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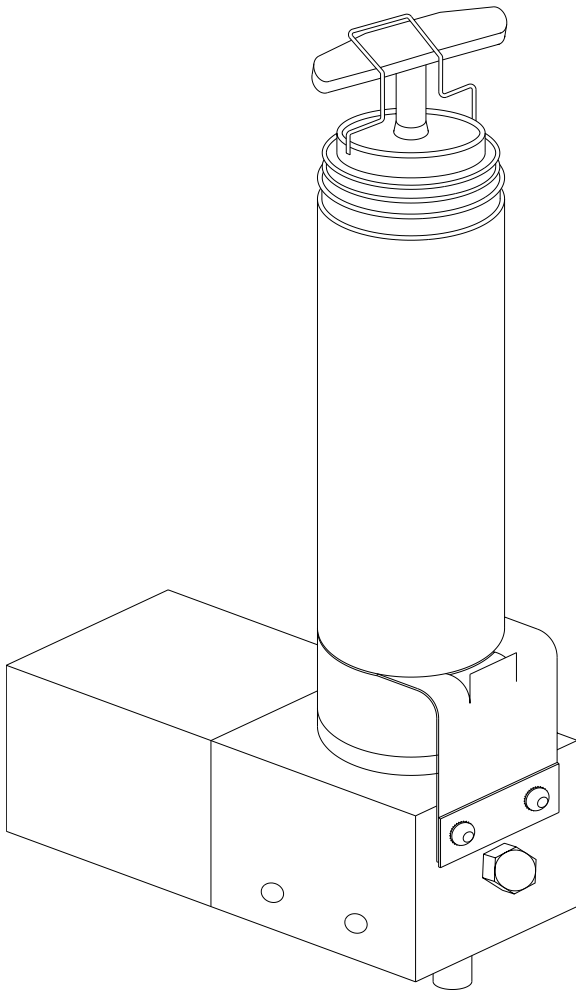


**ALLIED**  
Construction Products, LLC

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**TECHNICAL  
MANUAL**

Manual Part No. 102782  
November 11, 2002



**AutoLube III  
Automated  
Lubrication  
System**

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**Allied AutoLube III  
Document Change Notice**

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## SECTION 1.0 INTRODUCTION

This manual contains important information for the safe use and maintenance of the Allied AutoLube III. Read this manual thoroughly before installing, operating or servicing the AutoLube III. The AutoLube III must be operated, maintained and repaired exclusively by persons familiar with the operating instructions. Operate the AutoLube III only after safety instructions and this manual are fully understood. This manual must be easily accessible to operators and service personnel. Store this manual in a convenient location.

 Instructions identified with this symbol are important for personnel safety and full service life of the AutoLube III. Follow them carefully.

 **WARNING**

Instructions given inside a WARNING box emphasize a potentially dangerous procedure which may result in injury or death to the operator or any bystanders in the work area. Please read and follow these instructions carefully and heed all decals.

 **CAUTION**

Instructions given inside a CAUTION box emphasize a procedure that may cause damage to the equipment if not performed properly. Read these instructions carefully before performing the procedure on the Allied AutoLube III Lubrication System.

This technical manual describes in detail the procedures needed to operate the Allied AutoLube III Lubrication System on site. Pay careful attention to all instructions and follow all governing regulations. This pump is exclusively designed to dispense grease in Hydraulic Hammer applications and should be operated only with hydraulic power. Any other use not in accordance with the instructions will result in loss of claims for warranty and liability. Operation or service other than in accordance with these instructions may subject the AutoLube III to conditions beyond its design capability. Improper operation, service or the use of non-Allied parts may result in AutoLube III failure or personnel injury.

Responsibility for operation and safety lies at all times with the operator of the carrier. Allied takes no responsibility for the following:

- Incorrect usage of the AutoLube III.
- Exceeding maximum ratings as provided in Section 4.0 Specifications.
- Inadequate maintenance of the AutoLube III.
- Use of non-Allied spare parts.
- Damages due to the use of grease which is not or is only conditionally pumpable in a centralized lubrication system. Allied Chisel Paste is recommended.
- Damage caused by unauthorized modification of the system components. Contact Allied Technical Service Department if modification is necessary.

- Damage caused by insufficient lubricant or irregular pump refilling.
- Damage caused by contaminated lubricants.
- Damage caused by improper disposal of used or contaminated lubricants.

Allied provides no warranty for the following wear parts:

- All seals
- O-rings
- Hoses

## SECTION 2.0 OVERVIEW

The Allied AutoLube III Lubrication System (AutoLube III) is designed to provide a simple and effective, inexpensive method of lubricating hydraulic hammers.

The AutoLube III is a fully automated system with lubricant supplied by a hydraulic pump. The AutoLube III is installed and works integrally with the carrier and hammer, pumping lubricant to the hammer bushings and demolition tool every time the hammer is activated. Costly downtime is eliminated because the right amount of lubricant is delivered at the right time. The Allied AutoLube III is the proven solution for lubricating hydraulic hammers.

The Allied AutoLube III Lubrication System provides the following advantages:

- Simple design
- Compact size - mounts on hammer.
- Supplied with all mounting hardware and adapter fittings.
- Replaceable or refillable, standard 12 ounce grease cartridge. Bulk filling of cartridge can be complete
- No tools required to change grease cartridge.
- Primer relief valve.
- Adjustable output by changing metering plug.
- Used with Allied Chisel Paste.
- Lubricant level can be monitored from operator's cab.

Figure 2-1 illustrates the AutoLube III main components and Figure 2-2 shows typical mounting locations of the AutoLube III on a hammer. The mounting location varies with the hammer model.

