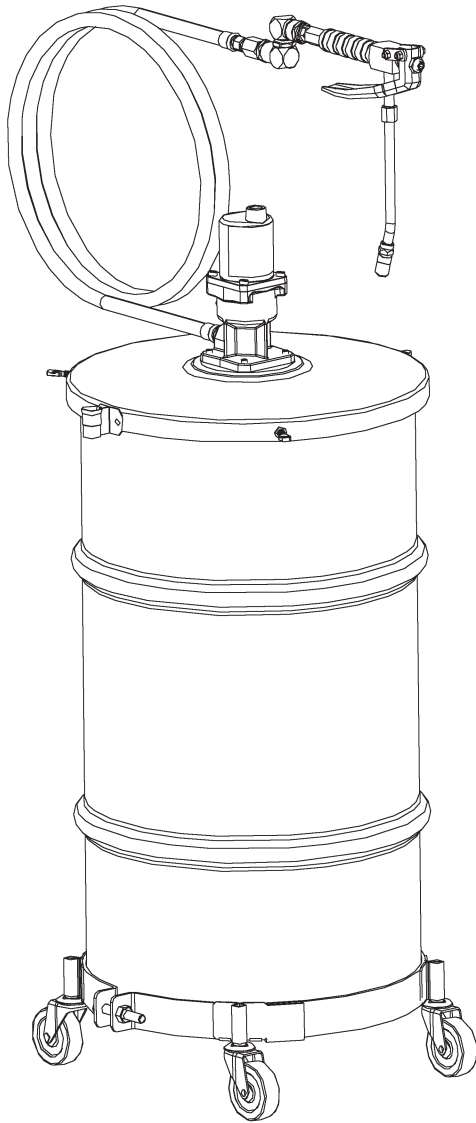
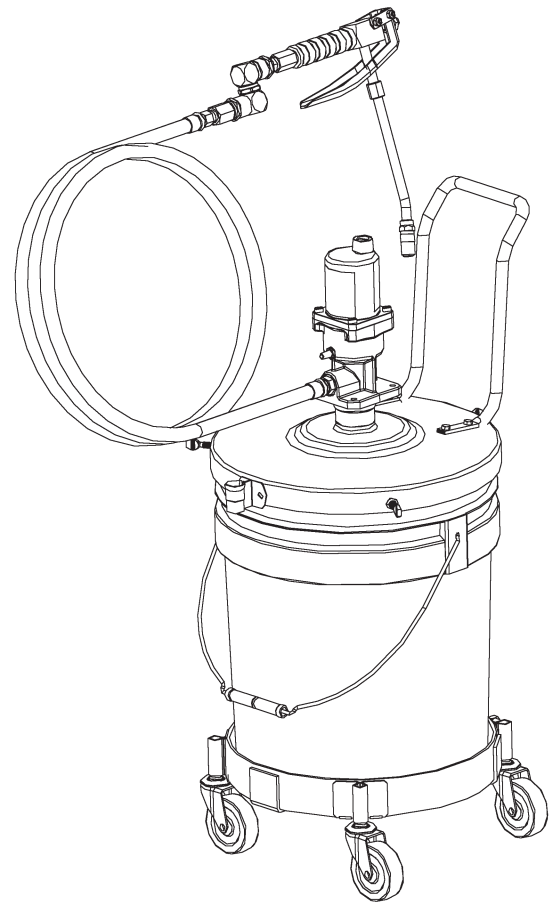




AIR OPERATED LUBRICATION UNIT  
Models 4417, 4459, 4489  
BARE PUMP ASSEMBLIES  
274216 & 274217  
Series "A"  
40:1 Ratio



Model 4417  
120# Drum Size  
(Drum Not Included)



Model 4459 & 4489  
25-50# Pail Size  
(Model 4489 is without dolly)  
(Pail not included)

## **OWNER/OPERATOR RESPONSIBILITY**

It is the owner/operator responsibility to properly use and maintain this equipment.

The instructions and warnings contained in this manual shall be read and understood by the owner/operator prior to operating this equipment.

If an owner/operator does not understand English, the contents of this manual shall be explained in the owner/operator native language to assure the owner/operator comprehends.

It is the owner/operator responsibility to maintain the legibility of all warning and instruction labels.

The owner/operator shall retain this manual for future reference to important warnings, operating and maintenance instructions.

## **SAFETY**

Read and carefully observe these operating instructions before operating this air operated pump. The pump must be operated, maintained, and repaired exclusively by persons familiar with the operation instructions. Operate the pump only after safety instructions and this operation manual is fully understood.

Adequate personal protection is recommended to prevent splashing of material on the skin or in the eyes.

ALWAYS disconnect the air coupler from the pump when the pump is not being used.

ALWAYS wear eye protection.

NEVER kink or bend high-pressure hose.

NEVER point control valve at any portion of the body or at anyone else.

Never dispense lubricant from the control valve into the palm of the hand; injection of lubricant into the body may result in serious injury.

## **WARNING**

If any fluid appears to penetrate the skin, get emergency medical attention immediately. Do not treat injury as a simple cut. Tell attending physician exactly what fluid was injected.

## **SPECIFICATIONS**

Airmotor Effective Dia.	2.06" (52.3mm)
Air Inlet	1/4 NPTF (Female)
Lube Outlet	SAE-6 O-Ring Port (.5625-18 UNF-2B)
Ratio:	40:1
Delivery Output per Minute	5 in. <sup>3</sup> (82 cc)
Max. Air Pressure	100 PSI (6.9 bar)
Min. Air Pressure	40 PSI (2.75 bar)
Max. Output Pressure	4000 PSI (275 bar)

## **DESCRIPTION**

Models 4417, 4489, and 4459 are air operated single acting grease pumps for dispensing automotive greases directly from container to the lubrication point. All models include a high-pressure control valve, grease coupling, high-pressure swivel, 7' supply hose and follower.

