

# LINCOLN



## ***CENTRO-MATIC<sup>®</sup> AUTOMATED LUBRICATION SYSTEMS***



**"I install Lincoln Centro-Matic systems with confidence because I know they're going to prolong the life of my customer's critical machinery."**

**Les Maness, Installation Foreman,  
Lincoln Distributor**

# Centro-Matic® Automated 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

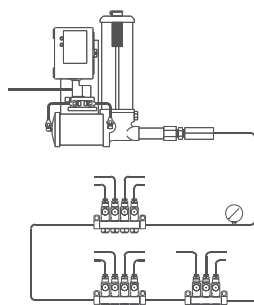
Each injector incorporates an indicator pin that gives visual confirmation the injector is operating correctly. When necessary, troubleshooting is the simple process of checking indicator pins.

### 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.

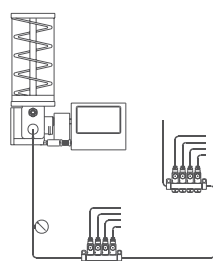
### Parts and Service

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.



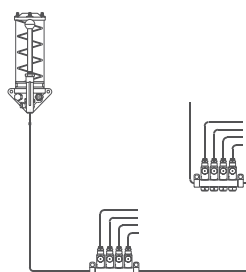
### Air-Operated

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.



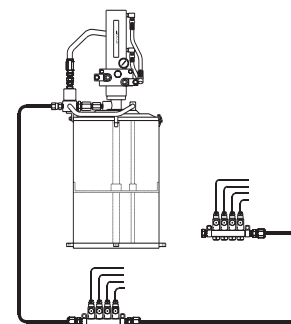
### Electric

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.



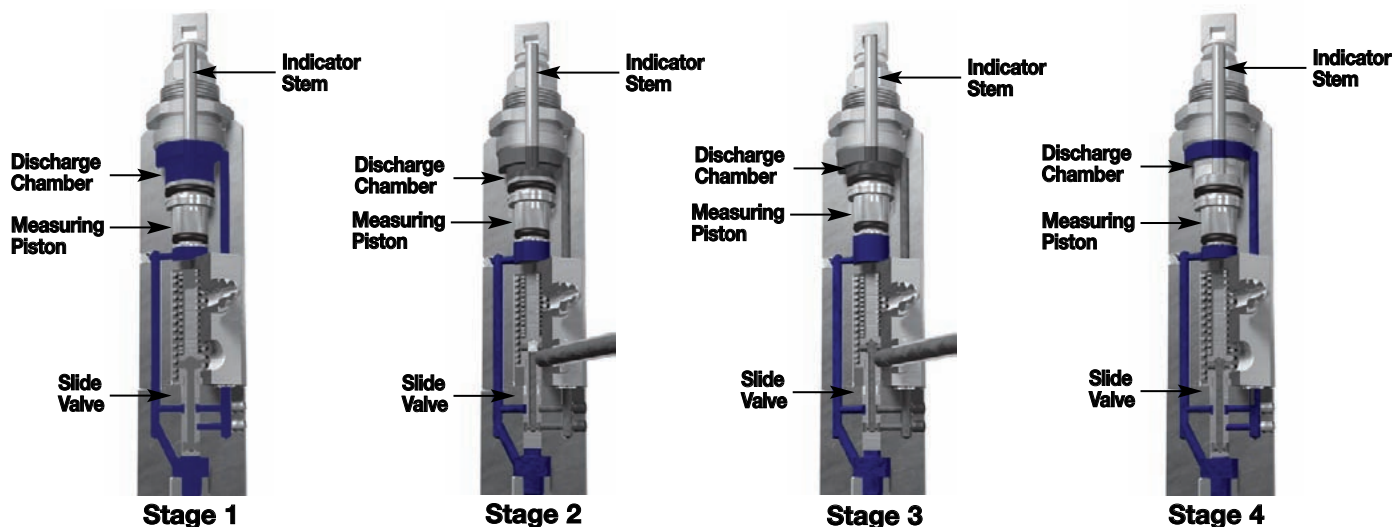
### Hydraulic

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.



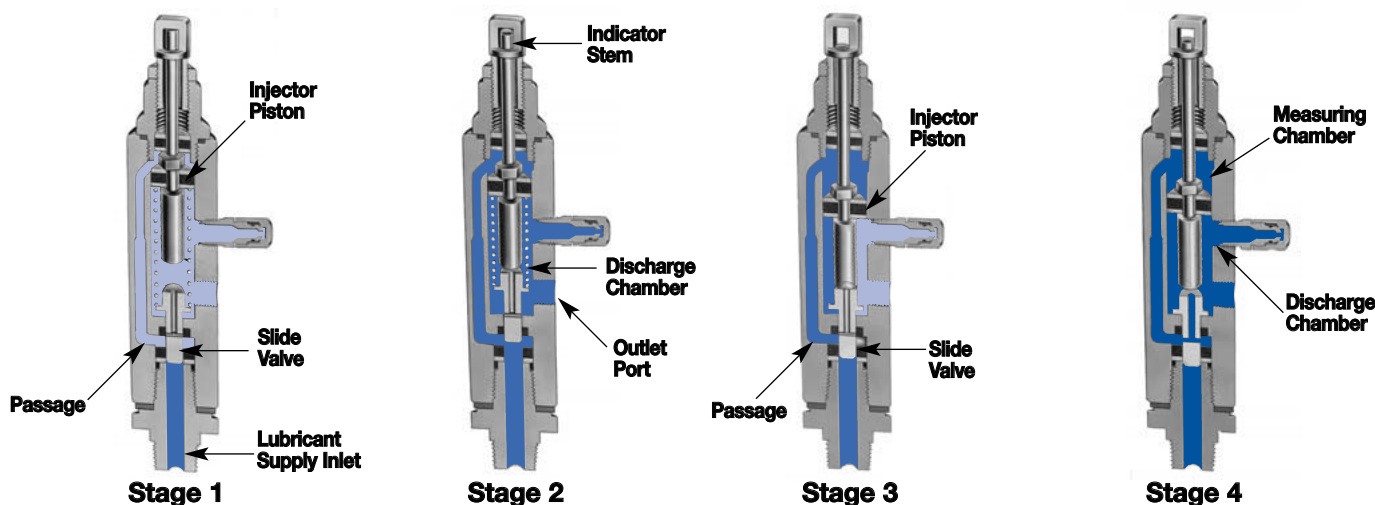
### SL-V, SL-V XL

**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.

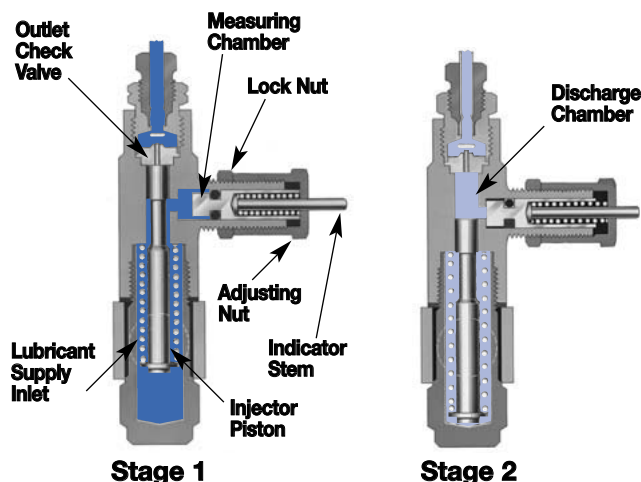
### SL-32, -33, -42, -43

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



# 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 almost 90 years, 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 BearingSaver®. You not only get a complete audit of your facility, you also receive an analysis of your return on investment.

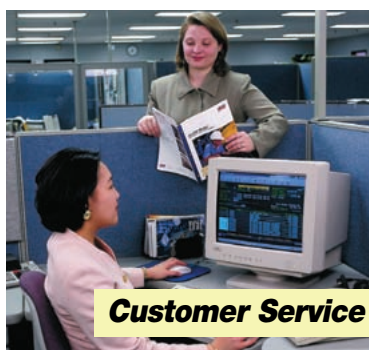
## Industrial Solutions



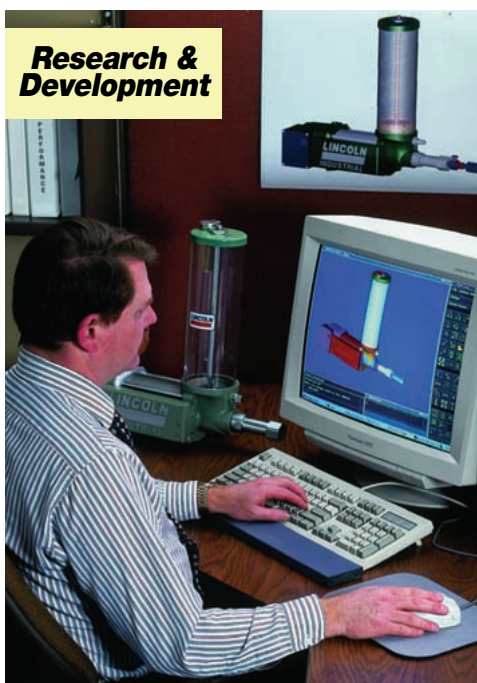
## Worldwide Support



## Quality Manufacturing



## Customer Service



## Research & Development



## BearingSaver®



## Mobile Equipment

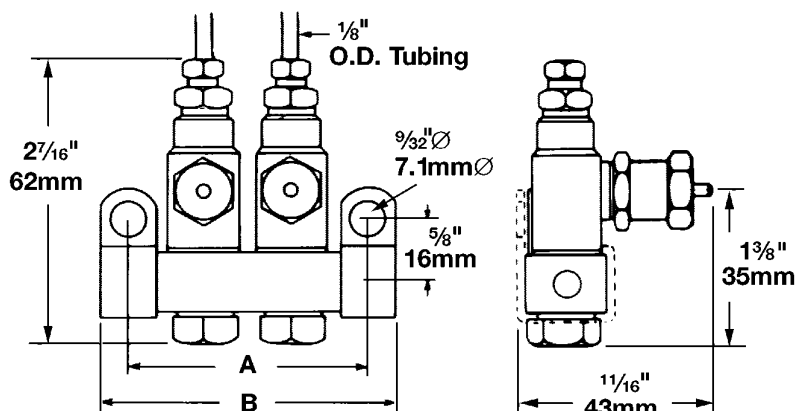
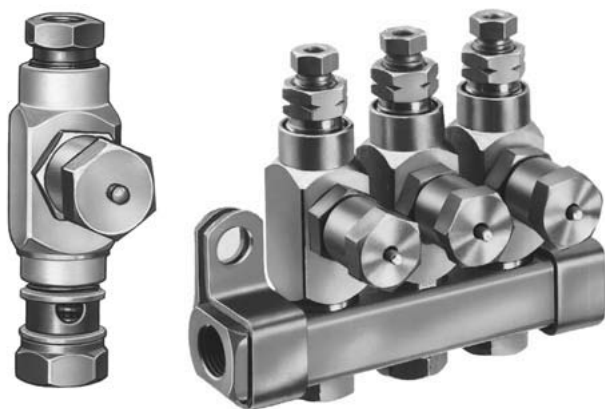