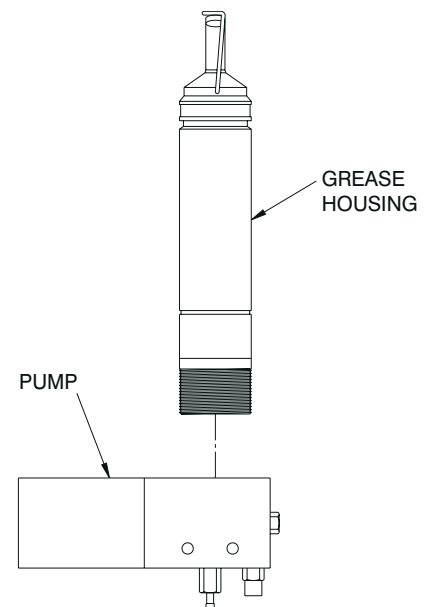


Figure 2-1. AutoLube III Main Components

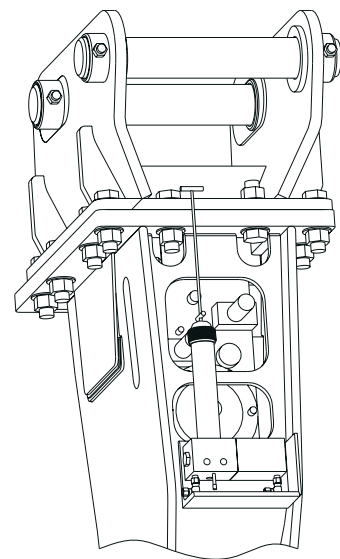


Figure 2-2. Typical AutoLube III Mounting

## SECTION 3.0 GENERAL CONSTRUCTION SAFETY

Always follow procedures that promote safe conditions for workers and bystanders. This includes, but is not limited to: locating existing underground utility services, establishing pedestrian barriers and wearing personal protective equipment.



### CAUTION

Read and follow all equipment and machinery instructions.

Comply with all federal and local regulations regarding construction practices and public safety. Identification of and compliance to governing regulations are the responsibility of the owner and operator.

In the United States, comply with the recommendations of the Occupational Safety and Health Administration standards of the U.S. Department of Labor. For OSHA construction guidelines contact your local federal government office or write:

U.S. Government Printing Office  
Superintendent of Documents  
P.O. Box 371954  
Pittsburgh, Pa. 15250

Ask for Construction Industry OSHA Standards Stock #869-034-00107-6.

### 3.1 Operator Safety Recommendations

- This equipment generates very high grease pressure. Use extreme caution when operating this equipment as material leaks from loose or ruptured components can inject fluid through the skin and into the body causing serious bodily injury.
  - Use adequate protection to prevent splashing of material onto the skin or into the eyes.
  - If any fluid appears to penetrate the skin, get emergency medical attention immediately. Do not treat as a simple cut. Tell attending physician exactly what fluid was injected.
  - Do not run any hydraulic lines through the operator's cab; they may leak or even burst, injuring the operator.
  - Relieve hydraulic oil pressure before disconnecting or removing existing lines on the carrier.
  - Collect any oil which spills out and dispose of it properly.
- When welding as needed to mount the AutoLube III, the following instructions must be observed:
- Disconnect all battery cables from the carrier battery.
  - Protect all hydraulic hoses in the immediate vicinity of the point being welded to prevent danger of fire or damage to hoses from heat.
- To avoid damage to the carrier and/or the AutoLube III, perform the following daily inspections.
- Before starting, visually inspect all hoses, fittings and fasteners for wear and looseness.
  - Check lubricant level inside the cartridge. Refer to Section 6.4.



**SECTION 4.0  
AUTOLUBE III TECHNICAL SPECIFICATIONS**

Weight	Empty	16.3 lbs. (7.4kg)
	Full	17.3 lbs. (7.8kg)
Hydraulic Inlet Pressure (max.)		5000 psi (345 bar)
Max Inlet Back Pressure		200 psi (13.8 bar)*
Output Pressure (max.)		6500 psi (450 bar)
Output per Stroke		0.018 in <sup>3</sup> (0.3 cm <sup>3</sup> )*
Pump Ratio		1.3:1
Grease Reservoir Volume		14.5 oz.
Operating Temperature		-10°F to +180°F (-23°C to +80°C)

\*Pressure Relief Valve required if back pressure is higher than 200 psi.

\*\*Pump output can be increased up to 0.072 in.<sup>3</sup> (1.2 cm<sup>3</sup>) by replacing the metering plug; refer to Section 7.4.

Metering Plugs

0.018 in. <sup>3</sup> (0.3 cm <sup>3</sup> )	Part No. 103057	0.060 in. <sup>3</sup> (1.0 cm <sup>3</sup> )	Part No. 103060
0.036 in. <sup>3</sup> (0.6 cm <sup>3</sup> )	Part No. 103508	0.072 in. <sup>3</sup> (1.2 cm <sup>3</sup> )	Part No. 103061
0.048 in. <sup>3</sup> (0.8 cm <sup>3</sup> )	Part No. 103059		

Hose Inside Diameters:

Hydraulic Line	3/8-inch (9.53mm)
Lubricant Line	1/4-inch (6.35mm)

Connecting Threads:

Hydraulic Line	SAE #4 (7/16-20 UNF)
Lubricant Line	SAE #4 (7/16-20 UNF)

Cartridge: Allied Chisel Paste

See Section 9.0 for ordering information

Table 4-2. Dimensions of AutoLube III

Letter	Dimension in. (mm)	Description
A	14.91 (379)	Overall Height
B	8.69 (221)	Overall Width
C	3.00 (76)	Overall Depth
D	3.00 (76)	Cylinder Block Height
E	8.39 (213)	Cylinder Block Width
F	5.64 (143)	Mounting Hole Location
G	1.50 (38)	Low Level Indicator Cap extended
H	1.40 (36)	Hydraulic Inlet Location
J	.50 (13) .56 (14)	Lube Outlet Location
K		