Model 4417 is for use with 120# drums and includes a drum cover and band dolly.

Model 4489 is for use with 25-50# containers and includes a pail cover with carrying handle. The pail is not included.

Model 4459 is for use with 25-50# containers and includes a pail cover with carrying handle and band dolly. The pail is not included.

Models 274216 and 274217 are bare pumps for use with 120# and 35-55# containers respectively.

## APPROPRIATE USE

The pump is designed to dispense automotive greases directly from the refinery container to the lubrication point with the supplied hose and fittings. Use with a hose reel or longer hoses are not recommended. Dispensing oils with this pump is not recommended.

### WARNING

It is dangerous to dispense fluids that are not recommended with this pump. Failure to heed this warning may cause serious damage or injury. These pumps are not intended, nor should it be used to pump fuels, such as gasoline, fuel oil, or Diesel fuels. Many solvents and fluids such as windshield washer solvent, anti freeze, brake fluid, and water will damage pump components and may cause the pump to seize, rendering the pump unusable. Any other use not in accordance with instructions will result in loss of claim for warranty or liability.

### WARNING

These pumps are to be operated with clean, dry, compressed air only. Operation with combustible gasses is prohibited. Maximum air pressures should not be exceeded. Failure to heed this warning may result in serious personal injury, property damage, and failure of the pump.

### WARNING

FAILURE TO HEED THE FOLLOWING WARNINGS INCLUDING MISUSE, OVER PRESSURIZING, MODIFYING PARTS, USING INCOMPATIBLE CHEMICALS AND FLUIDS, OR USING WORN OR DAMAGED PARTS, MAY RESULT IN EQUIPMENT DAMAGE AND/OR SERIOUS PERSONAL INJURY, FIRE, OR PROPERTY DAMAGE.

- Do not exceed the stated maximum working pressure of the pump, or the lowest rated component in your system.
- Do not alter or modify any part of this equipment.
- Do not operate this equipment with combustible gas.
- Do not attempt to repair or disassemble the equipment while the system is pressurized.
- Make sure all grease connections are securely tightened before using this equipment.
- Always read and follow the grease manufacturer's recommendations regarding grease compatibility, and the use of protective clothing and equipment.
- Check all equipment regularly and repair or replace worn or damaged parts immediately.
- Never point the dispensing valve at any part of the body or at another person.
- Never try to stop or deflect material from dispensing valve or leading connection or component with your hand or body.
- Always check equipment for proper operation before each use, making sure safety devices are in place and operating properly.

## TYPICAL PUMP INSTALLATION

Assemble components of the specific pump model as detailed in Illustrations 5 & 6.

Install air couplers (not included) to the air inlet of the pump, as required. An airline filter, regulator, and lubricator are recommended for the air supply of the pump.

### WARNING

FAILURE TO HEED THE FOLLOWING WARNINGS MAY RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE.

- ALWAYS determine the correct air pressure to operate the lubrication pump. This pump can develop over 5000 PSI. The supply hose, universal swivel, control valve, extension tube, and grease coupler are rated for 5000 PSI maximum as supplied on Models 4417, 4459, and 4489. When this pump is used with an optional whip hose between the control valve and grease coupler, the pressure rating must be further reduced to the rating of the whip hose. The supply hose rating and any fittings to the control valve must also be considered. To determine the air pressure to operate the lubrication pump, simply divide the rated pressure of the lowest rated component on the down stream side of the pump by the lubricant to air pressure ratio of the pump.  
EXAMPLE: The whip hose attached to the control valve is the lowest rated component and has a rating of 4500 PSI. If the lubrication pump is a 40:1 pump, divide 4500 PSI by 40 to determine the correct air pressure setting, (4500 PSI / 40 = 113 PSI). Set the air regulator that controls the air to the pump to 110 PSI or less.
- NEVER point the control valve at any part of the body or at another person.
- NEVER try to stop or deflect material from the dispensing valve, leaking connection or component with your hand.
- ALWAYS relieve pressure from the system before servicing
- AVOID contact with the nozzle.
- ALWAYS attach the spring guarded end of a whip hose to the grease coupling. The non-spring guarded end is always connected to the control valve.



## **INITIAL PUMP PRIMING**

When the pump is operated for the first time, the pump will have to be primed. To prime the pump, remove the grease hose from the pump lube outlet and set aside. Connect the airline to the air inlet of the pump with an air pressure of less than 20 PSIG. Slowly increase the air pressure to the pump until the pump begins to operate very slowly. Allow the pump to operate at the slow speed until lubricant begins to flow out of the pump lube outlet. This priming process may take 2 minutes or more to fully prime a pump tube.

After lubricant, free of air begins to flow from outlet, stop the pump. Attach the high pressure hose and control valve to the pump lubricant outlet. Restart the pump and hold the control valve nozzle in a suitable container while holding the control valve open to prime the hose and control valve. Increase the air pressure to the pump as required, keeping it operating.

After the pump and hose have been primed and are free of air, the air pressure may be increased to the desired operating pressure. Check for leaks at all connections.

## **BASIC PUMP OPERATION**

The air pressure should be adjusted so that the pump can overcome the backpressure in the lube fitting. Too much air pressure can cause the pump to deliver grease very rapidly, causing damage to the equipment being lubricated.

Connect the grease coupler to an appropriate grease fitting and open the control valve by squeezing the handle. Hold the control valve open until the desired volume of grease is dispensed, and release the handle. The pump will stop operating by stalling against the pressure developed in the hose and control valve. Due to hose expansion, this may take a minute or more to fully stall.

