Air Preparation Units
Filters, Regulators, and Lubricators
Mist Lubricators
• Pipe Sizes 1/4 thru 1½ Inch
• Flows to 260 SCFM
• Pressures to 250 PSIG
Mist Air Lubricators are designed to provide lubrication for most general applications in a pneumatic system. Units should be installed close to the application ensuring effective distribution of oil to pneumatic components.

• Miniature 04L Series, 1/4 Inch
• Standard FL10 Stainless Series, 1/2 Inch
• Hi-Flow P3NL Series, 3/4, 1 and 1-1/2 Inch

Lubricator Selection
1. Determine maximum system flow requirements.
2. Determine maximum allowable pressure drop at rated flow in SCFM.
3. Refer to flow chart and select lubricator by choosing the curve that offers minimum pressure drop at desired flow in SCFM.

Once the required flow is determined for a pneumatic application the lubricator can be selected by using the flow chart. To read the lubricator flow chart, first determine the inlet pressure that will be used. Find the appropriate pressure curve on the graph. Each graph will contain three pressure curves. If the required inlet pressure is not on the graph, interpolate a similar curve for the required pressure. Next, determine the acceptable pressure drop across the lubricator and locate it on the vertical axis. Find the intersection point of the acceptable pressure drop and the inlet pressure curve. At this point follow a vertical path downward to view the flow in SCFM.

If the flow is too low, select a larger port size or body size to give the required flow. If the flow is higher than necessary, select a smaller port size or body size to give the required flow.

Reading Flow Charts to Size Mist Lubricators

F442 Oil

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Part Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Quart</td>
<td>F442001P</td>
</tr>
<tr>
<td>1 Gallon</td>
<td>F442002P</td>
</tr>
<tr>
<td>12 Quart Case</td>
<td>F442003P</td>
</tr>
<tr>
<td>4 Gallon Case</td>
<td>F442005P</td>
</tr>
</tbody>
</table>
Air flowing through the unit goes through two paths. At low air flow rates, the majority of the air flows through venturi section (A). The rest of the air slightly deflects and flows by the flapper (B). The velocity of the air flowing through venturi section (A) creates a pressure drop at throat section (C). This lower pressure allows oil to be forced from the reservoir through the pickup tube (D) past the check ball (E), to the dome assembly where the rate of oil flow is controlled by metering screw (F). Rotation of the metering screw (F) in the counterclockwise direction increases the oil flow rate; in the clockwise direction decreases the oil flow rate. Oil then flows through the clearance between inner and outer sight domes (G) where drops are formed and drip into the nozzle tube (H). On the 09L, oil flows through the drip tube (F) where drops are formed and drip into the throat section (C). Here it is then broken into fine particles and mixed with the swirling air to be carried to the venturi outlet where it joins the air by passing the flapper (B). As air flow rate increases, the flapper (B), deflects, allowing a greater part of the additional air to bypass the venturi section (A). This assures the oil delivery rate increases linearly with increased air flow rate. The check ball (E) assures that when there is no oil flow the oil in the pickup tube does not return to the reservoir.

The bowl can be filled under pressure due to the action of the check ball (J). When the fill cap is removed, air in the bowl escapes and pressure forces the check ball (J) to nearly seal at (K). When the fill cap is replaced, the small amount of air flow past check ball (J) builds up pressure and together with the spring forces the check ball (J) off seat (K), letting full line pressure into the bowl.
**04L Mist Lubricators – Miniature**

**Features**
- Proportional oil delivery over a wide range of air flows.
- Precision needle valve assures repeatable oil delivery and provides simple adjustment of delivery rate.
- Ideal for low and high flow applications with changing air flow.
- Transparent sight dome for 360° visibility.
- High Flow: 1/4" – 20 SCFM

<table>
<thead>
<tr>
<th>Port Size</th>
<th>NPT</th>
<th>04L10G*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poly Bowl ‡</td>
<td>Twist Drain</td>
<td>—</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>—</td>
<td>04L13G*</td>
</tr>
<tr>
<td>Metal Bowl without Sight Gauge</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>04L13G*</td>
<td>—</td>
</tr>
</tbody>
</table>

‡ For polycarbonate bowl and sight dome, see Caution on page 2.
§ SCFM = Standard cubic feet per minute at 90 PSIG inlet and 5 PSIG pressure drop.

