

# Lincoln Centro-Matic automatic lubrication systems



**LINCOLN**

# People, capabilities and systems to save money and increase productivity

We're the largest and most successful company in our field because we continually satisfy our customers with the world's best lubrication and pumping systems. For more than a century, companies have relied on our technical and quality leadership, our world-class manufacturing and customer service, and our vast network of distributors and support facilities.

Lincoln develops new products and systems at research and development facilities in the U.S., Germany and India that provide global and regional application solutions.

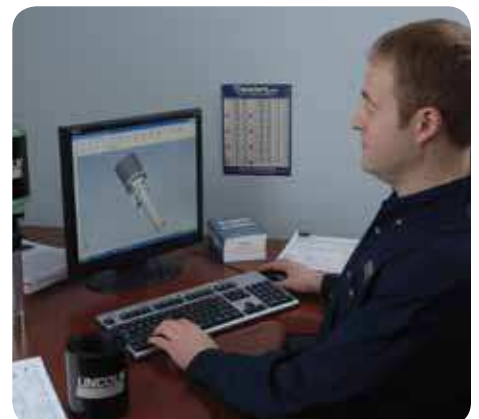
We have solutions for large processing plants, automotive manufacturing, pulp and paper mills, and food and beverage facilities. Virtually every industrial professional involved in operations and maintenance can benefit from Lincoln systems.

On the road or in the field, Lincoln protects heavy equipment used in mining, construction, agriculture and over-the-road trucking. The world's leading manufacturers offer our systems as standard equipment or factory options.

Lincoln builds precision metal components, state-of-the-art electronic controls, and the industry's top-performing pump systems. Our quality systems in the United States and Germany are ISO 9001 registered.

With five technical support centers on three continents, and a network of systems houses and distributors supported by regional sales and service offices, our customers can always draw on our worldwide resources.

To make sure your investment results in significant savings, Lincoln developed a unique program called Bearing Aver®. You not only get a complete audit of your facility, you also receive an analysis of your return on investment.



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# Centro-Matic® Automatic Lubrication Systems

## Introduction



Lincoln Centro-Matic® systems and components are made to match your application. Systems can service one machine, different zones on one machine or even several separate machines. Regardless of the application, the principle of centralized lubrication remains the same: a central pump station automatically delivers lubricant through a single supply line to the injectors. Each injector serves only one lubrication point and may be accurately adjusted to deliver the precise amount of grease or oil required. Centro-Matic systems give you multiple advantages over other designs.

### Simplicity

Systems are easy to understand, install and maintain. You realize savings right from the start because one lubricant supply line means lower installation costs.

### Powerful Pumping Unit

Centro-Matic systems dispense either grease or oil in measured quantities, unaffected by normal temperature or viscosity changes. For large systems, Lincoln's single-line design and powerful pumps mean injectors can be located long distances from original refinery containers or bulk lubricant tanks.

### External Adjustment

Lubricant injectors are externally adjustable without special tools so each bearing can receive the correct amount of lubricant. No under- or over-lubrication at individual points.

### Visual Indicators

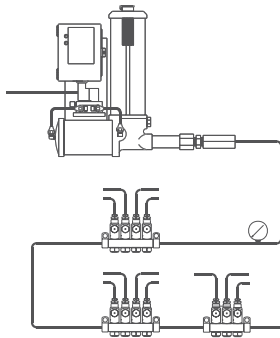
Each injector incorporates an indicator pin that gives visual confirmation the injector is operating correctly. When necessary, troubleshooting is the simple process of checking indicator pins.

### Ease of Service

When injectors finally need service, the job is quick and easy. No need to remove supply line connections or disturb adjacent injectors. Replacement can usually be done between lubrication cycles, so there's almost no lubricant loss or downtime.

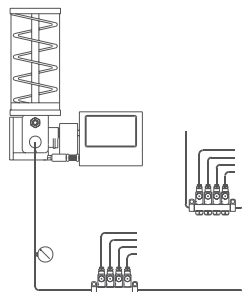
### Parts and Service

You're never far from a Lincoln authorized distributor. Qualified distributors offer design engineering, startup help and training for your personnel in the use and maintenance of Centro-Matic systems. They'll back you up with parts and service for years after the sale.



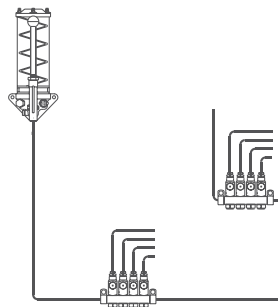
#### Air-Operated

Actuated automatically by compressed air at various pre-determined intervals. An air-operated pump delivers lubricant to the injectors. When all injectors have cycled, the pump shuts off automatically and vents lubricant pressure. Available with automatic, manual or mechanical controls.



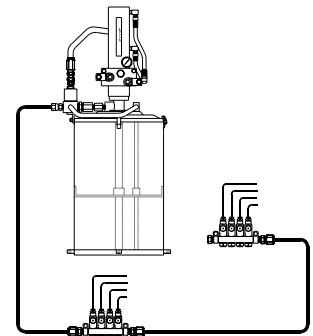
#### Electric

Used where compressed air is not available, or electrical operation is preferred. Totally enclosed motor supplies the power requirements of the pumping mechanism. Time control is adjustable to provide predetermined frequency of lubrication.



#### Manual

Designed for smaller, individual machines, manual systems provide a low-cost, efficient method of distributing lubricant to the injectors. Cycling a complete bank of injectors takes only a few seconds. In manually operated systems, the lubricant pump is hand-operated and the machine operator performs the lubrication intervals.

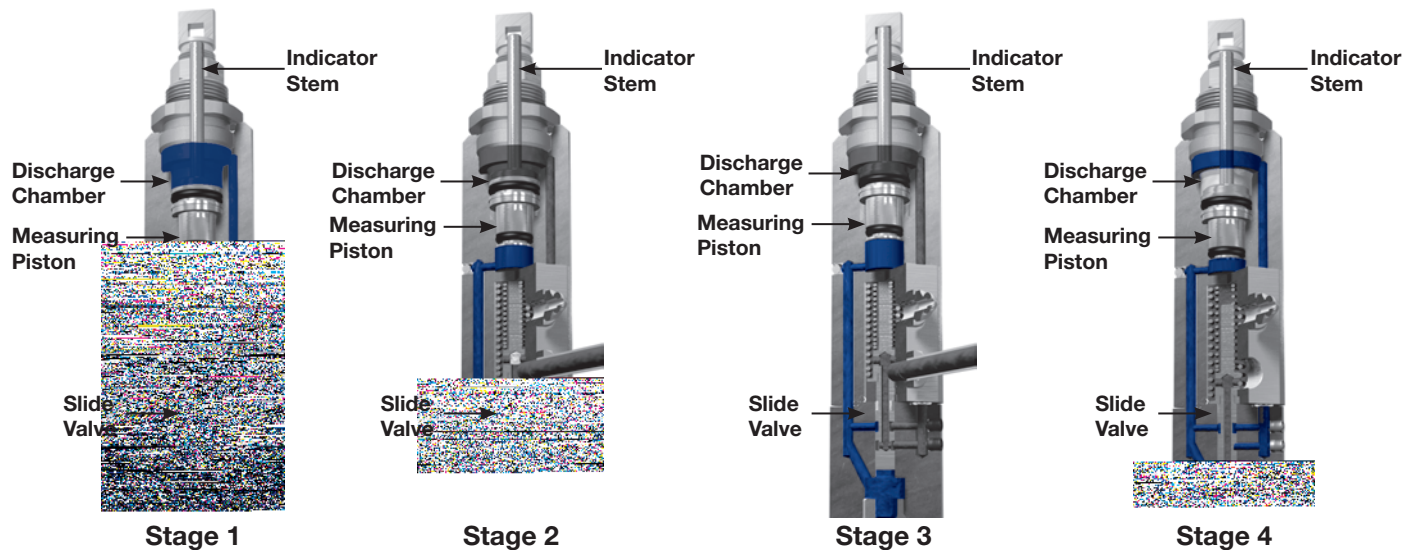


#### Hydraulic

A complete hydraulically-powered pumping unit for centralized lubrication of individual machines. Usually installed on machinery such as coal mining and earth moving equipment which utilize a hydraulic pressure system. The frequency of the lubrication cycle can be set manually or by mechanical or automatic controls.

### Basic Operating Principles of Centro-Matic® Injectors

Each Lincoln Centro-Matic injector can be manually adjusted to discharge the precise amount of lubricant each bearing needs. Injectors are mounted singly at each bearing, or grouped in a manifold with feedlines supplying lubricant to the bearings. In each case, injectors are supplied with lubricant under pump pressure through a single supply line. Two injector types are available: a top adjusting and a side adjusting. Both types can be used in the same circuit; their selection is made on the basis of bearing lubricant requirements.



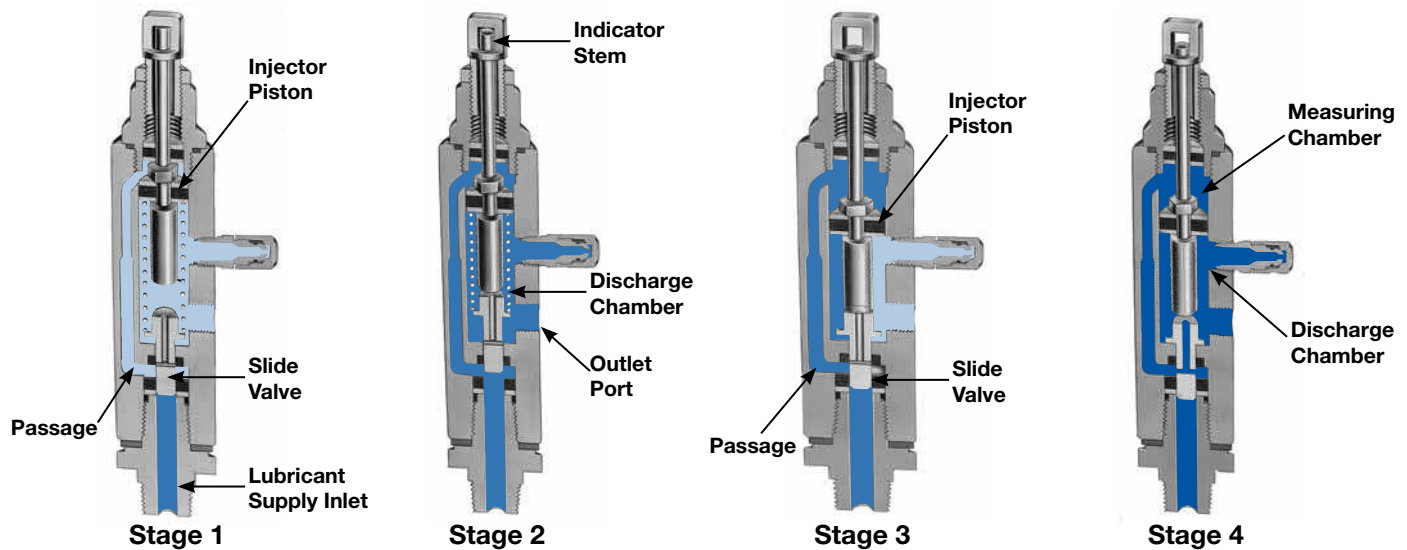
### SL-V, SL-V XL

**Stage 1**—The discharge chamber is filled with lubricant from the previous cycle. Under pressure of incoming lubricant, lubricant is directed to both sides of the measuring piston through the slide valve. The port to the bearing is closed in this position which prevents the measuring piston from moving. The indicator stem will be at its innermost position, having pulled away from the stop in the adjusting screw.

**Stage 2**—Pressure has built up and has moved the slide valve in position shown. This closes the flow passage to the upper side of the piston (larger diameter) while simultaneously opening the port to allow lubricant to flow out of the injector to the bearing. Pressure from the supply line continues to apply pressure to the lower portion of the measuring piston, which causes a pressure difference across the measuring piston thus allowing it to move upward.

**Stage 3**—Movement of the measuring piston is shown caused by the pressure on the lower side of the measuring piston dispensing lubricant out to the bearing. The indicator stem will move up against the stop in the adjusting screw when all lubricant has been delivered to the bearing.

**Stage 4**—As the pressure in the supply line is vented down to 1,000 psi, the slide valve moves back to its rest position. Flow of lubricant to the bearing is closed and simultaneously allows lubricant to flow to the upper (larger diameter) of the piston. The displacement of fluid on the lower side of the measuring chamber is also allowed by the slide valve to flow to the upper side of the piston. The injector is recharged by the residual pressure in the supply line to the upper portion of the measuring chamber.



### SL-1, -11, -41, -44

**Stage 1**—The injector piston is in its normal, or rest position. The discharge chamber is filled with lubricant from the previous cycle. Under the pressure of incoming lubricant, the slide valve is about to open the passage leading to the piston.

**Stage 2**—When the slide valve uncovers the passage, lubricant is admitted to the top of the piston, forcing the piston down. The piston forces lubricant from the discharge chamber through the outlet port to the bearing.

**Stage 3**—As the piston completes its stroke, it pushes the slide valve past the passage, cutting off further admission of lubricant to the passage. Piston and slide valve remain in this position until lubricant pressure in the supply line is vented (relieved) at the pump.

**Stage 4**—After pressure is relieved, the compressed spring moves the slide valve to the closed position. This opens the port from the measuring chamber and permits the lubricant to be transferred from the top of the piston to the discharge chamber.

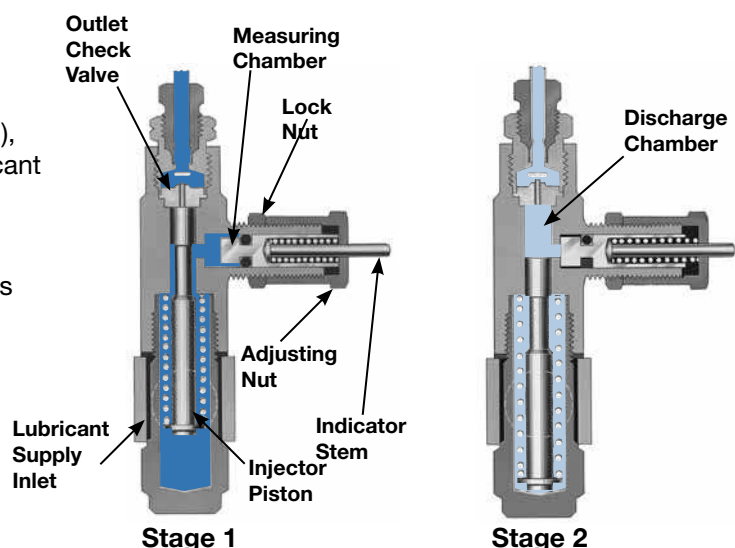
### SL-32, -33, -42, -43

**Stage 1**—Incoming lubricant, under pressure from the supply line, moves the injector piston forward. The piston forces a pre-charge of lubricant from the discharge chamber through the outlet check valve to the feed line.

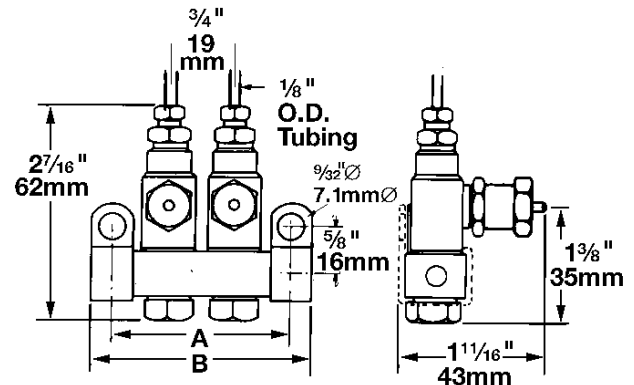
**Stage 2**—When the system is vented (pressure relieved), the piston returns to the rest position, transferring lubricant from the measuring chamber to the discharge chamber.

**Applications**—When it comes to eliminating costly, manual point-by-point lubrication, Centro-Matic systems have proven to be the right solution for many industries and applications. Examples include:

- Paper Converting
- Plastic Processing
- Wood Processing
- Printing
- Packaging
- Textile
- Food & Beverage
- Metalworking
- Material Handling Equipment



### Series SL-33



- For single-line, high-pressure central lubrication system.
- For dispensing petroleum-based lubricants with a viscosity up to NLGI No. 2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of Injectors SL-32, SL-V, SL-V XL, SL-1 and/or SL-11.
- Individual injectors can be easily removed for inspection or replacement.
- Available in stainless steel SAE 304, for application where environmental conditions are hazardous to carbon steel or in industries preferring stainless steel.

### Specifications:

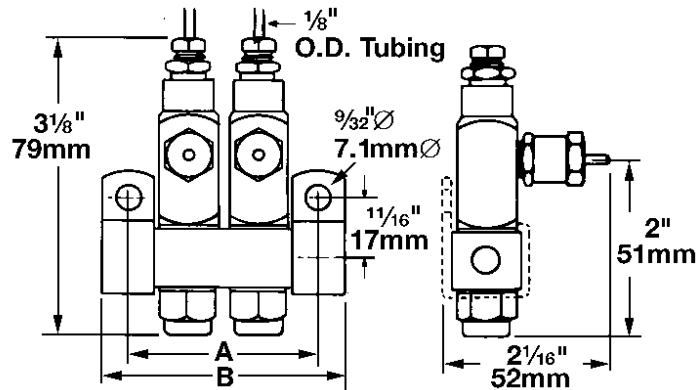
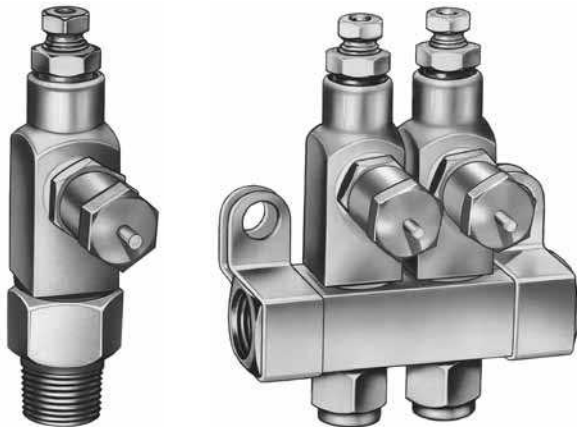
| Series | Output                  |                         | Operating Pressure  |                      |                      |                    |
|--------|-------------------------|-------------------------|---------------------|----------------------|----------------------|--------------------|
|        | Min.                    | Max.                    | Min.                | Max.                 | Typical              | Vent               |
| SL-33  | .001 cu. in.<br>.016 cc | .003 cu. in.<br>.049 cc | 1200 psig<br>83 bar | 3500 psig<br>241 bar | 1500 psig<br>103 bar | 200 psig<br>14 bar |

| Model        |                       | Number of Outlets | Connections    |                 | Dimensions                  |      |       |      |
|--------------|-----------------------|-------------------|----------------|-----------------|-----------------------------|------|-------|------|
| Carbon Steel | Stainless Steel (304) |                   | Manifold Inlet | Injector Outlet | A in.                       | A mm | B in. | B mm |
| 83309-1      | 83715-1               | 1                 | 1/8" NPTF (F)  | 1/8" O.D. Tube  | 1 1/8                       | 29   | 1 1/8 | 41   |
| 83309-2      | 83715-2               | 2                 |                |                 | 1 3/8                       | 48   | 2 1/8 | 60   |
| 83309-3      | 83715-3               | 3                 |                |                 | 2 1/8                       | 67   | 3 1/8 | 79   |
| 83309-4      | 83715-4               | 4                 |                |                 | 3 1/8                       | 86   | 3 3/8 | 98   |
| 83309-5      | —                     | 5                 |                |                 | 4 1/8                       | 105  | 4 3/8 | 117  |
| 83309-6      | 83715-6               | 6                 |                |                 | 4 3/8                       | 124  | 5 1/8 | 137  |
| —            | 83715-7               | 7                 |                |                 | 5 1/8                       | 143  | 6 1/8 | 156  |
| 83900        | 83900-9               | 1                 | 1/8" NPTF (M)  |                 | Single Injector/No Manifold |      |       |      |
| 83314        | 83314-9               | —                 | —              |                 | Single Replacement Injector |      |       |      |

#### Notes:

1. Injectors, except replacement injectors for manifold, include compression nut and ferrule for tubing — 1/8" O.D. as standard. Other outlet connectors for feed line optional.
2. Injectors with manifolds include two mounting clips and screws.
3. Injectors have Nitrile packings (200°F max. / 93°C). Check packing compatibility with synthetic lubricants.
4. Output with indicator cap hand-tightened is .001 cu. in. Maximum output is achieved with two turns at .001 cu. in./turn.

### Series SL-32



- For single-line, high-pressure central lubrication system.
- For dispensing petroleum-based lubricants with a viscosity up to NLGI No.2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-33, SL-V, SL-V XL, SL-1 and/or SL-11.
- Individual injectors can be easily removed for inspection or replacement.
- Available in stainless steel SAE 304, for application where environmental conditions are hazardous to carbon steel or in industries preferring stainless steel.

