ALLIED®
Construction Products, LLC

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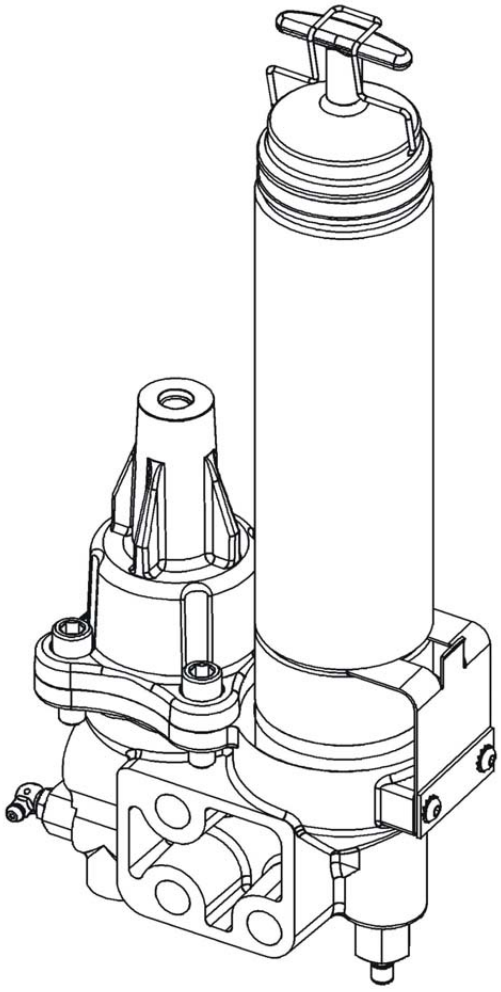

AutoLube IV

Automatic Lubrication System

Allied AutoLube IV
Document Change Notice

Date	Page	Change
7/28/04	3,5,9,10 and 14	update for Rammers

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SECTION 1.0
INTRODUCTION

This manual contains important information for the safe use and maintenance of the Allied AutoLube IV. Read this manual thoroughly before installing, operating or servicing the AutoLube IV. The AutoLube IV must be operated, maintained and repaired exclusively by persons familiar with the operating instructions. Operate the AutoLube IV 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 IV. 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 IV Lubrication System.

This technical manual describes in detail the procedures needed to operate the Allied AutoLube IV 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 IV to conditions beyond its design capability. Improper operation, service or the use of non-Allied parts may result in AutoLube IV 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 IV.
- Exceeding maximum ratings as provided in Section 4.0 Specifications.
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- Inadequate maintenance of the AutoLube IV.
- 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 IV Lubrication System (AutoLube IV) is designed to provide a simple and effective, inexpensive method of lubricating hydraulic hammers.

The AutoLube IV is a fully automated system with lubricant supplied by a hydraulic pump. The AutoLube IV 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 IV is the proven solution for lubricating hydraulic hammers.

The Allied AutoLube IV 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 16 ounce grease cartridge. Bulk filling of cartridge can be completed.
- No tools required to change grease cartridge.
- Primer releif valve.
- Adjustable output by changing optional metering plug.
- Used with Allied Chisel Paste.

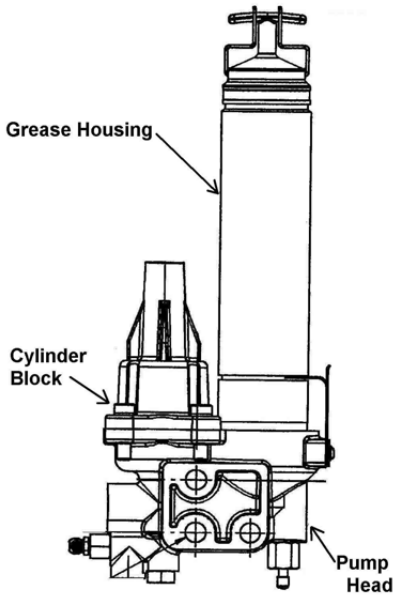


Figure 2-1 AutoLube IV pump and grease housing.