When the pump is not in operation, disconnect the air supply to the pump and relieve all pressure on the control valve and grease hose. **See Pressure Relief Procedure**, below

In normal operation, an air pocket may be formed in the grease, causing the pump to lose prime. Simply removing the pump from the container and re-inserting the pump tube into a fresh area of grease and shaking the container to dislodge the air pocket may restore the pump to operation. See priming instructions above.

Followers are recommended with lubricants that do not readily seek their own level, or in cold temperature conditions. They help by keeping the grease on an even level and reduce the air pockets that can form in the grease by the removal of grease by the pump from the bottom of the container.

## **CONTROL VALVE OPERATION**

Before using the valve, always make sure the air pressure is set correctly to operate the lubrication pump. **DO NOT EXCEED THE MAXIMUM PRESSURE RATING OF THE LOWEST RATED COMPONENT CONNECTED TO THE PUMP OUTLET!** Only a small pressure on the control valve handle is required to obtain lubricant flow from the nozzle.

**NEVER** point the control valve nozzle at any place on the body or another person. Should a leak develop in the grease hose, control valve or any attachment to the pump, discontinue use of the pump assembly, perform the Pressure Relief Procedure, below, and repair leak. **NEVER** attempt to stop or deflect leaking material from the control valve or any other of the pump components with your hand or any other body part.

## **PRESSURE RELIEF PROCEDURE**

The following procedure should be used whenever it becomes necessary to perform any service on the pump and when the pump is not to be in operation for an extended period.

- Disconnect the air supply from the pump air inlet.
- Direct the grease coupler on the end of the control valve into a suitable container and open the control valve by squeezing the lever. Lubricant pressure will be dissipated as the grease flows out of the grease coupler.
- After all grease flow stops, the pressure has been relieved and the pump can be serviced.
- 

## **PUMP REPAIR**

These pumps are designed for relatively simple repairs. In most cases wear will be limited to the soft parts used in the pump and replacement of these items is all that is necessary. See illustrations on the following pages for the pump break down and service parts. Service kits consisting of the normal wear items are available and listed in the parts list on the following pages.

Contact your nearest authorized Lincoln Service Dealer or Lincoln Technical Services Department for assistance.