# Centro-Matic® Automated Lubrication Systems

## Grease Injectors



### 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:

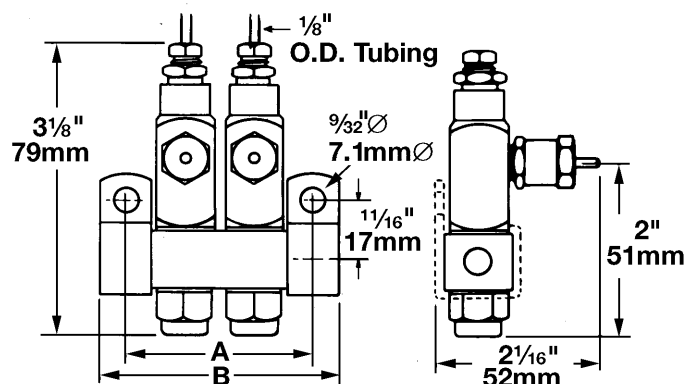
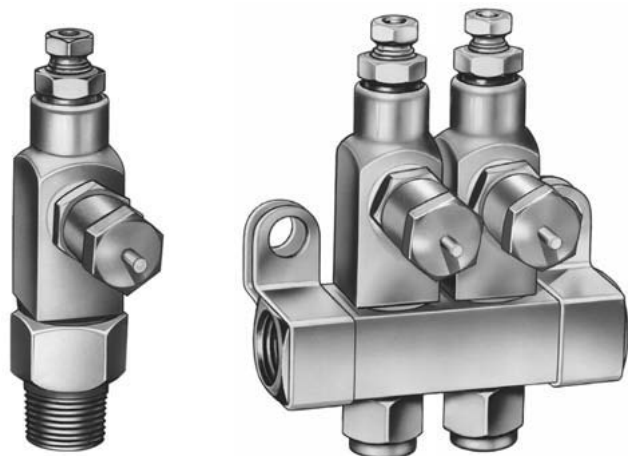
Series	Output		Operating Pressure			
	Min	Max	Min	Max	Typical	Vent
SL-33	.001 cu. in. .016 cc	.003 cu. in. .049 cc	1200 psig 83 bar	3500 psig 241 bar	1500 psig 103 bar	200 psig 14 bar

Model		Number of Outlets	Connections		Dimensions			
Carbon Steel	Stainless Steel (304)		Manifold Inlet	Injector Outlet	A		B	
					in.	mm	in.	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 1/2"	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 7/8"	124	5 3/8"	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:

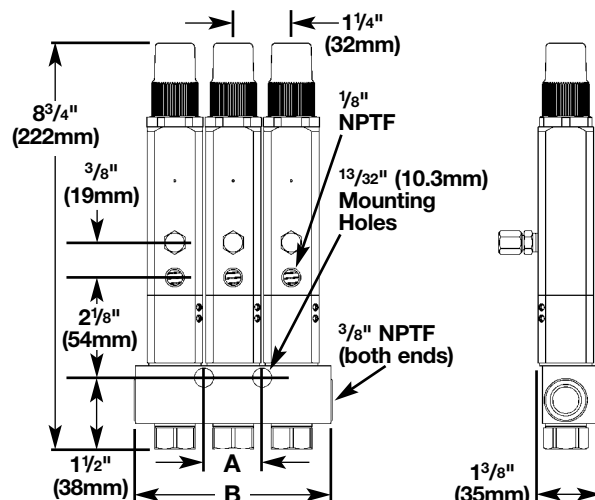
Series	Output		Operating Pressure			
	Min	Max	Min	Max	Typical	Vent
SL-32	.001 cu. in. .016 cc	.008 cu. in. .131 cc	1200 psig 83 bar	3500 psig 241 bar	1500 psig 103 bar	200 psig 14 bar

Model		Number of Outlets	Connections		Dimensions			
Carbon Steel	Stainless Steel (304)		Manifold Inlet	Injector Outlet	A		B	
					in.	mm	in.	mm
83336-1	83724-1	1	1/4" NPTF (F)	1/8" O.D. Tube	1 1/4	32	1 1/4	44
83336-2	83724-2	2			2	51	2 1/2	63
83336-3	83724-3	3			2 3/4	70	3 1/4	83
83336-4	83724-4	4			3 1/2	89	4	102
83338	—	1	1/4" NPTF (M)		Single Injector/No Manifold			
83337	83337-9	—	—		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. 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	0.08	1850 psig 128 bar	6000 psig 415 bar	2500 psig 170 bar	1000 psig 70 bar	3/8" NPTF(F)	1/8" NPTF(F)

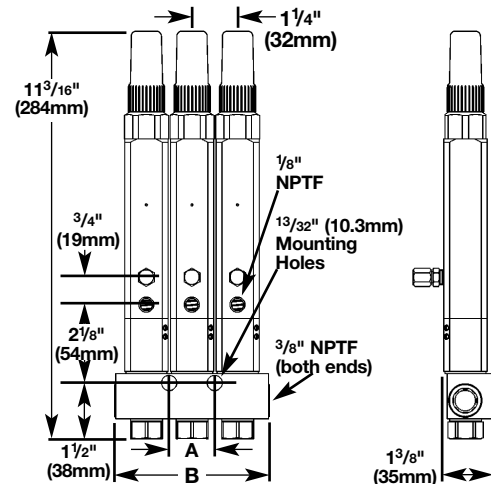
Model	Type	Number of Outlets	Dimension A		Dimension B	
			in.	mm	in.	mm
85770-1	One Injector Manifold	1	Single Mounting Hole		2 1/2	63
85770-2	Two Injector Manifold	2			3	76
85770-3	Three Injector Manifold	3	1 1/4	32	4 1/4	108
85770-4	Four Injector Manifold	4	2 1/2	63	5 1/2	140
85770-5	Five Injector 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 1/2" (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.



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

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

#### Notes:

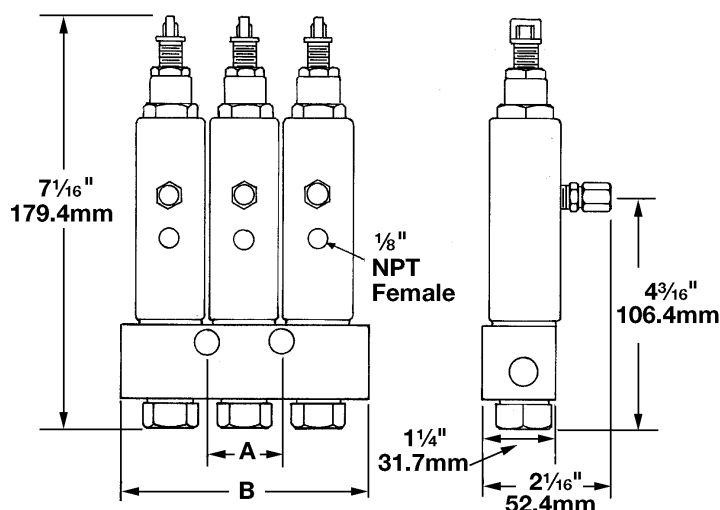
1. Injector manifolds have 13/32" (10.3 mm) dia. mounting holes for 3/8" bolt.
2. Injectors have polyurethane seals. Check compatibility with synthetic lubricants.
3. Injector rated for 180°F (80°C) max. ambient temperature, depending on lubricant used.
4. Injectors include fitting for filling feedlines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

# Centro-Matic® Automated Lubrication Systems

## Grease Injectors



### Series SL-1



- For single-line, high-pressure central lubrication system.
- For dispensing lubricants compatible with Viton® 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. .131 cc	.080 cu. in. 1.31 cc	1850 psig 127 bar	3500 psig 241 bar	2500 psig 172 bar	600 psig 41 bar	3/8" NPTF (F)	1/8" NPTF (F)

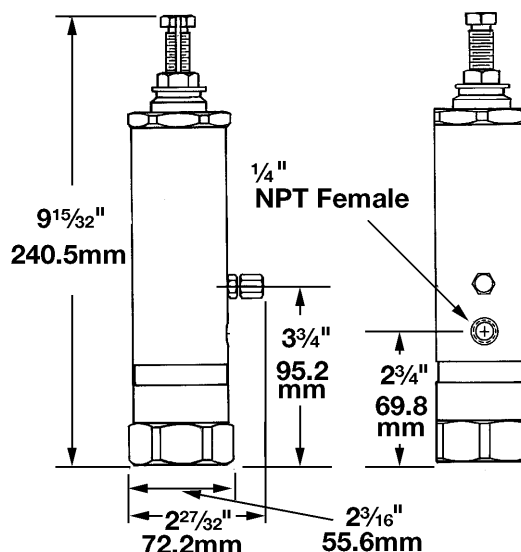
Model		Number of Outlets	Dimensions			
Carbon Steel	Stainless Steel (316)		A		B	
			in	mm	in	mm
81770-1	239351* One Injector Manifold	1	Single Mounting Hole		2½	63
81770-2	239352* Two Injector Manifold	2			3	76
81770-3	239353* Three Injector Manifold	3	1¼	32	4¼	108
81770-4	239354* Four Injector Manifold	4	2½	63	5½	140
81770-5	239355* Five Injector Manifold	5	3¾	95	6¾	171
81770-6	—	6	5	23	8”	203
81713	—	Single injector/no manifold, [ ⅝" NPTF (M) inlet]				
81713A	84776* Injector	Replacement for manifolded injectors				

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

#### Notes:

1. Injector manifolds have 1 3/8" (10.3 mm) dia. mounting holes for 3/8" bolt.
2. Injectors have Viton® 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 Viton® 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. .82 cc	.500 cu. in. 8.2 cc	1000 psig 69 bar	3500 psig 241 bar	2500 psig 172 bar	800 psig 55 bar

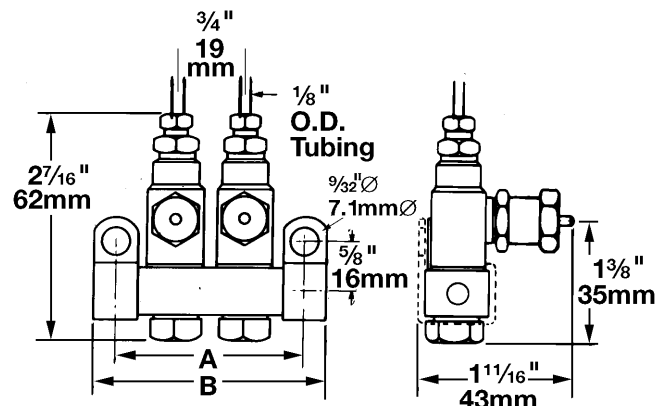
Model Carbon Steel	Number of Outlets	Connections	
		Inlet	Outlet
85497	1	1/2" NPTF (F)	1/4" NPTF (F)

#### Notes:

1. Injectors have Viton® 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 Viton® packings.
- Injectors with Viton® packings are used for heat resistant applications or when lubricant to be dispensed requires Viton® packings for compatibility (indicated by black adjustment caps).