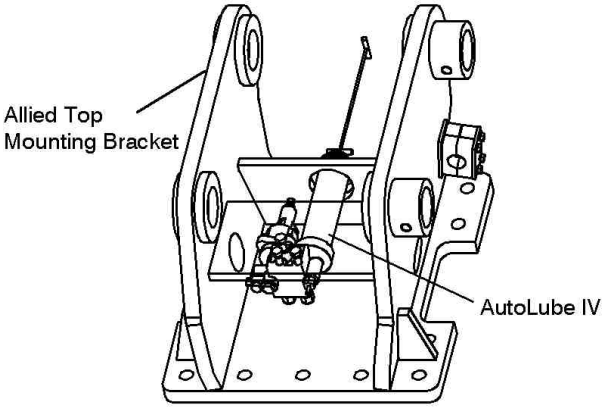


Figure 2-2 Typical mounting In Allied Bracket for Rammer Hammer

Figure 2-1 illustrates the AutoLube IV main components and Figure 2-2 shows typical mounting locations of the AutoLube IV in hammer bracket. The mounting location may vary with the hammer model.

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 IV, 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 IV, 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 6.1.

SECTION 4.0
AutoLube IV TECHNICAL SPECIFICATIONS

Weight	Empty	16.3 lbs. (7.4kg)
	Full	17.3 lbs. (7.8kg)
Hydraulic Inlet Pressure (max.)		3000 psi (207 bar)
Max Inlet Back Pressure.		400 psi (28 bar)*
Output Pressure (max.).		6500 psi (450 bar)
Output per Stroke.		0.006 in3 (0.1 cm3)**
Pump Ratio.		2.16:1
Grease Reservoir Volume.		16.0 oz.
Operating Temperature.		-10oF to +180oF (-23oC to +80oC)

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

**Pump output can be increased up to 0.031 in.3 (0.5 cm3) by replacing the metering plug. Refer to Section 7.4.

Metering Plugs

0.006 in.3 (0.1 cm3)	Part No. 103680
0.012 in.3 (0.2 cm3)	Part No. 103681
0.018 in.3 (0.3 cm3)	Part No. 103281 (std)
0.031 in.3 (0.5 cm3)	Part No. 103682

Hose Inside Diameters:

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

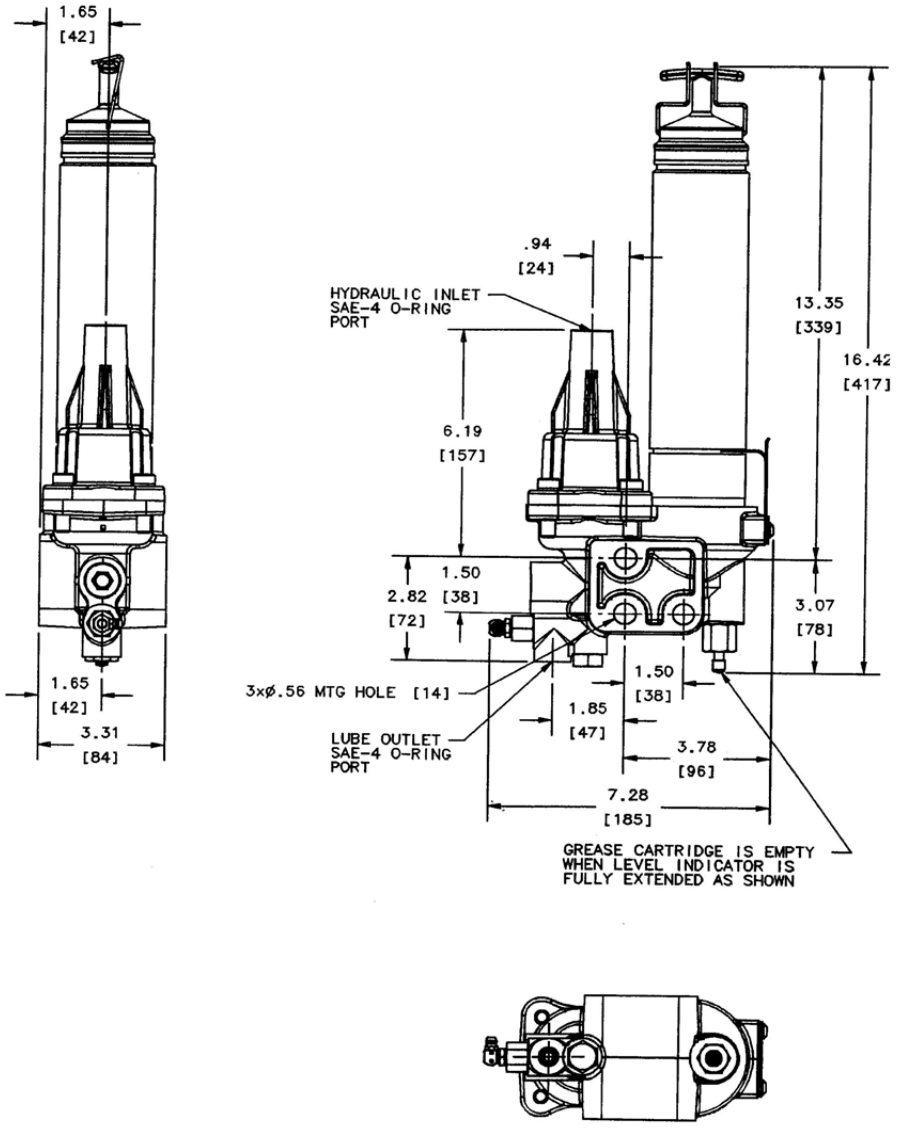
Connecting Threads:

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

Cartridge: Allied Chisel Paste

See Section 10.0 for ordering information

Table 4-2. Dimensions of AutoLube IV	
Dimension in. (mm)	Description
16.42 (417)	Overall Height
7.28 (185)	Overall Width
3.31 (84)	Overall Depth
8.70 (221)	Cylinder Block Height
7.28 (185)	Cylinder Block Width
3.78 (96)	Mounting Hole Location



SECTION 5.0
THEORY OF OPERATION

The AutoLube IV 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 400 psi (28 bar) and the internal springs (see Figure 5-1) return the pump plunger to the initial position for the next lube cycle.

In the initial position, the pistion 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 piston chamber (see Figure 5-1). This process is repeated every time the hammer is started and stopped.

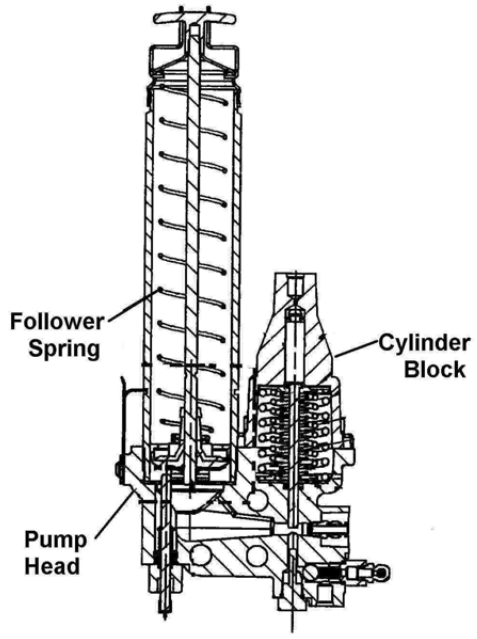


Figure 5-1 Plunger and Internal Springs

SECTION 6.0
AutoLube IV INSTALLATION

The installation kit for the AutoLube IV is Hammer Model specific. It is mounted to the top bracket or on a bracket that is welded to the hammer box. All accessories, hardware and hoses are included in the AutoLube IV Kit. Section 10.0 lists the AutoLube IV Kit part numbers.

!! CAUTION !!
Nominal inside diameter of the hydraulic line and lubricant line MUST be at least .25 in. (6.35mm)

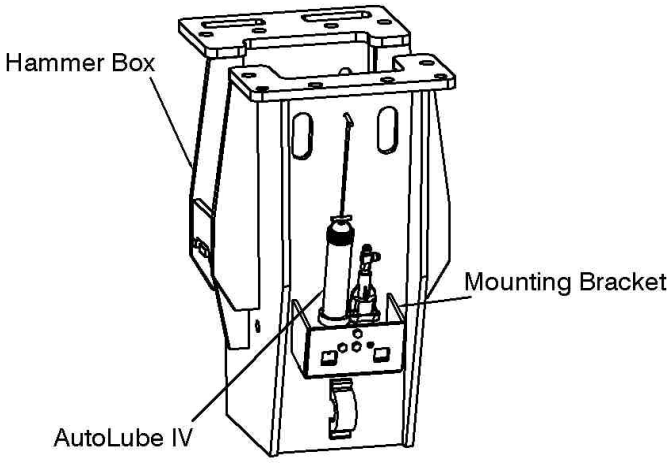


Figure 6-2 AutoLube IV mounted on Hammer

6.1 Installation

Allied recommends mounting the cartridge housing in the horizontal or upright position. Allow sufficient space for cartridge removal and replacement and for pump servicing. Refer to Figure 6-1 and 6-2. Refer to Section 6.2 to install Reservoir Retainer.

