solid steel gas end cap, screwed in place for easy removal and seated with O-ring and back-up washer.
3. Lightweight, low inertia aluminum piston, reducing bounce, over travel, and shock when in operation.
4. Non-metallic wear rings provide piston to wall contact. Non-scoring, low frictional drag, these scarf cut rings also stop shock waves from reaching primary seal. The wear rings also provide a wiper type action, thus protecting the primary seal.
5. Proven O-ring balanced seal design with double back-up anti-extrusion rings.
6. Protected gas fill valve. This valve also incorporates a release valve for quick exhausting of the pre charge gas.

APPLICATION
Milwaukee Cylinder’s Series NA Piston-Type Accumulators have a wide range of applications such as:

- Cushioning peak loads
- Shock absorption
- Compensating for circuit leakage
- Maintaining constant loading on holding circuits
- Performing extremely fast cylinder cycles
- Reducing pump size and circuit horsepower
- A safety device—in case of pump failure—Hydraulic power is available to activate brakes or other locking devices.

Determination of the usable volume of oil obtained from a specific size Accumulator, under specific operating conditions, can be computed by using the formula $P_1V_1 = P_2V_2$ (Isothermal) where:

\[ P_1 = \text{absolute precharge pressure (Gauge + 14.7) psia} \]
\[ V_1 = \text{Initial gas volume cubic inch} \]
\[ V_2 = \text{Final gas volume cubic inch} \]
\[ P_2 = \text{Final pressure psia} \]

Compute $V_1$ volume for both maximum and minimum operating pressure, ($P_1$). Subtracting the $V_2$ volume from the Accumulator total gas volume will result in the Accumulator oil volumes at both operating pressure limits. The difference between the two resulting oil volumes, is the usable volume of Accumulator oil.

PART LIST
When ordering parts specify Model No., Part No., Description, Serial No. and Quantity.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accumulator Shell</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Piston</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Wear Ring</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>O-Ring (Piston)</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Backup Washer</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>O-Ring (End Cap)</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Backup Washer</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>End Cap</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Gas Valve</td>
<td>1</td>
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<tr>
<td>10</td>
<td>Bracket</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Cap Screws</td>
<td>2</td>
</tr>
</tbody>
</table>

EXAMPLE FOR NA 4-4
Gas Capacity: 128 cubic inches
Operating Pressure Range: 1500 to 2200 psi
Pre-charge Pressure: 800 psi

@ 2200 psi
\[ P_1V_1 = P_2V_2 \]
\[ 814.7 \times 128 = 2214.7 \times V_2 \]
\[ V_2 = 47.2 \text{ cu.in. gas} \]
\[ V_1 - V_2 = 81.2 \text{ cu.in. oil} \]

@ 1500 psi
\[ 814.7 \times 128 = 1514.7 \times V_2 \]
\[ V_2 = 68.5 \text{ cu.in. gas} \]
\[ V_1 - V_2 = 59.5 \text{ cu.in. oil} \]

Usable Oil Volume
\[ 81.2 - 59.5 = 21.7 \text{ cu.in.} \]
(Based on Isothermal performance)

SPECIAL UNITS
Milwaukee Cylinder can supply you an Accumulator to do your job.

Accumulators for:
1. Fire-resistant fluids
2. Water operation
3. High pressure
4. High and low temperature operation
5. Special flange mounts for direct connection to check valves or manifold mounts.

These are some of the special applications which are available. Contact your local Milwaukee Cylinder representative or the factory direct with your requirements.
MILWAUKEE CYLINDER offers:

- Specials / Custom Products
- Hydraulic Cylinders
- Low Pressure Hydraulic Cylinders
- Pneumatic Cylinders
- Aluminum Cylinders
- Hydraulic Pneumatic Devices
  - Pressure Boosters
  - Air Oil Tanks
  - Accumulators
- Cylinder Accessories
  - Linear Alignment Tools
  - Amlok® Rod Clamp
  - Spherical Rod Accessories
- Industrial Manipulators
- Power Units and Valves

Contact Milwaukee Cylinder for your application needs.