### Specifications:

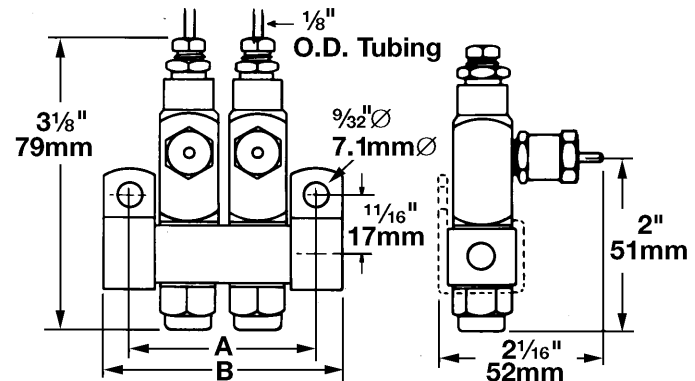
Series	Output		Operating Pressure			
	Min	Max	Min	Max	Typical	Vent
SL-42	.001 cu. in. .016 cc	.003 cu. in. .049 cc	750 psig 52 bar	1000 psig 69 bar	850 psig 59 bar	150 psig 10 bar

Model		Number of Outlets	Connections		Dimensions			
Carbon Steel			Manifold/ Injector Inlet	Injector Outlet	A		B	
Standard	Heat Resistant				in	mm	in	mm
83311-1	84428-1	1	½" NPTF (F)	½" O.D.  Tube Connection	1⅛	29	1⅛	41
83311-2	84428-2	2			1⅞	48	2⅜	60
83311-3	84428-3	3			2⅝	67	3⅜	79
83311-4	84428-4	4			3⅜	86	3⅜	98
83311-5	84428-5	5			4⅛	105	4⅝	117
83311-6	84428-6	6			4⅞	124	5⅝	137
83311-10	84428-10	10			7⅞	200	8⅜	213
83311-15	84428-15	15			11⅝	295	12⅞	308
83535	—	1	½" NPTF (M)		Single Injector/No Manifold			
83313	84048	—	—		Replacement for manifolded 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 Viton® 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 Viton® packings.
- Injectors with Viton® packings are used for heat resistant applications or when lubricant to be dispensed requires Viton® packings for compatibility (indicated by black adjustment caps).

### Specifications:

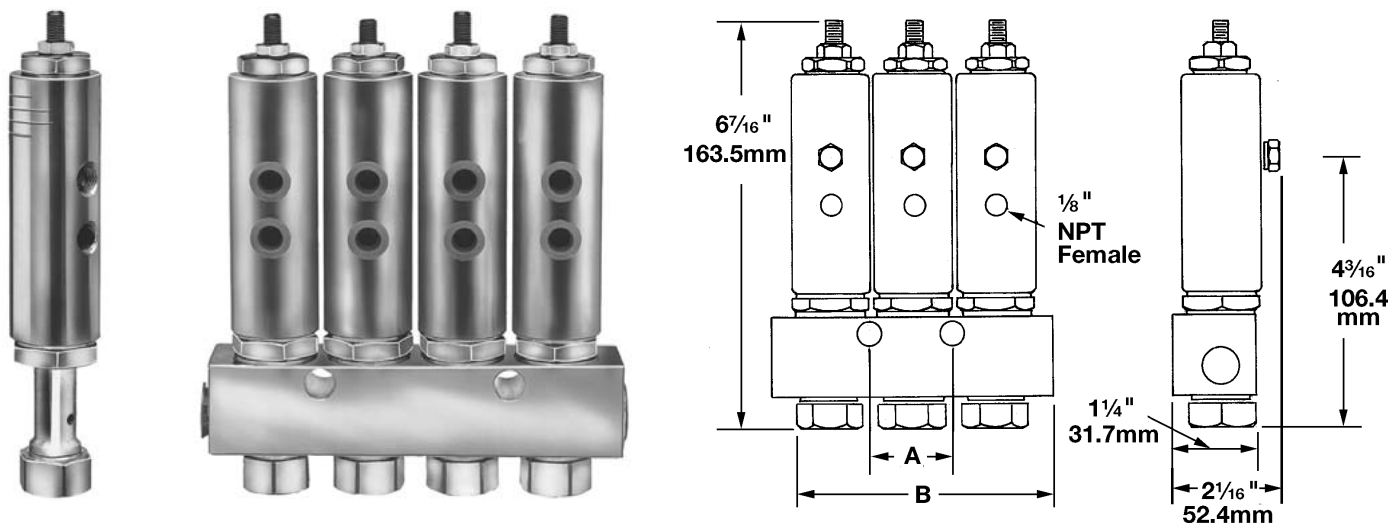
Series	Output		Operating Pressure			
	Min	Max	Min	Max	Typical	Vent
SL-43	.001 cu. in. .016 cc	.008 cu. in. .131 cc	750 psig 52 bar	1000 psig 69 bar	850 psig 59 bar	150 psig 10 bar

Model		Number of Outlets	Connections		Dimensions			
Carbon Steel			Manifold/ Injector Inlet	Injector Outlet	A		B	
Standard	Heat Resistant				in	mm	in	mm
83661-1	84429-1	1	¼" NPTF (F)	⅛" O.D.  Tube 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 manifolded 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 Viton® 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. .131 cc	.080 cu. in. 1.31 cc	750 psig 52 bar	1000 psig 69 bar	850 psig 59 bar	150 psig 10 bar

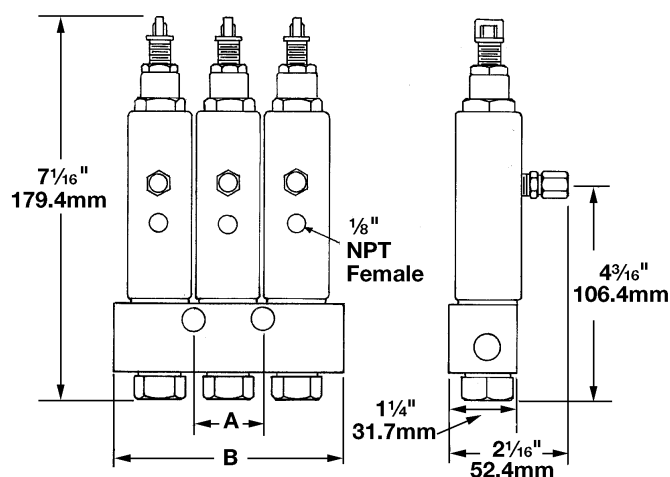
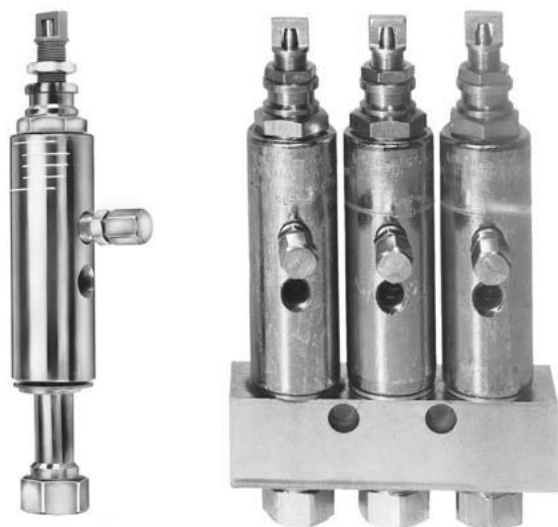
Model	Number of Outlets	Connections		Dimensions			
		Manifold Inlet	Injector Outlet	A		B	
				in	mm	in	mm
82294-1	1	3/8" NPTF (F)	1/8" NPTF (F)	Single Hole		2 1/2	63
82294-2	2			Mounting		3	76
82294-3	3			1 1/4	32	4 1/4	108
82294-4	4			2 1/2	63	5 1/2	140
82294-5	5			3 3/4	95	6 3/4	171
82295	—	—		Replacement for manifolded injector			

### Notes:

1. Injector manifolds have 1 3/32" (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 Viton® packings.

### Specifications:

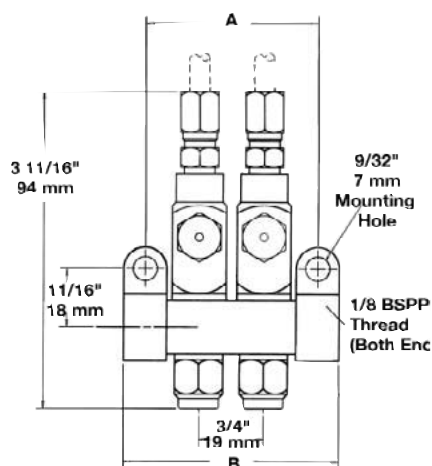
Series	Output		Operating Pressure				Connections	
	Min	Max	Min	Max	Typical	Vent	Manifold Inlet	Injector Outlet
SL-44	.008 cu. in. .131 cc	.080 cu. in. 1.31 cc	750 psig 52 bar	1000 psig 69 bar	850 psig 59 bar	150 psig 10 bar	3/8" NPTF (F)	1/8" NPTF (F)

Model	Number of Outlets	Dimensions			
Carbon Steel		A		B	
		in	mm	in	mm
83749-1	1	Single Mounting Hole		2½	63
83749-2	2			3	76
83749-3	3	1¼	32	4¼	108
83749-4	4	2½	63	5½	140
83749-5	5	3¼	95	6¾	171
83748	1	Replacement for manifolded injectors			