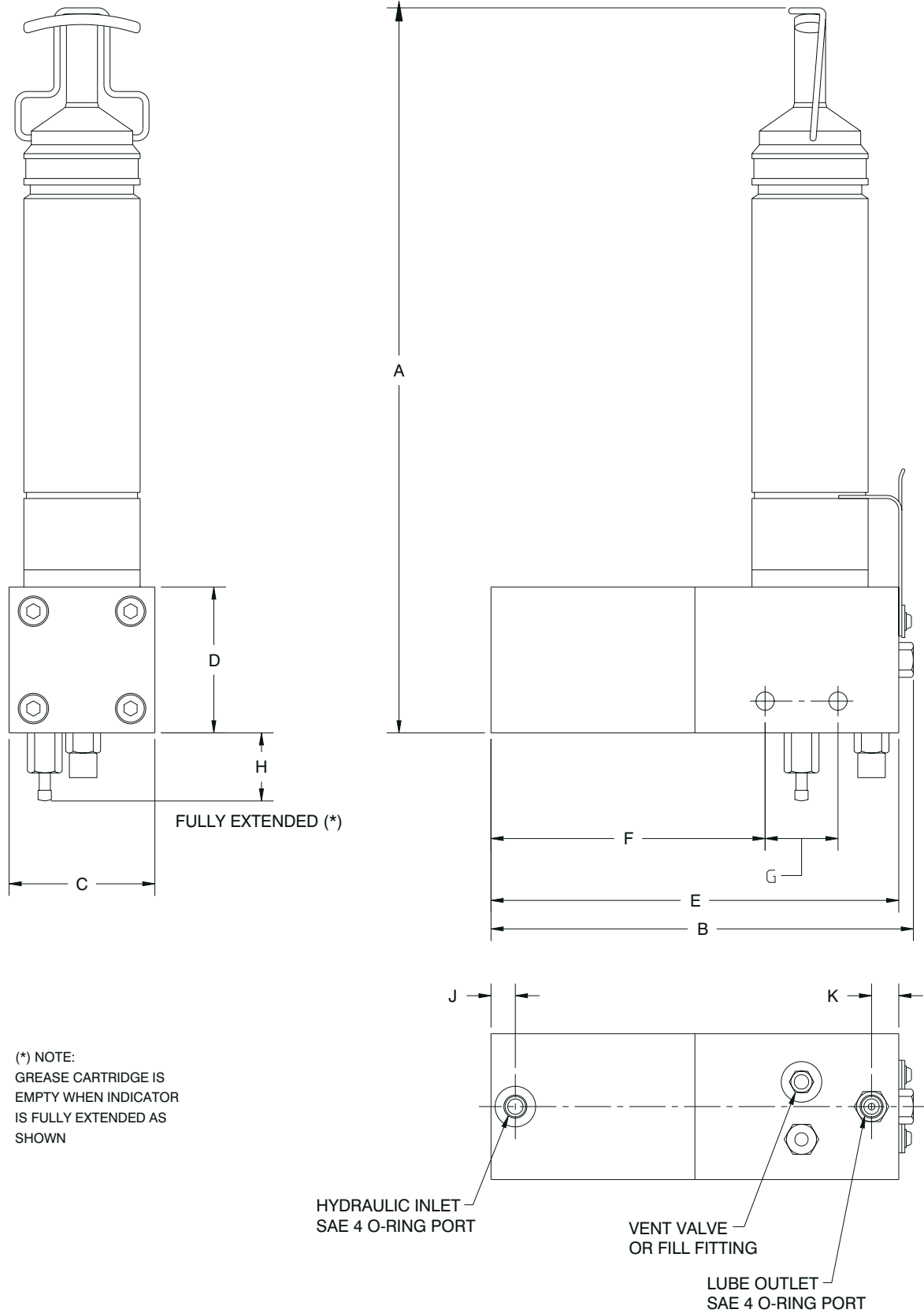


Figure 4-1. AutoLube III Dimension Drawing

## SECTION 5.0 THEORY OF OPERATION

The AutoLube III is used on a hydraulic hammer to lubricate the wear bushings and demolition tool automatically every time the hammer is started.

Each time the hammer is activated, the pressure from the carrier's hydraulic system activates the pump; the pump makes one stroke to dispense grease. When the hammer is stopped, the hydraulic pressure to the pump drops below 200 psi (14 bar) and the internal springs (see Figure 5-1) return the pump plunger to the initial position for the next lube cycle. For proper operation on older HyRams, the inlet hydraulic back pressure is higher than 200 psi (14bar), a pressure relief valve must be installed.)

When the hammer is activated, grease flows to the pump and the plunger opens the grease inlet port. Grease is drawn into the pump head by the vacuum in the head. This vacuum and the pressure of the cartridge follower spring force the grease into the lubricant pump line. Refer to Figure 5-2. When the hammer is stopped, the plunger and the follower spring return to their initial positions. This process is repeated every time the hammer is started and stopped.

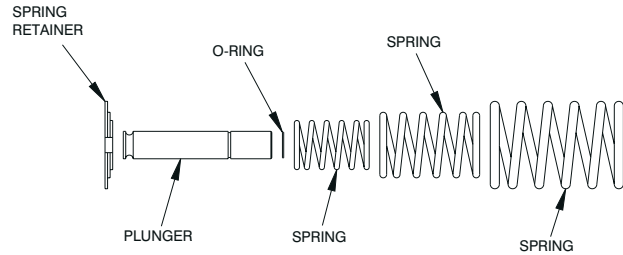


Figure 5-1. Plunger and Internal Springs

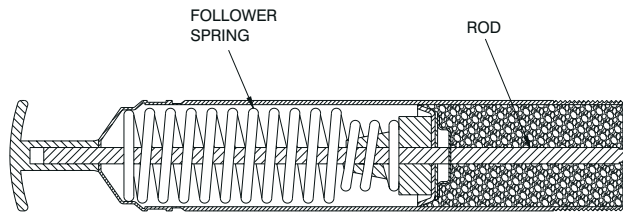


Figure 5-2. Follower Spring and Rod

## SECTION 6.0 AUTOLUBE III INSTALLATION

The AutoLube III is Hy-Ram Model specific. It is mounted on a bracket that is welded to the hammer box. All accessories, hardware and hoses are included in the AutoLube III Kit. Section 9.0 lists the AutoLube III Kit part numbers.



### CAUTION

Nominal inside diameter of the hydraulic line **MUST** be at least .375 in. (9.53mm) and nominal inside diameter of the lubricant supply line **MUST** be at least .25 in. (6.35 mm)

### 6.1 Installation

(Refer to Figures 6-1 and 6-2.)

Allied recommends mounting the cartridge housing in the upright position. Allow sufficient space for cartridge removal and replacement and for pump servicing. Mount AutoLube III so that the pump Low Level Indicator Cap is visible to the carrier operator for monitoring lubricant level. Refer to Figure 6-1. Refer to Section 6.x to install Reservoir Retainer.

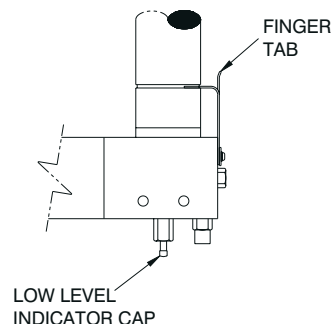


Figure 6-1. Low Level Indicator Cap

### WARNING

Disconnect the battery cables to prevent electrical damage before performing any welding work.