### Specifications:

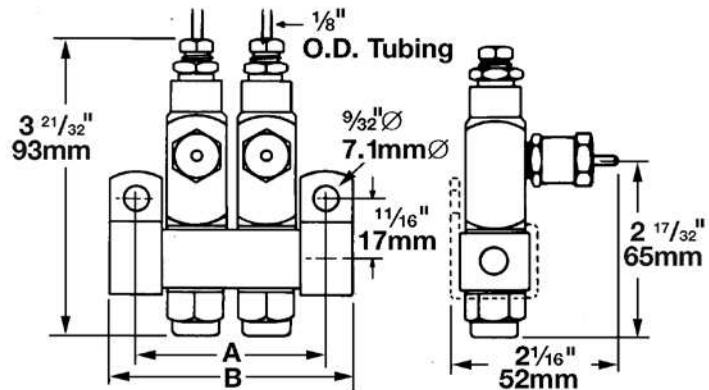
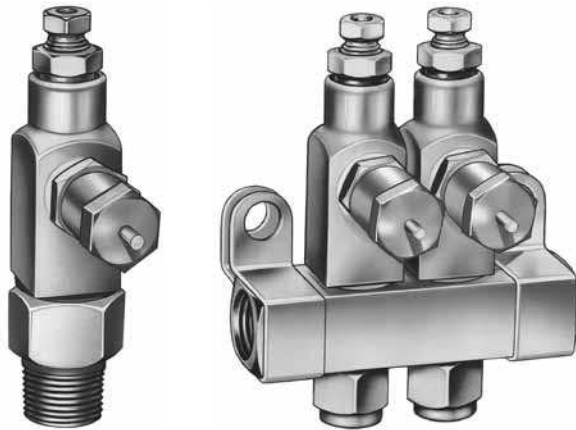
| Series | Output                  |                         | Operating Pressure  |                      |                      |                    |
|--------|-------------------------|-------------------------|---------------------|----------------------|----------------------|--------------------|
|        | Min.                    | Max.                    | Min.                | Max.                 | Typical              | Vent               |
| SL-32  | .001 cu. in.<br>.016 cc | .008 cu. in.<br>.131 cc | 1200 psig<br>83 bar | 3500 psig<br>241 bar | 1500 psig<br>103 bar | 200 psig<br>14 bar |

| Model        |                       | Number of Outlets | Connections    |                 | Dimensions                  |      |       |      |
|--------------|-----------------------|-------------------|----------------|-----------------|-----------------------------|------|-------|------|
| Carbon Steel | Stainless Steel (304) |                   | Manifold Inlet | Injector Outlet | A in.                       | A mm | B in. | B mm |
| 83336-1      | 83724-1               | 1                 | 1/4" NPTF (F)  | 1/8" O.D. Tube  | 1 1/4                       | 32   | 1 3/4 | 44   |
| 83336-2      | 83724-2               | 2                 |                |                 | 2                           | 51   | 2 1/2 | 63   |
| 83336-3      | 83724-3               | 3                 |                |                 | 2 3/4                       | 70   | 3 1/4 | 82   |
| 83336-4      | 83724-4               | 4                 |                |                 | 3 1/2                       | 89   | 4     | 101  |
| 83338        | —                     | 1                 | 1/4" NPTF (M)  |                 | Single Injector/No Manifold |      |       |      |
| 83337        | 83337-9               | —                 | —              |                 | Single Replacement Injector |      |       |      |

#### Notes:

1. Injectors, except replacement injectors for manifold, include compression nut and ferrule for tubing — 1/8" O.D. as standard.  
Other outlet connectors for feed line optional.
2. Injectors with manifolds include two mounting clips and screws.
3. Injectors have Nitrile packings (200°F max. / 93°C). Check packing compatibility with synthetic lubricants.
4. Output with indicator cap hand-tightened is .001 cu. in. Maximum output is achieved with five turns at .0014 cu. in./turn.

### Series SL-32HV High Venting - NEW



- For single-line, high-pressure central lubrication system.
- For dispensing petroleum-based lubricants with a viscosity up to NLGI No.2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-33, SL-V, SL-V XL, SL-1 and/or SL-11.
- Individual injectors can be easily removed for inspection or replacement.

### Specifications:

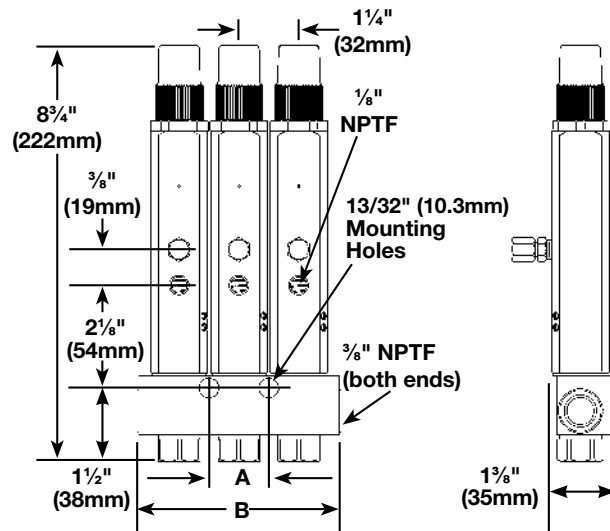
| Series  | Output                  |                         | Operating Pressure  |                      |                      |                    |
|---------|-------------------------|-------------------------|---------------------|----------------------|----------------------|--------------------|
|         | Min.                    | Max.                    | Min.                | Max.                 | Typical              | Vent               |
| SL-32HV | .001 cu. in.<br>.016 cc | .008 cu. in.<br>.131 cc | 1200 psig<br>83 bar | 3500 psig<br>241 bar | 1500 psig<br>103 bar | 400 psig<br>28 bar |

| Model        | Number of Outlets | Connections    |                 | Dimensions                  |      |       |      |
|--------------|-------------------|----------------|-----------------|-----------------------------|------|-------|------|
| Carbon Steel |                   | Manifold Inlet | Injector Outlet | A in.                       | A mm | B in. | B mm |
| 83336HV-1    | 1                 | 1/4" NPTF (F)  | 1/8" O.D. Tube  | 1 1/4                       | 32   | 1 3/4 | 44   |
| 83336HV-2    | 2                 |                |                 | 2                           | 51   | 2 1/2 | 63   |
| 83336HV-3    | 3                 |                |                 | 2 3/4                       | 70   | 3 1/4 | 82   |
| 83336HV-4    | 4                 |                |                 | 3 1/2                       | 89   | 4     | 101  |
| 83336HV-5    | 5                 |                |                 | 4 1/4                       | 108  | 4 3/4 | 120  |
| 83336HV-6    | 6                 |                |                 | 5                           | 127  | 5 1/2 | 139  |
| 83336HV-7    | 7                 |                |                 | 5 3/4                       | 146  | 6 1/4 | 158  |
| 83336HV-8    | 8                 |                |                 | 6 1/2                       | 165  | 7     | 177  |
| 83336HV-9    | 9                 |                |                 | 7 1/4                       | 184  | 7 3/4 | 196  |
| 83336HV-10   | 10                |                |                 | 8                           | 203  | 8 1/2 | 215  |
| 83338HV      | 1                 | 1/4" NPTF (M)  | 1/8" O.D. Tube  | Single Injector/No Manifold |      |       |      |
| 83337HV      | —                 | —              |                 | Single Replacement Injector |      |       |      |

#### Notes:

1. Injectors, except replacement injectors for manifold, include compression nut and ferrule for tubing — 1/8" O.D. as standard. Other outlet connectors for feed line optional.
2. Injectors with manifolds include two mounting clips and screws.
3. Injectors have Nitrile packings (200°F max. / 93°C). Check packing compatibility with synthetic lubricants.
4. Output with indicator cap hand-tightened is .001 cu. in. Maximum output is achieved with five turns at .0014 cu. in./turn.

### Series SL-V



- For single-line, high-pressure central lubrication system.
- For dispensing lubricants compatible with polyurethane seals up to NLGI No. 2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-32, SL-33, SL-1, SL-V XL and/or SL-11.
- Individual injectors can be easily removed for inspection or replacement.
- Each SL-V injector includes a clear polycarbonate protective cap.

### Specifications:

| Series | Material     | Output                   |                         | Operating Pressure   |                      |                      |                     | Connections    |                 |
|--------|--------------|--------------------------|-------------------------|----------------------|----------------------|----------------------|---------------------|----------------|-----------------|
|        |              | Min.                     | Max.                    | Min.                 | Max.                 | Typical              | Vent                | Manifold Inlet | Injector Outlet |
| SL-V   | Carbon Steel | 0.015 cu. in.<br>0.25 cc | 0.08 cu. in.<br>1.31 cc | 1850 psig<br>128 bar | 6000 psig<br>413 bar | 2500 psig<br>172 bar | 1000 psig<br>60 bar | 3/8" NPTF (F)  | 1/8" NPTF (F)   |

| Model   | Type                                             | Number of Outlets | Dimension            |      |       |      |
|---------|--------------------------------------------------|-------------------|----------------------|------|-------|------|
|         |                                                  |                   | A in.                | A mm | B in. | B mm |
| 85770-1 | One Injector Manifold                            | 1                 | Single Mounting Hole |      | 2 1/2 | 63   |
| 85770-2 | Two Injector Manifold                            | 2                 |                      |      | 3     | 76   |
| 85770-3 | Three Injector Manifold                          | 3                 | 1 1/4                | 32   | 4 1/4 | 108  |
| 85770-4 | Four Injector Manifold                           | 4                 | 2                    | 63   | 5 1/2 | 140  |
| 85770-5 | Five Injector Manifold                           | 5                 | 3 3/4                | 95   | 6 3/4 | 171  |
| 85770-6 | Six Injector Manifold                            | 6                 | 5                    | 127  | 8     | 203  |
| 85771   | Replacement for manifold injectors               |                   |                      |      |       |      |
| 85772   | Single injector/no manifold (3/8" NPTF(M) inlet) |                   |                      |      |       |      |

#### Notes:

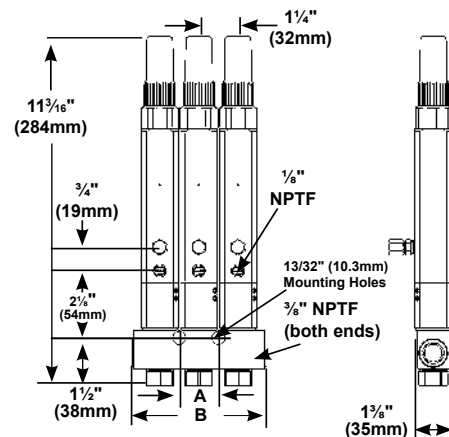
1. Injector manifolds have 13/32" (10.3 mm) dia. mounting holes for 3/8" bolt.
2. Injectors have polyurethane seals Check compatibility with synthetic lubricants.
3. Injector rated for 180°F (80°C) max. ambient temperature, depending on lubricant used.
4. Injectors include fitting for filling feedlines via alternate outlet port.
5. Output with adjustment screw hand-tightened is .015 cu. in. Maximum output is achieved with five turns at .014 cu. in./turn.

# Centro-Matic® Automatic Lubrication Systems

## Grease Injectors



### Series SL-V XL High-Output



- For single-line, high-pressure central lubrication system.
- For dispensing lubricants compatible with polyurethane seals up to NLGI No. 2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-32, SL-33, SL-1, SL-V and/or SL-11.
- Individual injectors can be easily removed for inspection or replacement.
- Two SL-V XL injectors are required to replace one SL-11 injector.
- Each SL-V XL injector includes a clear polycarbonate protective cap.

### Specifications:

| Series  | Material     | Output                   |                          | Operating Pressure   |                      |                      |                     | Connections    |                 |
|---------|--------------|--------------------------|--------------------------|----------------------|----------------------|----------------------|---------------------|----------------|-----------------|
|         |              | Min.                     | Max.                     | Min.                 | Max.                 | Typical              | Vent                | Manifold Inlet | Injector Outlet |
| SL-V XL | Carbon Steel | 0.015 cu. in.<br>0.25 cc | 0.305 cu. in.<br>5.00 cc | 1850 psig<br>128 bar | 6000 psig<br>413 bar | 2500 psig<br>172 bar | 1000 psig<br>69 bar | 3/8" NPTF (F)  | 1/8" NPTF (F)   |

| Model   | Type                                             | Number of Outlets | A in.                | A mm | B in. | B mm |
|---------|--------------------------------------------------|-------------------|----------------------|------|-------|------|
| 85780-1 | One Injector Manifold                            | 1                 | Single Mounting Hole |      | 2 1/2 | 63   |
| 85780-2 | Two Injector Manifold                            | 2                 |                      |      | 3     | 76   |
| 85780-3 | Three Injector Manifold                          | 3                 | 1 1/4                | 32   | 4 1/4 | 108  |
| 85780-4 | Four Injector Manifold                           | 4                 | 2 1/2                | 63   | 5 1/2 | 140  |
| 85780-5 | Five Injector Manifold                           | 5                 | 3 3/4                | 95   | 6 3/4 | 171  |
| 85780-6 | Six Injector Manifold                            | 6                 | 5                    | 127  | 8     | 203  |
| 85781   | Replacement for manifold injectors               |                   |                      |      |       |      |
| 85782   | Single injector/no manifold (3/8" NPTF(M) inlet) |                   |                      |      |       |      |

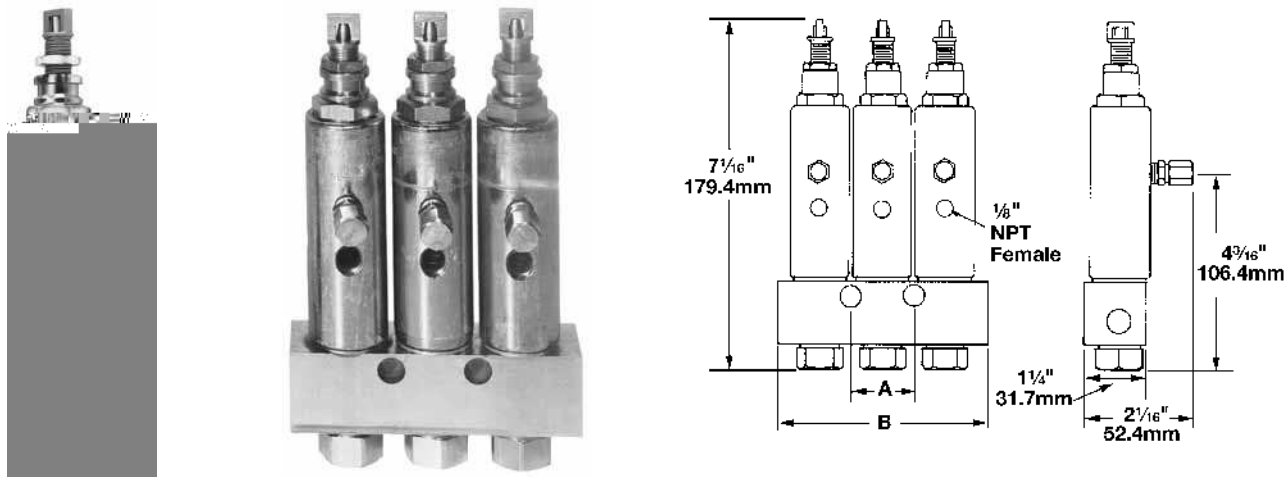
### Spectrum Adjustment Sleeves:

| Model Number<br>(10/bag only) | Output<br>in <sup>3</sup> (cc) | Ratio from<br>Maximum Output | Ratio from<br>Minimum Output | Sleeve<br>Color |
|-------------------------------|--------------------------------|------------------------------|------------------------------|-----------------|
| N/A                           | 0.015 (0.25)                   | 0.05                         | 1                            | NA              |
| 85785-1                       | 0.030 (0.50)                   | 0.10                         | 2                            | red             |
| 85785-2                       | 0.045 (0.75)                   | 0.15                         | 3                            | silver          |
| 85785-3                       | 0.060 (1.00)                   | 0.20                         | 4                            | gold            |
| 85785-4                       | 0.075 (1.25)                   | 0.25                         | 5                            | green           |
| 85785-5                       | 0.113 (1.88)                   | 0.37                         | 7.5                          | black           |
| 85785-6                       | 0.150 (2.50)                   | 0.50                         | 10                           | purple          |
| 85785-7                       | 0.188 (3.13)                   | 0.62                         | 12.5                         | blue            |
| 85785-8                       | 0.225 (3.75)                   | 0.75                         | 15                           | orange          |
| 85785-9                       | 0.263 (4.38)                   | 0.87                         | 17.5                         | brown           |
| 85785-10                      | 0.300 (5.00)                   | 1.00                         | 20                           | yellow          |

#### Notes:

1. Injector manifolds have 13/32" (10.3 mm) dia. mounting holes for 3/8" bolt.
2. Injectors have polyurethane seals. Check compatibility with synthetic lubricants.
3. Injector rated for 180°F (80°C) max. ambient temperature, depending on lubricant used.
4. Injectors include fitting for filling feedlines via alternate outlet port.
5. Output with adjustment screw handtightened is .015 cu. in. Maximum output is achieved with 20 1/2 turns at .014 cu. in./turn.

Series SL-1



- For single-line, high-pressure central lubrication system.
- For dispensing lubricants compatible with fluoroelastomer packings and viscosity up to NLGI No. 2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-32, SL-33, SL-V, SL-V XL and/or SL-11.
- Individual injectors can be easily removed for inspection or replacement.
- Available in stainless steel SAE 316, for application where environmental conditions are hazardous to carbon steel or in industries preferring stainless steel.

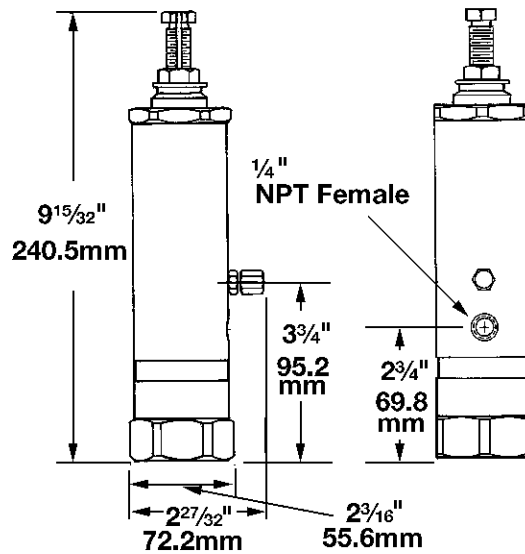
Specifications:

| Series | Output                  |                         | Operating Pressure   |                      |                      |                    | Connections    |                 |
|--------|-------------------------|-------------------------|----------------------|----------------------|----------------------|--------------------|----------------|-----------------|
|        | Min.                    | Max.                    | Min.                 | Max.                 | Typical              | Vent               | Manifold Inlet | Injector Outlet |
| SL-1   | .008 cu. in.<br>.131 cc | .080 cu. in.<br>1.31 cc | 1850 psig<br>127 bar | 3500 psig<br>241 bar | 2500 psig<br>172 bar | 600 psig<br>41 bar | 3/8" NPTF (F)  | 1/8" NPTF (F)   |
|        |                         |                         |                      |                      |                      |                    |                |                 |
|        |                         |                         |                      |                      |                      |                    |                |                 |
|        |                         |                         |                      |                      |                      |                    |                |                 |
|        |                         |                         |                      |                      |                      |                    |                |                 |
|        |                         |                         |                      |                      |                      |                    |                |                 |
|        |                         |                         |                      |                      |                      |                    |                |                 |
|        |                         |                         |                      |                      |                      |                    |                |                 |

\* For complete assembly, you must order stainless steel manifold and corresponding quantity of Model #84776 Injectors separately.

- Notes:
1. Injector manifolds have 13/32" (10.3mm) dia.mounting holes for 3/8" bolt.
  2. Injectors have fluoroelastomer packings. Check compatibility with synthetic lubricants.
  3. Injector rated for 350°F (176°C) max. ambient temperature, depending on lubricant used.
  4. Injectors include fitting for filling feedlines via alternate outlet port.
  5. Output with adjustment screw hand-tightened is .009 cu. in. Maximum output is achieved with eight turns at .009 cu. in./turn.

### Series SL-11



- For single-line, high-pressure central lubrication system.
- For dispensing lubricants compatible with fluoroelastomer packings and viscosity up to NLGI No. 2 (refer to Design Guide).
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-32, SL-33, SL-V, SL-V XL and/or SL-1.
- Available only as single unit with 1/2" NPTF Female inlet.