## DIMENSIONS MODEL 4417

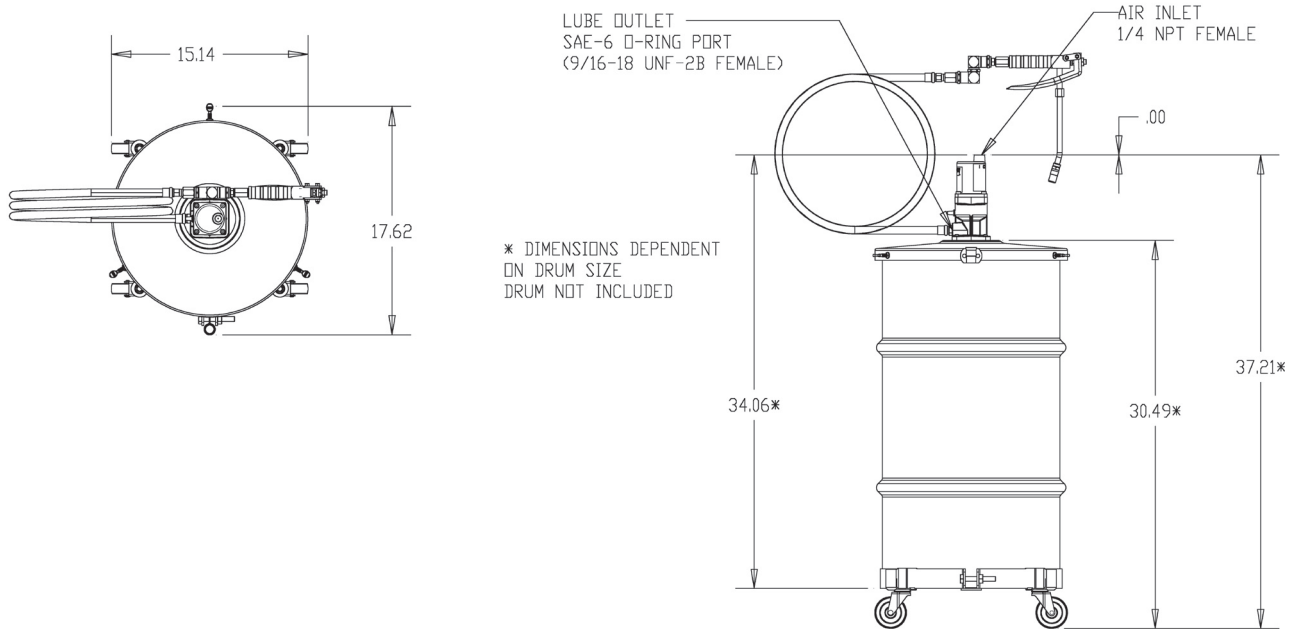


Illustration 2

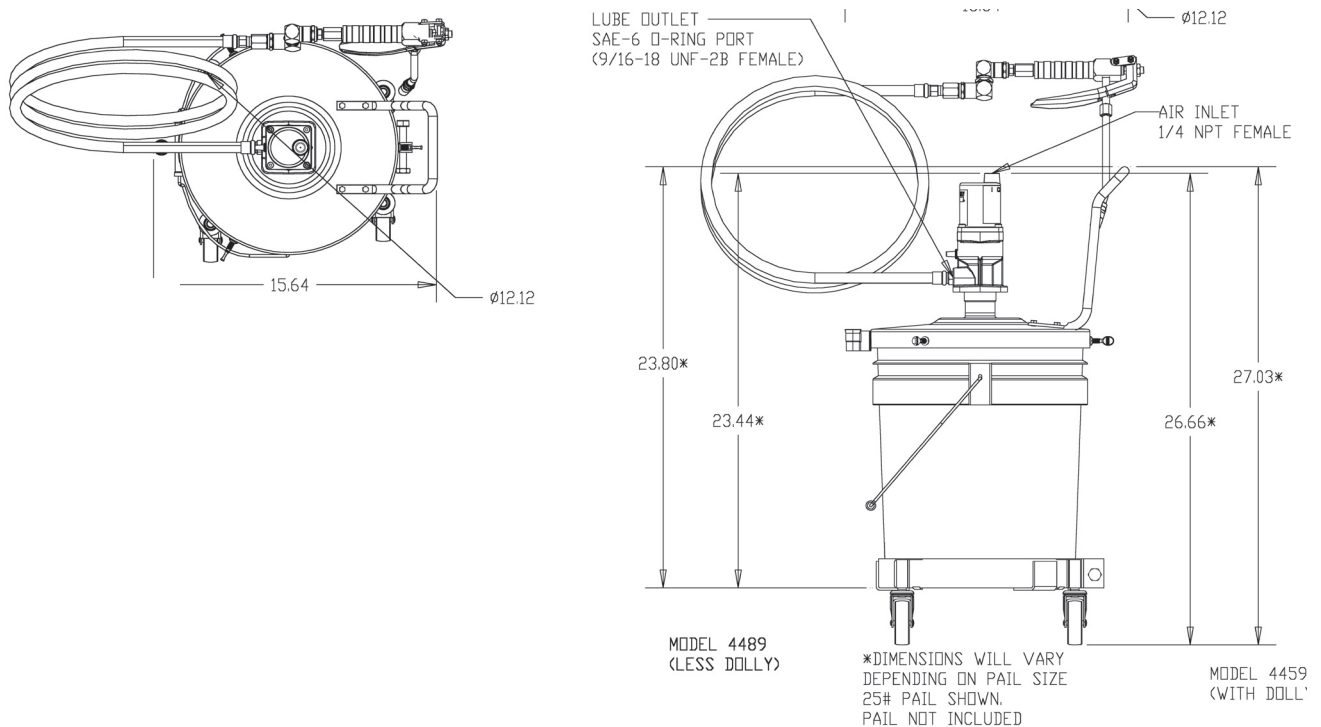


Illustration 3