**Ordering Information**

### Port Size

- 1 1/4 Inch

### Bowl Options

<table>
<thead>
<tr>
<th>Polycarbonate Bowl</th>
<th>Without Drain</th>
<th>Metal Bowl</th>
<th>Twist Drain</th>
</tr>
</thead>
</table>

### Body

- G Without Tamperproof Cap, No Fill Plug

### Engineering Level

- * Will be Entered at Factory

### Port Type

- Blank NPT

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* With Twist Drain.
**Technical Information**

### 04L Mist Lubricator Kits & Accessories

- **Bowl Kits**
  - Poly Bowl – No Drain ........................................... PS421P
  - Metal Bowl – Twist Drain (No Sight Gauge) .................. PS447BP
- **Mounting Bracket Kit** ........................................ PS419
- **Oil**
  - 1 Gal. ............................................................... F442002P
  - 12 Quart Case .................................................. F442003P
  - 4 Gallon Case .................................................. F442005P

### Specifications

- **Bowl Capacity** .................................................. 1 Ounce
- **Minimum Flow for Lubrication** .............................. 0.5 SCFM at 100 PSIG
- **Port Threads** .................................................... 1/4 Inch
- **Pressure & Temperature Ratings** –
  - Polycarbonate Bowl – 0 to 150 PSIG (0 to 10.3 bar) 32°F to 125°F (0°C to 52°C)
  - Metal Bowl – 0 to 250 PSIG (0 to 17.2 bar) 32°F to 175°F (0°C to 80°C)

### Suggested Lubricant
- Petroleum based oil of 100 to 200 SSU viscosity at 100°F and an aniline point greater than 200°F
- (DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

### Weight
- ................................................................. 0.4 lb. (0.18 kg)

### Materials of Construction

- **Body** ............................................................. Zinc
- **Bowls** – Transparent ........................................... Polycarbonate
  - Metal (Without Sight Gauge) .................................. Zinc
- **Drains** – Twist – Body & Nut ................................ Plastic
- **Seals** ............................................................ Nitrile
- **Sight Dome** .................................................. Polycarbonate
Features

• Stainless Steel Construction Handles Most Corrosive Environments
• 1/8" Female Threaded Drain
• Fillable Under Pressure
• Meets NACE Specifications MR-01-75/ISO 15156
• High Flow: 1/2" - 100 SCFM 

Optional Sight Gauge

<table>
<thead>
<tr>
<th>Port Size</th>
<th>NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>Metal Bowl Without Sight Gauge</td>
</tr>
<tr>
<td></td>
<td>FL10-04DSS</td>
</tr>
</tbody>
</table>

Standard part numbers shown bold. For other models refer to ordering information below.

<table>
<thead>
<tr>
<th>FL10 Lubricator Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>2.38 (60)</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>1.81 (46)</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>3.50 (89)</td>
</tr>
</tbody>
</table>

SCFM = Standard cubic feet per minute at 90 PSIG inlet and 5 PSIG pressure drop.

Ordering Information

<table>
<thead>
<tr>
<th>Port Type</th>
<th>Port Size</th>
<th>Bowl</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>- NPT</td>
<td>04 1/2 Inch</td>
<td>D Metal Bowl without Sight Gauge</td>
<td>SS Stainless Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W Metal Bowl with Sight Gauge</td>
<td></td>
</tr>
</tbody>
</table>
Operation

Air flowing through the unit goes through two paths. At low flow rates the majority of the air flows through the Venturi section (A). The rest of the air opens the check valve (C). The velocity of the air flowing through the Venturi section (A) creates a pressure drop. This lower pressure allows the oil to be forced from the reservoir through the pickup tube (B) and travels up to the metering screw (D). The rate of oil delivery is then controlled by adjusting the metering screw (D). Oil flows past the metering screw (D) and forms a drop in the nozzle tube (E). As the oil drops through the dome (F) and back into the Venturi section (A), it is broken up into fine particles. It is then mixed with the air flowing past the check valve (C) and is carried downstream. As the air flow increases the check valve (C) will open more fully. This additional flow will assure that the oil delivery rate will increase linearly with the increase of air flow.