### Specifications:

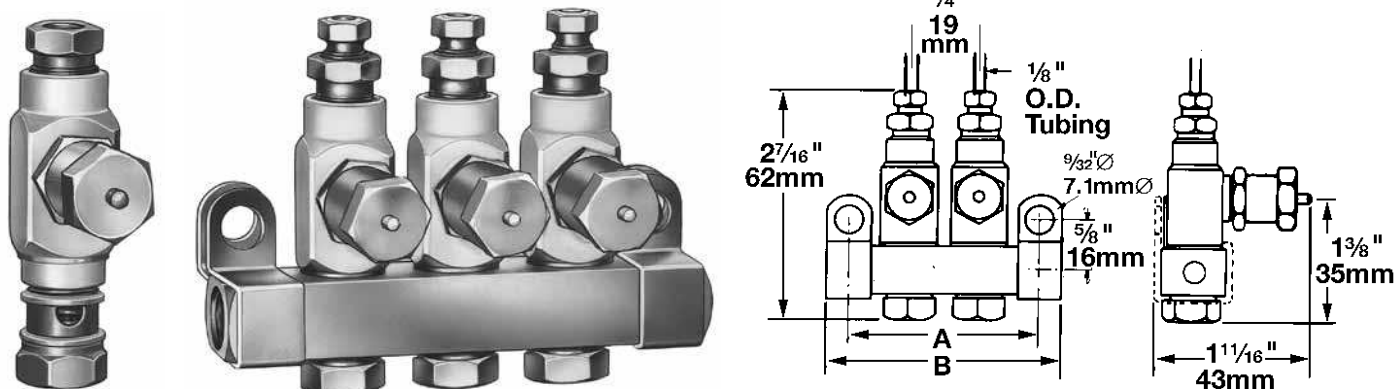
| Series | Output                 |                        | Operating Pressure  |                      |                      |                    |
|--------|------------------------|------------------------|---------------------|----------------------|----------------------|--------------------|
|        | Min.                   | Max.                   | Min.                | Max.                 | Typical              | Vent               |
| SL-11  | .050 cu. in.<br>.82 cc | .500 cu. in.<br>8.2 cc | 1000 psig<br>69 bar | 3500 psig<br>241 bar | 2500 psig<br>172 bar | 800 psig<br>55 bar |

| Carbon Steel | Number of Outlets | Connections   |               |
|--------------|-------------------|---------------|---------------|
|              |                   | Inlet         | Outlet        |
| 85497        | 1                 | 1/2" NPTF (F) | 1/4" NPTF (F) |

#### Notes:

1. Injectors have fluoroelastomer packings. Check packing compatibility with synthetic lubricants.
2. Injector rated for 350°F (176°C) max. ambient temperature.
3. Injectors supplied with fitting for filling feed line via alternate outlet port.
4. Output with adjustment screw hand-tightened is .05 cu. in. Maximum output is achieved with 11 1/2 turns at .040 cu. in./turn.

### Series SL-42



- For single-line central lubrication system.
- For dispensing fluid or semi-fluid lubricants.
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-43, SL-41 and/or SL-44.
- Individual injectors can be easily removed for inspection or replacement.
- Carbon steel injectors with Nitrile or flouroelastomer packings.
- Injectors with flouroelastomer packings are used for heat resistant applications or when lubricant to be dispensed requires flouroelastomer packings for compatibility (indicated by black adjustment caps).

### Specifications:

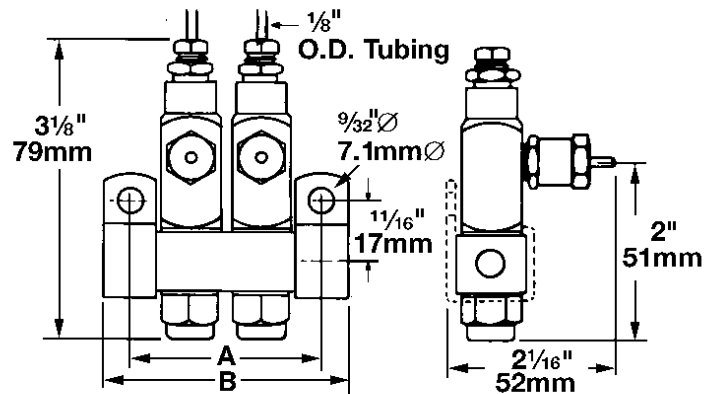
| Series | Output                  |                         | Operating Pressure |                     |                    |                    |
|--------|-------------------------|-------------------------|--------------------|---------------------|--------------------|--------------------|
|        | Min.                    | Max.                    | Min.               | Max.                | Typical            | Vent               |
| SL-42  | .001 cu. in.<br>.016 cc | .003 cu. in.<br>.049 cc | 750 psig<br>52 bar | 1000 psig<br>69 bar | 850 psig<br>59 bar | 150 psig<br>10 bar |

| Model    |                | Number of Outlets | Connections                 |                                 | Dimensions                         |         |          |         |
|----------|----------------|-------------------|-----------------------------|---------------------------------|------------------------------------|---------|----------|---------|
| Standard | Heat Resistant |                   | Manifold/<br>Injector Inlet | Injector<br>Outlet              | A<br>in.                           | A<br>mm | B<br>in. | B<br>mm |
| 83311-1  | 84428-1        | 1                 | 1/8" NPTF (F)               | 1/8" O.D.<br>Tube<br>Connection | 1 1/8                              | 29      | 1 1/8    | 41      |
| 83311-2  | 84428-2        | 2                 |                             |                                 | 1 1/8                              | 48      | 2 3/8    | 60      |
| 83311-3  | 84428-3        | 3                 |                             |                                 | 2 5/8                              | 67      | 3 1/8    | 79      |
| 83311-4  | 84428-4        | 4                 |                             |                                 | 3 3/8                              | 86      | 3 3/8    | 98      |
| 83311-5  | 84428-5        | 5                 |                             |                                 | 4 1/8                              | 105     | 4 5/8    | 117     |
| 83311-6  | 84428-6        | 6                 |                             |                                 | 4 7/8                              | 124     | 5 3/8    | 137     |
| 83311-10 | 84428-10       | 10                |                             |                                 | 7 7/8                              | 200     | 8 3/8    | 213     |
| 83311-15 | 84428-15       | 15                |                             |                                 | 11 7/8                             | 295     | 12 1/8   | 308     |
| 83535    | —              | 1                 | 1/8" NPTF (M)               |                                 | Single Injector/No Manifold        |         |          |         |
| 83313    | 84048          | —                 | —                           |                                 | Replacement for Manifold Injectors |         |          |         |

#### Notes:

1. Injectors, except replacement injectors for manifold, include compression nut and ferrule for tubing – 1/8" O.D. as standard.  
Other outlet connectors for feed line optional.
2. Injectors with manifolds include two mounting clips and screws.
3. Standard injectors have Nitrile packings (200°F/93°C max.); Heat Resistant injectors have flouroelastomer packings (350°F/176°C max., depending on lubricant used) and black adjusting cap. Check packing compatibility with synthetic lubricants.
4. Output with indicator cap hand-tightened is .001 cu. in. Maximum output is achieved with two turns at .001 cu. in./turn.

## Series SL-43



- For single-line central lubrication system.
- For dispensing fluids or semi-fluid lubricants.
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-42, SL-41 and/or SL-44.
- Individual injectors can be easily removed for inspection or replacement.
- Carbon steel injectors with Nitrile or flouroelastomer packings.
- Injectors with flouroelastomer packings are used for heat resistant applications or when lubricant to be dispensed requires flouroelastomer packings for compatibility (indicated by black adjustment caps).

## Specifications:

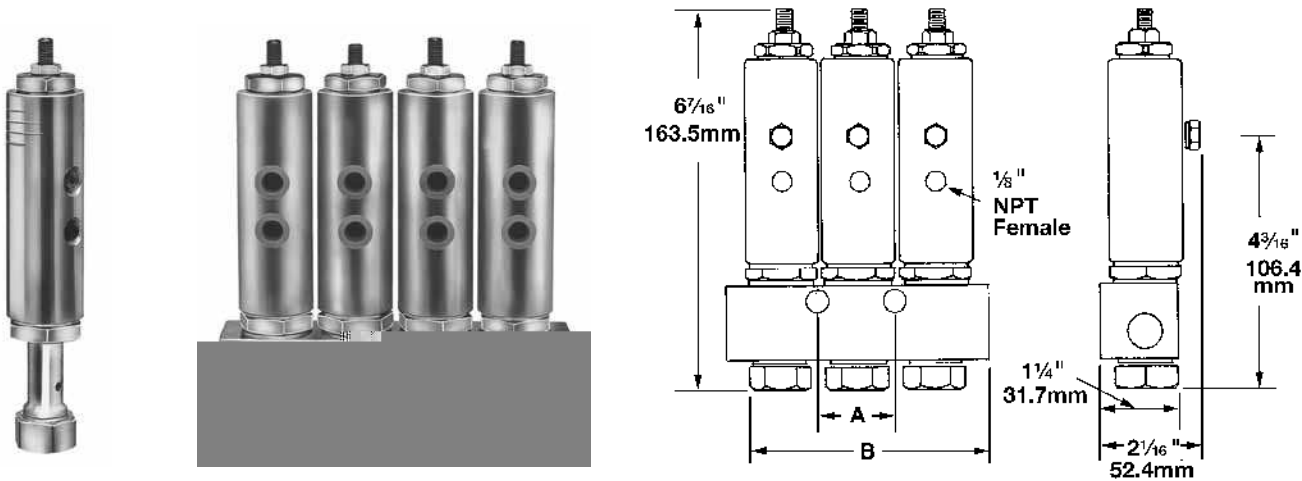
| Series | Output                  |                         | Operating Pressure |                     |                    |                    |
|--------|-------------------------|-------------------------|--------------------|---------------------|--------------------|--------------------|
|        | Min.                    | Max.                    | Min.               | Max.                | Typical            | Vent               |
| SL-43  | .001 cu. in.<br>.016 cc | .008 cu. in.<br>.131 cc | 750 psig<br>52 bar | 1000 psig<br>69 bar | 850 psig<br>59 bar | 150 psig<br>10 bar |

| Model        |                | Number of Outlets | Connections                 |                            | Dimensions                         |         |          |         |
|--------------|----------------|-------------------|-----------------------------|----------------------------|------------------------------------|---------|----------|---------|
| Carbon Steel |                |                   | Manifold/<br>Injector Inlet | Injector<br>Outlet         | A<br>in.                           | A<br>mm | B<br>in. | B<br>mm |
| Standard     | Heat Resistant |                   |                             |                            |                                    |         |          |         |
| 83661-1      | 84429-1        | 1                 | ¼" NPTF (F)                 | ⅝" O.D. Tube<br>Connection | 1¼                                 | 32      | 1¼       | 44      |
| 83661-2      | 84429-2        | 2                 |                             |                            | 2                                  | 51      | 2½       | 63      |
| 83661-3      | 84429-3        | 3                 |                             |                            | 2¾                                 | 70      | 3¼       | 83      |
| 83661-4      | 84429-4        | 4                 |                             |                            | 3½                                 | 89      | 4        | 102     |
| 83660        | 84110          | —                 | —                           |                            | Replacement for Manifold Injectors |         |          |         |

### Notes:

1. Injectors, except replacement injectors for manifold, include compression nut and ferrule for tubing – 1/8" O.D. as standard.  
Other outlet connectors for feed line optional.
2. Injectors with manifolds include two mounting clips and screws.
3. Standard injectors have Nitrile packings (200°F/93°C max.)
4. Heat Resistant injectors have flouroelastomer packings (350°F/176°C max. depending on lubricant used) and Black Adjusting Cap.
5. Check packing compatibility with synthetic lubricants.
6. Output with indicator cap hand-tightened is .001 cu. in. Maximum output is achieved with five turns at .0014 cu. in./turn.

## Series SL-41



- SL-41 series injectors are designed for use in high temperature applications up to 350°F (176°C), depending on lubricant.
- Available installed only in manifolds with 3/8" NPT female inlet.
- Injectors feature a tamper-resistant adjustment screw which does not incorporate a visual indicator.
- May be combined in a circuit of injectors SL-42, SL-43 and SL-44.

## Specifications:

| Series | Output                  |                         | Operating Pressure |                     |                    |                    |
|--------|-------------------------|-------------------------|--------------------|---------------------|--------------------|--------------------|
|        | Min.                    | Max.                    | Min.               | Max.                | Typical            | Vent               |
| SL-41  | .008 cu. in.<br>.131 cc | .080 cu. in.<br>1.31 cc | 750 psig<br>52 bar | 1000 psig<br>69 bar | 850 psig<br>59 bar | 150 psig<br>10 bar |

| Model        | Number of Outlets | Connections                                      |                    | Dimensions                         |                         |          |         |
|--------------|-------------------|--------------------------------------------------|--------------------|------------------------------------|-------------------------|----------|---------|
| Carbon Steel |                   | Manifold/<br>Injector Inlet                      | Injector<br>Outlet | A<br>in.                           | A<br>mm                 | B<br>in. | B<br>mm |
| 82294-1      | 1                 | ¾" NPTF (F)                                      | ⅛" NPTF (F)        | Single Hole<br>Mounting            | Single Hole<br>Mounting | 2½       | 63      |
| 82294-2      | 2                 |                                                  |                    |                                    |                         | 3        | 76      |
| 82294-3      | 3                 |                                                  |                    | 1¼                                 | 32                      | 4¼       | 108     |
| 82294-4      | 4                 |                                                  |                    | 2½                                 | 63                      | 5½       | 140     |
| 82294-5      | 5                 |                                                  |                    | 3¾                                 | 95                      | 6¾       | 171     |
| 82292        |                   | Single Injector/No Manifold, [¾" NPTF (M) Inlet] |                    |                                    |                         |          |         |
| 82295        | —                 | —                                                | ⅛" NPTF (F)        | Replacement for Manifold Injectors |                         |          |         |

### Notes:

1. Injector manifolds have 13/32" (10.3 mm) mounting holes for 3/8" bolt.
2. Output with adjustment screw hand-tightened is .008 cu. in. Maximum output is achieved with 12 turns at .006 cu. in./turn.

### Series SL-44



- For single-line central lubrication system.
- For dispensing fluid or semi-fluid lubricants.
- Output is externally adjustable.
- Indicator stem permits visual check of injector operation.
- May be combined in a circuit of injectors SL-43, SL-41 and/or SL-42.
- Individual injectors can be easily removed for inspection or replacement.
- Carbon steel injectors with flouroelastomer packings.

### Specifications:

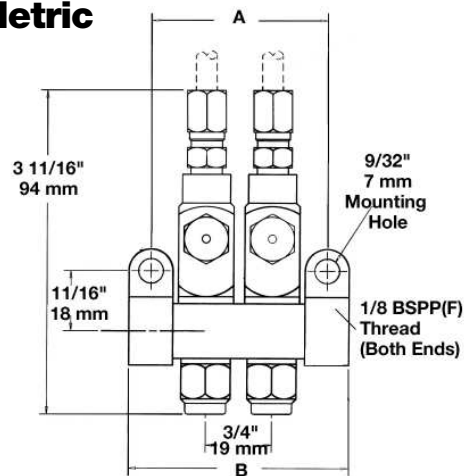
| Series | Output                  |                         | Operating Pressure |                     |                    |                    |
|--------|-------------------------|-------------------------|--------------------|---------------------|--------------------|--------------------|
|        | Min.                    | Max.                    | Min.               | Max.                | Typical            | Vent               |
| SL-44  | .008 cu. in.<br>.131 cc | .080 cu. in.<br>1.31 cc | 750 psig<br>52 bar | 1000 psig<br>69 bar | 850 psig<br>59 bar | 150 psig<br>10 bar |

| Model        | Number of Outlets | Connections    |                 | Dimensions           |      |       |      |
|--------------|-------------------|----------------|-----------------|----------------------|------|-------|------|
| Carbon Steel |                   | Manifold Inlet | Injector Outlet | A in.                | A mm | B in. | B mm |
| 83749-1      | 1                 | 3/8" NPTF (F)  | 1/8" NPTF (F)   | Single Hole Mounting |      | 2 1/2 | 63   |
| 83749-2      | 2                 |                |                 |                      |      | 3     | 76   |
| 83749-3      | 3                 |                |                 | 1 1/4                | 32   | 4 1/4 | 108  |
| 83749-4      | 4                 |                |                 |                      |      |       |      |
|              |                   |                |                 |                      |      |       |      |

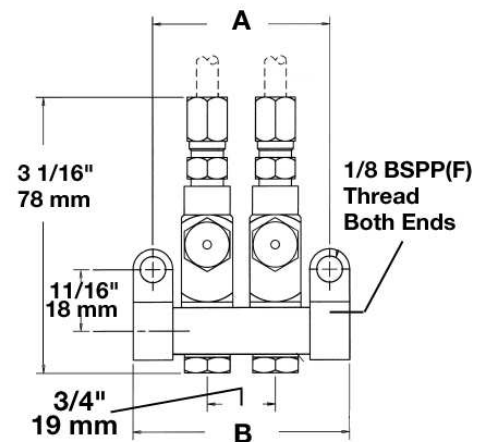
#### Notes:

1. Injector manifolds have 13/32" mounting holes for 3/8" bolt.
2. Injectors have flouroelastomer packings. Check packing compatibility with synthetic lubricants.
3. Injectors rated at 350°F (176°C) maximum ambient temperature, depending on lubricant used.
4. Output with adjustment screw hand-tightened is .009 cu. in. Maximum output is achieved with eight turns at .009 cu. in./turn.

### Series SL-32, 33 and 42 Metric



SL-32 Series



SL-33, 42 Series

With the same proven design as our U.S. standard injectors, the new metric versions of our popular small grease and oil injectors feature metric ports. Any surface that needs a wrench is metric. It's more convenient for customers in most of the world, and easier to maintain because there's no need for a second set of wrenches or adapters.

- Offered for international customers.
- Metric ports connect with metric lines without adapters.
- No need for a second set of tools.
- Proven design used in the United States.
- Models for both grease and oil.

### Specifications:

| Model        |                 |                 | Outlets | Connections |                                 | Dimensions |         |          |         |
|--------------|-----------------|-----------------|---------|-------------|---------------------------------|------------|---------|----------|---------|
| Oil<br>SL-42 | Grease<br>SL-33 | Grease<br>SL-32 |         | Inlet       | Outlet                          | A<br>in.   | A<br>mm | B<br>in. | B<br>mm |
| 85352-1      | 85351-1         |                 | 1       | 1/8 BSPP(F) | 6 mm<br>O.D. Tube<br>Connection | 1 1/8      | 29      | 1 1/8    | 41      |
| 85352-2      | 85351-2         |                 | 2       |             |                                 | 1 7/8      | 48      | 2 3/8    | 60      |
| 85352-3      | 85351-3         |                 | 3       |             |                                 | 2 5/8      | 67      | 3 1/8    | 79      |
| 85352-4      | 85351-4         |                 | 4       |             |                                 | 3 3/8      | 86      | 3 7/8    | 98      |
| 85352-5      | 85351-5         |                 | 5       |             |                                 | 4 1/8      | 105     | 4 5/8    | 118     |
| 85352-6      | 85351-6         |                 | 6       |             |                                 | 4 7/8      | 124     | 5 3/8    | 137     |
|              |                 | 85353-1         | 1       |             |                                 | 1 1/4      | 32      | 1 3/4    | 44      |
|              |                 | 85353-2         | 2       |             |                                 | 2          | 51      | 2 1/2    | 64      |
|              |                 | 85353-3         | 3       |             |                                 | 2 3/4      | 70      | 3 1/4    | 83      |
|              |                 | 85353-4         | 4       |             |                                 | 3 1/2      | 89      | 4        | 102     |



### Injector Connector Tube

Permits application of combined discharge of two or more Series SL-V, SL-1, SL-41 or SL-44 injectors through one feed line. Used where bearing size is such that multiple injector output is required. Fittings 1/8" NPT male each end. Carbon steel construction.

| Model  | For Injector Series              | Connections    |
|--------|----------------------------------|----------------|
| 81646  | SL-V, SL-V XL OR SL1, SL41, SL44 | 1/8" NPTF Male |
| 274824 | SL-1 to SL-V connection          | 1/8" NPTF Male |



### Injector Outlet Adapter

Converts individual injector lubricant outlet when standard 1/8" O.D. tube is not desired. All adapters are carbon steel unless otherwise noted.

| Model  | For Injector Series    | Outlet Connections |
|--------|------------------------|--------------------|
| 14988  | SL32, SL33, SL42, SL43 | 1/8" NPTF Female   |
| 84200  |                        | 1/4" O.D. Tube     |
| 14991  |                        | 1/8" NPTF Male     |
| 249281 |                        | 4 mm Tube          |
| 249282 |                        | 6 mm Tube          |



### Manual Grease Fitting Adapter

Allows manual lubrication of the machine between normal system cycles. Carbon steel with Nitrile seals.

| Model | For Injector Series    | Outlet Connections |
|-------|------------------------|--------------------|
| 84195 | SL32, SL33, SL42, SL43 | 1/8" O.D. Tube     |
| 84203 |                        | 1/4" O.D. Tube     |



### Injector Locking Cap

Carbon steel locking caps set injectors to fixed output.