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

!! WARNING !!
Disconnect battery cables to prevent electrical damage before performing welding.

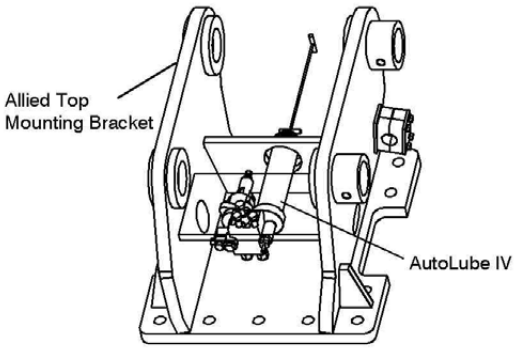


Figure 6-1 AutoLube IV mounted in Bracket

Install AutoLube Kit per Installation Kit Bulletin. See section 10.0 for appropriate kit number.

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, Figure 10-1) are correctly in place. Install grease cartridge (Section 7.2) before final adjustment of the spring clip (1, Figure 6-3).

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).

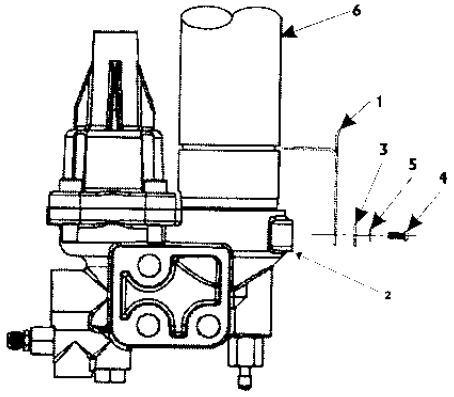


Figure 6-3

SECTION 7.0
AutoLube IV 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.

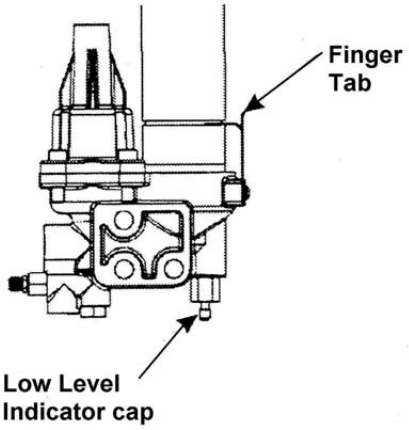


Figure 7-1 Low Level Indicator

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.

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.

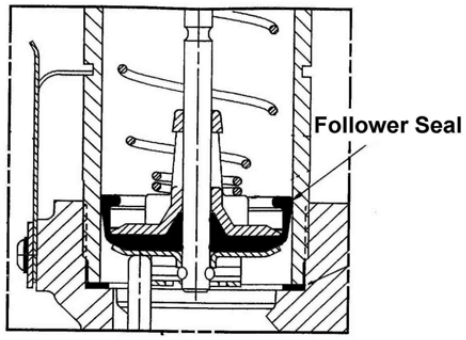


Figure 7-2

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 7.2.1).
3. Visually check that follower seal is in the correct position (Figure 7-1).
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 (Section 7.2.3).
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.
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.

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. Fill grease line or hand grease pump at manual grease fill.