Technical Information

FL10 Lubricator Kits & Accessories

<table>
<thead>
<tr>
<th>Drain Kit – Manual Twist Drain</th>
<th>SA600Y7-1SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Nipple – 1/2” 316 Stainless Steel</td>
<td>616A28-SS</td>
</tr>
<tr>
<td>Sight Dome Kit</td>
<td>RKL10SS</td>
</tr>
</tbody>
</table>

Specifications

| Bowl Capacity | 4.0 Ounces |
| Port Threads | 1/2 Inch |

Pressure & Temperature Ratings –
- Metal Bowl (D): 300 PSIG Max (20.7 bar)
  - 0°F to 150°F (-18°C to 66°C) Auto Drain Ratings
- Metal Bowl (W): 0 to 250 PSIG (0 to 17.2 bar)
  - 0°F to 150°F (-18°C to 66°C)

Note: Air must be dry enough to avoid ice formation at temperatures below 32°F (2°C).

Weight ................................................................. 1.9 lb. (0.85 kg)

Materials of Construction

| Body | 316 Stainless Steel |
| Bowl | 316 Stainless Steel |
| Dip Tube | 316 Stainless Steel |
| Drain | 316 Stainless Steel |
| Fill Plug | 316 Stainless Steel |
| Seals | Fluorocarbon |
| Sight Dome | Nylon |
| Sight Gauge | Isoplast |
P3NL Mist Lubricators – Hi-Flow

Features
• Port blocks (PB) available to provide 1½” port extension to 1” ported bodies.
• Proportional oil delivery over a wide range of air flows.
• Bowl can be filled while air line is under pressure.
• Transparent sight dome for 360° visibility.
• High Flow: 3/4” – 240 SCFM§
  1” – 250 SCFM§
  1½” – 260 SCFM§

<table>
<thead>
<tr>
<th>Port Size</th>
<th>NPT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4”</td>
<td>P3NLA96LSN</td>
<td>Metal Bowl / Sight Gauge</td>
</tr>
<tr>
<td>1”</td>
<td>P3NLA98LSN</td>
<td>Metal Bowl / Sight Gauge</td>
</tr>
<tr>
<td>1½”</td>
<td>P3NLA9PLSN</td>
<td>Metal Bowl / Sight Dome</td>
</tr>
</tbody>
</table>

Port Size NPT

Port Size

Port Type

Design Level

Port Type

Port Size

Type

Bowl

Drain / Fill Device

Ordering Information

P3N L A 9 8 L S N

Note: 3/4” & 1 inch meet ISO 1179-1 Standard.
Technical Information

P3NL Lubricator Kits & Accessories
Adjustment Knob ..................................................... P04121
Bowl Kits –
  Metal Bowl – Sight Gauge / Twist Drain ................. P3NKA00BSM
  Metal Bowl – Sight Gauge / No Drain ....................... P3NKA00BSN
Bowl Latch Kit ....................................................... C11A33
Drain Kit – Twist Drain ............................................ PS512P
Fill Cap Kit ............................................................. P3NKA00PL
Sight Dome Kit – Polycarbonate ......................... PS740P
  Nylon ............................................................... PS740N
Sight Gauge Kit ...................................................... P3NKA00PE
Pressure Fill Adapter Kit ........................................ P3NKA00PK
Service Kit .......................................................... P3NKA00RL
Mounting Bracket Kit* ........................................... P3NKA00MW
Oil –
  1 Gal. ................................................................. F442002P
  12 Quart Case .................................................. F442003P
  4 Gallon Case ................................................ F442005P

Specifications
Bowl Capacity ....................................................... 18.0 Ounces
Minimum Flow for Lubrication ......................... 6.6 SCFM at 100 PSIG
Pressure & Temperature Rating ............. 0 to 250 PSIG (0 to 17.2 bar)
  32°F to 175°F (0°C to 80°C)
Suggested Lubricant .............................................. F442 Oil
  Petroleum based oil of 100 to 200 SSU viscosity
  at 100°F and an aniline point greater than 200°F
  (DO NOT USE OILS WITH ADDITIVES,
  COMPOUNDED OILS CONTAINING SOLVENTS,
  GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)
Weight –
  3/4 Inch ........................................................... 3.5 lb. (1.6 kg)
  1 Inch ............................................................ 3.5 lb. (1.6 kg)
  1-1/2 Inch† ...................................................... 4.6 lb. (2.1 kg)

Materials of Construction
Body, Bowl ......................................................... Aluminum
Drains: Twist Drain (Optional) ......................... Plastic
Injector Meter Block & Base Assembly ................... Plastic
Seals ................................................................. Nitrile
Sight Dome ........................................................ Polycarbonate
Sight Gauge ...................................................... Polyamide (Nylon)
† 1" Port Body with 1-1/2" Port Block.