### CAUTION

Shield all hydraulic hoses in the AutoLube III mounting vicinity during welding to avoid the risk of fire or damage to the hoses from excessive heat.

1. Determine location for AutoLube III. Weld mounting bracket in place.
2. Install in AutoLube #4 SAE side of Items 7 & 8, 90 degree elbow, SAE#4/4MJIC.
4. Remove pressure plug from Hammer. Install M14-1.5 side item 2, M14-1.5/4MJIC adaptor.

### NOTE

Some Hy-Ram Models have a separate pressure port for the AutoLube III on the cylinder head. This port is marked with a small **P**. Other Hy-Ram Models have a pressure port connection in the flange on the hydraulic pressure inlet port. This port is marked with a large **P**. See Section 9.0 Parts Information for specific Hy-Ram Model pressure port type.

4.

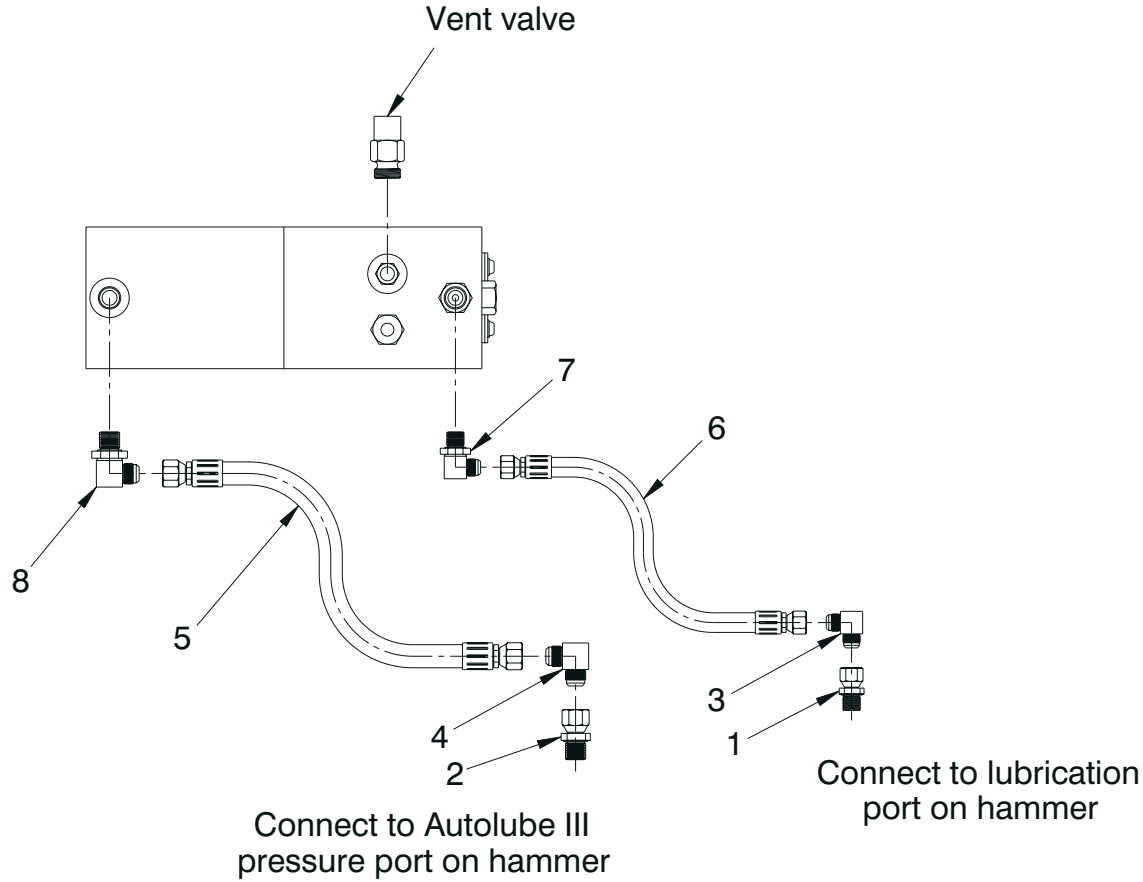


Figure 6-2. AutoLube III Installation

Remove Grease fitting from Hammer. Install 4MSPP side od Item 1 4BSBB/4MJIC adaptor:

5. Install 90 degree elbows on hammer adaptors.
  - Elbow (3), #4JIC, for lubrication connection.
  - Elbow (4), #6JIC, for hydraulic connection.
6. Connect hoses to elbows (refer to Section 5.2 for retrofit kit instructions):
  - Hose (5), 3/8-inch, for hydraulic line connection.
  - Hose (6), 1/4-inch, for lube supply line connection.
  -
7. Connect hoses to AutoLube III pump with adapters.

- Adapter (9), #4JIC, for lubrication connection.
- Adapter (10), #6JIC, for hydraulic connection.

8. Bolt AutoLube to Bracket with Hardware provided.
9. Refer to Section 7.1 and install Allied Chisel Paste cartridge into AutoLube III cartridge housing. The cartridge can be refilled and re-used.

### 6.2 Installing the Reservoir Retainer

The reservoir clip has fingers that fit into a groove at the lower end of the grease cartridge housing. When the retainer is tightened, the housing is pulled into the pump head. Before installing the Reservoir Retainer, ensure that the Grease Cartridge

Housing (28, Figure 10-1) and gasket (27) are correctly in place. Install grease cartridge (Section 7.1) before final adjustment of the spring clip (1, Figure 6-3).

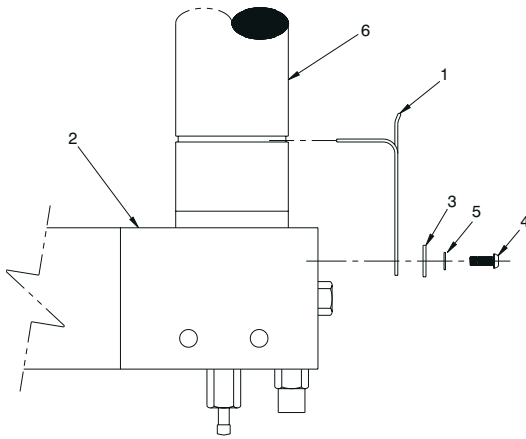


Figure 6-3. Reservoir Retainer

1. Install the spring clip (1) on the side of the pump head (2) with plate (3), cap screws (4) and lock washers (5) as shown in Figure 6-3.
2. With Grease Housing (6) installed and tightened as required, adjust the fingers of the spring clip (1) so that they firmly retain the housing.
3. Tighten two cap screws (4).