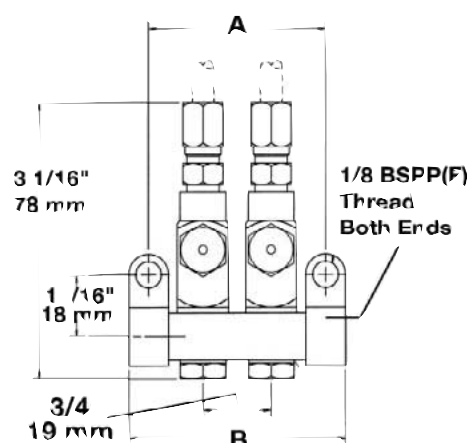
#### Notes:

1. Injector manifolds have 13/32" mounting holes for 3/8" bolt.
2. Injectors have Viton® 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		Dimension A		Dimension B	
Oil SL-42	Grease SL-33	Grease SL-32		Inlet	Outlet	in.	mm.	in.	mm.
85352-1	85351-1		1	1/8" BSPP(F)	6 mm O.D. Tube Connection	1 1/8"	29	1 1/8"	41
85352-2	85351-2		2			1 1/4"	48	2 1/8"	60
85352-3	85351-3		3			2 1/8"	67	3 1/8"	79
85352-4	85351-4		4			3 1/8"	86	3 3/8"	98
85352-5	85351-5		5			4 1/8"	105	4 3/8"	118
85352-6	85351-6		6			4 3/8"	124	5 1/8"	137
		85353-1	1			1 1/4"	32	1 1/4"	44
		85353-2	2			2	51	2 1/2"	64
		85353-3	3			2 3/8"	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, SL1, SL41, SL44	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 in <sup>3</sup> / .033 cc
	SL33, SL42	.003 in <sup>3</sup> / .049 cc

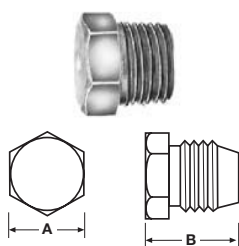


### Injector Cover Caps

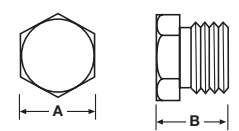
Injector cover caps are designed to protect the injector from dirt, harmful liquids and fumes.

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

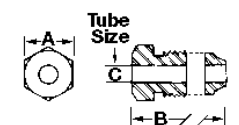
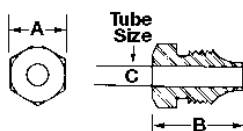




Style 1



Style 2



Model 68874

## 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	$\frac{1}{8}$ -24	$\frac{5}{16}$ / 7.9	$\frac{1}{2}$ / 12.7	1
12698-9*	Stainless Steel				
12511	Carbon Steel	$\frac{1}{8}$ PTF	$\frac{7}{16}$ / 11.1	$\frac{7}{16}$ / 11.1	2
12511-9	Stainless Steel				
67044	Carbon Steel	$\frac{3}{8}$ NPT	$\frac{7}{16}$ / 11.1	$1\frac{1}{16}$ / 20.6	2
67007		$\frac{1}{4}$ NPT	$\frac{3}{8}$ / 4.8	$\frac{5}{8}$ / 15.9	2
67007-9	Stainless Steel				

\* 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	$\frac{1}{8}$ -24	$\frac{5}{16}$ / 7.9	$\frac{1}{2}$ / 12.7	$\frac{1}{8}$ / 3.2
66260-9		Stainless Steel				
83924	Two Piece	Brass	$\frac{1}{8}$ -24	$\frac{5}{16}$ / 7.9	$\frac{1}{2}$ / 12.7	$\frac{1}{8}$ / 3.2
83924-9		Stainless Steel				
66713	One Piece	Brass	$\frac{1}{8}$ -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	$\frac{1}{8}$ NPTF Female	$\frac{1}{8}$ NPTF Female	Fixed Nozzle	3.5 CFM @40 PSI	4.1 CFM @60 PSI	5.2 CFM @80 PSI
69456				Swivel Nozzle	99 l/min @2.8 bar	116 l/min @4.1 bar	147 l/min @5.5 bar
68587*				Bulkhead Mount			
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.

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.	.45 kg
	30 cu. in.	492 cc
<b>Lube Outlet:</b>	1/8" NPTF (F)	
<b>Typical System</b>	Min. 1200 psig	82 bar
<b>Operating Pressure:</b>	Max. 3500 psig	241 bar
<b>Dimensions (HxWxL):</b>	15 1/4" x 5" x 5 5/8"	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.	2.27 kg
	150 cu. in.	2458.50 cc
<b>Lube Outlet:</b>	1/4" NPTF (F)	
<b>Typical System</b>	Min. 1200 psig	82 bar
<b>Operating Pressure:</b>	Max. 3500 psig	241 bar
<b>Dimensions (HxWxL):</b>	16 1/4" x 7 1/8" x 7 3/4"	413 x 181 x 197 mm
<b>Filling Method:</b>	81834 Filler Pump	

# Centro-Matic® Automated 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

<b>Ratio:</b>	31:1	
<b>Power:</b>	120 VAC	
<b>Typical System Operating Pressure:</b>	Min. 1200 psig	82 bar
	Max. 3500 psig	240 bar
<b>Maximum Output:</b>	1.4 in <sup>3</sup>	18.7 cm <sup>3</sup>
<b>Reservoir Capacity:</b>	4.5 lbs.	1.8 kg
<b>Dimensions (LxWxH):</b>	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

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

#### Model 85444 Integrated Grease Pump

<b>Ratio:</b>	20:1	
<b>Power:</b>	120 VAC	
<b>Typical System Operating Pressure:</b>	Min. 1200 psig	82 bar
	Max. 3500 psig	240 bar
<b>Maximum Output:</b>	0.45 in <sup>3</sup>	7.4 cm <sup>3</sup>
<b>Reservoir Capacity:</b>	4 lbs.	1.8 kg
<b>Dimensions (LxWxH):</b>	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 -23°C to 65°C



# Centro-Matic® Automated Lubrication Systems

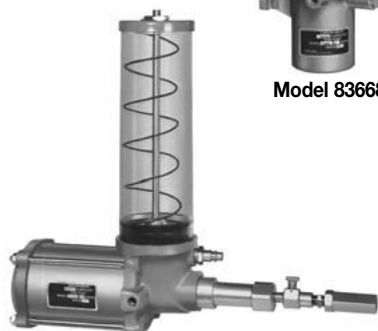
## Air-Operated (Single Stroke) Grease Pumps



Model 82886



Model 83668



Model 82653

### Model 82886 Pump

Pump discharges lubricant on air-powered forward stroke and vents on spring-powered 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	Metric Equiv.	Lubricant /Air Ratio	Max. Output	Reservoir Capacity	Reservoir Temp. Range	Air Inlet	Lube Outlet	Lubricant Oper. Press.		Dimensions HxWxL	Air Valve Required
								Min.	Max.		
82886		20:1	.45 in <sup>3</sup>	1 lb/.45 kg	0°F to 150°F -18°C to 65°C	¼" NPTF(F)  (metric ¼" BSPP)	¼" NPTF(F)  (metric ¼" BSPP)	1200 psig 82 bar	3500 psig 240 bar	10⅝" x 5¼" x 6"	3-way
83668			7.4 cm <sup>3</sup>	30 in <sup>3</sup> /492cm <sup>3</sup>						263x133x152mm	
82653		31:1	1.4 in <sup>3</sup>	4 lb/1.81 kg						18½" x 5¼" x 6"	4-way
82655			22.9 cm <sup>3</sup>	120 in <sup>3</sup> / 1967 cm <sup>3</sup>						470x133x152mm	
83834	85393	25:1	2.15 in <sup>3</sup>							18½" x 5¾" x 21"	
85393			35.2 cm <sup>3</sup>							470x146x533mm	
83800											

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

### Timer Specifications

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

**Note:**

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

# Centro-Matic® Automated 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>	Min. 1200 psig	82 bar
	Max. 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>	Min. 1200 psig	82 bar
	Max. 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® Automated 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>	¾" NPTF (F)	
<b>Typical System Operating Pressure:</b>	Min. 1200 psig	82 bar
	Max. 3500 psig	241 bar
<b>Components Included:</b>	Pump & Vent Assembly 282288 Controller 85209 Pump Elevator 83447	

**Controller Electrical Requirements:** 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>	Min. 1200 psig	82 bar
	Max. 3500 psig	241 bar
<b>Components Included:</b>	Basic Pump 2004 Vent Valve 85215 Controller 85209 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.



# Centro-Matic® Automated Lubrication Systems

## Electric Grease Pumps / Manually-Operated Oil Pump



### 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 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.

<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</b>	Min. 1200 psig	82 bar
<b>Operating Pressure:</b>	Max. 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 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</b>	Min. 1200 psig	82 bar
<b>Operating Pressure:</b>	Max. 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 Pump

### 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.	2.13 liter/2130 cc
<b>Lube Outlet:</b>	¼" NPTF (F)	
<b>Typical System</b>	Min. 750 psig	52 bar
<b>Operating Pressure:</b>	Max. 1000 psig	69 bar
<b>Dimensions (HxWxL):</b>	16¾" x 7½" x 7¾"	425 x 181 x 197 mm

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





# Centro-Matic® Automated 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

<b>Ratio:</b>	20:1	
<b>Power:</b>	120 VAC	
<b>Typical System Operating Pressure:</b>	Min. 750 psig	52 bar
	Max. 1000 psig	69 bar
<b>Maximum Output:</b>	2.4 in <sup>3</sup>	39.3 cm <sup>3</sup>
<b>Reservoir Capacity:</b>	4.5 pints	2.1 liters
<b>Dimensions (LxWxH):</b>	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

<b>Ratio:</b>	20:1	
<b>Power:</b>	120 VAC	
<b>Typical System Operating Pressure:</b>	Min. 750 psig	52 bar
	Max. 1000 psig	69 bar
<b>Maximum Output:</b>	0.45 in <sup>3</sup>	7.4 cm <sup>3</sup>
<b>Reservoir Capacity:</b>	1.25 pints	0.6 liters
<b>Dimensions (LxWxH):</b>	5.25" x 7.24" x 12.02"	133 x 184 x 305 mm

### Model 85440 Integrated Fluid Pump

<b>Ratio:</b>	20:1	
<b>Power:</b>	120 VAC	
<b>Typical System Operating Pressure:</b>	Min. 750 psig	52 bar
	Max. 1000 psig	69 bar
<b>Maximum Output:</b>	0.45 in <sup>3</sup>	7.4 cm <sup>3</sup>
<b>Reservoir Capacity:</b>	4.25 pints	2.0 liters
<b>Dimensions (LxWxH):</b>	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 or 30 sec	1/2 to 30 min or 30 min to 30 hrs	8 amps @ 250 VAC	-10°F to 150°F -23°C to 65°C

# Centro-Matic® Automated Lubrication Systems

## Air-Operated (Single-Stroke) Oil Pumps



Model 82885



Model 83667



Model 82676

### Model 82885

Pump discharges lubricant on air-powered forward stroke and vents on spring-powered return stroke through built-in check/vent valve. Translucent reservoir is refilled through filler cap with strainer.