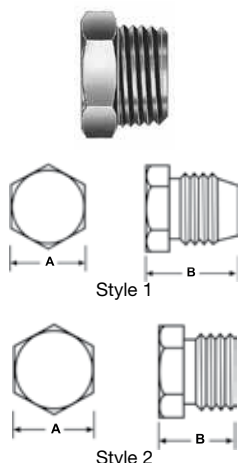
| Model  | For Injector Series | Fixed Volume Output |
|--------|---------------------|---------------------|
| 102781 | SL32, SL43          | .002 in³ / .033 cc  |
|        | SL33, SL42          | .003 in³ / .049 cc  |



### Injector Cover Caps

Injector cover caps are designed to protect the injector from dirt, harmful liquids and fumes.

| Model  | Fits Injector Series   | Covers            | Material      | Length |      | Diameter   |      |
|--------|------------------------|-------------------|---------------|--------|------|------------|------|
|        |                        |                   |               | in.    | mm   | in.        | mm   |
| 273088 | SL-V                   | Indicator Stem    | Polycarbonate | 1.5    | 38.1 | .715 (ID)  | 18.2 |
| 273089 | SL-V XL                |                   |               | 2.2    | 55.9 | .715 (ID)  | 18.2 |
| 83272  | SL1, SL44              |                   | Vinyl         | 1.5    | 38.1 | .69 (ID)   | 17.5 |
| 83730  | SL11                   |                   |               | 2.0    | 50.8 | 1.125 (ID) | 28.6 |
| 68483  | SL32, SL33, SL42, SL43 | Measuring Chamber | Aluminum      | 1.25   | 31.2 | .5 (ID)    | 12.7 |
| 90537  | SL1, SL41, SL44        | Injector Body     |               | 3.25   | 82.6 | 1.19 (ID)  | 30.2 |



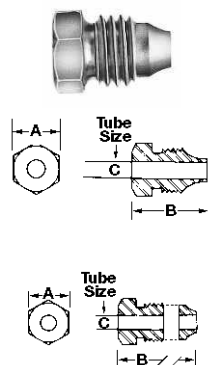
### Closure Plugs for Injectors and Manifolds

For use in plugging lubricant outlets of injectors and manifolds.

| Model     | Material        | Thread Size (in) | A in./mm    | B in./mm   | Style |
|-----------|-----------------|------------------|-------------|------------|-------|
| * 12698   | Carbon Steel    | 5⁄16-24          | 5⁄16 / 7.9  | 1⁄2 / 12.7 | 1     |
| * 12698-9 | Stainless Steel |                  |             |            | 2     |
| 12511     | Carbon Steel    | 1⁄8 PTF          | 7⁄16 / 11.1 |            |       |
| 12511-9   | Stainless Steel |                  |             | 3⁄8 NPT    |       |
| 67044     |                 |                  |             |            |       |
| 67007     |                 | 1⁄4 NPT          | 3⁄16 / 4.8  | 5⁄8 / 15.9 |       |
| 67007-9   |                 |                  |             |            |       |

\* For plugging outlet of series SL-32, SL-33, SL-42, SL-43 injectors.

### Compression Nuts



| Model   | Style     | Material        | Thread Size (in)   | A in./mm              | B in./mm             | C in./mm            |
|---------|-----------|-----------------|--------------------|-----------------------|----------------------|---------------------|
| 66260   | One Piece | Brass           | $\frac{5}{16}$ -24 | $\frac{5}{16}$ / 7.9  | $\frac{1}{2}$ / 12.7 | $\frac{1}{8}$ / 3.2 |
| 66260-9 |           | Stainless Steel |                    |                       |                      |                     |
| 83924   | Two Piece | Brass           |                    |                       |                      |                     |
| 83924-9 |           | Stainless Steel |                    |                       |                      |                     |
| 66713   | One Piece | Brass           | $\frac{7}{16}$ -24 | $\frac{7}{16}$ / 11.1 | $\frac{5}{8}$ / 15.9 | $\frac{1}{4}$ / 6.3 |

### Injector-Operated Air Valve

| Model | For Injector Series | Air Inlet               | Air Outlet              |
|-------|---------------------|-------------------------|-------------------------|
| 82272 | SL-1, SL-44         | $\frac{1}{8}$ " NPTF(F) | $\frac{1}{8}$ " NPTF(F) |

### Air Lubricant Spray Devices

| Model   | Use With Series        | Air Inlet (in)            | Lubricant Inlet (in)      | Spray Outlet   | Air Consumption                       |
|---------|------------------------|---------------------------|---------------------------|----------------|---------------------------------------|
| 68421   | SL1, SL44              | $\frac{1}{4}$ NPTF Female | $\frac{1}{4}$ NPTF Female | Fixed Nozzle   | 3.5 CFM @40 PSI<br>99 l/min @2.8 bar  |
| 69456   |                        |                           |                           | Swivel Nozzle  | 4.1 CFM @60 PSI<br>116 l/min @4.1 bar |
| * 68587 |                        |                           |                           | Bulkhead Mount | 5.2 CFM @80 PSI<br>147 l/min @5.5 bar |
| 84204   | SL32, SL33, SL42, SL43 | $\frac{1}{8}$ NPTF Female | $\frac{7}{16}$ - 24 Male  | Fixed Nozzle   | Throttle Controlled                   |

\*  $\frac{3}{16}$ " (4.8 mm) maximum bulkhead thickness.

### Metric Outlet Adapters

Adapts injector outlet to 4 or 6 mm tubing.

| Conversion Kit Model No. | Tubing Size | Material     | Nut    | Ferrule |
|--------------------------|-------------|--------------|--------|---------|
| 249281                   | 4 mm        | Carbon Steel | 249277 | 249271  |
| 249282                   | 6 mm        | Carbon Steel | 249274 | 249273  |

Assembly comes with one nut and one ferrule.

### Feedline Brush

Use to apply lubricant to chains and conveyors.  $\frac{1}{8}$ " NPT(F) inlet, 1" long,  $\frac{5}{8}$ " surface area diameter; aluminum body with nylon bristles.



Model 68874



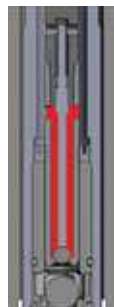
FlowMaster II  
crankcase



Follower



Reservoir



New ball  
check

### **Continuous Innovation Increases Pump Life and Simplifies Pump Installation, Operation and Service**

#### **FlowMaster II Features**

- Increases pump life and simplifies pump installation, operation and service
- Common crankcase design for all FlowMaster motors (hydraulic, AC or DC electric)
- Less susceptible to grease contamination
- Pump and reservoir combination models are level sensor and shut-off system ready
- Culmination of years of design and performance improvements makes this a premium-choice pump for single-line parallel lubrication systems
- Two year warranty

#### **FlowMaster II Improvements**

##### **Crankcase Improvements**

- 4-bolt hole pattern for all FlowMaster motors
- Dual bearing load support
- O-ring seals for all motors
- Wider bolt-hole pattern for easier top mounting of pump
- All FlowMaster II pumps will fit existing reservoirs
- Dual support ribs for increased strength
- Inner crankcase seal allows for easy and clean motor replacements without loss of crankcase oil
- Increased depth of pump tube and crankcase interface for added strength
- Integrated crankcase oil drain for easier oil change

##### **Follower Improvements**

- 2" (51 mm) closed foam seal resists grease by-pass
- Larger side bearing surface virtually eliminates tilting of the follower plate
- Improved vent tube seal
- Sturdy construction greatly enhances sealing properties
- Grease level-sensor ready

##### **Reservoir Improvements**

- Reservoir design incorporates 1" (25.4 mm) fill and 1¼" (32 mm) overflow ports
- Accommodates new 2" (51 mm) follower
- Lids are adjusted for top-mounting FlowMaster II pumps
- Lids can be easily converted to grease level system operation
- Each reservoir includes two lifting eye bolts for safety
- Rigid pressure outlet connection fittings are replaced by a single flexible hose

##### **Upper Ball Check Design**

- Ball check spring has been removed from flow path allowing 70% more annular flow area
- Reduces clogging problems caused by contamination from unfiltered grease
- Grease has a clear flow path, reducing downtime and costly repairs



### Electric FlowMaster II Pump

- 19:1 gear ratio results in lower current draw
- Gear sets can be changed for different ratios
- 18" (457 mm) wire motor leads with Deutsch connectors for easier installation
- Wire leads are sheathed for protection from the elements and rub areas

### Hydraulic FlowMaster II Pump

- Four-bolt motor design with dual bearing drive shaft support virtually eliminates motor loosening
- O-ring motor-to-crankcase seal virtually eliminates oil leaks
- Same hydraulic manifold and controls as on FlowMaster I models

### Model Numbers and Specifications

| Discontinued model<br>(reference only) | FlowMaster II model    | Power and gear ratio                                                     | Size   |       | Description        |
|----------------------------------------|------------------------|--------------------------------------------------------------------------|--------|-------|--------------------|
|                                        |                        |                                                                          | lb.    | kg.   |                    |
| 85471                                  | 85728                  | 24 V DC electric, 19:1                                                   | 60     | 27    | Reservoir and pump |
| 85487                                  | 85723                  | Hydraulic                                                                | 60     | 27    | Reservoir and pump |
| 86258                                  | 85722                  | Hydraulic                                                                | 60     | 27    | Reservoir and pump |
| 85677                                  | 85726                  | Hydraulic                                                                | 90     | 41    | Reservoir and pump |
| 85220                                  | 85727                  | Hydraulic                                                                | 120    | 54    | Reservoir and pump |
| 85518                                  | 85724 <sup>1) 2)</sup> | Hydraulic                                                                | 60     | 27    | Reservoir and pump |
| 85585                                  | 85725                  | Hydraulic                                                                | 90     | 41    | Reservoir and pump |
| 85473                                  | 85730                  | 24 V DC electric, 19:1                                                   | 120    | 54    | Reservoir and pump |
| 85472                                  | 85729                  | 24 V DC electric, 19:1                                                   | 90     | 41    | Reservoir and pump |
| 85482                                  | 85734                  | Hydraulic                                                                | 400    | 181   | Pump               |
| 85481                                  | 85732                  | Hydraulic                                                                | 60     | 27    | Pump               |
| 85480                                  | 85733                  | Hydraulic                                                                | 120/90 | 54/41 | Pump               |
| 85587                                  | 85736                  | 24 V DC electric, 19:1                                                   | 35     | 16    | Pump               |
| 85554                                  | 85737                  | 24 V DC electric, 19:1                                                   | 60     | 27    | Pump               |
| 85591                                  | 85739                  | 24 V DC electric, 19:1                                                   | 400    | 181   | Pump               |
| 85483                                  | 85731                  | Hydraulic                                                                | 35     | 16    | Pump               |
| 85566                                  | 85738                  | 24 V DC electric, 19:1                                                   | 120/90 | 54/41 | Pump               |
| 85484                                  | 85735                  | Hydraulic                                                                | 60     | 27    | Pump               |
| 85676                                  | 85742 <sup>1)</sup>    | Hydraulic                                                                | 120/90 | 54/41 | Pump               |
| 85678                                  | 85741 <sup>1)</sup>    | Hydraulic                                                                | 60     | 27    | Pump               |
| 85599                                  | 85743                  | 115 to 230 V AC electric, 1 ph, 19:1                                     | 120/90 | 54/41 | Pump               |
| 85598                                  | 85744                  | 115 to 230 V AC electric, 1 ph, 19:1                                     | 400    | 181   | Pump               |
| 85850                                  | 85745                  | 220 to 420 V AC, 50 Hz, 3 ph, 19:1<br>230 to 460 V AC, 60 Hz, 3 ph, 19:1 | 120/90 | 54/41 | Pump               |
| 85851                                  | 85746                  | 220 to 420 V AC, 50 Hz, 3 ph, 19:1<br>230 to 460 V AC, 60 Hz, 3 ph, 19:1 | 400    | 181   | Pump               |
| 85569                                  | 85747                  | 24 V DC electric, 17.8:1                                                 | 35     | 16    | Pump               |
| 85552                                  | 85748                  | 24 V DC electric, 34:1                                                   | 35     | 16    | Pump               |
| 85553                                  | 85749                  | 24 V DC electric, 34:1                                                   | 120/90 | 54/41 | Pump.              |
| 274873                                 | 85750                  | 24 V DC electric, 7:1                                                    | 35     | 16    | Pump               |
| 274874                                 | 85751                  | 24 V DC electric, 7:1                                                    | 35     | 16    | Pump               |
| 276041                                 | 85752                  | 12 V DC electric, 19:1                                                   | 35     | 16    | Pump               |
| 276360                                 | 85753                  | 12 V DC electric, 19:1                                                   | 35     | 16    | Pump               |
| 85592                                  | 85754                  | 12 V DC electric, 19:1                                                   | 60     | 27    | Pump               |
| 277560                                 | 85740                  | 24 V DC electric, 19:1                                                   | 55     | 25    | Pump               |

<sup>1</sup> Fixed hydraulic control valves. Call Technical Service for information.

<sup>2</sup> Developed for the fracking industry. Call Technical Service for details.



### Lincoln's New Design Automatically Shuts Off Grease Fill Supply To The Reservoir

Lincoln's advanced grease level gauge design with automatic overflow shut-off option is unlike any other system in the industry.

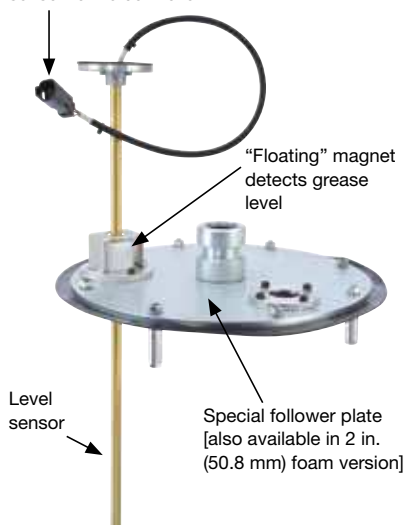
- The system senses the position of the follower in the reservoir (i.e., grease level) and sends the signal to a level gauge which can be mounted at the fill station.
- Grease level can be determined at all times.
- The level indicator signal can also be integrated into on-board systems.
- The system can prevent dangerous and costly overfills when used with the automatic shut-off valve system.
- The sensor and follower plate automatically signals a high pressure shut-off valve to the reservoir before overfilling occurs.
- Reduces maintenance time allowing personnel to do other jobs.

Unlike other shut-off systems, the Lincoln system does not use pressurized technology. Therefore, the reservoir is not completely welded together and, thus, the system does not need to adhere to the governmental pressurized-vessel regulations in some countries (Australia).

Overflow spillage is a common result of ground filling large grease reservoirs located in remote or hard-to-reach areas of machines. The Lincoln automatic shut-off system prevents this type of overflow avoiding safety hazards which can result in injury and potential costly fines. As a result, it is easy to see how this system will pay for itself. This system is completely retrofitable to all FlowMaster pump and bucket combinations with a follower.

When filling the reservoir, a high-pressure shut-off valve activates when the reservoir is full, stalling the supply pump. After the supply pump is turned off, a pressure relief button on the control box opens to relieve supply line pressure so it can be safely uncoupled.

Deutsch connector links the sensor to the controller



FlowMaster pump and reservoir with 2" (50.8 mm) foam follower and level sensor



Model 280450



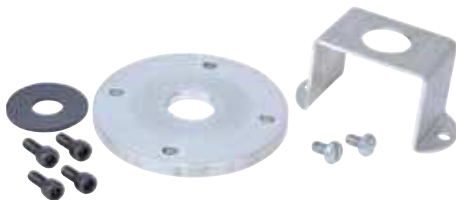
Model 283005



Model 276849



Model 274872



Model 278097



Model 280414

### Model 280450

Control box with grease-level gauge (24 V DC), “full” alarm light and momentary switch for shut-off valve.

### Model 283005

7,350 psi (507 bar) shut-off valve is designed to prevent overflow during reservoir filling.

### Model 276849

Special FlowMaster reservoir lid to accept sensor .

### Model 274872

10,000 psi (689.5 bar) high-pressure gauge before shut-off valve.

### Model 278097

Follower magnet bracket kit.

### Model 280414

Cable assembly between sensor and controller.

| Model  | Description                                                                            |
|--------|----------------------------------------------------------------------------------------|
| 280455 | Controller for level sensor only                                                       |
| 280450 | Controller for level sensor and overflow prevention system                             |
| 283005 | 7 350 psi (507 bar) high-pressure shut-off valve                                       |
| 274524 | Sensor for standard 60 lb. (27 kg) follower                                            |
| 277659 | Sensor for 2 in. (50.8 mm) 60 lb. (27 kg) foam follower                                |
| 274312 | Standard 60/90 lb. (27/41 kg) follower with sensor bracket                             |
| 85706  | 2 in. (50.8 mm) 60/90 lb. (27/41 kg) foam follower with sensor bracket                 |
| 280441 | Sensor-ready lid for 60/90 lb. (27/41 kg) reservoir with standard follower             |
| 277703 | Sensor-ready lid for 60/90 lb. (27/41 kg) reservoir with 2 in. (50.8 mm) foam follower |
| 278092 | Sensor for standard 90/120 lb. (41/54 kg) follower                                     |
| 277654 | Sensor for 2 in. (50.8 mm) 90/120 lb. (41/54 kg) foam follower                         |
| 278094 | Standard 120 lb. (54 kg) follower with sensor bracket                                  |
| 278095 | 2 in. (50.8 mm) 120 lb. (54 kg) foam follower with sensor bracket                      |
| 280442 | Sensor-ready lid for 120 lb. (54 kg) reservoir with standard follower                  |
| 278096 | Sensor-ready lid for 120 lb. (54 kg) reservoir with 2 in. (50.8 mm) foam follower      |
| 280414 | 30 ft. (10 m) controller cable                                                         |
| 278097 | Follower magnet bracket kit (for all followers)                                        |
| 85763  | 60 lb. (27 kg) 24 VDC FlowMaster II pump and bucket with sensor                        |
| 85762  | 90 lb. (41 kg) 24 VDC FlowMaster II pump and bucket with sensor                        |
| 274872 | 10,000 psi (689.5 bar) high-pressure gauge; ¼ in. NPT; 2½ in. (63.5 mm) face           |

Note: standard follower, sensor and lid must be used together. 2 in. (50.8 mm) foam follower, sensor and lid must be used together. Do not mix.

#### WARNING

Make sure fill coupling is capable of handling high pressure.



### HTL Single Shot Hydraulic Lubricator Pump for Hammers

- Delivers precise lubrication every time the hammer cycles
- Increase productivity—no work interruption
- Reduces machine repairs and replacement costs

Arms and breakers move constantly and exert enough force to demolish a building or repair roads in a tough environment filled with grit and debris. Many OEMs recommend frequent lubrication of that hammer to achieve optimal performance and to hold down maintenance and repair costs. However, deadline-driven operators rarely halt work to grease the hammer, which can lead to breakdowns that grind down productivity and inflate repair expenses. Lincoln's HTL Pumps make precise, consistent lubrication a reality. Now your operator can lubricate the hammer without leaving the cab. The pumps attach directly to the hammer, and your operator, with the push of a pedal, automatically sends a single shot of hydraulic fluid to the pump. Then the pump gives one shot of grease to lubricate the bearing points. When the operator's foot comes off the pedal, pressure releases the spring in the pump so it's ready to lubricate again.

Applications: construction OEMs, hydraulic hammer retrofits, demolition attachments and medium to larger breakers/hammers

- Withstands vibrations of an operating hammer
- Travels with hammer, perfect for rental equipment or hammers used on various machines
- Hydraulic power supply
- Pedal-actuated
- Attached grease fitting allows for manual filling and fast priming of pump
- Uses standard 14.5-ounce grease cartridges and handles chisel paste
- To adjust output, metering plugs are available (0.006 in<sup>3</sup> [0.1 cm<sup>3</sup>] to 0.031 in<sup>3</sup> [0.5 cm<sup>3</sup>])
- Convenient visual low level indicator

|                               |                                  |
|-------------------------------|----------------------------------|
| <b>Operating Temperature:</b> | -10°F to +180°F / -23°C to +80°C |
| <b>Hydraulic Port:</b>        | SAE #4 ( 7/16-20 UNF) O-ring     |
| <b>Pump Outlet:</b>           | SAE #4 ( 7/16-20 UNF) O-ring     |
| <b>Weight (Empty):</b>        | 16.3 lbs. / 7.4 kg               |
| <b>Weight (Full):</b>         | 17.3 lbs. / 7.8 kg               |

### Specifications

| Model No.                                           | 85429                                                                     | 85425               | 85424             | 85414                                                                     |
|-----------------------------------------------------|---------------------------------------------------------------------------|---------------------|-------------------|---------------------------------------------------------------------------|
| <b>Hydraulic Ratio at Max. Output and Pressure*</b> | 2.4:1                                                                     | 0.7:1               |                   |                                                                           |
| <b>Max. Hydraulic Operating Pressure:</b>           | 2600 psig (112 bar)                                                       | 5000 psig (345 bar) |                   |                                                                           |
| <b>Max. Recharge (or Vent) Pressure:</b>            | 400 psig (28 bar)                                                         | 1100 psig (75 bar)  | 600 psig (41 bar) | 1100 psig (75 bar)                                                        |
| <b>Max. Lube Outlet Pressure:</b>                   | 6500 psig (450 bar)                                                       |                     |                   |                                                                           |
| <b>Output per Stroke (Std. Metering Plug)</b>       | .018 cu. in. (0.3 cc) Std.<br>.006 - .031 cu. in. (0.1 - .5 cc) Optional* |                     |                   | .031 cu. in. (0.5 cc) Std.<br>.006 - .031 cu. in. (0.1 - .5 cc) Optional* |
| <b>Grease Reservoir Volume:</b>                     | 14.5 oz.                                                                  |                     |                   |                                                                           |

\*Optional metering plugs are available for different output volume. See Pump Output Adjustment chart below.