## SECTION 7.0 AUTOLUBE III OPERATION

**⚠ CAUTION**  
 Low Level Indicator Rod extends from bottom of pump when grease cartridge is empty. Replace empty cartridge immediately. Do not operate hammer without grease.

Fill Grease Housing when Low Level Indicator Cap extends from bottom of pump.

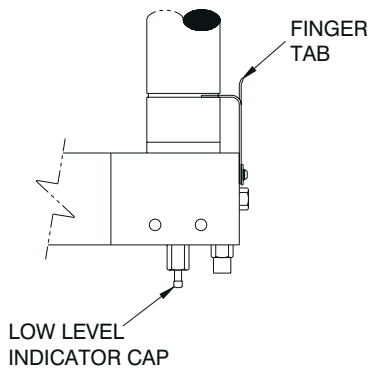


Figure 7-1. Low Level Indicator Cap

### 7.1 Follower Seal

There is a follower seal at the bottom of the Grease Housing. The seal lip must be directed toward the follower handle for cartridge loading. When filling the housing with grease manually (bulk) or with a hand pump, the seal must be flipped so the lip is directed toward the pump head. Refer to Figure 7-2. The illustration shows the seal in the cartridge position, seal lip toward follower handle.

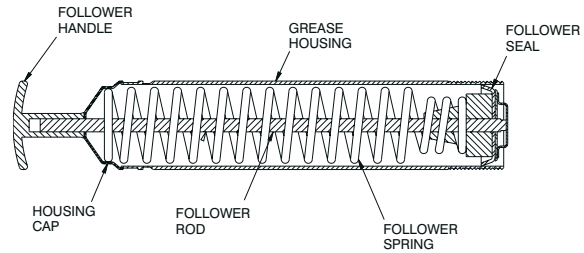


Figure 7-2. Cartridge Housing Components

## 7.2 Filling Pump with Grease

### 7.2.1 Remove Empty Cartridge

1. Disengage the retaining clip from the follower handle. Refer to Figure 7-3.

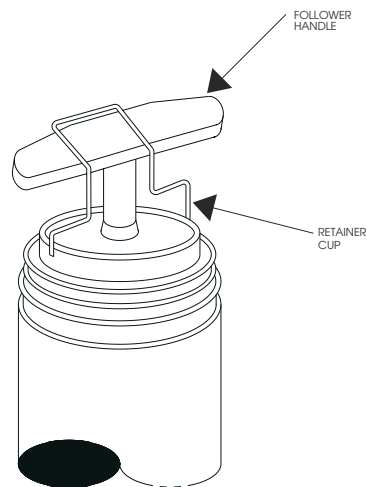


Figure 7-3. Follower Handle Retaining Clip

2. Pull finger tab on reservoir retainer to disengage clip fingers from the housing groove.



3. Loosen the housing a couple of turns to break the seal.
4. Pull follower handle until follower rod is fully extended. Latch the follower rod groove into slot in the tube cap.
5. Unscrew housing from the pump head.
6. Carefully release the follower handle to eject the empty cartridge
7. If replacing cartridge, do not remove follower seal. If manually filling, flip seal (Section 7.1).

### 7.2.2 Install Grease Cartridge

1. Turn off hammer.
2. Remove empty cartridge (Section 7.2).
3. Visually check that follower seal is in the correct position (Figure 7-2).
4. Pull follower rod out and latch.
5. Remove plastic cap from grease cartridge and insert cartridge into housing.
6. Remove pull-tab from cartridge.
7. Pull on Reservoir Retainer finger tab and install housing into pump head. Screw housing into pump head.
8. Release follower rod.
9. Purge air from pump. Refer to Section 7.4
10. Latch retaining clip over the top of the follower handle.

### 7.2.3 Air Purging

1. Engage the follower rod with the follower by lightly pulling up and rotating the follower handle. M.P. I don't understand this. What is the follower?
2. Push down on follower handle while pressing the button on Vent Valve to

force any air pockets out of pump head. Refer to Figure 7-4.

3. Wipe excess grease from Vent Valve.

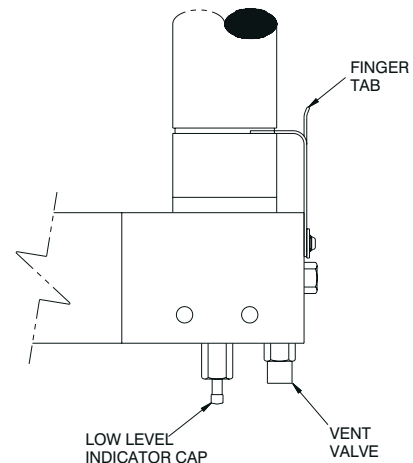


Figure 7-4. Vent Valve

### 7.2.4 Prefill Lubricant Line

The lubricant line must be filled with lubricant before operation to bleed air from the line. A hand grease gun can accomplish this task.

### 7.2.5 Manual Bulk Filling

1. Pull finger tab on reservoir retainer to disengage clip fingers from the housing groove.
2. Loosen the housing a couple of turns to break the seal.
3. Check that follower seal lip is oriented toward pump head; refer to Section 7.1.
4. Pack the bottom of the grease housing with grease to eliminate air pockets.
5. Dip the packed end of the housing about one inch into bulk container.

6. Slowly pull follower handle back while gradually pushing the housing deeper into the grease.
7. When the follower rod is fully extended, latch the rod in the housing cap.
8. Wipe excess grease from the outside of the housing.
9. Pull on Reservoir Retainer finger tab and install housing into pump head. Screw housing into pump head.
10. Adjust reservoir retainer as required; refer to Section 6.2.
11. Latch retaining clip over the top of the follower handle.

### 7.2.6 Manual Filling with Hand Pump

#### NOTE

Lube Fitting 798197 is installed in place of Vent Valve for filling with a hand pump.