**DIMENSIONS MODELS 274216 & 274217**

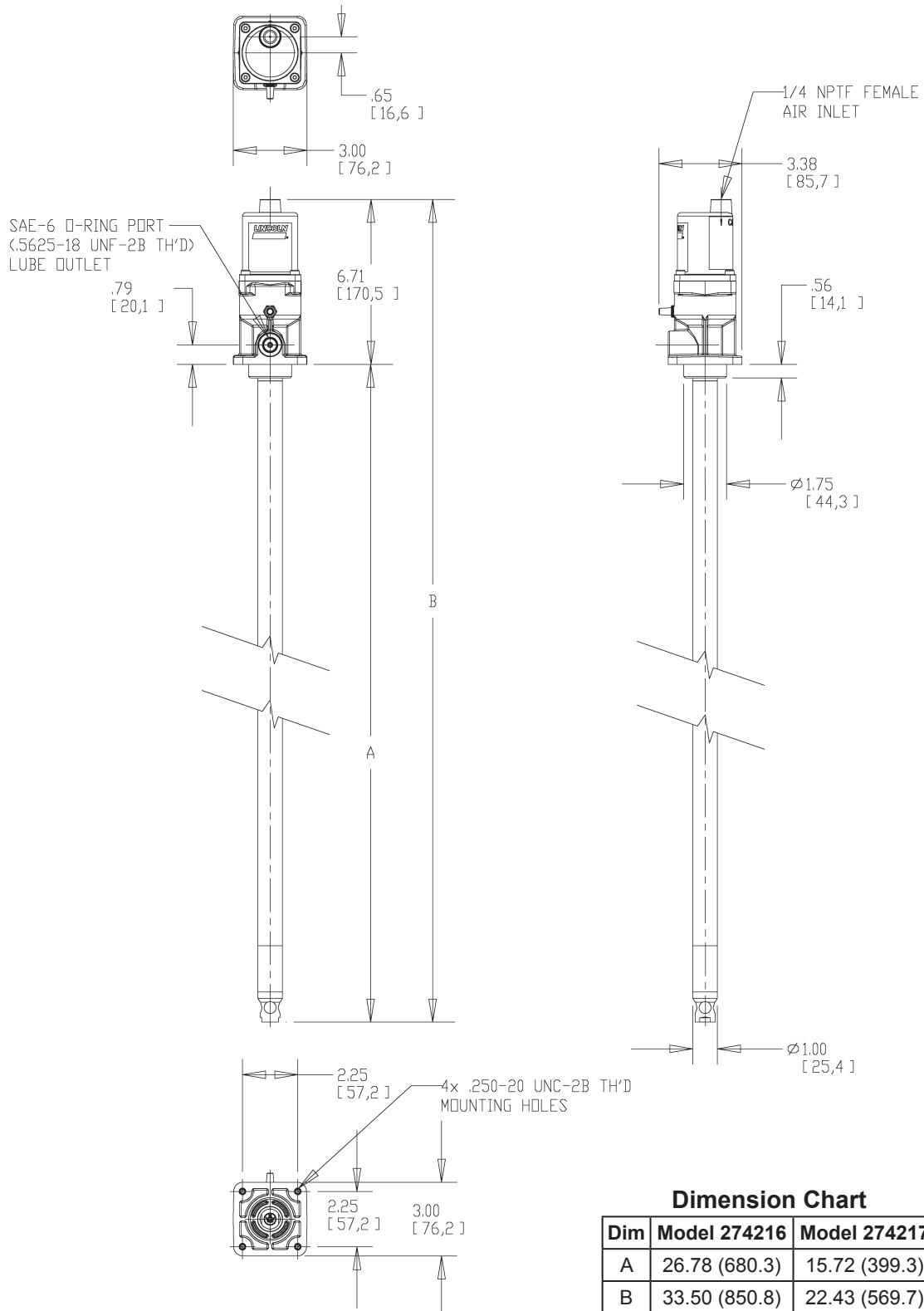


Illustration 4

## MODELS 4459 & 4489