### Pump Output Adjustment Metering Plug

| Model No. | Output per Stroke                           |
|-----------|---------------------------------------------|
| 271924    | 0.006 in <sup>3</sup> / 0.1 cm <sup>3</sup> |
| 271925    | 0.012 in <sup>3</sup> / 0.2 cm <sup>3</sup> |
| 271926 *  | 0.018 in <sup>3</sup> / 0.3 cm <sup>3</sup> |
| 271927    | 0.031 in <sup>3</sup> / 0.5 cm <sup>3</sup> |

\*Note: Standard plug included with pump



### HTL 201US Continuous Hydraulic Lubricator Pump for Hammers

- Delivers precise lubrication every time the hammer operates
- Increase productivity—no work interruption
- Reduces machine repairs and replacement costs

Arms and breakers move constantly and exert enough force to demolish a building or repair roads in a tough environment filled with grit and debris. Many OEMs recommend constant lubrication of that hammer to achieve optimal performance and to hold down maintenance and repair costs. However, deadline-driven operators rarely halt work to grease the hammer, which can lead to breakdowns that grind down productivity and inflate repair expenses. Lincoln's HTL Pumps make precise, consistent lubrication a reality. Now your operator can lubricate the hammer without leaving the cab. The pumps attach directly to the hammer, and your operator, with the push of a pedal, automatically sends a continuous flow of hydraulic fluid to the pump. Then the pump gives continuous grease to lubricate the bearing points. When the operator's foot comes off the pedal, pressure releases the flow in the pump so it's ready to lubricate again.

Applications: construction OEMs, hydraulic hammer retrofits, demolition attachments and medium to larger breakers/hammers

- Mounts directly on the hydraulic device and lubricates continuously while in operation
- Continuous lubrication with small quantities during the working cycle
- Compact design
- Independent – the pump stays with the tool that requires lubrication even if the carrier unit is exchanged.
- 14.5 oz. cartridge can be replaced or the reservoir bulk filled with the special built-in adapter making it ideal for OEMs or rental fleets that specify a specific grease or chisel paste on their equipment.
- Low lubricant level indicator lets operator know when to fill or change cartridges.

|                               |                                  |
|-------------------------------|----------------------------------|
| <b>Operating Temperature:</b> | -13°F to +140°F / -25°C to +60°C |
|-------------------------------|----------------------------------|

|                        |                 |
|------------------------|-----------------|
| <b>Hydraulic Port:</b> | G ¼ BSPP O-ring |
|------------------------|-----------------|

|                     |                 |
|---------------------|-----------------|
| <b>Pump Outlet:</b> | G ¼ BSPP O-ring |
|---------------------|-----------------|

### Specifications

|                                           |                                                                                                                               |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Model No.</b>                          | <b>85446</b>                                                                                                                  |
| <b>Max. Hydraulic Operating Pressure:</b> | 1160 to 3045 psi (80 to 210 bar)                                                                                              |
| <b>Max. Lube Outlet Pressure:</b>         | 1740 to 3916 psi (120 to 270 bar)                                                                                             |
| <b>Output per Stroke</b>                  | 0.13 in <sup>3</sup> / stroke (0.22 cm <sup>3</sup> / stroke) to 0.41 in <sup>3</sup> / stroke (6.7 cm <sup>3</sup> / stroke) |
| <b>Grease Reservoir Volume:</b>           | 14.5 oz.                                                                                                                      |

# Centro-Matic® Automatic Lubrication Systems

## P653S Electric Pump



### Taking Lincoln's Pump Performance and Dependability In A Totally New Direction

The fully integrated P653S pump is an example of Lincoln's commitment to providing innovative, cost-effective solutions through industry-leading advances in technology. This next-generation, lower-cost pump package can be fitted with one of four reservoir sizes and easily adapts to many applications.



#### P653S Pump Features

- Integrated pump supplies lubricant to a single line parallel lubrication system
- Pumps low- and high-viscosity greases including industry standard NLGI grade 2 grease
- Easily interfaces with telematics technology in today's heavy equipment
- Operating temperature range from -40°F to +158°F (-40°C to +70°C) VDC or 32°F to 122°F (0°C to 50°C) VAC\*
- Neutral switch allows mobile equipment to remain idling with pump power on but the timer is deactivated – allowing manual lubrication functionality.
- All pumps include low-level and system fault alarms

#### Benefits

- Integration of major system components reduces labor and overall costs
- Simplifies lubrication system design
- Installation time is reduced due to the "plug-and-play" pump design. Simply mount the pump, connect power and the supply lines and the system is ready for operation.
- Neutral switch ensures lubrication only when the machine is operating – eliminating wasted grease.

\* Appropriate greases apply

#### 15 AND 20 LITER RESERVOIR KITS

Convert any 4 or 8 liter P653S or P603S pump without a follower to a 15 or 20 liter reservoir with the following kits:

| Reservoir size: | Part No. |
|-----------------|----------|
| 15L             | 276764   |
| 20L             | 276765   |

Available With or Without Follower (shown with follower)

High-Volume Output

Vent Valve

120/220 AC or 24-DC Pump



#### INTERNAL COMPONENTS

- Telematics Signaling Capabilities for Low Level and System Fault Detection
- Pressure Switch or Transducer

Reservoir Available in Four Sizes – 4, 8, 15 and 20 Liters Means Versatility in Scheduling Refilling Service Intervals

Reservoir Refill Port

Programmable Controller



### **P653S Pump Specifications for Grease Applications**

| <b>Electrical data</b> | <b>DC Pumps</b>              | <b>AC Pumps</b>         |
|------------------------|------------------------------|-------------------------|
| Incoming voltage:      | 19 to 31 VDC                 | 100 to 240 VAC          |
| Maximum current:       | 10 amps                      | 1.7 amps                |
| Frequency:             | —                            | 47 to 63 hz             |
| Operating temperature: | -40 to +158°F (-40 to +70°C) | 32 to 122°F (0 to 50°C) |

### **Common Electrical Data for DC and AC Pumps**

|                        |                 |
|------------------------|-----------------|
| Minimum pause time:    | 4 min.          |
| Maximum pause time:    | 59 hrs. 59 min. |
| Pause time increments: | 1 hr. or 1 min. |
| Maximum pumping time:  | 12 min.         |

### **Pump P653S**

|                                                                |                                                      |
|----------------------------------------------------------------|------------------------------------------------------|
| Operating pressure with:                                       |                                                      |
| Pressure switch (fixed):                                       | 3,500 psig (240 bar)                                 |
| Pressure transducer (adj.):                                    | 1,400 to 4,600 psig (96 to 317 bar)                  |
| End of line pressure switch and transducer setting (not adj.): | 2,500 psig (172 bar)                                 |
| Number of outlets:                                             | 1                                                    |
| Output:                                                        | 1.5 in <sup>3</sup> /min (24.6 cm <sup>3</sup> /min) |

### **Pump Elements**

|                                                  |         |
|--------------------------------------------------|---------|
| Piston diameter:                                 | 7 mm    |
| Number of pumping elements (connected together): | 3       |
| Protection                                       | 1P 6K9K |

Available Pump Models

NOTE: All models are designed for grease and include stirring paddle and low-level detection. Pumps include remote signaling cable, relief valve, electrical connectors and external pressure switch or transducer (as indicated for each model).

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

# Centro-Matic® Automatic Lubrication Systems

## P603S Pump



### P603S Pump Features

#### Reliable Operation in Harsh Environments

- Wind turbines – especially offshore
- Construction and mining
- Commercial vehicles
- Compact and medium-sized machines and industrial applications
- Robust and easy system layout
- Simple maintenance – easy to expand
- SE1 suction elements for used lubricant
- Increased profits and productivity
- Improved operating times; less costly downtime resulting from improper lubrication
- Lower costs for repairs and spare parts

|                                     |                             |
|-------------------------------------|-----------------------------|
| Incoming metering                   | 0.05 - 0.4 cm³/stroke       |
| Pump Output                         | 12 cm³                      |
| Supply voltage                      | 12 VDC, 24 VDC, 100-240 VAC |
| Programmable controller             | Yes                         |
| Reservoir capacity/liter            | 4, 8, 10, 15, 20            |
| Integrated pressure sensor and vent | Yes                         |
| Visual low-level                    | Yes                         |

### Available Pump Models

| Model No.   | Description                       | Power | Size | Follower     | Internal Transducer |
|-------------|-----------------------------------|-------|------|--------------|---------------------|
| 645-41064-3 | P603S- 4XLF -3Z7-AC-2A7.16-S13-SE | AC    | 4L   | X            | X                   |
| 645-41062-3 | P603S- 8XLF -3Z7-AC-2A7.16-S13-SE | AC    | 8L   | X            | X                   |
| 645-41110-2 | P603S- 8XLBO-3Z7-AC-3A7.16-S12-SE | AC    | 8L   |              | X                   |
| 645-41062-4 | P603S- 8XLBO-3Z7-AC-3A7.16-S19-SE | AC    | 8L   |              | X                   |
| 645-41073-5 | P603S-15XLF -3Z7-AC-2A7.16-S13-SE | AC    | 15L  | X            | X                   |
| 645-41064-8 | P603S- 4XLF1-3Z7-12-1A7.16-S01-SE | 12 DC | 4L   | X (Bayonett) | X                   |
| 645-41064-7 | P603S- 4XNBO-3Z7-12-2A7.16-S01-SE | 12 DC | 4L   |              | X                   |
| 645-41110-3 | P603S- 8XLF1-3Z7-12-1A7.16-S01-SE | 12 DC | 8L   | X (Bayonett) | X                   |
| 645-41062-9 | P603S- 8XLF -3Z7-24-1A7.16-S01-SE | 24 DC | 8L   | X            | X                   |
| 645-41064-4 | P603S- 4XLBO-3Z7-24-1A7.16-S17-SE | 24 DC | 4L   |              | X                   |
| 645-41064-6 | P603S- 4XLF -3Z7-24-1A7.16-S13-SE | 24 DC | 4L   | X            | X                   |
| 645-41064-2 | P603S- 4XNBO-3Z7-24-1A7.16-S01-SE | 24 DC | 4L   |              | X                   |
| 645-41062-8 | P603S- 8XLBO-3Z7-24-2A7.16-S19-SE | 24 DC | 8L   |              | X                   |
| 645-41062-9 | P603S- 8XLF -3Z7-24-1A7.16-S01-SE | 24 DC | 8L   | X            | X                   |
| 645-41062-7 | P603S- 8XLF -3Z7-24-1A7.16-S03-SE | 24 DC | 8L   | X            | X                   |
| 645-41119-1 | P603S-10XLF -3Z7-24-1A7.16-S13-SE | 24 DC | 10L  | X            | X                   |
| 645-41175-5 | P603S-4XNBO -3Z7-12-1A7.16-S22-SE | 12 DC | 4L   |              | X                   |
| 645-41119-2 | P603S-10XLF -3Z7-AC-2A1.01-S13-SE | AC    | 10L  | X            | X                   |

# Centro-Matic® Automatic Lubrication Systems

## P603S Pump



### Pump and Accessories – All-In-One

The pump with integrated controller is easy to install. The all-in-one design of the pump includes the programmable controller, a pressure switch/transducer and a vent valve.

### Simple System Design – Easy to Expand

The single-line system's design and layout is uncomplicated, making it easy to install and operate. A single mainline reduces material and installation costs.

### Easy to Service

It is quick and easy to exchange out an injector. The mainline or neighboring injectors do not have to be removed. The exchange can be performed between lubrication cycles so that there is no wasted lubricant or excessive costly downtime.

### Additional Pressure Switch

An additional pressure switch at the end of larger systems can be used for added pressure control to ensure correct lubrication.

### Special Features for Wind Turbine Applications – Also for Off-Shore Systems

Lincoln single-line systems completely vent during the pause interval. As a result, they are suitable for fast separating lubricants.

For rotating operation in wind turbines, the reservoir is equipped with a follower plate and stirring paddle – which also facilitates the usage of fast separating lubricants. For stationary operation a stirring and fixed paddle is sufficient.

## Pump Specifications

|                                  | P603S 12/24 VDC                            | P603S / AC                                 |
|----------------------------------|--------------------------------------------|--------------------------------------------|
| Pump Output                      | 0.73 cu.in/min (12cm <sup>3</sup> /min)    | 0.73 cu.in/min (12cm <sup>3</sup> /min)    |
| Maximum Working Pressure         | 4,350 psig (300 bar) / 3,480 psig (240bar) | 4,350 psig (300 bar) / 3,480 psig (240bar) |
| Maximum Current Draw             | 2 Amps                                     | 2 Amps                                     |
| Steering Paddle And Follower     | Yes                                        | Yes                                        |
| Reservoir Size, Liter            | 4, 8, 10, 15 and 20                        | 4, 8, 10, 15 and 20                        |
| Number Of Pumping Elements       | 3, (7 mm diameter)                         | 3, (7 mm diameter)                         |
| RPM, Paddle (76°F)               | 18                                         | 18                                         |
| Pressure Switch At Pump          | Yes                                        | Yes                                        |
| Transducer At Pump               | Yes                                        | Yes                                        |
| Pressure Switch/ End Of Line     | Yes                                        | Yes                                        |
| Transducer/ End Of Line          | Yes                                        | Yes                                        |
| PCB                              | Yes                                        | Yes                                        |
| Separate Alarms, LL/Proxy Switch | No                                         | No                                         |
| 24.0 VDC Input                   | Yes                                        | Yes                                        |
| Switching Power Supply           | No                                         | Yes                                        |
| Connectors                       | Bayonet Style                              | Bayonet Style + Square Type (AC)           |
| Data Logger                      | No                                         | No                                         |
| Remotely Change Lube Frequency   | Yes                                        | Yes                                        |
| Count Control                    | Yes                                        | Yes                                        |
| Ignition & Neutral Switch        | Yes                                        | Yes                                        |
| Acknowledging Fault              | At Pump/External                           | At Pump/External                           |
| Manually Lub Switch, External    | Yes                                        | Yes                                        |
| Pump On LED, External            | Yes                                        | Yes                                        |
| Protection                       | IP 6K9K                                    | IP 6K9K                                    |
| Temperature                      | -40°C / +70°C                              | -40°C / +70°C                              |

# Centro-Matic® Automatic Lubrication Systems

## Manual Grease Pumps



Once you have determined your total lubricant requirements, your greatest line length and compensated for line expansion, you're ready to determine the pump you need.

If your overall requirements are less than 2.4 cu. in. for oil or 2.15 cu. in. for grease, you can select a single stroke pump. Should your requirements demand more capacity, a reciprocating pump will fill the need.

Your Lincoln representative will suggest the best pump for you based on your application. Look over the following pages of pump selection options and feel free to ask questions.



### Model 83817 Economy Grease Pump

Manual pump has metal reservoir and spring-loaded follower. Indicator pin in pump base shows when 2500 psi system operating pressure has been achieved.

|                                           |             |                                     |
|-------------------------------------------|-------------|-------------------------------------|
| <b>Model:</b>                             |             | <b>83817</b>                        |
| <b>Output/Stroke:</b>                     |             | .100 cu. in. / 1.6 cc               |
| <b>Reservoir Capacity:</b>                |             | 1 lb. 30 cu. in. / .45 kg 492 cc    |
| <b>Lube Outlet:</b>                       |             | 1/8" NPTF (F)                       |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 1200 psig / 82 bar                  |
|                                           | <b>Max.</b> | 3500 psig / 241 bar                 |
| <b>Dimensions (HxWxL):</b>                | <b>in.</b>  | 15 1/4" x 5" x 5 5/8"               |
|                                           | <b>mm</b>   | 387 x 127 x 141 mm                  |
| <b>Filling Method:</b>                    |             | 14.6 oz. Grease Cartridge/Bulk Fill |



### Model 1810 Grease Pump

Translucent reservoir with spring-loaded follower. Indicator pin in pump base shows when 2500 psi system operating pressure has been achieved. Refill through included fitting using Model 81834 filler pump or other manual pump equipped with Model 645006 coupler.

|                                           |             |                                       |
|-------------------------------------------|-------------|---------------------------------------|
| <b>Model:</b>                             |             | <b>1810</b>                           |
| <b>Output/Stroke:</b>                     |             | .160 cu. in. / 2.6 cc                 |
| <b>Reservoir Capacity:</b>                |             | 5 lb. 150 cu. in./ 2.27 kg 2458.50 cc |
| <b>Lube Outlet:</b>                       |             | 1/4" NPTF (F)                         |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 1200 psig / 82 bar                    |
|                                           | <b>Max.</b> | 3500 psig / 241 bar                   |
| <b>Dimensions (HxWxL):</b>                | <b>in.</b>  | 16 1/4" x 7 1/8" x 7 3/4"             |
|                                           | <b>mm</b>   | 413 x 181 x 197 mm                    |
| <b>Filling Method:</b>                    |             | 81834 Filler Pump                     |

# Centro-Matic® Automatic Lubrication Systems

## Air-Operated (Single Stroke) Grease Pumps



### Centro-Matic® Integrated Pumps

All models are air-operated, positive displacement pumps delivering a maximum volume by means of a single stroke of the pump (volumes listed below). Solenoid air valves and adjustable solid-state time controls are integrated into the pump body. All pumps are designed to deliver grease to single-line injectors and include a special high-volume refill fitting. Acrylic reservoirs are available in several sizes. Integrated controls feature LED indicators for "Power On", "Pump On" and "Alarm," along with a membrane-type, "Manual Lube" switch.



Model 85434

### Model 85434 Integrated Grease Pump

|                                    |      |                                              |
|------------------------------------|------|----------------------------------------------|
| Ratio:                             |      | 31:1                                         |
| Power:                             |      | 120 VAC                                      |
| Typical System Operating Pressure: | Min. | 1200 psig / 82 bar                           |
|                                    | Max. | 3500 psig / 240 bar                          |
| Maximum Output:                    |      | 1.4 in <sup>3</sup> / 18.7 cm <sup>3</sup>   |
| Reservoir Capacity:                |      | 4.5 lbs. / 1.8 kg                            |
| Dimensions (LxWxH):                |      | 24.70" x 6.52" x 18.11" / 627 x 166 x 460 mm |

### Model 85435 Integrated Grease Pump

Same as Model 85434 except 240 VAC.

### Model 85436 Integrated Grease Pump

Same as Model 85434 except with a Ratio of 25:1 and Maximum Output of 2.15 in<sup>3</sup> (35.2 cm<sup>3</sup>).



Model 85442

### Model 85442 Integrated Grease Pump

|                                    |      |                                             |
|------------------------------------|------|---------------------------------------------|
| Ratio:                             |      | 20:1                                        |
| Power:                             |      | 120 VAC                                     |
| Typical System Operating Pressure: | Min. | 1200 psig / 82 bar                          |
|                                    | Max. | 3500 psig / 240 bar                         |
| Maximum Output:                    |      | 0.45 in <sup>3</sup> / 7.4 cm <sup>3</sup>  |
| Reservoir Capacity:                |      | 1 lb. / 0.450 kg                            |
| Dimensions (LxWxH):                |      | 5.25" x 7.24" x 12.02" / 133 x 184 x 305 mm |

### Model 85444 Integrated Grease Pump

|                                    |      |                                             |
|------------------------------------|------|---------------------------------------------|
| Ratio:                             |      | 20:1                                        |
| Power:                             |      | 120 VAC                                     |
| Typical System Operating Pressure: | Min. | 1200 psig / 82 bar                          |
|                                    | Max. | 3500 psig / 240 bar                         |
| Maximum Output:                    |      | 0.45 in <sup>3</sup> / 7.4 cm <sup>3</sup>  |
| Reservoir Capacity:                |      | 4 lbs. / 1.8 kg                             |
| Dimensions (LxWxH):                |      | 5.25" x 7.24" x 20.75" / 133 x 184 x 527 mm |

### Model 85445 Integrated Grease Pump

Same as Model 85444 except 240 VAC.

### Timer and Controller Specifications

| On Time          | Off Time                          | Alarm Contacts   | Operating Temperature           |
|------------------|-----------------------------------|------------------|---------------------------------|
| 10 sec or 30 sec | 1/2 to 30 min or 30 min to 30 hrs | 8 amps @ 250 VAC | -10°F to 150°F<br>-23°C to 65°C |



Model 85444

# Centro-Matic® Automatic Lubrication Systems

## Air-Operated (Single Stroke) Grease Pumps



Model 82886



Model 83668



Model 82653

### Model 82886 Pump

Pump discharges lubricant on air-powered forward stroke and vents on springpowered return stroke through built-in check/vent valve. Reservoir is translucent with spring-loaded follower. Includes filler fitting for refilling reservoir with Model 81834 or other manual pump equipped with Model 645006 coupler.

### Model 83668

Same as Model 82886 except includes larger reservoir.

### Model 82653 Bare Pump

Pump uses air for forward and return stroke but dispenses lubricant on forward stroke only. Return stroke vents lubricant pressure through included check/vent valve. Translucent reservoir has spring-loaded follower. Refill through included filler fitting using Model 81834 or other manual pump equipped with Model 645006 coupler.