1. Remove Vent Valve and install Lube Fitting 798197.
2. Pull finger tab on reservoir retainer to disengage clip fingers from the housing groove.
3. Loosen the housing a couple of turns to break the seal.
4. Check that follower seal lip is oriented toward pump head; refer to Section 7.1.
5. Engage the follower rod with the follower by lightly pulling up and rotating the follower handle.
6. Push filler pump socket onto filler nipple.
7. While filling housing with hand pump, watch follower rod. When notch on follower rod is visible, container is full.

8. Disengage follower rod from follower and push follower rod into housing. Air purging is not required unless the housing was removed from the pump head.

### 7.3 Maintenance Before Operation



#### WARNING

Always relieve pressure from the pump and supply lines before servicing or repairing the pump to avoid injury from injection, splashing fluid or moving parts.



#### CAUTION

Always use Allied parts for service and repair.

1. Tighten all loose fittings.
2. Replace all damaged tubes or hoses.
3. Check the lubricant level in the AutoLube III. Fill as required.

### 7.4 Operation

The pump is shipped with metering plug 10357 which delivers minimum grease output of 0.018 in.<sup>3</sup> (0.3 cm<sup>3</sup>). The following metering plugs are included with the AutoLube III. Change metering plug to change output.

#### Metering Plugs

- 0.018 in.<sup>3</sup> (0.3 cm<sup>3</sup>) Part No. 103057
- 0.036 in.<sup>3</sup> (0.6 cm<sup>3</sup>) Part No. 103058
- 0.048 in.<sup>3</sup> (0.8 cm<sup>3</sup>) Part No. 103059
- 0.060 in.<sup>3</sup> (1.0 cm<sup>3</sup>) Part No. 103060
- 0.072 in.<sup>3</sup> (1.2 cm<sup>3</sup>) Part No. 103061

### **7.4.1 Working In High/Low Temperatures**

The AutoLube III is powered by pressurized hydraulic oil from the carrier's hydraulic system. The oil temperature should never exceed 176°F (80°C), in accordance with the carrier manufacturer's recommendations.

When using the AutoLube III with the Allied hydraulic hammer, the use of Allied Chisel Paste is recommended. This paste can be used in a temperature range of 32°F to 122°F (0°C to 50°C). If the system is to be used in temperatures below freezing, a cold weather paste must be used. In such cases, please consult your Allied authorized dealer's service department for recommended cold weather pastes.

### **7.4.2 Working Underwater**

The entire AutoLube III and its holder must remain above the surface of the water.

If the entire hammer is to be used underwater, the AutoLube III must be positioned high on the carrier stick and the supply lines lengthened accordingly.

The fittings on the lubricant lines must be tightened with particular care to avoid leaks.

For further details on underwater operation, contact your Allied Technical Service Department.

## SECTION 8.0 TROUBLESHOOTING



**WARNING**

Before removing the hydraulic lines, bleed all hydraulic pressure. When rectifying faults, observe all safety regulations.

### AutoLube III Inoperable

If the AutoLube III fails to work properly and the cause cannot be determined from the following Troubleshooting Chart, contact the Allied Technical Service Department for further assistance.

Problem	Cause	Remedy
No Lubrication at Lubrication Point	Lubricant cartridge empty.	Install new cartridge. Section 7.2.2.
	Air in lubricant lines.	Purge air. Section 7.2.3.
	Pressure oil line to system is blocked.	Open branch from hammer pressure line (valve block on boom).
	Pressure oil line to system leaks.	Check fittings and hose: replace if necessary and tighten properly. Refer to Section 6.0 Installation.
	Lubricant line blocked or too long.	Check hose, replace if necessary (maximum length 15 feet). Perform functional test with hose uncoupled. Refer to Section 6.0 Installation.
	Lubricant cartridge installed incorrectly.	Reinstall cartridge correctly. Section 7.2.2.
	Follower seal damaged or positioned incorrectly.	Check follower seal position. Replace follower seal if necessary. Section 7.1.
	Lube system draws in air.	Misaligned or defective Follower seal or gasket.

**TROUBLESHOOTING (cont')**

Problem	Cause	Remedy
Lubricant Supply too Low.	Wrong size metering plug.	Change to larger metering plug. Section 7.4.
Lubricant Supply too High.	Wrong size metering plug.	Change to smaller metering plug. Section 7.4.
Lubricant Supply Incorrect.	Wrong type of lubricant.	Observe lubricant recommendations.

## SECTION 9.0 REMOVAL AND STORAGE OF AUTOLUBE III

### 9.1 Mechanical Removal Of AutoLube III

1. Unscrew both hoses from the AutoLube III.
2. Plug the fittings with tapered plugs to provide protection from dirt and debris.
3. Unscrew the two attachment bolts.
4. Remove the complete AutoLube III and store in a secure place.

### 9.2 Removing Hoses

Unscrew the AutoLube III hoses from the hydraulic and lubrication ports on the hammer. Plug the ports and cap the hoses.

### 9.3 Reattaching AutoLube III After Idle Periods

1. Clean the lubricant line, which is still connected to the hammer, and remove any blockages formed by residual lubricant.
2. Refer to SECTION 6.0 AutoLube III INSTALLATION.

**SECTION 10.0  
PARTS INFORMATION**

<b>AutoLube III Model Specific Part Numbers</b>		
<b>AutoLube III PART NO.</b>	<b>HY-RAM MODEL</b>	<b>PRESSURE CONNECTION</b>
	735	AutoLube III Port
	740	AutoLube III Port
	745	AutoLube III Port
102051	755/755B	AutoLube III Port
	775/775B	AutoLube III Port
	785/785B	Large Port Flange
	795	AutoLube III Port
	797/797B	AutoLube III Port
	805/805B	AutoLube III Port
	905	Large Port Flange

**ALLIED CHISEL PASTE**

The use of Allied Chisel Paste will extend bushing and tool life of the hammer. It is specially formulated with copper/graphite ingredients that distinguish it from other lubricants on the market. Allied Chisel Paste provides superior and longer lasting lubrication properties over a wide range of operating temperatures. Ordering information:

Allied Part No.	
100057	Case (12 Tubes)
100058	Box (36 Tubes)
676698	Keg (35 lbs.)
679968	Keg (120 lbs.)