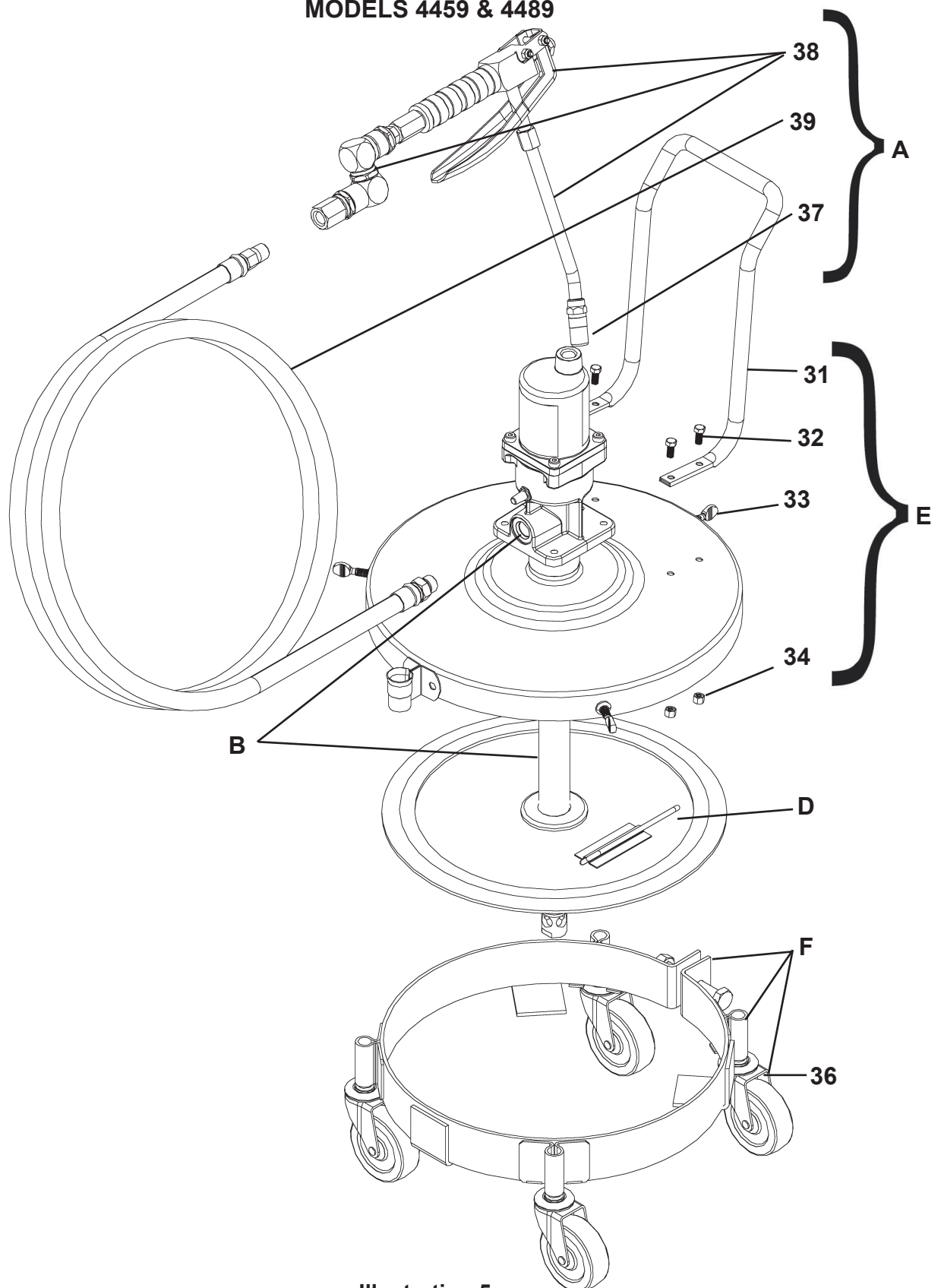


Illustration 5

MODEL 4417

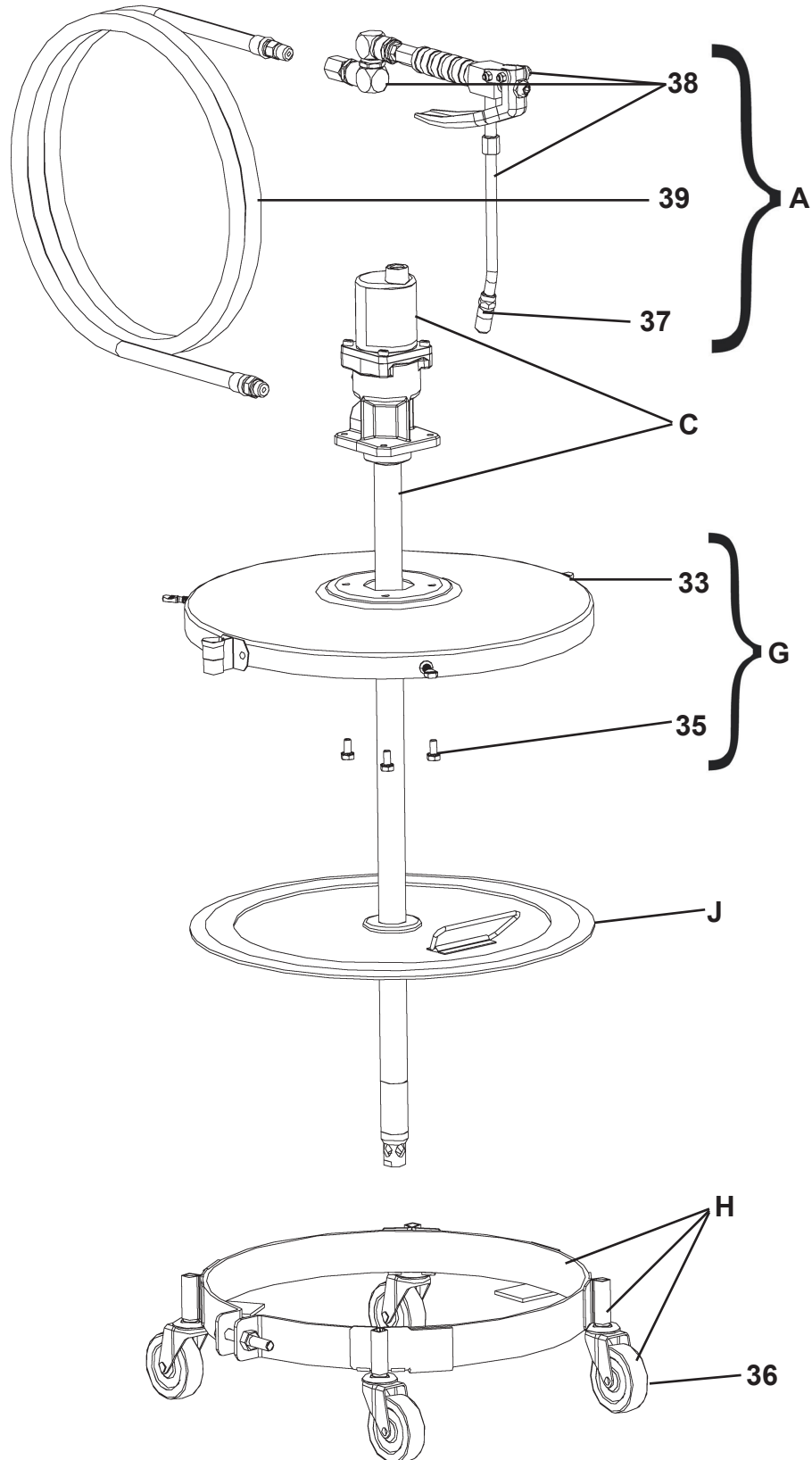
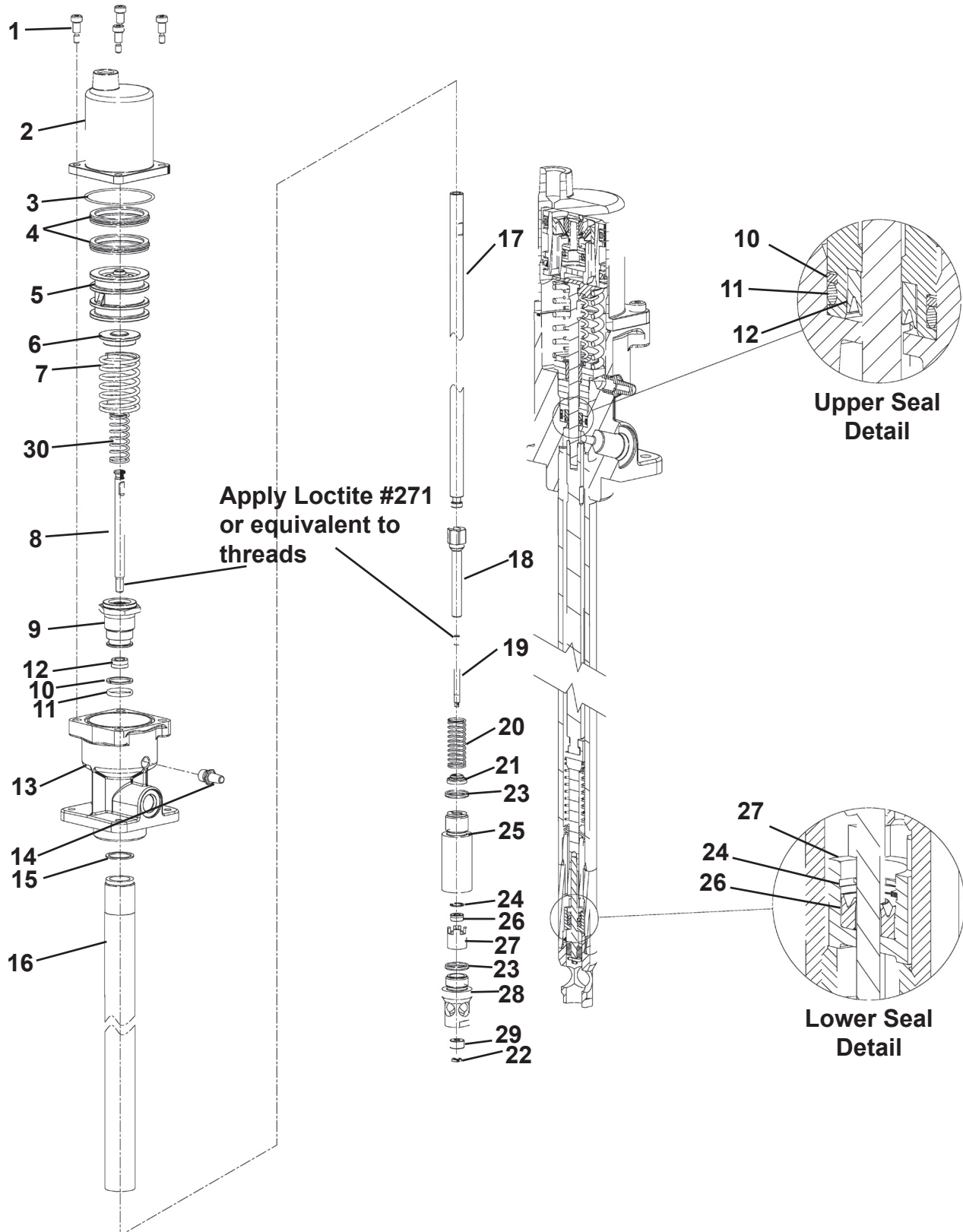