### Model 83667

Same as Model 82885 except includes larger reservoir.

### Model 82570

High-volume pump discharges lubricant on air-powered forward stroke and vents through included check/vent valve on air-powered return stroke. Translucent reservoir is refilled through filler cap with strainer.

### Model 82573

Air-operated, single stroke oil pump and timer assembly. Same as Model 82570 except includes Model 84501 solid state timer and 350244 four-way electrical solenoid valve. Power requirements: 120 VAC, 60 Hz; 110 VAC, 50 Hz.

### Model 82676

Same as Model 82570 except for use with external oil supply through ½" NPT(F) oil inlet (maximum head pressure 80 psi (5.5 bar)).

Model	Metric Equiv	Lubricant/ Air Ratio	Max Output	Reservoir Capacity	Air Inlet	Lube Outlet	Lubricant Oper. Press.		Dimensions HxWxL	Air Valve Required
							Min	Max		
82885	85391	20:1	.45 in <sup>3</sup> 7.4 cm <sup>3</sup>	1¼ pint/.6 liter 36 in <sup>3</sup> /600cm <sup>3</sup>	¼" NPTF(F)	¼" NPTF(F)	750 psig	1000 psig	10½"x5¼"x6" 263x133x152mm	3-way
83667							52 bar	69 bar	18½"x5½"x6" 470x140x152mm	
82570			2.4 in <sup>3</sup> 39.3 cm <sup>3</sup>	4½ pint / 2 liter 123 in <sup>3</sup> / 2000 cm <sup>3</sup>	(metric ¼" BSPP)	(metric ¼" BSPP)			17¾"x5¾"x18¼" 451x146x464mm	4-way
82573									18½"x5¾"x21" 470x146x533mm	
82676				Remote						

\*\* Air consumption @ 100 psi is .15 CFM per stroke.  
Check compatibility when using synthetic oils.

### Timer Specifications for Model 82573 Only

Cycle Time		On Time	
Min	Max	Min	Max
20 Sec.	24 Hr.	10 Sec.	1 Min. 24 Sec.

**Note:**

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

# Centro-Matic® Automated Lubrication Systems

## Air-Operated (Reciprocating) Oil Pumps



### Model 283167

Includes 2½" air motor driven pump, vent valve assembly, translucent reservoir with filler cap and strainer and 1200 psi (82 bar) safety unloader.

<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>	½" NPTF (F)	
<b>Lube Outlet:</b>	¾" NPTF (F)	
<b>Typical System</b>	Min. 750 psig	52 bar
<b>Operating Pressure:</b>	Max. 1000 psig	69 bar
<b>Dimensions (HxWxL):</b>	23¼" x 9" x 16¼"	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
<b>Drum Size:</b>	U.S. standard 55-gal. refinery drum (removable head)	
<b>Air Inlet:</b>	¾" NPTF (F)	
<b>Lube Outlet:</b>	¾" NPTF (F)	
<b>Typical System</b>	Min. 750 psig	52 bar
<b>Operating Pressure:</b>	Max. 1000 psig	69 bar
<b>Controller Electrical</b>		
<b>Requirements:</b>	120 V 60 Hz, 110V 50 Hz	

#### Notes:

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



### 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.

<b>Model:</b>	<b>1848</b>	
<b>Output/Min:</b>	18 cu. in.	295 cc
<b>Reservoir Capacity:</b>	14.7 pint	6.96 liter
	424 cu. in.	6960cc
<b>Lube Outlet:</b>	¼" NPTF (F)	
<b>Electrical Specifications:</b>		
<b>Pump Motor</b>	220/440 VAC, 60 Hz, 3 ph	
<b>Controller Max..</b>	115 VAC, 60 Hz	
<b>Typical System</b>	Min. 750 psig	52 bar
<b>Operating Pressure:</b>	Max. 1000 psig	69 bar
<b>Dimensions (HxWxL):</b>	25¾" x 13 "x 19 <sup>13</sup> / <sub>16</sub> "	645 x 330 x 503 mm
<b>Note:</b> See Model 85520, System Controls section for controller specifications.		



# Centro-Matic® Automated Lubrication Systems

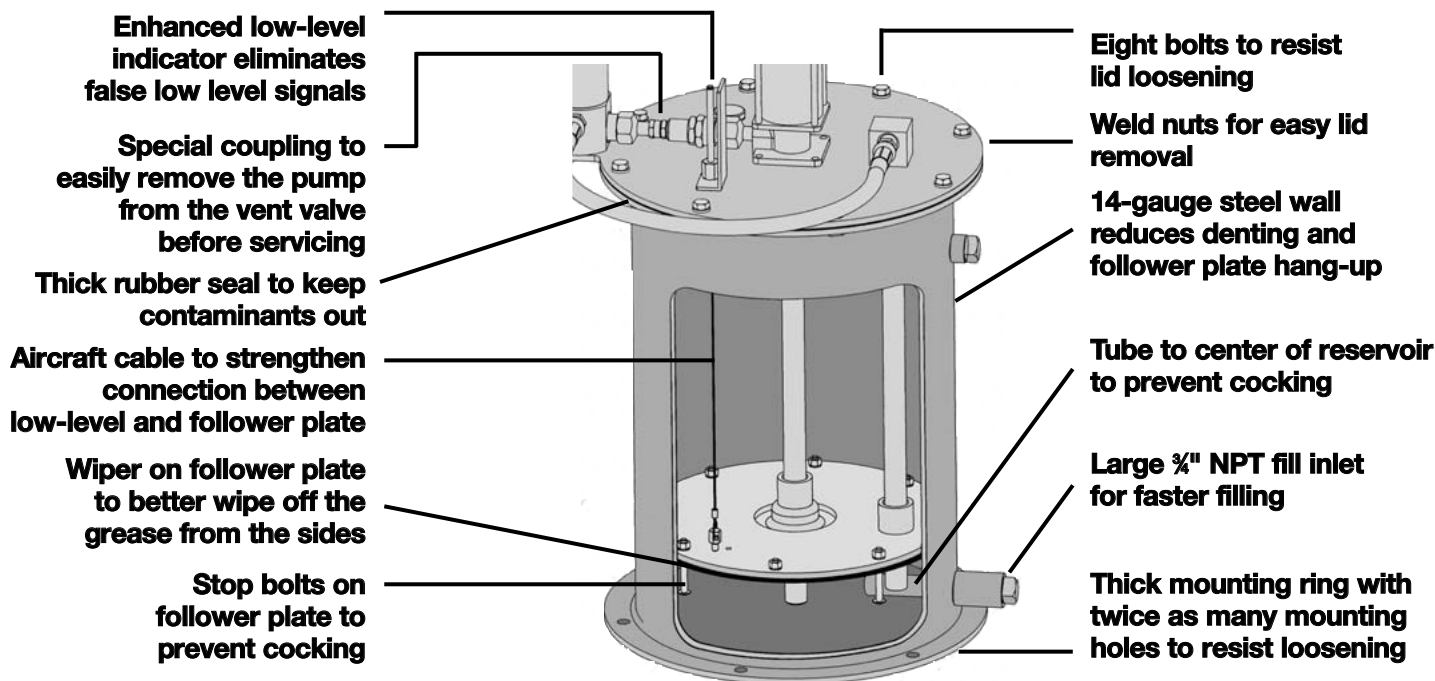
## Bucket Pumps



Lincoln offers 60, 90 or 120 lb. reservoirs for our bucket pumps. Here are the features:

- Rugged 14-gauge steel walls
- Large  $\frac{3}{4}$ " NPT inlet for fast filling
- Wiper on follower plate that reduces lubricant waste
- Special coupling for easy pump removal when servicing
- Thick mounting ring that withstands severe vibration

These buckets work with hydraulic, air and electric pumps.



### Model 84050

A 50:1 ratio double acting air-operated pump for high-volume displacement. Supplied with a 60-pound capacity metal reservoir with removable cover for easy filling. Includes air-operated vent valve and 5' (1.5m) air and lubricant connecting hoses.

<b>Model:</b>	<b>84050</b>	
<b>Lubricant/Air Ratio:</b>	50:1	
<b>Output/Min @ 100 PSIG Air:</b>	30 cu. in.	492 cc
<b>Reservoir Capacity:</b>	60 lb. / 27 kg	1800 cu. in. / 29,500 cc
<b>Air Inlet:</b>	$\frac{3}{8}$ " NPTF (F)	
<b>Lube Outlet:</b>	$\frac{3}{4}$ " NPTF (M) at Hose	
<b>Typical System Operating Pressure:</b>	Min. 1200 psig	82 bar
	Max. 3500 psig	241 bar
<b>Dimensions (HxWxL):</b>	31 $\frac{3}{4}$ " x 15 $\frac{7}{16}$ " x 15 $\frac{9}{16}$ "	806 x 392 x 395 mm
<b>Filling Method:</b>	Bulk	
<b>Reservoir:</b>	Steel	

**Notes:** 1. Pump requires 3-way air valve. 2. Air consumption @ 100 psi is .42 CFM per cycle  
3. Optional Model 92597 follower available.

### Model 85460

Same as Model 84050 except includes installed visual low level and follower plate assembly.