### Model 83834 High Volume Bare Pump

Same as Model 82653 except 25:1 ratio, 2.15 cu. in (35.2 cc) maximum output.

### Model 82655 Pump with Controls

Same as Model 82653 except includes Model 84501 solid state timer and 350244 four way electric solenoid valve.

### Model 83800 High Volume Pump with Controls

Same as Model 83834 except includes Model 84501 solid state timer and 350244 four way electric solenoid valve.

| Model | Lubricant/<br>Air Ratio | Max.<br>Output                               | Reservoir<br>Capacity                                       | Reservoir<br>Temp.<br>Range   | Air Inlet       | Lube<br>Outlet  | Lubricant Oper.<br>Pressure |                           | Dimensions<br>HxWxL                          | Air Valve<br>Required |
|-------|-------------------------|----------------------------------------------|-------------------------------------------------------------|-------------------------------|-----------------|-----------------|-----------------------------|---------------------------|----------------------------------------------|-----------------------|
|       |                         |                                              |                                                             |                               |                 |                 | Min.                        | Max.                      |                                              |                       |
| 82886 | 20:1                    | .45 in <sup>3</sup><br>7.4 cm <sup>3</sup>   | 1 lb/.45 kg<br>30 in <sup>3</sup> /492 cm <sup>3</sup>      | 0°F to 150°F<br>-18°C to 65°C | 1/4"<br>NPTF(F) | 1/4"<br>NPTF(F) | 1200<br>psig /<br>82 bar    | 3500<br>psig /<br>240 bar | 10 3/8" x 5 1/4" x 6"<br>263 x 133 x 152 mm  | 3-way                 |
| 83668 |                         |                                              |                                                             |                               |                 |                 |                             |                           | 18 1/2" x 5 1/4" x 6"<br>470 x 133 x 152 mm  |                       |
| 82653 | 31:1                    | 1.4 in <sup>3</sup><br>22.9 cm <sup>3</sup>  | 4 lb/1.81 kg<br>120 in <sup>3</sup><br>1967 cm <sup>3</sup> |                               |                 |                 |                             |                           | 18 1/2" x 5 3/4" x 21"<br>470 x 146 x 533 mm | 4-way                 |
| 82655 |                         |                                              |                                                             |                               |                 |                 |                             |                           |                                              |                       |
| 83834 | 25:1                    | 2.15 in <sup>3</sup><br>35.2 cm <sup>3</sup> |                                                             |                               |                 |                 |                             |                           |                                              |                       |
| 83800 |                         |                                              |                                                             |                               |                 |                 |                             |                           |                                              |                       |

#### Note:

Air consumption @ 100 psi is .15 CFM per stroke.

### Timer Specifications

| Cycle Time |        | On Time |                   | Power<br>Requirements            | Ambient Operating<br>Temp. Range |
|------------|--------|---------|-------------------|----------------------------------|----------------------------------|
| Min        | Max    | Min     | Max               |                                  |                                  |
| 20 Sec.    | 24 Hr. | 10 Sec. | 1 Min.<br>24 Sec. | 120 VAC, 60 hz<br>110 VAC, 50 hz | 10°F to +150°F<br>-23°C +65°C    |

#### Note:

Refer to System Controls section for detailed timer and solenoid operated air valve specifications.

# Centro-Matic® Automatic Lubrication Systems

## Air-Operated (Reciprocating) Grease Pumps



### Model 83167

Includes transparent reservoir, spring-loaded follower, vent valve assembly and filler fitting for refilling of reservoir with 81834 filler pump or other manual pump equipped with Model 645006 coupler.

|                                           |             |                                             |
|-------------------------------------------|-------------|---------------------------------------------|
| <b>Model:</b>                             |             | <b>83167</b>                                |
| <b>Lubricant/Air Ratio:</b>               |             | 40:1                                        |
| <b>Output/Min @ 100 PSIG Air:</b>         |             | 12 cu. in. 197 cc                           |
| <b>Reservoir Capacity:</b>                |             | 12 lb. / 5.44 kg / 360 cu. in. / 5900 cc    |
| <b>Air Inlet:</b>                         |             | 1/8" NPTF (F)                               |
| <b>Lube Outlet:</b>                       |             | 3/4" NPTF (F)                               |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 1200 psig / 82 bar                          |
|                                           | <b>Max</b>  | 3500 psig / 241 bar                         |
| <b>Dimensions (HxWxL):</b>                |             | 22 1/2" x 9" x 16 1/4" / 572 x 229 x 413 mm |
| <b>Filling Method:</b>                    |             | 81834 Filler Pump                           |
| <b>Reservoir:</b>                         |             | Translucent Acrylic                         |

Notes: 1. Pump requires 3-way air valve. 2. Air consumption @ 100 psi is .15 CFM per cycle



### Model 83599

Same as Model 83167 except includes base mounting kit and metal reservoir with indicator rod for visual check of grease level. Reservoir includes spring-loaded follower.

|                                           |             |                                              |
|-------------------------------------------|-------------|----------------------------------------------|
| <b>Model:</b>                             |             | <b>83599</b>                                 |
| <b>Lubricant/Air Ratio:</b>               |             | 40:1                                         |
| <b>Output/Min @ 100 PSIG Air:</b>         |             | 12 cu. in. / 197 cc                          |
| <b>Reservoir Capacity:</b>                |             | 12 lb. / 5.44 kg 360 cu. in. / 5900 cc       |
| <b>Air Inlet:</b>                         |             | 1/4" NPTF (F)                                |
| <b>Lube Outlet:</b>                       |             | 3/4" NPTF (F)                                |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 1200 psig 82 bar                             |
|                                           | <b>Max.</b> | 3500 psig 241 bar                            |
| <b>Dimensions (HxWxL):</b>                |             | 24 3/8" x 9" x 18 3/16" / 619 x 229 x 462 mm |
| <b>Filling Method:</b>                    |             | 81834 Filler Pump                            |
| <b>Reservoir:</b>                         |             | Aluminum                                     |

Notes: 1. Pump requires 3-way air valve. 2. Air consumption @ 100 psi is .15 CFM per cycle

# Centro-Matic® Automatic Lubrication Systems

## Air-Operated (Reciprocating) Grease Pumps



### Model 1823

Includes 2½" air motor driven pump, vent valve assembly, pump elevator, connecting lubricant and air hoses, and control panel.

|                                            |             |                                                                                                             |
|--------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------|
| <b>Model:</b>                              |             | <b>1823</b>                                                                                                 |
| <b>Lubricant/Air Ratio:</b>                |             | 50:1                                                                                                        |
| <b>Output/Min @ 100 PSIG Air:</b>          |             | 30 cu. in. / 492 cc                                                                                         |
| <b>Drum Size:</b>                          |             | U.S. standard 120 lb. refinery drum                                                                         |
| <b>Air Inlet:</b>                          |             | ¾" NPTF (F)                                                                                                 |
| <b>Lube Outlet:</b>                        |             | ¼" NPTF (F)                                                                                                 |
| <b>Typical System Operating Pressure:</b>  | <b>Min.</b> | 1200 psig / 82 bar                                                                                          |
|                                            | <b>Max.</b> | 3500 psig / 241 bar                                                                                         |
| <b>Components included:</b>                |             | Pump & Vent Assembly    282288<br>Controller                    85209<br>Pump Elevator                83447 |
| <b>Controller Electrical Requirements:</b> |             | 120V, 60 Hz., 110 V, 50hz                                                                                   |

Notes: 1. Air consumption @ 100 psi is .42 CFM per cycle.

2. Model 83371 follower plate is available as an optional accessory.

### Model 282288

Same specifications as Model 1823 but does not include elevator or controller.

### Model 1827 Heavy-Duty Unit

Consists of PowerMaster pump, vent valve assembly with air and lubricant connecting hoses, drum cover and control panel.



|                                           |             |                                                                                                                        |
|-------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Model:</b>                             |             | <b>1827</b>                                                                                                            |
| <b>Lubricant/Air Ratio:</b>               |             | 75:1                                                                                                                   |
| <b>Output/Min @ 100 PSIG Air:</b>         |             | 161 cu. in. / 2638 cc                                                                                                  |
| <b>Drum Size:</b>                         |             | U.S. standard 400 lb. refinery drum                                                                                    |
| <b>Air Inlet:</b>                         |             | ¾" NPTF (F)                                                                                                            |
| <b>Lube Outlet:</b>                       |             | ¾" NPTF (F)                                                                                                            |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 1200 psig / 82 bar                                                                                                     |
|                                           | <b>Max.</b> | 3500 psig / 241 bar                                                                                                    |
| <b>Components included:</b>               |             | Basic Pump            2004<br>Vent Valve            85215<br>Controller            85209<br>Drum Cover           81675 |

### Model 1828

Same as Model 1827 except includes Model 2008 pump, 85218 vent valve and Model 84034 drum cover sized for U.S. standard 120 lb. refinery drum. Includes 85209 controller.

### Model 1829

Same as Model 1827 except includes Model 2010 pump (50:1 ratio, 231 cu.in./min. (3785 cc) delivery at 100 psig air). Fits U.S. standard 400 lb. refinery drum. Includes 85209 controller and 85215 vent valve.



### Model 1849

Fully automatic assembly including pump, 220/440 volt motor, translucent reservoir with spring-loaded follower, 4000 psi (276 bar) safety unloader, adjustable pressure switch and time control. Time control is adjustable for lubrication cycle frequency of 5, 10, 15, 20, 30 or 60 min. Solid state time delay relay (35 sec. to 240 sec.) included for connection of audible or visual alarm to signal lubrication failure due to empty reservoir or broken supply line.

|                                           |                   |                                                     |
|-------------------------------------------|-------------------|-----------------------------------------------------|
| <b>Model:</b>                             |                   | <b>1849*</b>                                        |
| <b>Output Min:</b>                        |                   | 18 cu. in. / 295 cc                                 |
| <b>Reservoir Capacity:</b>                |                   | 12 lb. / 5.44 kg / 360 cu. in. / 5900 cc            |
| <b>Lube Outlet:</b>                       |                   | ¼" NPTF (F)                                         |
| <b>Electrical Specifications:</b>         | <b>Pump Motor</b> | 220/440 VAC, 60 Hz, 3 ph                            |
|                                           | <b>Controller</b> | 115 VAC, 60 Hz                                      |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b>       | 1200 psig / 82 bar                                  |
|                                           | <b>Max.</b>       | 3500 psig / 241 bar                                 |
| <b>Dimensions (HxWxL):</b>                |                   | 25½" x 13" x 19½" / 645 x 330 x 503 mm              |
| <b>Reservoir Fill Method:</b>             |                   | 81834 Filler Pump or Manual Pump and 645006 Coupler |

\* See Model 85520 in Systems Control section for controller specifications.

### Model 201849

Same as Model 1849 except has 7 lb. reservoir capacity.

### Model 1835

Same as Model 1849 except has 115 VAC, 60 Hz motor and controller.

### Model 1833

Similar to Model 1849 except: 24 VDC pump motor and controller; metal reservoir with visual level indicator rod; 2.5, 5, 10, 20, 40 and 80 minute cycle frequency adjustment; 60 second fixed on time and alarm relay features. Incorporates pressure switch factory set at 2500 psi (172 bar).

|                                           |                   |                                                      |
|-------------------------------------------|-------------------|------------------------------------------------------|
| <b>Model:</b>                             |                   | <b>1833</b>                                          |
| <b>Output/Min:</b>                        |                   | 18 cu. in. / 295 cc                                  |
| <b>Reservoir Capacity:</b>                |                   | 12 lb. / 5.44 kg / 360 cu. in. / 5900 cc             |
| <b>Lube Outlet:</b>                       |                   | ¼" NPTF (F)                                          |
| <b>Electrical Specifications:</b>         | <b>Pump Motor</b> | ¼ HP, 24 VD, 10 AMP                                  |
|                                           | <b>Controller</b> | 24 VDC, 5 watts                                      |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b>       | 1200 psig / 82 bar                                   |
|                                           | <b>Max.</b>       | 3500 psig / 241 bar                                  |
| <b>Dimensions (HxWxL):</b>                |                   | 34¼" x 11½" x 21¾" / 870 x 292 x 552 mm              |
| <b>Reservoir Fill Method:</b>             |                   | 81834 Filler Pump or Manual Pump with 645006 Coupler |

Notes:

1. Controller has provision for remote manual lube button and remote lube failure alarm.
2. Enclosure is designed to meet NEMA 3S and 12 specifications.

### Manually Operated Oil

### Model 1812

Pump has translucent reservoir with filler cap and strainer. Pump base has built-in check/vent valve and an indicator pin to show when system pressure is achieved.

|                                           |             |                                               |
|-------------------------------------------|-------------|-----------------------------------------------|
| <b>Model:</b>                             |             | <b>1812</b>                                   |
| <b>Output/Stroke:</b>                     |             | .160 cu. in. / 2.6 cc                         |
| <b>Reservoir Capacity:</b>                |             | 4½ pint / 130 cu. in.<br>2.13 liter / 2130 cc |
| <b>Lube Outlet:</b>                       |             | ¼" NPTF (F)                                   |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 750 psig / 52 bar                             |
|                                           | <b>Max.</b> | 1000 psig / 69 bar                            |
| <b>Dimensions (HxWxL):</b>                |             | 16¾" x 7½" x 7¾" / 425 x 181 x 197 mm         |



# Centro-Matic® Automatic Lubrication Systems

## Air-Operated (Single Stroke) Oil Pumps



### Centro-Matic® Integrated Pumps

All models are air-operated, positive displacement pumps delivering a maximum volume by means of a single stroke of the pump (volumes listed below). Solenoid air valves and adjustable solid-state time controls are integrated into the pump body. All pumps are designed to deliver fluid lubricants to single-line injectors and are filled via a spring-loaded filler cap and internal filter. Acrylic reservoirs are available in several sizes. Pump Models 85432 and 85433 do not include a reservoir, and are designed for remote or bulk-fill oil applications (80 psi/5.4 bar maximum head pressure). Integrated controls feature LED indicators for "Power On", "Pump On" and "Alarm," along with a membrane-type, "Manual Lube" switch.



Model 85430



Model 85432



Model 85438



Model 85440

### Model 85430 Integrated Fluid Pump

|                                    |      |                                              |
|------------------------------------|------|----------------------------------------------|
| Ratio:                             |      | 20:1                                         |
| Power:                             |      | 120 VAC                                      |
| Typical System Operating Pressure: | Min. | 750 psig / 52 bar                            |
|                                    | Max. | 1000 psig / 69 bar                           |
| Maximum Output:                    |      | 2.4 in³ / 39.3 cm³                           |
| Reservoir Capacity:                |      | 4.5 pints / 2.1 liters                       |
| Dimensions (LxWxH):                |      | 24.70" x 6.52" x 18.11" / 627 x 166 x 460 mm |

### Model 85431 Integrated Fluid Pump

Same as Model 85430 except 240 VAC.

### Model 85432 Integrated Fluid Pump

Same as Model 85430 except without reservoir.

### Model 85433 Integrated Fluid Pump

Same as Model 85432 except 240 VAC.

### Model 85438 Integrated Fluid Pump

|                                    |      |                                             |
|------------------------------------|------|---------------------------------------------|
| Ratio:                             |      | 20:1                                        |
| Power:                             |      | 120 VAC                                     |
| Typical System Operating Pressure: | Min. | 750 psig / 52 bar                           |
|                                    | Max. | 1000 psig / 69 bar                          |
| Maximum Output:                    |      | 0.45 in³ / 7.4 cm³                          |
| Reservoir Capacity:                |      | 1.25 pints / 0.6 liters                     |
| Dimensions (LxWxH):                |      | 5.25" x 7.24" x 12.02" / 133 x 184 x 305 mm |

### Model 85440 Integrated Fluid Pump

|                                    |      |                                             |
|------------------------------------|------|---------------------------------------------|
| Ratio:                             |      | 20:1                                        |
| Power:                             |      | 120 VAC                                     |
| Typical System Operating Pressure: | Min. | 750 psig / 52 bar                           |
|                                    | Max. | 1000 psig / 69 bar                          |
| Maximum Output:                    |      | 0.45 in³ / 7.4 cm³                          |
| Reservoir Capacity:                |      | 4.25 pints / 2.0 liters                     |
| Dimensions (LxWxH):                |      | 5.25" x 7.24" x 20.75" / 133 x 184 x 527 mm |

### Model 85441 Integrated Fluid Pump

Same as Model 85440 except 240 VAC.

### Timer and Controller Specifications

| On Time             | Off Time                             | Alarm Contacts      | Operating Temperature           |
|---------------------|--------------------------------------|---------------------|---------------------------------|
| 10 sec<br>or 30 sec | 1/2 to 30 min<br>or 30 min to 30 hrs | 8 amps<br>@ 250 VAC | -10°F to 150°F<br>-23°C to 65°C |



### Model 283167



|                                           |             |                                             |
|-------------------------------------------|-------------|---------------------------------------------|
| <b>Model:</b>                             |             | <b>283167</b>                               |
| <b>Lubricant/Air Ratio:</b>               |             | 40:1                                        |
| <b>Output/Min. @ 100 PSI Air:</b>         |             | 12 cu. in. / 197 cc                         |
| <b>Reservoir Capacity:</b>                |             | 15 pint / 7.1 liter, 433 cu. in. / 7100 cc  |
| <b>Air Inlet:</b>                         |             | 1/8" NPTF (F)                               |
| <b>Lube Outlet:</b>                       |             | 3/4" NPTF (F)                               |
| <b>Typical System Operating Pressure:</b> | <b>Min.</b> | 750 psig / 52 bar                           |
|                                           | <b>Max.</b> | 1000 psig / 69 bar                          |
| <b>Dimensions (HxWxL):</b>                |             | 23 1/4" x 9" x 16 1/4" / 591 x 229 x 413 mm |
| <b>Air Valve Required:</b>                |             | 3-Way**                                     |

\*\* Air consumption @ 100 psi is .15 CFM per stroke.

**Note:** Check compatibility when using synthetic oils.

### Model 1826

Consists of Model 2002 PowerMaster pump, Model 85217 vent valve assembly, Model 81675 drum cover, Model 85209 controller, air and lubricant connecting hoses and 1200 psi (82 bar) safety unloader.

|                                |  |                       |
|--------------------------------|--|-----------------------|
| <b>Model:</b>                  |  | <b>1826</b>           |
| <b>Lubricant/Air Ratio:</b>    |  | 24:1                  |
| <b>Output @ 75 Cycles/Min:</b> |  | 462 cu. in. / 7571 cc |
|                                |  |                       |
|                                |  |                       |
|                                |  |                       |
|                                |  |                       |
|                                |  |                       |
|                                |  |                       |

**Notes:**

1. See System Controls section for detailed controller specifications.
2. See Industrial Pumping catalog for basic pump specification, including air consumption.

### Electric-Operated Oil Pump

#### Model 1848

Fully automatic assembly including pump, 220-/440-volt motor, translucent reservoir, 1200 psi (82 bar) safety unloader, adjustable pressure switch and time control. Time control is adjustable for lubrication cycle frequency of 5, 10, 15, 20, 30 or 60 minutes. Solid state time delay relay (35 sec. to 240 sec.) included for connection of audible or visual alarm to signal lubrication failure due to empty reservoir or broken supply line.



Note: See Model 85520, System Controls section for controller specifications.