Illustration 6



## BARE PUMP MODELS 274216 & 274217



**AIR OPERATED LUBRICATION UNIT  
MODELS 4417, 4459, 4489  
BARE PUMP ASSEMBLIES  
274216 & 274217**



SERVICE PARTS				USED ON		
ITEM	PART NO	DESCRIPTION	QUAN	MODEL 4417	MODEL 4459	MODEL 4489
1	261110	CAP SCREW	4	X	X	X
2	274339	AIR CYLINDER	1	X	X	X
3	261174*	O-RING (NITRILE) [IN REPAIR KIT M]	1	X	X	X
4	271998*	PISTON SEAL (POLYURETHANE) [IN REPAIR KIT M]	2	X	X	X
5	271907	PISTON ASSY (INCL ITEM 4)	1	X	X	X
6	274135	SPRING RETAINER	1	X	X	X
7	271903	COMPRESSION SPRING	1	X	X	X
8	274134	PISTON ROD	1	X	X	X
9	274131	BUSHING ASSY	1	X	X	X
10	274128*	BACK-UP RING (TEFLON) [IN REPAIR KIT M]	1	X	X	X
11	34210*	O-RING (NITRILE) [IN REPAIR KIT M]	1	X	X	X
12	274396*	U-CUP SEAL (POLYURETHANE) [IN REPAIR KIT M]	1	X	X	X
13	274129	OUTLET BODY	1	X	X	X
14	261109	MUFFLER	1	X	X	X
15	31054*	GASKET (COPPER) [IN REPAIR KIT M]	1	X	X	X
16	274124	PUMP TUBE (120#)	1	X	NA	NA
16	274126	PUMP TUBE (5 GAL)	1	NA	X	X
17	274125	PLUNGER ROD (120#)	1	X	NA	NA
17	274127	PLUNGER ROD (5 GAL)	1	NA	X	X
18	274336	PLUNGER	1	X	X	X
19	274388	PRIMING ROD	1	X	X	X
20	274338	COMPRESSION SPRING	1	X	X	X
21	274335	CHECK, UPPER	1	X	X	X
22	274437	COTTER PIN, 1/16 X 3/8"	1	X	X	X
23	252773*	O-RING (NITRILE) [IN REPAIR KIT M]	2	X	X	X
24	274138	RETAINING RING	1	X	X	X
25	274337	PUMP BUSHING	1	X	X	X
26	272799	U-CUP SEAL, POLYURETHANE	1	X	X	X
27	274387	CHECK, LOWER	1	X	X	X
28	274389	PRIMING TUBE	1	X	X	X
29	274390	SHOVEL	1	X	X	X
30	274366	COMPRESSION SPRING	1	X	X	X
31	NA	HANDLE	1	NA	X	X
32	NA	12-24 X 1/2 HEX HD SCREW	4	NA	X	X
33	NA	1/4-20 X 1-3/8" THUMB SCREW	3	X	X	X
34	NA	12-24 HEX NUT	4	NA	X	X
35	NA	1/4-20 X 9/16 MACH SCREW W/LOCKWASHER	4	X	NA	NA
36	274371	SWIVEL CASTER	4	X	X	NA
37	G310	GREASE COUPLER	1	X	X	X
38	282883	HIGH PRESSURE CONTROL VALVE & SWIVEL	1	X	X	X
39	282882	HIGH PRESSURE GREASE HOSE, 7FT	1	X	X	X
A	274174	DELIVERY KIT	1	X	X	X
B	274217	GREASE PUMP ASSY, 5 GAL PAIL	1	NA	X	X
C	274216	GREASE PUMP ASSY, 120# DRUM	1	X	NA	NA
D	274326	FOLLOWER ASSY, 5 GAL PAIL	1	NA	X	X
E	274329	DRUM COVER ASSY, 5 GAL PAIL	1	NA	X	X
F	274330	PAIL DOLLY, 5 GAL	1	NA	X	NA
G	274328	DRUM COVER ASSY, 120#	1	X	NA	NA
H	274331	DRUM DOLLY, 120#	1	X	NA	NA
J	274327	120# UNIVERSAL FOLLOWER ASSY	1	X	NA	NA
L	G212S	WHIP HOSE, 12" W/SPRING (NOT SHOWN)	AS REQ	OPT	OPT	OPT
M	274175	REPAIR KIT		X	X	X

\* DENOTES PARTS SUPPLIED IN REPAIR KIT 274175  
ITEM M, (NOT SHOWN)