# Centro-Matic® Automated Lubrication Systems

## FlowMaster® Hydraulic Pump



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 Hydraulic Pressure, Max.:</b>	3000 psig	200 bar
<b>Operating Inlet 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 in <sup>3</sup> /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>	¼" NPTF	
<b>Max. Hydraulic Fluid Temp:</b>	200°F	93°C

For the complete system, when ordering 120# or 400# versions also order the following:

<b>120#</b>	<b>Drum Cover</b>	<b>84616</b>
	<b>Follower Assy</b>	<b>85492</b>
	<b>Vent Valve Assy</b>	<b>84990</b>
<b>400#</b>	<b>Drum Cover</b>	<b>271606</b>
	<b>Follower Assy</b>	<b>270982</b>
	<b>Vent Valve Assy</b>	<b>271605</b>



### Pump Only Models

Model	Capacity			Solenoid Manual Override	Adjustable Flow Control	Adjustable Pressure Control
	lbs	gal	L			
85247	120	18	68	Yes	Yes	Yes
85480	120	18	68	No		
85481	60	8	30			
85482	400	55	208			
85483	35	5	19			
85486	35	5	19			
85586*	400	55	208			
85610**	400	55	208			
85670	90	10	38	Yes	Fixed	Fixed
85675	60	8	30	No	Yes	Yes
86261***	35	5	19			

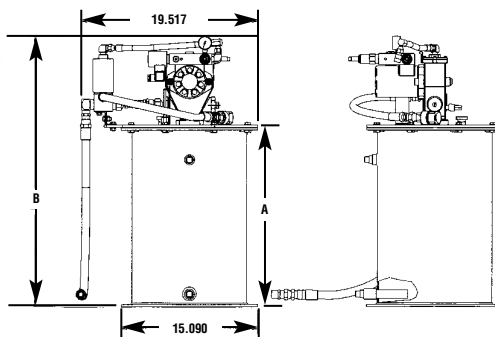
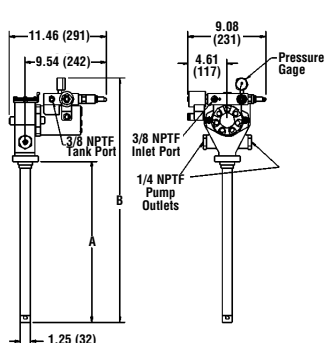
\*Heavy-duty model \*\*Low temperature model (-60°F) \*\*\*Kit consisting of pump, follower, bucket cover and hardware

### Pump & Bucket Models with follower plate and low-level detect

Model	lbs	Size gal	L	Solenoid Manual Override	Adjustable Flow Control	Adjustable Pressure Control
85220*	120	18	68	No	Yes	Yes
85244**	90	10	38	Yes		
85487**	60	8	30	No		
85585	90	10	38	Yes	Fixed	Fixed
85671**	90	10	38			
86258	60	8	30	No	Yes	Yes

\*Includes high-level detect

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



Container Size	Pump - in. (mm)		Pump Bucket-in. (mm)	
	A	B	A	B
35 lb.	13.69 (348)	23.50 (597)	14.59 (371)	24.40 (620)
60 lb.	19.00 (483)	28.81 (732)	19.90 (505)	29.70 (754)
90 lb.	27.50 (699)	37.31 (942)	28.40 (721)	40.13 (1,019)
120 lb.	27.50 (699)	37.31 (942)	28.40 (721)	40.13 (1,019)
400 lb.	34.00 (864)	43.81 (1,113)	34.00 (864)	44.94 (1,142)

# Centro-Matic® Automated Lubrication Systems

## FlowMaster® Electric Pumps



It seems too good to be true, but Lincoln's new Electric FlowMaster Pump can serve all but the largest automated lubrication applications. Now you can take advantage of the ease and economy of this efficient, versatile electric pump—no cost for air associated with running the pump and no hydraulic hoses to connect.

The Electric FlowMaster Pump is a workhorse. Because you can adjust the speed of the pump's motor, you can adjust the pump's output to precisely fit any application. Lincoln offers 12 different models.

For manual lubrication, use the pump with a hose reel and a dispensing valve.



### 24 VDC FlowMaster®

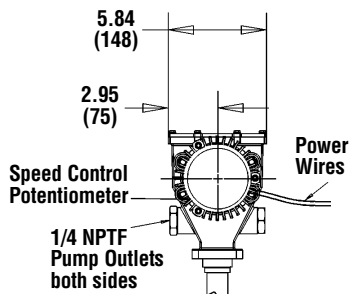
**Operating Temperature Range:** -40° to +150°F      -40° to +65°C

**Pump Outlets:** ¼" NPTF

**Motor:** ½" HP PEAK

### Pump Only Models

Model	Capacity			Power	Maximum Pressure Rating	Speed Range RPM
	lbs	gal	L			
85479	35	5	19	24 DC	2500 psi (170 bar)	9.5-100
85552	35	5	19		5000 psi (345 bar)	5-50
85553	120	18	68			9-93
85554	60	8	30			
85566	120	18	68			36-360
85567	60	8	30			
85568	120	18	68		2500 psi (170 bar)	9.5-100
85569	35	5	19	12 DC	3500 psi (241 bar)	300
85582	60	8	30			



Model	Gear Ratio	Current Draw Amps	Output: in³/min	
			Min	Max
85479*	17.8:1	2-5	0.7	6.3
85552	34:1	1-4.2	0.4	3.5
85553				
85554	19:1	1-6.5	0.7	6.3
85566				
85567				
85568	5:1	2-15	2.8	25.2
85569	17.8:1	2-5	0.7	6.3
85582		31		21

\* Kit consisting of pump, follower, bucket cover and hardware

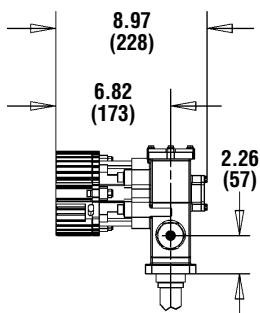
### Pump and Bucket Models

Model	Capacity			Power	Maximum Pressure Rating	Speed Range RPM
	lbs	gal	L			
85471	60	8	30	24 DC	5000 psi (345 bar)	36-360
85472	90	10	38			
85473*	120	18	68			

Model	Gear Ratio	Current Draw Amps	Output: in³/min	
			Min	Max
85471	5:1	2-15	2.8	25.2
85472				
85473				

Above models include follower plate and low-level detect

\* Includes high-level detect





### 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.

**Operating Temperature Range:** -40° to +150°F (-40° to +65°C)

**Operating Voltage:** 120/230 VAC (60 Hz only)

**Pump Outlets:** ¼" NPTF

**Motor:** ½ HP

### Pump Only Models

Model	Capacity			Power	Maximum Pressure Rating	Speed Range RPM
	lbs	gal	L			
85588	400	55	208	120-230 AC	5000 psi (345 bar)	360
85589	120	18	68			

Model	Gear Ratio	Current Draw: Amps		Output: in³/min	
		@120 V	@230 V	Min	Max
85588	5:1	1-4.6	.5-2.4	24.5	24.5
85589					

### 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



# Centro-Matic® Automated Lubrication Systems

## Hydraulic-Powered Grease Pumps



Model 84944



Model 84960



Model 84962

### Model 84944

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

**Model:** 84944

**Nominal Lubricant/**

**Hydraulic Pressure Ratio:** 16:1

**Output/Min @ 30 Cycles/Min:** 11 cu. in. 180 cc

**Reservoir Capacity:** 60 lb. / 27 kg 1800 cu. in. / 29,500 cc

**Hydraulic Inlet/Outlet:** 1/4" NPTF (M)

**Lube Outlet:** 3/4" NPTF (M)

#### Important Note:

1. Pumps require a timed electrical signal to operate. Use Model 244270 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/ Hydraulic Pressure Ratio	Output/Min @ 30 Cycles/Min	Lube Outlet	Pump Tube Length	Pump Tube Diameter
84960	16:1	11 in <sup>3</sup> / 180 cm <sup>3</sup>	1/4" NPTF(F)	—	—
84962				33 1/8" 862 mm	1" 25.4 mm

#### Important Note:

1. Pumps require a timed electrical signal to operate. Use Model 244270 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 Pressure psig / bar		Flow Rate @ 30 Cycles/Min. GPM ltrs/min	Fluid Max. Inlet Temperature	Ambient Operating Temperature Range		Filtration Requirement
Min	Max			Min	Max	
300 / 21	3000 / 207	1.0 / 3.8	210°F/99°C	-40°F/-40°C	+135°F/57°C	10 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).

# Centro-Matic® Automated Lubrication Systems

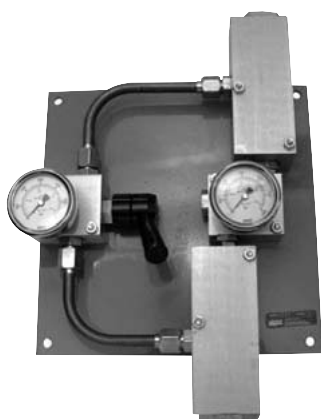
## Airless Spray System



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-xxxx **	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-xxxx **	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
85427-8002	85427-1100067

### Pumps

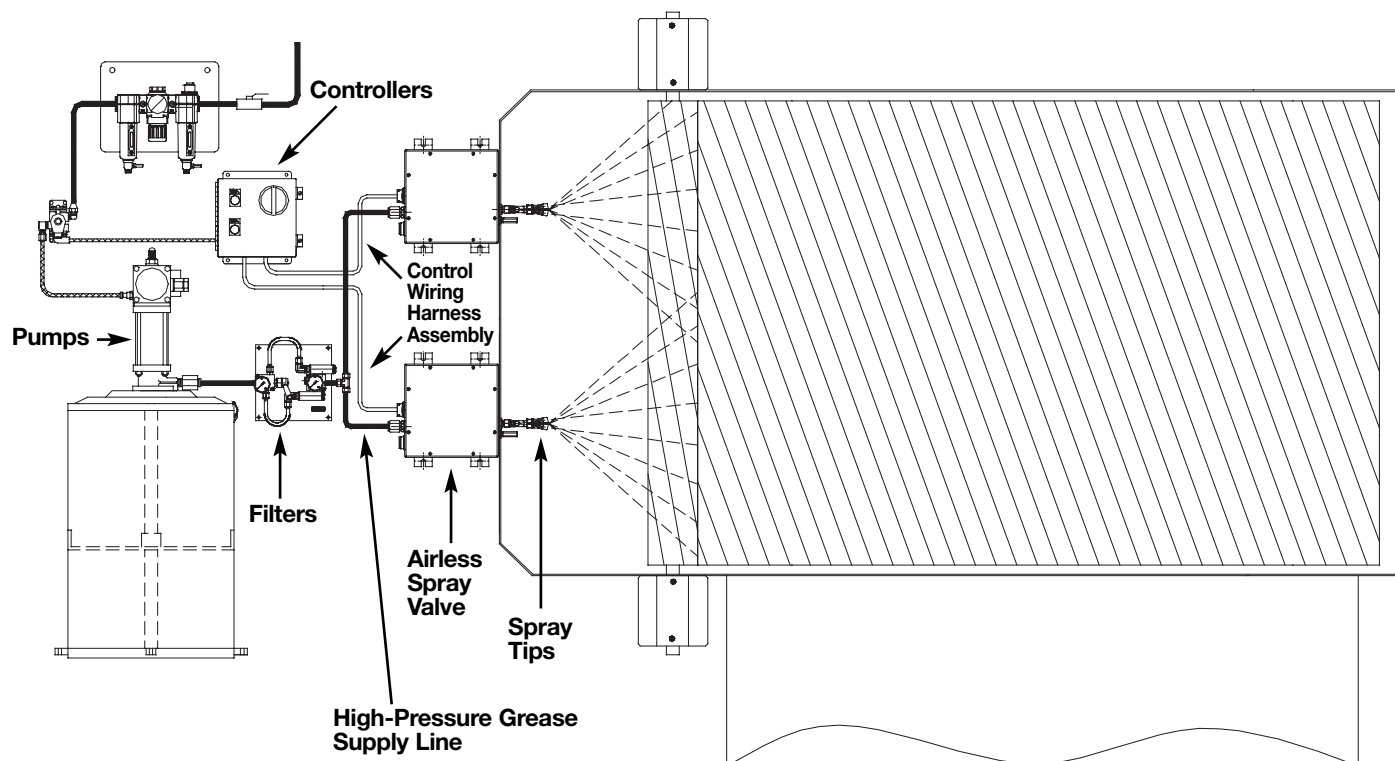
Lincoln offers many pump options for supplying lubricant to the lube system. Air-operated pumps are preferred when possible due to their versatility and wide range of selection. Hydraulic and electric pumps are also available. **The pump must be capable of pumping the lubricant to a minimum of 3500 psi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