High-performance FlowMaster hydraulic pumps combine rotary-driven pump motors with reciprocating pump tubes and flexible control features that perform in desert heat and arctic cold. Integrated control manifold adjusts the amount of lubricant and operating pressure. The pump’s output is adjustable from 7 to 45 cubic inches per minute.

|                                   |                                                                                                                                                                   |               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Supply Inlet</b>               |                                                                                                                                                                   |               |
| <b>Hydraulic Pressure, Max.:</b>  | 3000 psig                                                                                                                                                         | 200 bar       |
| <b>Operating Inlet</b>            |                                                                                                                                                                   |               |
| <b>Hydraulic Pressure:</b>        | 300 to 420 psig                                                                                                                                                   | 20 to 32 bar  |
| <b>Hydraulic Inlet Flow:</b>      | Up to 7 gpm                                                                                                                                                       | 28 l/min      |
| <b>Pump Ratio with Manifold:</b>  | 9:1 at low inlet pressure (300 to 350 psi/20 to 25 bar) and low inlet flow (below 2 gpm/7 lpm) pump ratio approaches 11:1 ratio at higher inlet pressure and flow |               |
| <b>Pump Output:</b>               | 7 - 45 in³/min                                                                                                                                                    |               |
| <b>Operating Temperature:</b>     | -20° to +150°F                                                                                                                                                    | -10° to +65°C |
| <b>Solenoid Valve Coil:</b>       | 24 VDC                                                                                                                                                            |               |
| <b>Hydraulic Inlet Port:</b>      | SAE 4                                                                                                                                                             |               |
| <b>Tank Return Port:</b>          | SAE 6                                                                                                                                                             |               |
| <b>Pump Outlets:</b>              | 1/4" NPTF                                                                                                                                                         |               |
| <b>Max. Hydraulic Fluid Temp:</b> | 200°F                                                                                                                                                             | 93°C          |

### Pump Only Models



| Model | Capacity |     |     | Solenoid Manual Override | Adjustable Flow Control | Adjustable Pressure Control |
|-------|----------|-----|-----|--------------------------|-------------------------|-----------------------------|
|       | Lbs.     | gal | L   |                          |                         |                             |
| 85733 | 120      | 18  | 68  | No                       | Yes                     | Yes                         |
| 85732 | 60       | 8   | 30  |                          |                         |                             |
| 85734 | 400      | 55  | 208 |                          |                         |                             |
| 85731 | 35       | 5   | 19  |                          |                         |                             |
| 85676 | 90       | 10  | 38  | Yes                      | Fixed                   | Fixed                       |
| 85678 | 60       | 8   | 30  |                          |                         |                             |

For the complete system, when ordering 120 or 400 lb. refinery drum versions also order the following:

| Capacity | Model No. | Description         |
|----------|-----------|---------------------|
| 120 lb.  | 84616     | Drum Cover          |
|          | 85492     | Follower Assembly   |
|          | 84990     | Vent Valve Assembly |
| 400 lb.  | 271606    | Drum Cover          |
|          | 270982    | Follower Assembly   |
|          | 271605    | Vent Valve Assembly |

## Pump and Bucket Models with Follower Plate and Low-Level Detect

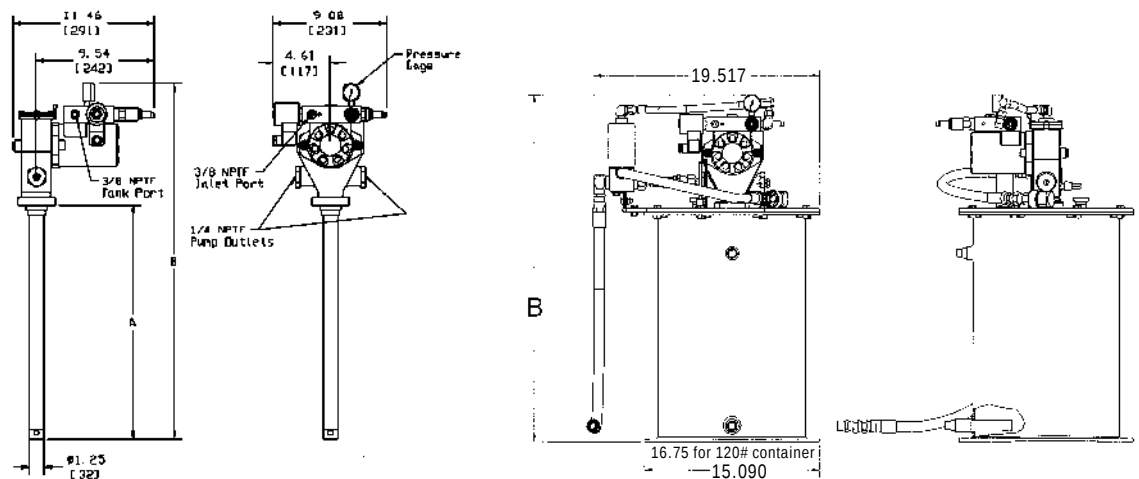
| Model    | Lbs. | Size gal | L  | Solenoid Manual Override | Adjustable Flow Control | Adjustable Pressure Control |
|----------|------|----------|----|--------------------------|-------------------------|-----------------------------|
| 85727 *  | 120  | 18       | 68 | No                       | Yes                     | Yes                         |
| 85728 ** | 60   | 8        | 30 |                          |                         |                             |
| 85725    | 90   | 10       | 38 |                          |                         |                             |
| 85726 ** |      | 10       | 38 | Yes                      | Fixed                   | Fixed                       |
| 85722    | 60   | 8        | 30 | No                       | Yes                     | Yes                         |

\*Includes high-level detect

\*\*Does not include follower plate or low-level detect

## Pump and Bucket Dimensions

| Container Size | Pump - in. (mm) |                 | Pump Bucket-in. (mm) |                 |
|----------------|-----------------|-----------------|----------------------|-----------------|
|                | A               | B               | A                    | B               |
| 35 lb.         | 13.69 (348)     | 24.00 (609.7)   | 14.59 (371)          | 24.90 (632.7)   |
| 60 lb.         | 19.00 (483)     | 29.31 (744.7)   | 19.90 (505)          | 30.20 (766.7)   |
| 90 lb.         | 27.50 (699)     | 37.81 (954.7)   | 28.40 (721)          | 40.63 (1,031.7) |
| 120 lb.        | 27.50 (699)     | 37.81 (954.7)   | 28.40 (721)          | 40.63 (1,031.7) |
| 400 lb.        | 34.00 (864)     | 44.31 (1,125.7) | 34.00 (864)          | 45.44 (1,154.7) |





## Pump and Bucket Models

| Model   | Capacity |     |    | Power | Maximum Pressure Rating | Speed Range RPM |
|---------|----------|-----|----|-------|-------------------------|-----------------|
|         | lbs      | gal | L  |       |                         |                 |
| 85728   | 60       | 8   | 30 | 24 DC | 5000 psi (345 bar)      | 9.5 - 100       |
| 85729   | 90       | 10  | 38 |       |                         |                 |
| 85730 * | 120      | 18  | 68 |       |                         |                 |

| Model | Gear Ratio | Current Draw Amps | Output: in <sup>3</sup> /min |     |
|-------|------------|-------------------|------------------------------|-----|
|       |            |                   | Min                          | Max |
| 85728 | 19:1       | 1 - 6.5           | 0.7                          | 6.3 |
| 85729 |            |                   |                              |     |
| 85730 |            |                   |                              |     |

Above models include follower plate and low-level detect

\* Includes high-level detect

## Accessories

| Description                    | 120 lb. | 400 lb. |
|--------------------------------|---------|---------|
| Follower plate                 | 85492   | 270982  |
| Drum cover                     | 85474   | 85475   |
| Vent valve assembly:<br>24 VDC | 85664   | 85665   |
| Strainer                       | 272180  | 272180  |

## 24 VDC Electric Vent Valve

| Model No.   | Description                  |
|-------------|------------------------------|
| 274899      | IP 67 Explosion Proof Rating |
| 276325      | IP 65 Rating                 |
| 276903      | IP 65 Rating                 |
| 276919      | Hardware Kit for 276903      |
| 525-32083-1 | IP 54 Rating                 |

For all FlowMaster II pumps replaced on original buckets, vent valve kit 278413 will be needed. This also applies to DC FlowMasters made after 2009.



### 120/230 VAC FlowMaster®

Now you can save the cost of air and plug in our new 120/230 VAC FlowMaster pump. Convenient and powerful, the 120/230 VAC FlowMaster pump allows you to tap into your AC power source and pump grease from a 120 lb. or 400 lb. drum. Rely on it to drive your automated lubrication systems such as Centro-Matic®, Mod Lube®, Quicklub® and Two-line.

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| <b>Operating Temperature Range:</b> | -40° to +150°F (-40° to +65°C)      |
| <b>Operating Voltage:</b>           | 120/230 VAC (50/60 Hz single phase) |
| <b>Pump Outlets:</b>                | ¼" NPTF                             |
| <b>Motor:</b>                       | ½" HP                               |

### Pump Only Models

| Model | Capacity |     |     | Power      | Maximum Pressure Rating | Speed RPM |
|-------|----------|-----|-----|------------|-------------------------|-----------|
|       | lbs      | gal | L   |            |                         |           |
| 85744 | 400      | 55  | 208 | 120-230 AC | 5000 psi (345 bar)      | 95        |
| 85743 | 120      | 18  | 68  |            |                         |           |

| Model | Gear Ratio | Current Draw: Amps |        | Output: in³/min Max |
|-------|------------|--------------------|--------|---------------------|
|       |            | @120 V             | @230 V |                     |
| 85744 | 19:1       | 1-4.6              | .5-2.4 | 6.3                 |
| 85743 |            |                    |        |                     |

### Accessories

| Description                  | 120 lb. | 400 lb. |
|------------------------------|---------|---------|
| Follower plate               | 85492   | 270982  |
| Drum cover                   | 85474   | 85475   |
| Vent valve assembly: 120 VAC | 85662   | 85663   |
| 230 VAC                      | 85660   | 85661   |
| Strainer                     | 272180  | 272180  |



### Reel-N-Flow Pump and Reel Kits

|                              |                                      |
|------------------------------|--------------------------------------|
| <b>Operating Temperature</b> | -20° to +140°F (-29° to +60°C)       |
| <b>Operating Voltage:</b>    | 24 VDC (18 min., 30 max.)            |
| <b>Motor</b>                 | ⅓ HP (0.25 kw)                       |
| <b>Max. Current Draw</b>     | 15 AMPS                              |
| <b>Max. Output</b>           | 18.0 in³/min (295 cm³/min)           |
| <b>Max. Output Pressure</b>  | 6,000 psi (413.8 bar)                |
| <b>Pump Weight</b>           | 35 lbs. kg (15.9)                    |
| <b>Hose Reel Capacity</b>    | ¾" High Pressure Hose, 50 ft. (15 m) |

Mounts on 35#/5-gallon refinery container

### Pump Models

| Model  | Description                                                 |
|--------|-------------------------------------------------------------|
| 274873 | 24V, Bare, high-pressure pump                               |
| 274874 | 24V, Bare pump with integrated pressure switch and manifold |
| 276041 | 12V, Bare high-pressure pump                                |
| 276360 | 12V, Bare pump with integrated pressure switch and manifold |

### Kit Models

Note: FlowMaster kit models will NOT be discontinued

| Model  | Description                                                                 | Bare Pump | Lid    | Follower | Reel   | Connecting Hose | Control Vlv. & Swivel |
|--------|-----------------------------------------------------------------------------|-----------|--------|----------|--------|-----------------|-----------------------|
| 274886 | 85751 pump, lid and follower                                                | 85751     | 274878 | 274888   |        |                 |                       |
| 274887 | 274886 with hose reel, 50' hose, control valve, swivel & 7' connecting hose | 85751     | 274878 | 274888   | 94553H | 276366          | 3050, 81729           |
| 276358 | 85753 pump, lid and follower                                                | 85753     | 274878 | 274888   |        |                 |                       |
| 276359 | 276358 with hose reel, 50' hose, control valve, swivel & 7' connecting hose | 85753     | 275878 | 274888   | 94553H | 276366          | 3050, 81729           |

### Accessories

| Model  | Description                |
|--------|----------------------------|
| 274872 | 10,000 psi Gauge           |
| 274934 | 35#/5-gal. Container Mount |



## 220 - 460 VAC, 50 Hz / 60 Hz 3 Phase AC FlowMaster Pump

The high-performance FlowMaster product line is a new generation of pump technology. Compact and versatile, its unique rotary drive and modular gear set let you adjust the pump to exactly fit your application.

- Wires directly to existing AC service
- Reduces installation costs – no need to tap into hydraulic circuits or pipe in compressed air
- Integrates easily to many styles of lubrication systems

- Heavy industry
  - Mining
  - Steel
  - Paper
- General Industry
  - Food/beverage
  - Automotive
  - Packaging
  - And others

|                                |                                                       |              |
|--------------------------------|-------------------------------------------------------|--------------|
| <b>Pump Model:</b>             | <b>85745</b>                                          | <b>85746</b> |
| <b>Pump/Container Size:</b>    | 120 lb.                                               | 400 lb.      |
| <b>Pump Output:</b>            | 6.3 in <sup>3</sup> /min. (103 cm <sup>3</sup> /min.) |              |
| <b>Operating Temperature:</b>  | -40° to 150°F (-40° to 65°C)                          |              |
| <b>Motor Max. Temperature:</b> | Up to 220°F (105°C)                                   |              |
| <b>Operating Voltage:</b>      | 3 Phase / 220 - 420 @ 50 Hz / 230 - 460 @ 60 Hz       |              |
| <b>Motor Power:</b>            | ½ Hp                                                  |              |
| <b>Pump Outlet:</b>            | ¼" NPTF                                               |              |

## Accessories

| Description         | 120 lb. | 400 lb. |
|---------------------|---------|---------|
| Follower plate      | 85492   | 270982  |
| Drum cover          | 85474   | 85475   |
| Vent valve assembly | 85660   | 85661   |
| Strainer            | 272180  | 272180  |



Model 84944

### Model 84944

Hydraulic-operated pump with 60 lb. metal reservoir and vent valve.

|                                                         |                                          |
|---------------------------------------------------------|------------------------------------------|
| <b>Model:</b>                                           | <b>84944</b>                             |
| <b>Nominal Lubricant/<br/>Hydraulic Pressure Ratio:</b> | 16:1                                     |
| <b>Output/Min @ 30 Cycles/Min:</b>                      | 11 cu. in. / 180 cc                      |
| <b>Reservoir Capacity:</b>                              | 60 lb. / 27 kg ,1800 cu. in. / 29,500 cc |
| <b>Hydraulic Inlet/Outlet:</b>                          | ¼" NPTF (M)                              |
| <b>Lube Outlet:</b>                                     | ¾" NPTF (M)                              |

**Important Note:**

1. Pumps require a timed electrical signal to operate. Use Model 244270 (not potted) or 249605 (potted) Cycle Timer. See System Controls section for specifications.
2. Included hydraulic solenoids require 24 VDC.

### Model 84961

Basic pump only for Model 84944. Includes pump and hydraulic control. Does not include reservoir or vent valve.

### Model 84960

Hydraulic pump for use with U.S. standard 120 lb. refinery drum. System components (pump, vent assembly, drum cover and follower plate) must be ordered separately.

### Model 84962

Hydraulic pump for custom lubricant container installations. Pump length is sized for U.S. standard 400 lb. refinery drum depth.

| Model | Nominal Lubricant/<br>Hydraulic Pressure Ratio | Output/Min @<br>30 Cycles/Min             | Lube<br>Outlet | Pump Tube<br>Length                          | Pump Tube<br>Diameter |
|-------|------------------------------------------------|-------------------------------------------|----------------|----------------------------------------------|-----------------------|
| 84960 | 16:1                                           | 11 in <sup>3</sup><br>180 cm <sup>3</sup> | ¼"<br>NPTF(F)  | -                                            | -                     |
| 84962 |                                                |                                           |                | 33 <sup>15</sup> / <sub>16</sub> "<br>862 mm | 1"<br>25.4 mm         |

**Important Note:**

1. Pumps require a timed electrical signal to operate. Use Model 244270 (not potted) or 249605 (potted) Cycle Timer. See System Controls section for specifications.
2. Included hydraulic solenoids require 24 VDC. Use Vent Assembly Model 84990; Drum Cover Model 84616 and Follower Plate Model 83371. Drum Cover and Follower Plate are for use with Model 84960 only.

### Hydraulic Power Supply Requirements

| Hydraulic Inlet<br>Pressure psig / bar |               | Flow Rate @<br>30 Cycles/Min.<br>GPM ltrs/min | Fluid<br>Max. Inlet<br>Temperature | Ambient Operating<br>Temperature Range |                | Filtration<br>Requirement |
|----------------------------------------|---------------|-----------------------------------------------|------------------------------------|----------------------------------------|----------------|---------------------------|
| Min                                    | Max           |                                               |                                    | Min                                    | Max            |                           |
| 300 /<br>21                            | 3000 /<br>207 | 1.0 /<br>3.8                                  | 210°F<br>99°C                      | -40°F<br>-40°C                         | +135°F<br>57°C | 10<br>Micron              |

**Note:**

All pumps have a hydraulic pressure reducing valve rated for 60 psi (4 bar) to 800 psi (55 bar) output. Maximum input is 3000 psi (207 bar).



Model 84960



Model 84962



Model 85418



Controller



Model 85419



Model 84111

## Airless Spray High-Pressure System

No air required—three words describe why Lincoln's innovative new Airless Spray System is the only system of its kind on the market. But it takes many more words to list all the benefits the latest in Lincoln's long line of technological advances has to offer. Because no air is required, the Airless Spray System means that mining, concrete, steel and other heavy industries can look forward to dependable, high-pressure lubricant spraying that's low-maintenance and cost-effective.

## 85418 Airless Spray Valve

| Model | Operating Voltage | Solenoid Valve Initial Current | Heater Current |
|-------|-------------------|--------------------------------|----------------|
| 85418 | 115 VAC           | .18 Amps                       | 1.80 Amps      |

## Spray Tips

| Model    | Descrip.       | Std Spray Tip | Std Tip with Swivel | Roto-Clean Tip | Roto-Clean Tip with Swivel* |
|----------|----------------|---------------|---------------------|----------------|-----------------------------|
| 252790   | Retaining Nut  | Required      | Not Required        | Not Required   | Not Required                |
| 252792   | Jet Stabilizer | Optional      | Optional            | Optional       | Optional                    |
| 85423 ** | Std. Spray Tip | Required      | Required            | Not Required   | Not Required                |
| 271579   | Swivel Assy    | Optional      | Required            | Optional       | Required                    |
| 252831   | Body           | Not Required  | Not Required        | Required       | Required                    |
| 85427 ** | Roto-Clean Tip | Not Required  | Not Required        | Required       | Required                    |

\* Discard tip retaining nut and protective cover, supplied with swivel assembly, when installing the roto-clean tip on a swivel assembly.

\*\* See chart below for spray tip models

| Standard Carbide Spray Tips |               |
|-----------------------------|---------------|
| Model                       | Model         |
| 85423-5001                  | 85423-11003   |
| 85423-6501                  | 85423-11004   |
| 85423-6502                  | 85423-650067  |
| 85423-8001                  | 85423-800067  |
| 85423-8002                  | 85423-950080  |
| 85423-9501                  | 85423-1100067 |
| 85423-9502                  | 85423-1100080 |
| 85423-11001                 |               |

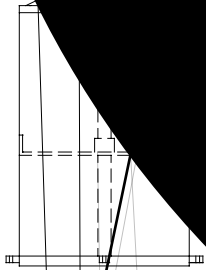
| Roto-Clean Carbide Spray Tips |               |
|-------------------------------|---------------|
| Model                         | Model         |
| 85427-5001                    | 85427-9501    |
| 85427-6501                    | 85427-9502    |
| 85427-6502                    | 85427-650067  |
| 85427-8001                    | 85427-800067  |
| 85423-8002                    | 85427-1100067 |

## Pumps

Lincoln offers many pump options for supplying lubricant to the lube system. Air-operated pumps are preferred when possible due to their versatility and wide range of selection. Hydraulic and electric pumps are also available. **The pump must be capable of pumping the lubricant to a minimum of 3500 psi at the airless spray valve.**

## Filters

| Model | Description                                                                                                                                                                                |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 85419 | Dual filter panel with operator valve to select one of the two 84111 filters. The other filter is isolated from the system pressure for uninterrupted service and easy element replacement |
| 84111 | High-pressure, single in-line filter (recommended) 238 micron (60 MESH)                                                                                                                    |
| 84004 | Single in-line filter 140 micron (100 MESH)                                                                                                                                                |





### High-Pressure, High-Flow Filter Designed Specifically for the Mining, Off-Highway And Industrial Markets

#### Features and Benefits

- Clogged filter indicator with quick reset
  - Red indicator pin is triggered when the filter element is almost completely clogged
  - If the filter element becomes completely clogged, the grease will safely vent to the atmosphere, preventing contaminated grease from entering the reservoir
- Promotes cost-effective preventative maintenance
- Custom-designed filter element
- Allows for easy and quick cleaning or replacement
- Virtually crush proof element; available in both 250 and 470 micron steel screen sizes
- Durable ductile iron body construction
- 4500 psi (310 bar) pressure rating
- 10 gal./min. (38 liter/min.) maximum flow rate
- Three mounting points for stability

| Model   | Description               |
|---------|---------------------------|
| 276492  | 250 micron filter         |
| 276492A | 470 micron filter         |
| 282007  | 250 micron filter element |
| 282008  | 470 micron filter element |



### Reservoir Low-Level Alarm Kits

Low-level kits signal need to fill reservoir

| Model  | Lubricant Type | Use with Models                                                                                             | Switch Type | Switch Capacity Voltage (Amps)                                                           | Feature                                                     |
|--------|----------------|-------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 83671  | Grease         | 82653, 82655, 83668, 83800, 83834, 83167, 83599, 1833, 1835, 1849, 85434, 85435, 85436, 85437, 85444, 85445 | SPDT        | 125 VAC (15)<br>250 VAC (15)<br>480 VAC (15)<br>24 VDC (2)<br>125 VDC (½)<br>250 VDC (¼) | Connect to machine control or visual/audible alarm circuit. |
| 83696  | Oil            | 82570, 82573, 83667, 283167, 1848, 85430, 85431, 85440, 85441                                               |             |                                                                                          | Includes follower for U.S. Std. 120 lb. drum.               |
| 84629  | Grease         | 84960                                                                                                       |             |                                                                                          |                                                             |
| 85490  | Grease         | 84050                                                                                                       | None        | -                                                                                        | Includes follower, visual indication only.                  |
| 249608 | Grease         | 84050 new style                                                                                             |             |                                                                                          |                                                             |

### Follower Plates

Recommended when pumping lubricants that do not readily seek their own level.



| Model  | Use with Pump Model | Container Size                      |
|--------|---------------------|-------------------------------------|
| 83370  | 87240, 87228        | Standard U.S. 400 lb. refinery drum |
| 83371  | 1823, 282288, 84960 | Standard U.S. 120 lb. refinery drum |
| 92544  | 1828, 1830          | Standard U.S. 120 lb. refinery drum |
| 92597  | 84050, 84944        | Lincoln 60 lb. container            |
| 252725 | 85483               | Lincoln 35 lb. unit                 |
| 85489  | 85481               | Lincoln 60 lb. unit                 |

### In-Line Lubricant Filters

Filters mount in pump outlet before vent valve on reciprocating pump systems. Removes solid contaminants before delivering lubricants to the supply line.



