

**NOTICE: This manual is to remain with truck after pump unit is installed.**

# **Williams®**

**BRAND**

## **Hydraulic Power Units**

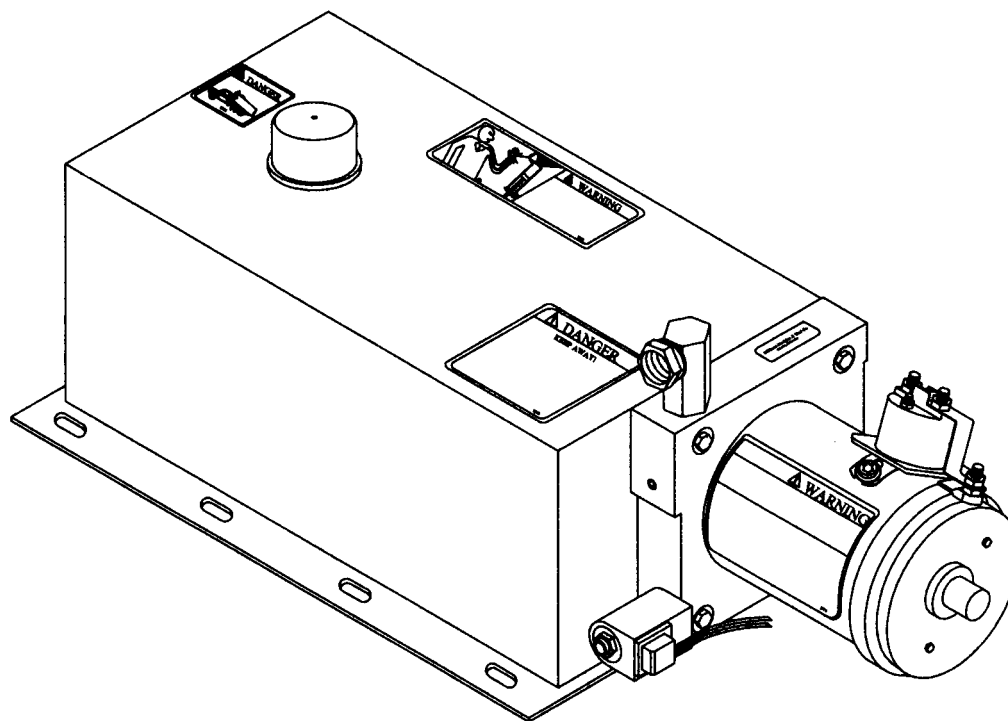
### **Instructions for Williams® Hydraulic Power Units**

DC 3-Piston Pumps

DC Split-Flow Piston Pumps

DC 6-Piston Pumps

DC Gear Pumps



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Pump Serial No. \_\_\_\_\_

Pump Model No. \_\_\_\_\_

# READ & UNDERSTAND THIS MANUAL BEFORE ATTEMPTING MAINTENANCE OR REPAIR

## To the Owner/Operator:

Read this manual thoroughly. The information presented in this manual will assist you to install, operate, and service a hydraulic power unit. Keep this manual with the unit at all times.

Throughout this manual you will see the following safety alert symbols:



This symbol indicates a personal safety hazard. Become alert, your safety is involved.



Indicates a potentially hazardous situation, which, if not avoided, may result in moderate injury.



Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.



Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

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## General Information

The purpose of this manual is to assist the owner/operator in maintaining and operating Williams® hydraulic power units. Read it carefully before attempting operation, maintenance or repair.

## Checklist

### Pre-Use Checklist

- Before operating hoist, check the hoist manufacturer's recommended maximum payload. Do not overload the hoist.
- Read and understand all the safety decals and signs on the truck hoist and Williams® Machine & Tool hydraulic power units.
- Make sure that the hoist body prop and pump unit are in place and operational before attempting to operate the hoist.

### General Checklist Before Use

- Before operating a loaded truck body, make sure the truck is on level, firm ground.
- Before operating the truck hoist, check to make sure the area is clear of all personnel and equipment.
- Operate the hoist controls from the cab during dumping operations. Release tailgate controls before lifting the body.

## Safety Decals

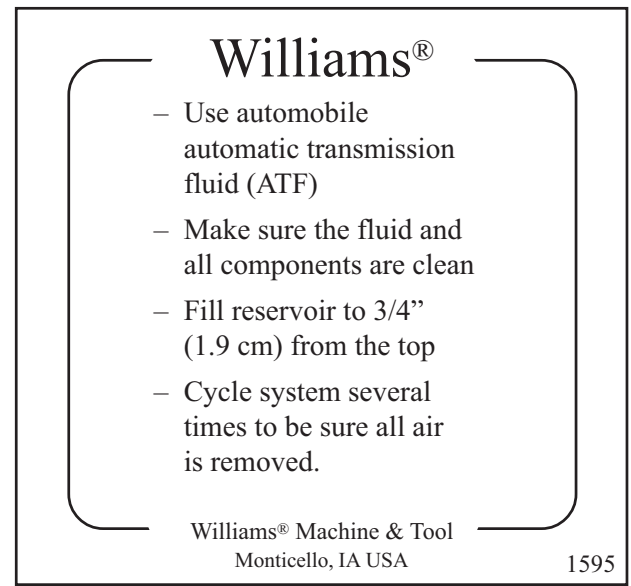
1. Read and understand this manual and obey all safety decals before operating the hydraulic power unit.
2. Never go under a truck box, loaded or unloaded, unless the truck box has been properly blocked/braced.
3. Before operating a truck hoist, check to make sure the area is clear of all personnel and equipment.
4. Never reach over the truck frame unless the truck box is properly blocked/braced.
5. Never drive the truck unless the truck box is completely lowered.