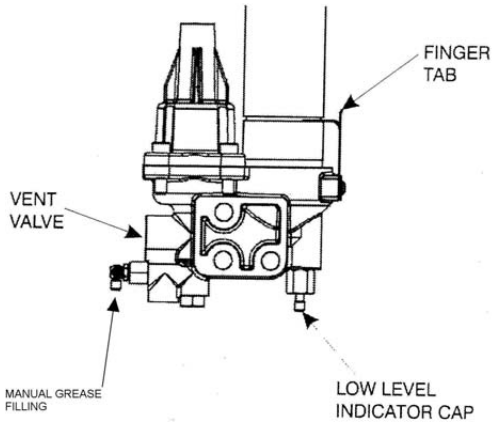


Figure 7-4 Vent Valve

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 (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 (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 103284 is installed in place of Vent Valve for filling with a hand pump.
1. Remove Vent Valve and install Lube Fitting 103284.
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 (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 IV. Fill as required

7.4 Operation

The pump is shipped with metering plug 103281 which delivers minimum grease output of 0.018 in.3 (0.5 cm3). The following metering plugs are optional for the AutoLube IV. Change metering plug to change output.
Metering Plugs

0.006 in.3(0.1 cm3)	Part No. 103680
0.012 in.3 (0.2 cm3)	Part No. 103681
0.018 in.3 (0.3 cm3)	Part No. 103281
0.031 in.3 (0.5 cm3)	Part No. 103682

7.4.1 Working In High/Low Temperatures

The AutoLube IV 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 IV 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 IV and its holder must remain above the surface of the water.
If the entire hammer is to be used underwater, the AutoLube IV 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 IV Inoperable
If the AutoLube IV 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. (section 6.0)
	Lubricant line blocked or too long.	Check hose, replace if necessary (maximum length 15 feet). Perform functional test with hose uncoupled. (section 6.0)
	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 air.	Misaligned or defective follower seal or gasket.
Lubricant Supply too low.	Wrong size of metering plug.	Change to larger metering plug. (Section 7.4)
Lubricant Supply too high	Wrong size of 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 IV

9.1 Mechanical Removal of AutoLube IV

1. Unscrew both hoses from the AutoLube IV.
2. Plug the fittings to provide protection from dirt and debris.
3. Unbolt (3) attachment bolts, nuts, and washers.
4. Remove the complete AutoLube IV and store in a secure place.
5. Replace bolts, nuts, and washers into AutoLube IV for safe keeping while removed.

9.2 Removing Hoses

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

9.3 Reattaching AutoLube IV After Idle Periods

1. Clean the lubricant line and remove any blockages formed by residual lubricant.
2. Refer to SECTION 6.0 AutoLube IV Installatio

SECTION 10.0
PARTS INFORMATION

AutoLube IV Model Specific Part numbers		
Autolube IV Part No.	Hammer Model	Mounting Location
570234	Rammer 'E' Series	Allied Top Mounting Bracket
570146	Rammer 'G' Series	Allied Top mounting Bracket
570326	Rammer Retro Fit	Bracket welded to hammer box, top bracket or carrier.
570190	Rammer-Allied SSU Bracket	Allied SSU Bracket
103884	Allied AR 130	Welded to box

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:

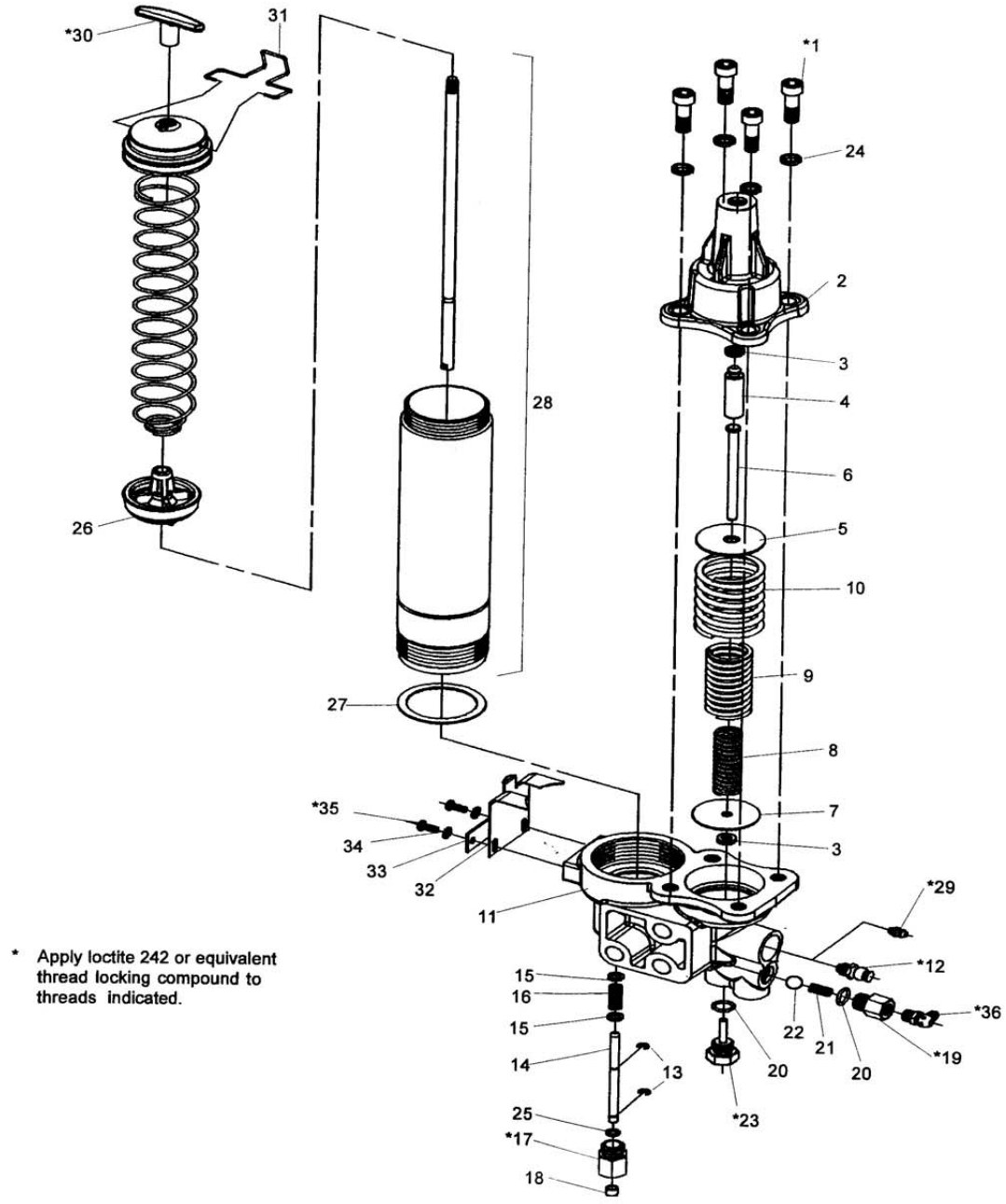
Allied Part No.

100057	Case (12 Tubes)
A100058	Box (36 Tubes)
676698	5 Gallon bucket. (Keg 35 lbs.)
679968	15 Gallon keg (Keg 120 lbs.)

AutoLube IV Parts
Sheet 1 of 2
103270

Item NO.	QTY.	Part NO.	Description
1	4	103271	Socket Head Screw (3/8-16 x 1-1/4)
2	1	103272	Cylinder Block
3	2	103683	U-Cup (polyurethane)**
4	1	103273	Piston
5	1	103274	Spring Retainer
6	1	103275	Plunger
7	1	103276	Washer
8	1	103065	Spring
9	1	103066	Spring
10	1	103067	Spring
11	1	103277	Pump Head
12	1	103069	Vent Valve
13	2	103070	Retaining Ring
14	1	103278	Indicator Rod
15	2	103072	Washer
16	1	103073	Spring
17	1	103279	Bushing
18	1	103075	Low Level Indicator Cap**
19	1	103280	Outlet Housing
20	2	103684	O-Ring (nitrile)**
21	1	103077	Spring
22	1	103078	Check Ball**
23	1	103281	Metering Plug
24	4	814696	Lockwasher (3/8)**
25	1	103685	O-ring (nitrile)**
26	1	103283	Follower Assembly
27	1	103080	Packing (neoprene)**