### TROUBLESHOOTING

CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
Pump does not operate	No air or low air pressure to pump	Make sure air pressure to pump is adequate to operate pump
	Muffler Clogged	Remove muffler and clean or replace.
Pump operates, but does not deliver lubricant. Pump will not stall when control valve is closed.	Lubricant reservoir is empty or low on lubricant.	Refill container
	Air pocket present in lubricant	Reposition pump in container or remove air pocket from lubricant.
	Dirt in checks or worn or damaged check valves (21 & 27)	Disassemble pump and clean or replace check valves items 21 & 27
	Worn or damaged plunger (18)	Disassemble pump and replace plunger (18) and pump bushing (25)
Pump operates but lubricant is expelled from exhaust muffler	Water in air or operation in high humidity conditions.	Install air filter and lubricator in airline to pump to remove moisture and lubricate pump.
	Upper U-cup seal (12) or piston rod (8) damaged or worn	Repair and replace seal or rod as required.
Air is leaking from exhaust when pump is stalled	Damaged or worn air piston (5) or piston seals (4) or air cylinder (2)	Replace damaged components as required.
	Broken return springs (7 or 30)	Replace broken springs

### CONTROL VALVE & SWIVEL REPAIR

The control valve and swivel are not serviceable items and disassembly and repair should be limited to replacement of the grease coupler and nozzle extension. If the control valve or swivel requires service they should be replaced as a unit. Lincoln does not stock repair parts for the control valve or swivel.

### High Humidity Operation

When pump is operated in very humid conditions or when air supply contains high amounts of moisture, the pump may spray water vapor from the muffler/exhaust with in operation. This vapor may also carry some of the emulsified grease lubricant used to lubricate the air piston. This is a normal condition and should not be cause for alarm in normal use. In extreme conditions, the muffler may become blocked with ice or lubricant causing the pump to stop operation. If the muffler is blocked with ice, simply stop operating the pump and allow the ice to melt. If lubricant from the air cylinder is causing the blockage, simply remove the muffler and clean with suitable solvent and blow dry with compressed air. It may also be necessary to re-lubricate the air piston, Item 5, with water resistant #1 grease periodically. Do not operate the pump with out the muffler installed. The muffler is necessary for the proper operation of the pump.



## **Lincoln Industrial Standard Warranty**

### **LIMITED WARRANTY**

Lincoln warrants the equipment manufactured and supplied by Lincoln to be free from defects in material and workmanship for a period of one (1) year following the date of purchase, excluding there from any special, extended, or limited warranty published by Lincoln. If equipment is determined to be defective during this warranty period, it will be repaired or replaced, within Lincoln's sole discretion, without charge.

This warranty is conditioned upon the determination of a Lincoln authorized representative that the equipment is defective. To obtain repair or replacement, you must ship the equipment, transportation charges prepaid, with proof of purchase to a Lincoln Authorized Warranty and Service Center within the warranty period.

This warranty is extended to the original retail purchaser only. This warranty does not apply to equipment damaged from accident, overload, abuse, misuse, negligence, faulty installation or abrasive or corrosive material, equipment that has been altered, or equipment repaired by anyone not authorized by Lincoln. This warranty applies only to equipment installed, operated and maintained in strict accordance with the written specifications and recommendations provided by Lincoln or its authorized field personnel.

**THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

In no event shall Lincoln be liable for incidental or consequential damages. Lincoln's liability for any claim for loss or damages arising out of the sale, resale or use of any Lincoln equipment shall in no event exceed the purchase price. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, therefore the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights. You may also have other rights that vary by jurisdiction.

Customers not located in the Western Hemisphere or East Asia: Please contact Lincoln GmbH & Co. KG, Walldorf, Germany, for your warranty rights.

### **Lincoln Industrial Special Limited Warranties**

#### **SPECIAL LIMITED 2 YEAR WARRANTY**

##### **SL-V Series, Single Injectors-85772, 85782, and Replacement Injectors-85771, 85781**

Lincoln warrants the SL-V Injector series to be free from defects in material and workmanship for two (2) years following the date of purchase. If an injector model (single or replacement) is determined to be defective by Lincoln, in its sole discretion, during this warranty period, it will be repaired or replaced, at Lincoln's discretion, without charge.

#### **SPECIAL LIMITED 5 YEAR WARRANTY**

##### **Series 20, 25, 40 Bare Pumps, Heavy Duty and 87000 Series Bare Reels**

Lincoln warrants series 20, 25, 40 bare pumps, and Heavy Duty and 87000 series (87300, 87500, 87700) bare reels to be free from defects in material and workmanship for five (5) years following the date of purchase. If equipment is determined by Lincoln, in its sole discretion, to be defective during the first year of the warranty period, it will be repaired or replaced at Lincoln's discretion, without charge. In years two (2) and three (3), the warranty on this equipment is limited to repair with Lincoln paying parts and labor only. In years four (4) and five (5), the warranty on this equipment is limited to repair with Lincoln paying for parts only.

### **Lincoln Industrial Contact Information**

To find Lincoln Industrial's Nearest Service Center call the following numbers, or you may also use our website

Customer Service 314-679-4200  
Website [lincolnindustrial.com](http://lincolnindustrial.com)

Americas:  
One Lincoln Way  
St. Louis, MO 63120-1578  
USA  
Phone +1.314.679.4200  
Fax +1.800.424.5359

Europe/Africa:  
Heinrich-Hertz-Str 2-8  
D-69183 Walldorf  
Germany  
Phone +49.6227.33.0  
Fax +49.6227.33.259

Asia/Pacific:  
51 Changi Business Park  
Central 2  
#09-06 The Signature  
Singapore 486066  
Phone +65.6588.0188  
Fax +65.6588.3438

© Copyright 2005  
Printed in Taiwan  
Web site:  
[www.lincolnindustrial.com](http://www.lincolnindustrial.com)