### Filters

Model	Description
85419	Dual filter panel with operator valve to select one of the two 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)
84004	Single in-line filter

# Centro-Matic® Automated Lubrication Systems

## Airless Spray System



### Controllers

Model	Description
254120	For single and dual Airless systems. Operates system by setting the time between lubrication events. Includes manual lube button and system alarm.
256228	For single Airless system with external initiate contacts with manual lube button and system alarm
254815	For dual Airless system with external initiate contacts with manual lube button and system alarm

### Control Wiring Harness Assembly

Model	Description
256241	25' wiring harness connects the controller to each spray valve. <b>One wiring assembly is required for each spray valve.</b>

### High Pressure Grease Supply Line

To be furnished by installer

### 2-Way Fluid Solenoid Valve

Model	Description
272285	For multiple machine/single pump applications. See design guide (form #403172) for details.



### 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)	Features
83671	Grease	82653, 82655, 83668, 83800, 83834, 83167 83599, 1833, 1835, 1849 85434, 85435, 85436 85437, 85442	SPDT	125 VAC (15) 250 VAC (15) 480 VAC (15) 24 VDC (2) 125 VDC (½) 250 VDC (¼)	Connect to machine control or visual/audible alarm circuit.
83696	Oil	82570, 82573, 83667, 283167, 1848, 85430 85431, 85432, 85433 85438, 85439, 85440, 85441			
84629	Grease	84960			Includes follower for U.S. Std. 120 lb. drum.
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 Models	Container Size
83370	1827, 1829	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	420			
*84239	10	6000 psig / 408 bar	¼ NPTF (F)	1¼

\* In-line filter with Viton® 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. * psig / bar	Max. Ratio	Max. Length		Reservoir Pressure psig / bar		
			% Tube	% 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 NLGI #1 Max	1 oz/stroke 1.9 cu. in. 31 cc	30 lbs. 14.2 L	7' 2.1 m	645006 Hydraulic Coupler	26 3/4 679	14 356	9 229
1254	Oil	1 pint/ 7 strokes 473 cc	30 pints 14.2 L	5' 1.5 m	80599 Non-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		Width		Depth	
				in	mm	in	mm	in	mm
87417	5	19	¾" NPTF (F)	10½	257	17½	446	12½	318
87418	3	11.4				13½	343	11½	292
87419	1.5	5.7				10½	267	7½	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 Outlet	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 -25°C to 70°C	IP65	20 - 30 VDC	60 mA	200 mA	NO contact (closes when full)	NO contact (opens when low)



# Centro-Matic® Automated Lubrication Systems

## System Controls

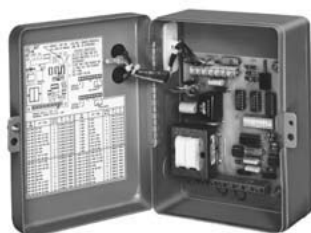


Selecting the right controls for your automated lubrication system is one of the last steps in the design process. Several different models may be chosen to control power-operated pumps, depending on the degree of automation and monitoring required. Your Lincoln representative will assist you in specifying 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 and can sense lubricant flow to each bearing 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 (Cycle Time)		On Time (Pumping Time)		Power Requirements	Approvals	Switch Capacity
Min	Max	Min	Max			
20 Sec.	24 Hrs.	10 Sec.	1 Min. 24 Sec.	120/230 VAC 50/60 Hz	UL, CSA	120 VAC, 5 Amps 230 VAC, 1.5 Amps



Built-In Program Options				Enclosure				Ambient Operating Temperature Range	
3 Hr. Program Memory		Prelube Function		Rating	Dimensions-in./mm			Minimum	Maximum
					Height	Width	Depth		
Yes	No	Yes	No	NEMA #1	8¼ 210	6⅜ 173	4⅝ 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 (Cycle Time)		On Time (Pumping Time)		Power Requirements	Approvals	Switch Capacity
Min	Max	Min	Max			
5 Min.	1 Hr.	30 Sec.	90 Sec.	120 VAC, 60 Hz	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 (Pumping Time)	Power Requirements	Switch 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.

Rating	Enclosure			Ambient Operating Temperature Range	
	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, features an adjustable pressure switch (280-3000 psi) and a memory switch to turn pre-lube option on or off.

Off Time (Cycle Time)		On Time (Pumping/ Alarm Time)		Power Requirements	Switch Capacity Inductive Load at 30VDC	
Min.	Max.	Min.	Max.		Load Relay	Alarm Relay
30 Sec.	30 Hours	30 Sec.	2 Min.	21-30 DC 100 MA*	2 Amps	2 Amps

Rating	Enclosure			Ambient Operating Temperature Range	
	Dimensions-in. / mm			Minimum	Maximum
	Height	Width	Depth		
NEMA 12	7½ / 191	4⅝ / 125	3½ / 89	0°F / -18°C	130°F / 55°C

\* Less load.

### 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.



### Model 85530 Lubrication System Controller

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

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

\* Minimum duration of count signal is 33 milliseconds.

Power Requirements (less load)		Pump, Solenoid, or Alarm Capacity	Ambient Temperature Range	Enclosure Rating	Enclosure Dimensions-in. / mm		
Voltage	Current				Height	Width	Depth
120 VAC, 50/60 Hz	85 MA	360 VA	32° to 122°F 0° to +50° C	NEMA 12	9½ 241	8½ <sub>16</sub> 227	4½ 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. Count Rate	Pumping Time Before Alarm		Connections	
Timer Mode Off Time		Counter Mode Off Counts						
Min.	Max.	Min.	Max.		Min.	Max.	Air	Lube
1 Minute	9,900 Minutes	1 Count	99,000 Counts	30/ Sec.	1 Minute	99 Minutes	¾" NPTF(F)	¾" 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 110 VAC, 50 Hz	47 VA	360 VA	32° to 122°F 0° to +50°C	12 305	18¼ 464

### Model 85208

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



### Model 85500 System Sentry II

The ultimate automated lubrication system controller/monitor now features greater monitoring accuracy with less sensitivity to lubricant flow rates, feed line length, or bearing back pressure. System Sentry II is always on the job, making sure that every lube point is lubricated when it's supposed to be.

- Solid-state controller with LCD status display and 16-button keypad for system programming
- Controls up to two pumps with as many as two lube zones per pump
- Fully programmable monitoring and alarm functions
- Be set up to monitor every lube point for lubricant flow during each lubrication event
- Easy to understand prompts reported by simple English language messages in real time

**Some functions require optional accessories. See chart on page 38.** Use a maximum of 48 sensors and three accessory Sensor Boards (order separately— 16 sensors per board) to monitor lube points. For more than 48 sensors, use Model 85510 Satellite plus additional Sensor Boards for a maximum of 1536 lube points.

Lube Cycle				Max. Count Rate*	Pumping Time Before Alarm		Net Wt.
Timer Mode Off-Time		Counter Mode Off-Counts			Min.	Max.	
Min.	Max.	Min.	Max.				
1 Second	9,900 Minutes	1 Count	99,000 Counts	30/Sec. @ 50% Duty Cycle	1 Second	99 Minutes	18 lbs. 8.1 kg

\* Minimum duration of count signal is 33 milliseconds.

Power Requirements (less load)		Pump, Solenoid, or Alarm Capacity	Ambient Temperature Range	Rating	Enclosure Dimensions-in. / mm		
Voltage	Current				Height	Width	Depth
120 VAC, 50/60 Hz	250 MA*	360 VA	32° to 122°F 0° to +50° C	NEMA 12	11 241	14 227	4 7/8 105
230 VAC, 50/60 HZ	125 MA*						
24 VDC	600 MA*	5 Amps					

**Note:** Model 85500 is CSA/NRTL approved.

\* No external load, no sensors.

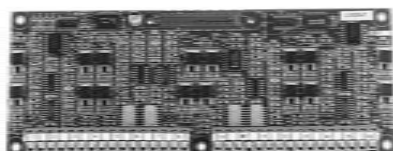




### Model 247333 Pressure Transducer

Pressure Transducer signals actual system pressure via LCD display of System Sentry II. Comes with 72 inch (1.8m) shielded 24-gauge connecting wire. Maximum length of wire between transducer and monitor is 30 (9.1m) feet.

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



### Model 250365 Sensor Board

Plug-in accessory board used with Model 85500 that allows the attachment of up to 16 lube flow sensors. (Model 85500 comes without boards installed and can hold up to a total of three.)

### Sensor Assemblies

Sensor assemblies consist of a check body and lube sensor with attached 30' cable. Cables are epoxy potted into the sensors for a watertight seal. Sensors have a 3/8" pipe thread for conduit connection and a Viton® O-ring seal. Check bodies terminate in a 1/8" NPTF male thread for attachment to a bearing or other lubricant inlet. Maximum working pressure 6,000 psi (414 bar). Maximum wire run from sensor to monitor is 500 feet (152m).