**Included in Seal Kit (103286)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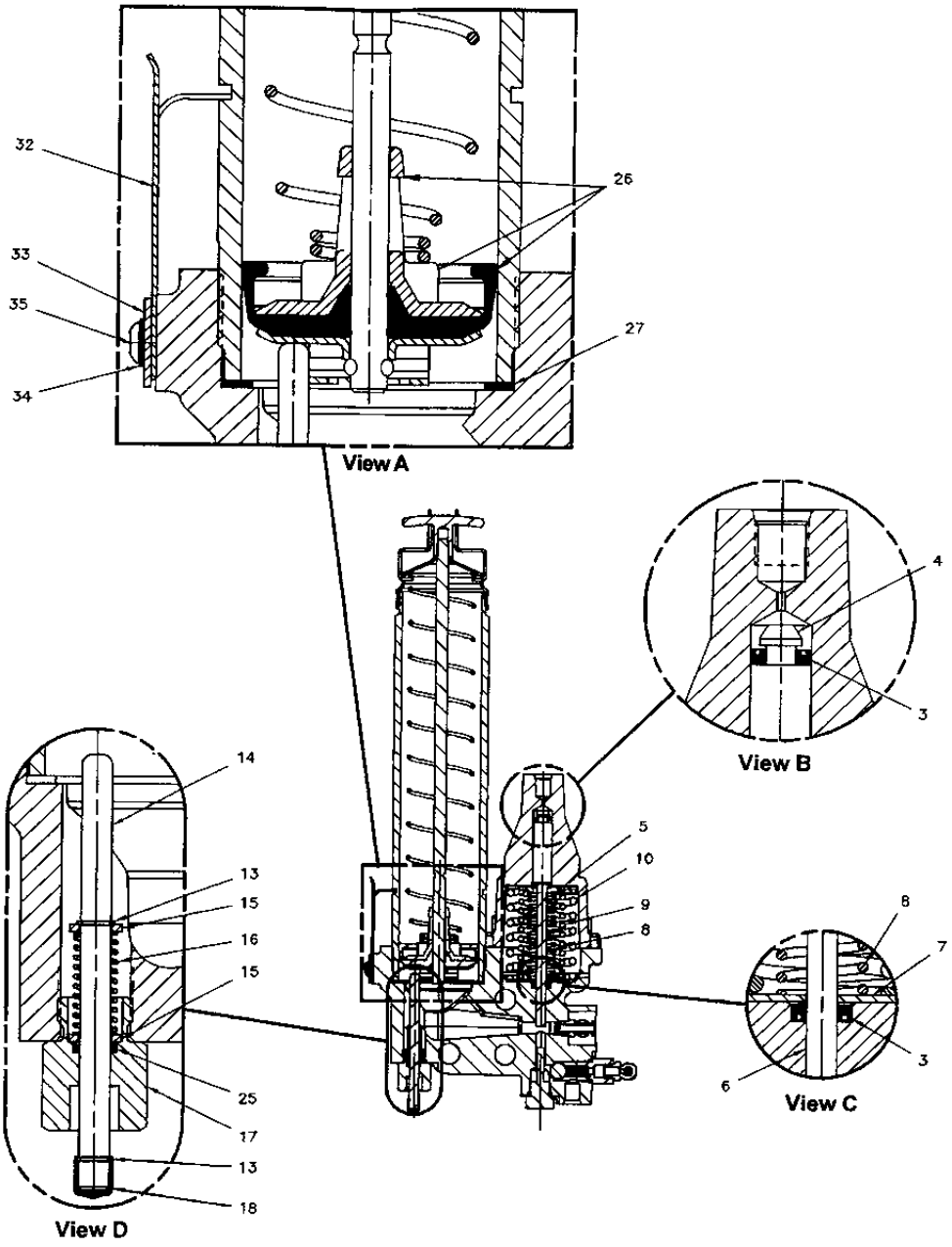
* Apply loctite 242 or equivalent thread locking compound to threads indicated.

Figure 10-1

AutoLube IV Parts
Sheet 1 of 2
103270

Item NO.	Qty.	Part NO.	Description
28	1	103081	Grease Cartridge housing (includes Items 26 & 30)
29	1	103284	Fill Fitting
30	1	103285	Follower Handle
31	1	103087	Retainer Clip
32	1	103088	Spring Clip
33	1	103089	Plate
34	1	798220	Lockwasher #10
35	1	103090	10-32 x ½ Button Head Cap Screw
36	1	708717	90 Grease fitting
	1	103286	Seal Kit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View D
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View C

Figure 10-2

3900 Kelley Avenue, Cleveland, Ohio 44114
Tel: 216-431-2600 Fax: 216-431-2601
e-mail: Sales@AlliedCP.com
website: http://www.AlliedCP.com