AutoLube III Parts Sheet 1 of 2 102777			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	4	669234	Socket Head Screw (3/8-16x4-1/2)
2	1	102083	Cylinder Block
3	1	Seal kit	U-Cup (polyurethane)
4		103062	Piston
5		103063	Spring Retainer
6		103064	Plunger
7		Seal Kit	O-Ring (nitrile)
8		103065	Spring
9		103066	Spring
10		103067	Spring
11		103068	Pump Head
12		103069	Vent Valve
13		103070	Retaining Ring
14		103071	Indicator Rod
15		103072	Washer
16		103073	Spring
17		103074	Bushing
18		103075	Low Level Indicator Cap
19		103076	Outlet Housing
20		Seal Kit	O-Ring (nitrile)
21		103077	Spring
22		103078	Check Ball
23		103057	Metering Plug (0.3cc)
24		Seal Kit	O-Ring (nitrile)
25		Seal Kit	O-Ring (nitrile)
26		103079	Bushing
27		103080	Packing (neoprene)



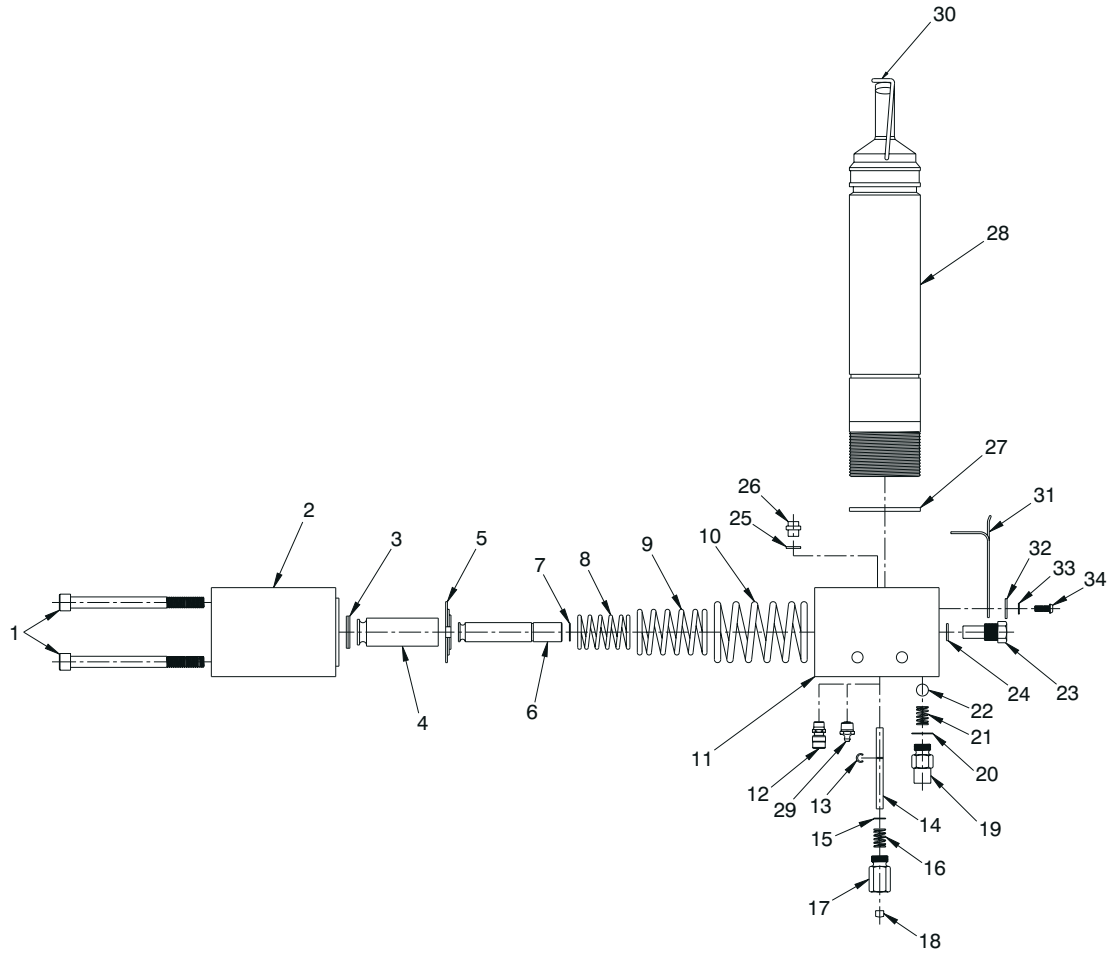


Figure 10-1. AutoLube III Exploded View

AutoLube III Parts  
Sheet 2 of 2

ITEM NO.	QTY.	PART NO.	DESCRIPTION
28	1	103081	Grease Housing
29	1	798197	Fill Fitting
30	1	103087	Retainer Clip
31	1	103088	Spring Clip
32	1	103089	Plate
33	2	798220	Lockwasher #10
34	2	103090	10-32 x 1/2 Button Head Cap Screw
	1	103082	Seal Kit