Model	Description	Construction	Lubricant Temp. Range	Min. Flow Per Event	Inlet/Outlet	Min. Interval Between Lube Flow Event
250400	Straight Sensor Assembly	Brass Sensor & Plated Steel Check Body	32° to 145° F 0° to 63° C	.004 cu.in./ .066 cc @ 32°F / 0° C to 125°F / 52°C	1/8"	30 Seconds
250490	90° Sensor Assembly					
250500	Straight Sensor Assembly	316 Stainless Steel		.008 in³ / .131cc @ 126°F / 53°C to 145°F / 63°C		
250590	90° Sensor Assembly	Sensor & Check Body				

### Model 243100 Sensor Wire

100 foot (30.5 meters) coil of two conductor 22-gauge wire for connecting sensors to monitor. Maximum length of wire between sensor and monitor is 500 feet (152 meters).



### Use This Guide to Select Accessories for Model 85500 System Sentry II

Function	Pressure Switch #69630	Pressure Transducer #247333	Sensor Board #250365	Sensors <i>Note 2</i>	Sensor Wire #243100 (100') <i>Note 3</i>
Lube Controller 1 Pump, 1 Zone <b>Note 1</b>	Optional 1	Optional 1	—	—	—
Lube Controller, 1 Pump, 1 per Zone Up to 3 Zones	Required Required 1 (3 Max.)	—	—	—	—
Lube Controller, 2 Pumps, 1 Zone Per Pump	No	Required 2 (1 per Pump)	—	—	—
Lube Controller, 2 Pumps, Up to 2 Zones Per Pump	Required 1 per Zone (4 Max.)	Required 2 (1 per Pump)	—	—	—
Lube Point Monitoring ≤ 48 Points	—	—	Required 1 per each 16 Sensors	Required 1 per Lube Point	Required Quantity As Needed
Lube Point Monitoring > 48 ≤ 1536 Points	—	—	Required 1 per each 16 Sensors	Required 1 per Lube Point	Required Quantity As Needed

**Note 1:** Controller may be operated without a pressure switch or pressure transducer but will not be able to monitor and alarm for lube system pressure failures.

**Note 2:** Sensors include 30' (9.1m) cable pigtail. Select brass/plated steel or stainless steel sensors in straight or 90° configuration as required.

**Note 3:** Maximum distance between monitor and sensor is 500' (152 meters).

**Note 4:** Satellite monitor includes one 250365 sensor board and accepts two additional boards (optional) for connection of up to 48 sensors per satellite. Maximum 31 satellites per system.



## 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 120 VAC, 60 Hz 8.4 VA	.11	.07	¼" NPT(F)	0° to 120°F -18° to 49°C	1.2	150 10.3	½" NPS(F)
350245		220 VAC, 50 Hz 240 VAC, 60 Hz 8.4 VA	.055	.035					
350241	3-Way	110 VAC, 50 Hz 120 VAC, 60 Hz 8.4 VA	.11	.07	0° to 140°F -18° to 60°C	.18			
350242		220 VAC, 50 Hz 240 VAC, 60 Hz 8.4 VA	.055	.035					
350282		12 VDC 6 Watts	N/A	N/A					⅛" NPT(F)
350283		24 VDC 6 Watts							
68586	2-Way	120V, 60 Hz 12 VA	.2	.1	⅜" NPT(F)	2.4		½" NPT(F)	
274398	3-Way	24 VDC 8.5 Watts	N/A	N/A	¼" NPT(F)				.5
244727	3-Way	110 VAC, 50 Hz 120 VAC, 60 Hz 11 VA	.12	.09	⅜" NPT(F)	0° to 120°F -18° to 49°C	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



## Model 84360 System Alarm

System Alarm includes Model 84297 Reset Timer and Model 69630 Pressure Switch. Signals alarm if system pressure is not detected within preset intervals.

Power Requirement (less load)	Count Down Interval Before Alarm Signal		Reset Timer Enclosure	Lube Connection	Increasing Pressure Switch Adjustment psi / bar	
	Min.	Max.			Min.	Max.
115 VAC, 60 Hz 7.5 VA	9 Min.	5 Hours	NEMA 1	¼" NPT(F)	280 / 19	3000 / 207



### 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	1200 / 83	2500 / 172	1/4"	5 3/4 / 146	2 1/4 / 57	1/2" NPSM
83899	480 VAC, 15 Amps	700 / 48	1150 / 79	NPT(F)			



### Model 83354 Signal Monitor

Designed to provide visual and audible indication of system operation and failure. Utilizes signal from system controller. Includes Model 69606 Alarm Horn mounted on enclosure door.

Power Requirement	Indicator Lamps			Audible Alarm	Dimensions - in / mm		
	Power On	Lube System On	System Failure		Height	Width	Depth
115 VAC 50/60 Hz 35 VA	Green	Amber	Red	69606 Horn (included)	10 254	8 203	6 152

**Note:** Lamps and horn are U.L. listed.

### Model 69606 Alarm Horn

Use with controllers or System Alarm Model 84360 for audible failure signal.

Model	Power Requirement
69606	120 VAC, 50/60 Hz, 15 VA

**Note:** U.L. listed.



### 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	15 Amps @ 6 VDC 5 Amps @ 24 VDC .03 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® Automated Lubrication Systems

## Numerical Index



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Model No.	Page No.	Model No.	Page No.
1254	36	82295	13
1810	18	82570	25, 35
1812	23	82573	25, 35
1823	22, 35	82612	36
1826	26	82621	36
1827	22, 35	82653	20, 35
1828	22, 35	82655	20, 35
1829	22, 35	82676	25
1830	35	82700	36
1833	23, 35	82885	25, 35
1835	23, 35	82886	20
1848	27, 35	83167	21, 35
1849	23, 35	83272	16
2002	26	83309-1	5
2008	22	83309-2	5
2010	22	83309-3	5
12511	17	83309-4	5
12511-9	17	83309-5	5
12698	17	83309-6	5
12698-9	17	83311-1	11
14988	16	83311-2	11
14991	16	83311-3	11
66260	17	83311-4	11
66260-9	17	83311-5	11
66713	17	83311-6	11
67007	17	83311-10	11
67007-9	17	83311-15	11
67044	17	83313	11
68421	17	83314	5
68483	16	83314-9	5
68586	43	83336-1	6
68587	17	83336-2	6
68874	17	83336-3	6
69456	17	83336-4	6
69606	44	83337	6
69630	39, 42, 43, 44	83337-9	6
80599	36	83338	6
81646	16	83354	44
81675	26	83368	35
81713	9	83370	35
81713A	9	83371	22, 32, 35
81770-1	9	83372	35
81770-2	9	83535	11
81770-3	9	83599	21, 35
81770-4	9	83637	35
81770-5	9	83661-2	12
81770-6	9	83661-3	12
81834	18, 20, 21, 36	83661-4	12
82272	17	83660	12
82294-1	13	83661-1	12
82294-2	13	83667	25, 35
82294-3	13	83668	20, 35
82294-4	13	83671	35
82294-5	13	83696	35



Model No.	Page No.
83715-1	5
83715-2	5
83715-3	5
83715-4	5
83715-6	5
83715-7	5
83724-1	6
83724-2	6
83724-3	6
83724-4	6
83730	16
83748	14
83749-1	14
83749-2	14
83749-3	14
83749-4	14
83749-5	14
83800	20, 35
83817	18
83834	20, 35
83898	44
83899	44
83900	5
83900-9	5
83924	17
83924-9	17
84004	<b>33, 35</b>
84015	38
84034	22
84048	11
84050	<b>28, 35</b>
84110	12
84111	33
84195	16
84200	16
84203	16
84204	17
84239	35
84297	43
84360	<b>43, 44</b>
84376	36
84428-1	11
84428-2	11
84428-3	11
84428-4	11
84428-5	11
84428-6	11
84428-10	11
84428-15	11
84429-1	12
84429-2	12
84429-3	12
84429-4	12
84501	20, 25, <b>37</b>

Model No.	Page No.
84511	37
84528	35
84616	29, 32
84629	35
84776	9
84944	<b>32, 35</b>
84960	<b>32, 35</b>
84961	32
84962	32
84990	29, 32
85208	39
85209	22, 26, <b>39</b>
85215	22
85217	26
85218	22
85220	29
85244	29
85247	29
85351-1	15
85351-2	15
85351-3	15
85351-4	15
85351-5	15
85351-6	15
85352-1	15
85352-2	15
85352-3	15
85352-4	15
85352-5	15
85352-6	15
85353-1	15
85353-2	15
85353-3	15
85353-4	15
85391	25
85393	20
85418	33
85419	33
85423-5001	33
85423-6501	33
85423-6502	33
85423-8001	33
85423-8002	33
85423-9501	33
85423-9502	33
85423-11001	33
85423-11003	33
85423-11004	33
85423-650067	33
85423-800067	33
85423-950080	33
85423-1100067	33
85423-1100080	33
85427-5001	33

Model No.	Page No.	Model No.	Page No.
85427-6501	33	85663	31
85427-6502	33	85670	29
85427-8001	33	85671	29
85427-8002	33	85675	29
85427-9501	33	85770-1	7
85427-9502	33	85770-2	7
85427-650067	33	85770-3	7
85427-800067	33	85770-4	7
85427-1100067	33	85770-5	7
85430	24, 35	85770-6	7
85431	24, 35	85771	7
85432	24, 35	85772	7
85433	24, 35	85780-5	8
85434	19, 35	85780-6	8
85435	19, 35	85780-1	8
85436	19, 35	85780-2	8
85437	35	85780-3	8
85438	24, 35	85780-4	8
85439	35	85781	8
85440	24, 35	85782	8
85441	24, 35	85785-1	8
85442	19, 35	85785-2	8
85444	19	85785-3	8
85445	19	85785-4	8
85460	28	85785-5	8
85471	30	85785-6	8
85472	30	85785-7	8
85473	30	85785-8	8
85474	31	85785-9	8
85475	31	85785-10	8
85480	29	86258	29
85481	29, 35	86261	29
85482	29	87417	36
85483	29, 35	87418	36
85486	29	87419	36
85487	29	90537	16
85489	35	92544	35
85490	35	92597	28, 35
85492	29, 31	102781	16
85497	10	239351	9
85500	40, 41, 42	239352	9
85510	40	239353	9
85520	23, 27, 38	239354	9
85525	38	239355	9
85530	39	243100	41, 42
85535	38	244270	32
85585	29	244727	43
85586	29	247333	41, 42
85588	31	249281	16, 17
85589	31	249282	16, 17
85610	29	249605	43
85660	31	249608	35
85661	31	250365	41, 42
85662	31	250400	41

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Lincoln Industrial Corp.  
One Lincoln Way  
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Phone 314.679.4200  
Fax 314.679.4359  
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