Williams® p/n 1842

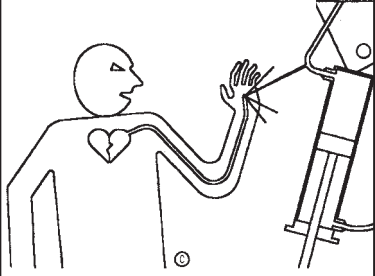


Williams® p/n 1840



Williams® p/n 1595

## Safety Decals

	<b>! WARNING</b>
	<p><b>DO NOT GO NEAR LEAKS!</b></p> <ul style="list-style-type: none"><li>• High pressure oil easily punctures skin causing serious injury, gangrene or death.</li><li>• If injured, seek emergency medical help. Immediate surgery is required to remove oil.</li><li>• Do not use finger or skin to check for leaks.</li><li>• Lower load or relieve hydraulic pressure before loosening fittings.</li></ul> <p>1858</p>

Williams® p/n 1858

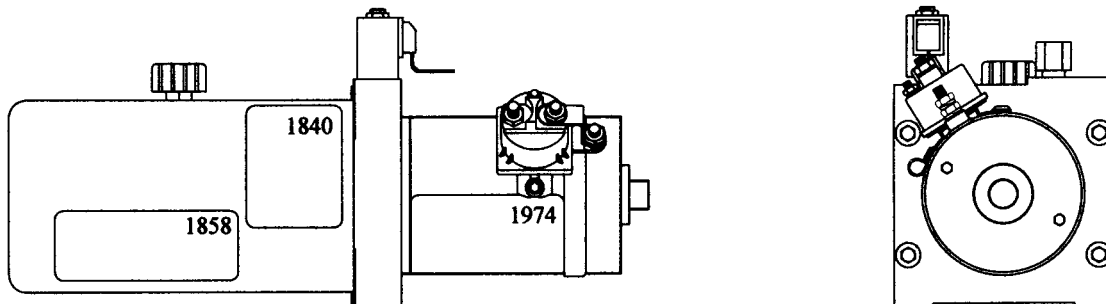
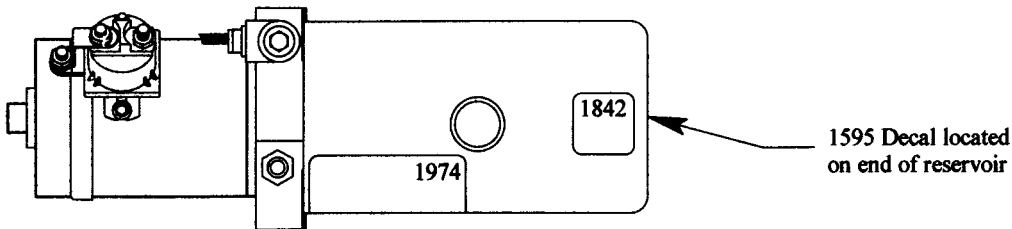
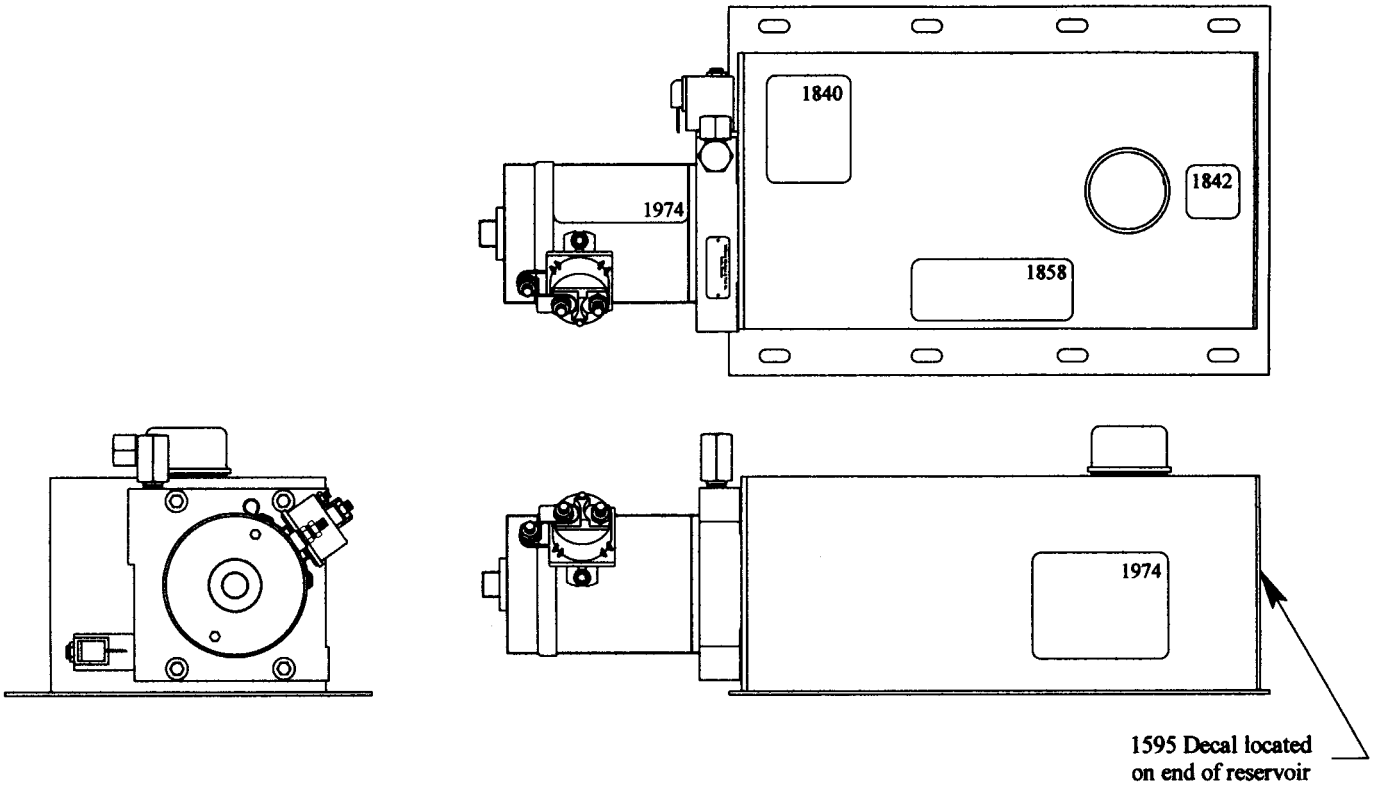
<b>! WARNING</b>
<p>DO NOT OPERATE PUMP UNIT UNTIL THE FOLLOWING STANDARDS ARE MET:</p> <ul style="list-style-type: none"><li>• USE 00 POWER CABLE ON LENGTHS UP TO 10 FEET (3.05 M) FROM BATTERY.</li><li>• USE 000 POWER CABLE ON CABLE LENGTHS 11 TO 20 FEET (3.35 TO 6.1 M) FROM BATTERY.</li><li>• MOUNT PUMP UNIT TO THE VEHICLE WHERE A GROUND EQUAL TO OR LARGER THAN THE POWER CABLE IS MAINTAINED BETWEEN THE PUMP MOUNTING SURFACE AND THE VEHICLE ENGINE BLOCK (CHECK GROUND CONTINUITY BEFORE OPERATING PUMP). (REFER TO INSTALLATION INSTRUCTIONS FOR FURTHER IMPORTANT INFORMATION)*</li></ul>
<p>FAILURE TO MEET THESE STANDARDS:</p> <ul style="list-style-type: none"><li>• MAY RESULT IN SEVERE INJURY OR DEATH.</li><li>• WILL VOID PUMP UNIT WARRANTY.</li><li>• MAY CAUSE DAMAGE TO THE VEHICLE AND/OR VEHICLE ELECTRICAL SYSTEM.</li></ul>