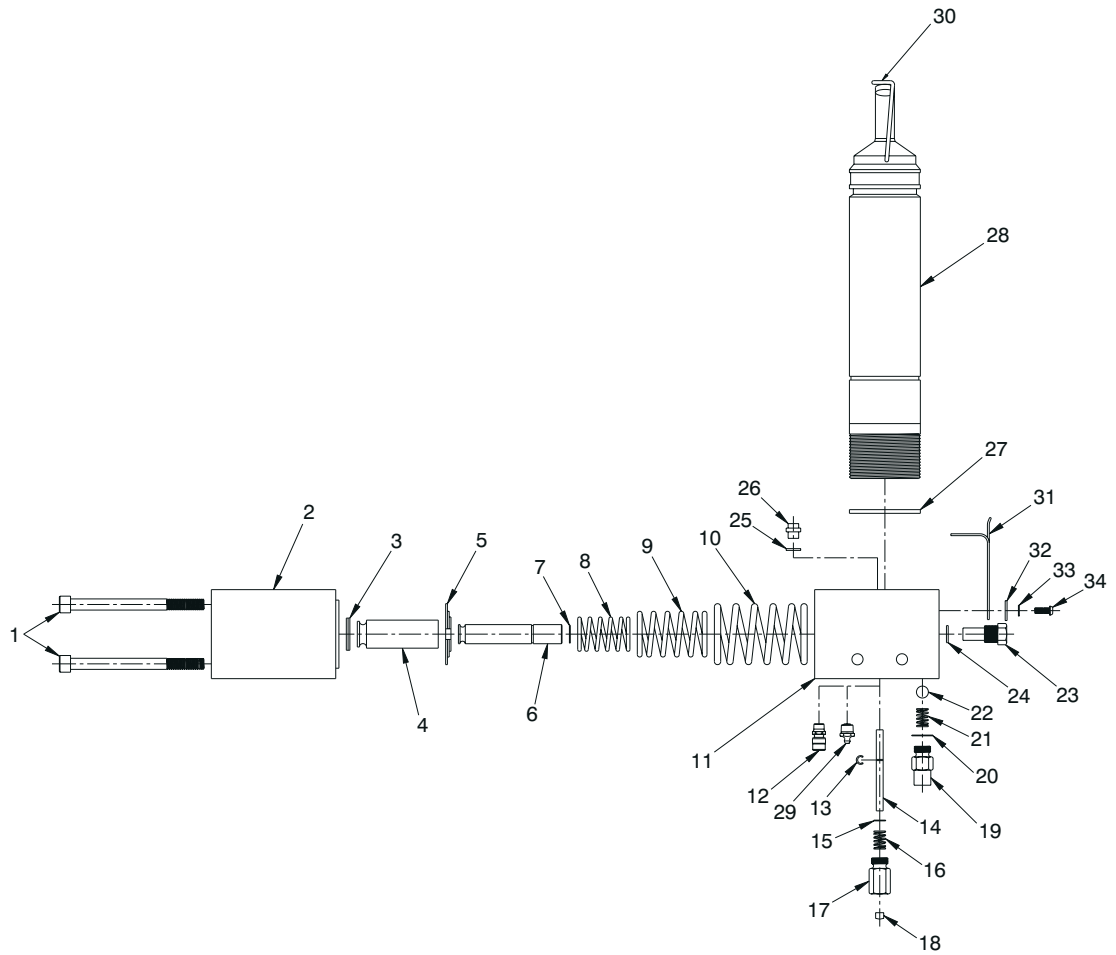


Figure 10-1. AutoLube III Exploded View

AutoLube III Seal Kit Part Number 103082			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	103091	U-Cup (polyurethane)
2	1	103092	O-Ring (nitrile)
3	1	103093	O-Ring (nitrile)
4	1	103094	O-Ring (nitrile)
5	2	103095	O-Ring (nitrile)

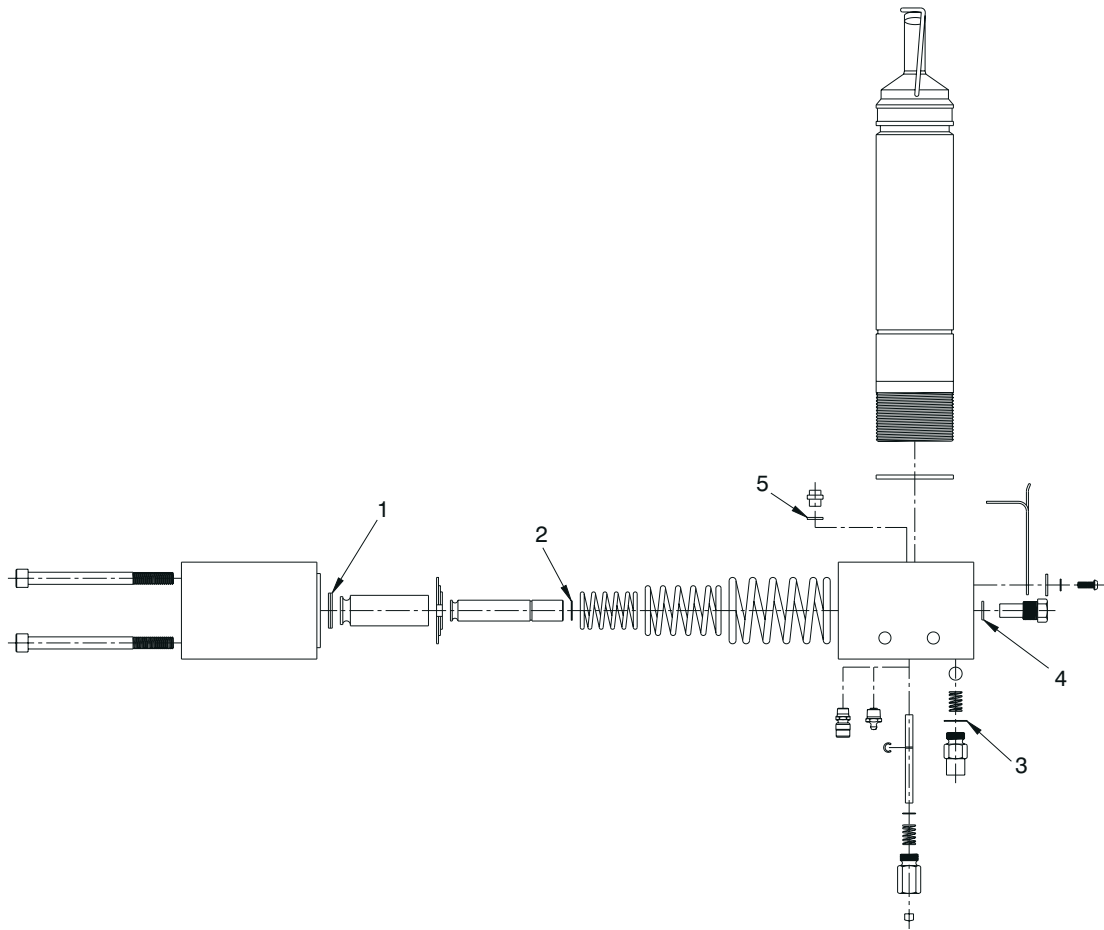


Figure 10-2. AutoLube III Seal Kit



3900 Kelley Avenue, Cleveland, Ohio 44114  
Tel: 216-431-2600 Fax: 216-431-2601  
e-mail: [Sales@AlliedCP.com](mailto:Sales@AlliedCP.com)  
website: <http://www.AlliedCP.com>

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