Model 84004,  
84523

| Part No. | Element Size micron | Maximum Pressure    | Connections in. | Hex Body Size - in. |
|----------|---------------------|---------------------|-----------------|---------------------|
| 84004    | 140                 | 5000 psig / 340 bar | ½ NPTF (M)      | ¼                   |
| 84528    | 570                 |                     |                 |                     |
| * 84239  | 10                  | 6000 psig / 408 bar | ¼ NPTF (F)      | 1¼                  |

\* In-line filter with flouroelastomer seal.

### Automatic Filling System Pressure Regulator

Pressurized systems automatically keep up to eight, single stroke oil pump reservoirs full at all times. Use with reservoir seal kits below. Fill pump not included.



| Model | Fill Pump Requirements |            | Fill System Requirements |           |                                  | Lubricant Inlet/Outlet | Vent Outlet |
|-------|------------------------|------------|--------------------------|-----------|----------------------------------|------------------------|-------------|
|       | Max. *<br>psig / bar   | Max. Ratio | Max. Length              |           | Reservoir Pressure<br>psig / bar |                        |             |
|       |                        |            | 5/8" Tube                | 3/8" Tube |                                  |                        |             |
| 83372 | 125 / 8.6              | 3:1        | 100' / 30.5m             | 55'/16.8m | 5 /.34                           | ½" NPT(F)              | ¼" NPTF(F)  |

\* Indicates maximum lubricant output pressure.

### Pressure Kits

Seal reservoirs for automatic filling.

| Model | Use with Pump Models |
|-------|----------------------|
| 83368 | 82885                |
| 83637 | 82570, 82573         |

### Manual Filling Pumps

Designed to provide a fast, clean method of filling Centro-Matic pumps with a self-contained reservoir without the risk of lubricant contamination.



| Model | Lubricant Type           | Lubricant Output                    | Container Capacity | Hose Length | Lubricant Outlet               | Dimensions - in. / mm |           |                    |
|-------|--------------------------|-------------------------------------|--------------------|-------------|--------------------------------|-----------------------|-----------|--------------------|
|       |                          |                                     |                    |             |                                | Height                | Width     | Container Diameter |
| 81834 | Grease<br>NLGI #1<br>Max | 1 oz/stroke<br>1.9 cu. in.<br>31 cc | 30 lbs.<br>14.2 L  | 7'<br>2.1 m | 645006<br>Hydraulic<br>Coupler | 26¾<br>679            | 14<br>356 | 9<br>229           |
| 1254  | Oil                      | 1 pint/ 7<br>strokes 473<br>cc      | 30 pints<br>14.2 L | 5'<br>1.5 m | 80599 Non-<br>Drip Nozzle      |                       |           |                    |



### Metal Reservoirs: Rectangular reservoirs for gravity feed oil pumps

Standard 3/8" NPTF outlet furnished for gravity-fed pumps. Features spring loaded cap with strainer, sight gauge and Buna-N O-rings. Model 84376 Sight Gauge Kit available for use with synthetic oil.

| Model | Capacity |       | Lubricant Outlet | Dimensions |           |           |          |          |          |
|-------|----------|-------|------------------|------------|-----------|-----------|----------|----------|----------|
|       | gal      | liter |                  | Height in  | Height mm | Width in. | Width mm | Depth in | Depth mm |
| 87417 | 5        | 19    | 3/8" NPTF (F)    | 10 1/2     | 257       | 17 1/2    | 446      | 12 1/2   | 318      |
| 87418 | 3        | 11.3  |                  |            |           | 13 1/2    | 343      | 11 1/2   | 292      |
| 87419 | 1.5      | 5.7   |                  |            |           | 10 1/2    | 267      | 7 1/2    | 191      |



### Cylindrical Reservoir

Four-gallon steel tank-type reservoir consisting of Model 82700 tank and Model 82612 mounting brackets. Incorporates large filler opening with screw cap.

| Model | Tank Number | Bracket Number | Capacity       | Lubricant Output | Dimensions - in. / mm |          |
|-------|-------------|----------------|----------------|------------------|-----------------------|----------|
|       |             |                |                |                  | Height                | Diameter |
| 82621 | 82700       | 82612          | 4 gal. / 15.1L | 1/2" NPT (F)     | 18 / 457              | 9 / 229  |



### Ultrasonic Sensor

Ultrasonic High/Low Sensor to make it easier to know when the 60 lb. Centro-Matic® automated lubrication system reservoir is getting low on lubricant and when it's refilled to capacity. Sensor detects the position of the follower plate with ultrasonic waves to report the lubricant level. The sensor is factory programmed for a 60 lb. reservoir. Its two outputs drive external signaling devices or connect with a customer's PLC. Three standard LEDs offer visual indication of the sensor's status and reservoir level.

| Model  | Description                         |
|--------|-------------------------------------|
| 270782 | Ultrasonic sensor                   |
| 270781 | Ultrasonic sensor socket (required) |

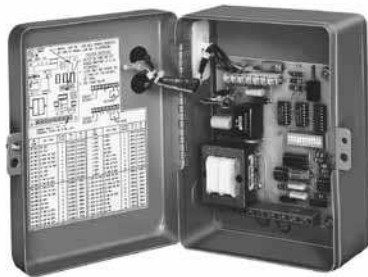
| Ambient Temp. Range             | Protection | Power Supply Operating Range | Current less load | Switching Outputs |                               |                             |
|---------------------------------|------------|------------------------------|-------------------|-------------------|-------------------------------|-----------------------------|
|                                 |            |                              |                   | Max. Current      | High Level                    | Low Level                   |
| -13°F to 158°F<br>-25°C to 70°C | IP65       | 20 - 30 VDC                  | 60 mA             | 200 mA            | NO contact (closes when full) | NO contact (opens when low) |

Selecting the right controls for your automated lubrication system is one of the last steps in the design process. Several different models may be chosen to control power-operated pumps, depending on the degree of automation and monitoring required. Your Lincoln representative will assist you in specifying the correct model.

Options range from simple timers to fully-automated system controllers and monitors. Basic timers allow you to set the interval between lubrication cycles. More sophisticated monitors control the frequency of lubrication, oversee system performance while showing system status and alarms on a LCD display panel. Monitors may be interfaced with machine control systems to protect your equipment from harm .

You may customize your installation with air and lubricant filters to prolong system life, pressure gauges for monitoring, shut-off valves to ease future maintenance and even automated filling systems to utilize bulk lubricant storage.

All of these possibilities, and more, have made Lincoln Automated Lubrication Systems the choice of industry for over 80 years.



### Model 84501 Program Timer—Solid State

Designed to control the lubrication cycle frequency of air-operated single-stroke pumps. Timer turns pump on/off at programmed intervals via a 3-way or 4-way air solenoid valve (not included) installed in the air line to pump.

| Off Time<br>(Cycle Time) |         | On Time<br>(Pumping Time) |                   | Power<br>Requirement    | Approvals | Switch Capacity                        |
|--------------------------|---------|---------------------------|-------------------|-------------------------|-----------|----------------------------------------|
| Min.                     | Max.    | Min.                      | Max.              |                         |           |                                        |
| 20 Sec.                  | 24 Hrs. | 10 Sec.                   | 1 Min.<br>24 Sec. | 120/230 VAC<br>50/60 Hz | UL, CSA   | 120 VAC, 5 Amps /<br>230 VAC, 1.5 Amps |

| Built-In Program<br>Options |                     | Enclosure |                     |          |          | Ambient Operating<br>Temperature Range |              |
|-----------------------------|---------------------|-----------|---------------------|----------|----------|----------------------------------------|--------------|
| 3 Hr. Program<br>Memory     | Prelube<br>Function | Rating    | Dimensions-in. / mm |          |          | Minimum                                | Maximum      |
|                             |                     |           | Height              | Width    | Depth    |                                        |              |
| Yes / No                    | Yes / No            | NEMA #1   | 8¼ / 210            | 6¼ / 173 | 4½ / 125 | 0°F / -18°C                            | 130°F / 54°C |

**Note:**

Refer to Technical Manual for a full explanation of available program options.



### Model 84511 Economy Timer for Single Stroke Pumps

Uses a timing motor, cam and switch to turn pump off and on. NEMA 1 enclosure, UL and CSA listed. Switch capacity 10 amps non-inductive.

| Off Time<br>(Cycle Time) |       | On Time<br>(Pumping Time) |         | Power<br>Requirement | Approvals | Switch<br>Capacity |
|--------------------------|-------|---------------------------|---------|----------------------|-----------|--------------------|
| Min.                     | Max.  | Min.                      | Max.    |                      |           |                    |
| 5<br>Min.                | 1 Hr. | 30 Sec.                   | 90 Sec. | 120 VAC, 60Hz        | UL, CSA   | 10 Amps            |

Note: Off-time selectable in 5 minute intervals.

| Enclosure |                       |           |         |
|-----------|-----------------------|-----------|---------|
| Rating    | Dimensions - in. / mm |           |         |
|           | Height                | Width     | Depth   |
| NEMA 1    | 5 / 127               | 3¼ / 82.5 | 3½ / 89 |

## Model 84015 Timer—12-24V DC

Solid-state microprocessor-based controller for automated lubrication systems on mobile equipment or where AC power is not available. Rugged construction with liquid- and dust-tight enclosure. Includes manual push-button for remote initiation of a lube cycle.



| Off Time** (Cycle Time) |         | Fixed On Time<br>(Pumping Time) | Power<br>Requirement | Switch<br>Capacity |
|-------------------------|---------|---------------------------------|----------------------|--------------------|
| Min.                    | Max.    |                                 |                      |                    |
| 2.5 Min.                | 80 Min. | 75 Sec.                         | 10-30 VDC 25 MA*     | 5 Amps             |

\* Less load.

\*\* Available selections are 2.5, 5, 10, 20, 40 or 80 minutes.

| Enclosure |                     |         |        | Ambient Operating Temperature Range |              |
|-----------|---------------------|---------|--------|-------------------------------------|--------------|
| Rating    | Dimensions-in. / mm |         |        | Minimum                             | Maximum      |
|           | Height              | Width   | Depth  |                                     |              |
| NEMA 12   | 5¼ / 133            | 3⅞ / 79 | 3 / 76 | 0°F / -18°C                         | 131°F / 55°C |



## Model 85520 Programmable Controller

Microprocessor-controlled, 120 volt AC unit is fully programmable. Controller has a wider off-time range than timers and a memory switch to turn pre-lube option on or off.

| Off Time<br>(Cycle Time) |          | On Time<br>(Pumping Time) |          | Power<br>Requirements | Switch Capacity<br>Inductive Load<br>at 120VAC |                |
|--------------------------|----------|---------------------------|----------|-----------------------|------------------------------------------------|----------------|
| Min.                     | Max.     | Min.                      | Max.     |                       | Load<br>Relay                                  | Alarm<br>Relay |
| 30 Sec.                  | 30 Hours | 30 Sec.                   | 300 Sec. | 120 VAC<br>50/60 Hz   | 2 Amps                                         | 2 Amps         |

| Enclosure |                     |          |         | Ambient Operating Temperature Range |              |
|-----------|---------------------|----------|---------|-------------------------------------|--------------|
| Rating    | Dimensions-in. / mm |          |         | Minimum                             | Maximum      |
|           | Height              | Width    | Depth   |                                     |              |
| NEMA 12   | 7½ / 191            | 4½ / 125 | 3½ / 89 | -13°F / -18°C                       | 150°F / 55°C |

## Model 85525 Programmable Controller

Same as Model 85520 except includes pressure switch and mounting brackets.

## Model 85535 System Controller—24V DC

Same as Model 85520 except is a 24-volt DC - max "on" time = 2 min.



### Model 85530 Lubrication System Controller

Controls lubrication frequency and monitors supply line pressure. The LCD displays operating status.

| Lube Cycle             |               |                            |               | Max<br>Count<br>Rate*          | Pumping Time<br>Before Alarm |                  |
|------------------------|---------------|----------------------------|---------------|--------------------------------|------------------------------|------------------|
| Timer Mode<br>Off Time |               | Counter Mode<br>Off Counts |               |                                | Min.                         | Max.             |
| Min.                   | Max.          | Min.                       | Max.          |                                |                              |                  |
| 1 Minute               | 9,900 Minutes | 1 Count                    | 99,000 Counts | 30/Sec. @<br>50% Duty<br>Cycle | 1 Minute                     | 9,900<br>Minutes |

\* Minimum duration of count signal is 33 milliseconds.

| Power Requirements<br>(less load) |         | Pump,<br>Solenoid,<br>or Alarm<br>Capacity | Ambient<br>Temperature<br>Range | Enclosure  |                     |              |           |
|-----------------------------------|---------|--------------------------------------------|---------------------------------|------------|---------------------|--------------|-----------|
| Voltage                           | Current |                                            |                                 | Rating     | Dimensions-in. / mm |              |           |
|                                   |         |                                            |                                 |            | Height              | Width        | Depth     |
| 120 VAC, 50/60 Hz                 | 85 MA   | 360 VA                                     | 32° to 122°F<br>-0° to +50° C   | NEMA<br>12 | 9½<br>241           | 8½/16<br>227 | 4⅞<br>105 |
| 230 VAC, 50/60 HZ                 | 45 MA   |                                            |                                 |            |                     |              |           |
| 24 VDC                            | 250 MA  | 5 Amps                                     |                                 |            |                     |              |           |

**Note:** Model 85530 is CSA/NRTL approved.



### Model 85209 Panel Mounted Pneumatic Control System

Panel mounted units control lubrication frequency and monitor supply line pressure. Includes Model 85530 Controller (specifications above), Model 69630 Pressure Switch and solenoid-operated air valve.

| Lube Cycle             |                  |                            |                  | Max<br>Count<br>Rate* | Pumping Time<br>Before Alarm |                  | Connections   |               |
|------------------------|------------------|----------------------------|------------------|-----------------------|------------------------------|------------------|---------------|---------------|
| Timer Mode<br>Off Time |                  | Counter Mode<br>Off Counts |                  |                       | Min.                         | Max.             | Air           | Lube          |
| Min.                   | Max.             | Min.                       | Max.             |                       |                              |                  |               |               |
| 1 Minute               | 9,900<br>Minutes | 1 Count                    | 99,000<br>Counts | 30/<br>Sec.           | 1<br>Minute                  | 9,900<br>Minutes | ¾"<br>NPTF(F) | ¾"<br>NPTF(F) |

| Power Requirements               |                     | External Alarm Load Capacity | Ambient Temperature Range   | Panel Dimensions in. / mm |           |
|----------------------------------|---------------------|------------------------------|-----------------------------|---------------------------|-----------|
| Voltage                          | Current (less load) |                              |                             | Height                    | Width     |
| 120 VAC, 60 Hz<br>110 VAC, 50 Hz | 47 VA               | 360 VA                       | 32° to 122°F<br>0° to +50°C | 12 / 305                  | 18¼ / 464 |

### Model 85208

Same as Model 85209 except 220 VAC, 50-60 Hz power.



### Model 247333 Pressure Transducer

Pressure Transducer signals actual system pressure. Comes with 72 inch (1.8m) shielded 24-gauge connecting wire. Maximum length of wire between transducer and monitor is 30 ft. (9.1 m).

| Range                    | Accuracy | Proof                | Pressure Connection   | Ambient Temp.                   | Input        | Voltage Output | Offset | Enclosure                                             |
|--------------------------|----------|----------------------|-----------------------|---------------------------------|--------------|----------------|--------|-------------------------------------------------------|
| 0 to 4000 psi<br>276 bar | ±1%      | 7500 psig<br>517 bar | ¼" NPT<br>Male Thread | -20° to 180° F<br>-29° to 82° C | 10 to 30 VDC | 1-6 VDC        | 1 VDC  | NEMA 4X<br>Rating<br>300 Series<br>Stainless<br>Steel |



### Electric Solenoid-Operated Air Valves

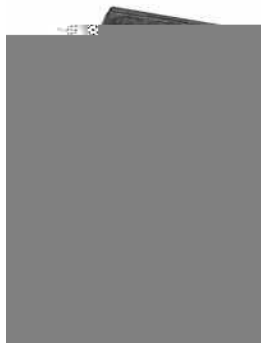
| Model  | Type  | Electrical Characteristics                 |                     |                      | Air Inlet/Outlet | Ambient Temperature Range   | Cv Factor | Max. Pressure psi / bar | Conduit Connection |
|--------|-------|--------------------------------------------|---------------------|----------------------|------------------|-----------------------------|-----------|-------------------------|--------------------|
|        |       | Power Requirements                         | Inrush Current Amps | Holding Current Amps |                  |                             |           |                         |                    |
| 350244 | 4-Way | 110 VAC, 50 Hz<br>120 VAC, 60 Hz<br>8.4 VA | .11                 | .07                  | ¼" NPT(F)        | 0° to 120°F<br>-18° to 49°C | 1.2       | 150 / 10.3              | ½" NPS(F)          |
| 350245 |       | 220 VAC, 50 Hz<br>240 VAC, 60 Hz<br>8.4 VA | .055                | .035                 |                  |                             |           |                         |                    |
| 350241 | 3-Way | 110 VAC, 50 Hz<br>120 VAC, 60 Hz<br>8.4 VA | .11                 | .07                  | ¼" NPT(F)        | 0° to 140°F<br>-18° to 60°C | .18       | 150 / 10.3              | N/A                |
| 350242 |       | 220 VAC, 50 Hz<br>240 VAC, 60 Hz<br>8.4 VA | .055                | .035                 |                  |                             |           |                         |                    |
| 350282 |       | 12 VDC 6 Watts                             | N/A                 | N/A                  |                  |                             |           |                         |                    |
| 350283 |       | 24 VDC 6 Watts                             | N/A                 | N/A                  |                  |                             |           |                         |                    |
| 68586  | 2-Way | 120V, 60 Hz 12 VA                          | .2                  | .1                   | ¾" NPT(F)        | 0° to 120°F<br>-18° to 49°C | 2.4       | 150 / 10.3              | ½" NPT(F)          |
| 274398 | 3-Way | 24 VDC 8.5 Watts                           | N/A                 | N/A                  | ¼" NPT(F)        |                             | .5        |                         | N/A                |
| 244727 |       | 110 VAC, 50 Hz<br>120 VAC, 60 Hz<br>11 VA  | .12                 | .09                  | ¾" NPT(F)        |                             | 4.4       |                         | ½" NPT(F)          |



### Model 249605 Sealed Cycle Timer

Sealed timer attaches to Lincoln 16:1 Hydraulic Pumps and generates timed pulse signal to control pump reciprocating cycle rate.

| Power Requirement | Cycle Rate/Minute |     |
|-------------------|-------------------|-----|
|                   | Min.              | Max |
| 24 VDC            | 6                 | 60  |



### End-of-Line Monitors

Designed to detect system pressure utilizing normally open or normally closed switch.

| Model | Switch Rating                   | Operating Range - psig / bar |            | Lube Inlet     | Dimensions - in / mm |            | Conduit Connection |
|-------|---------------------------------|------------------------------|------------|----------------|----------------------|------------|--------------------|
|       |                                 | Min.                         | Max        |                | Height               | Width      |                    |
| 83898 | 125, 250<br>480 VAC,<br>15 Amps | 1200 / 83                    | 2500 / 172 | 1/4"<br>NPT(F) | 5 3/4 / 146          | 2 1/4 / 57 | 1/2" NPSM          |
| 83899 |                                 | 700 / 48                     | 1150 / 79  |                |                      |            |                    |



### Model 69630 Pressure Switch

Senses supply line pressure rise/fall to signal system operation to controller or system alarm.

| Type           | Switch Capacity                |                                                 | Adjustable Range - psig / bar |            |            |            | Connections |                                        |
|----------------|--------------------------------|-------------------------------------------------|-------------------------------|------------|------------|------------|-------------|----------------------------------------|
|                | AC                             | DC                                              | Decreasing                    |            | Increasing |            | Lube        | Electrical                             |
|                |                                |                                                 | Min                           | Max        | Min.       | Max.       |             |                                        |
| Single Contact | 10 Amps at 125, 250 or 480 VDC | 15Amps@6VDC<br>5Amps@24VDC .03<br>Amps@ 250 VDC | 250 / 17                      | 2775 / 191 | 280 / 19   | 3000 / 207 | 1/4" NPT(F) | 27/32" hole for 1/2" conduit connector |

Note: Pressure switch has a NEMA 3 housing and UL listed switching elements.

# Centro-Matic® Automatic Lubrication Systems

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