<p>WILLIAMS® MACHINE &amp; TOOL IS NOT RESPONSIBLE FOR PERSONAL INJURY, DEATH OR VEHICLE AND/OR EQUIPMENT DAMAGE.</p>
<p>REPLACEMENT INSTALLATION INSTRUCTIONS AND/OR DECALS AVAILABLE FROM:</p> <p>WILLIAMS® MACHINE &amp; TOOL 204 Plastic Lane • Monticello, IA 52310-9472 USA Phone: (319) 465-3537 • Fax: (319) 465-5279 E-mail: <a href="mailto:Info@energymfg.com">Info@energymfg.com</a> Web Site: <a href="http://www.williamsmachineandtool.com">www.williamsmachineandtool.com</a></p> <p>1974</p>

Williams® p/n 1974

# Safety Decal Locations

(See pages 3 & 4 for decal details and text)

DC electric pump units on square/round reservoirs  
(Solenoid operated control valves)



## Installation/Replacement Instructions



### DANGER

Before beginning installation work, make sure the truck box is empty and properly blocked/braced. Always disconnect hydraulic hoses from the valve to hoist cylinder after the truck box is properly blocked/braced. Serious injury or death will result from truck box falling in one second or less.

1. Fabricate the necessary hardware and bracketry to install the hydraulic power unit to the truck frame. Ensure that a ground is maintained between the hydraulic power unit and the vehicle that is equal to or larger than the main power cable. (Reference Note below on grounding.)



### CAUTION

Failure to maintain an adequate ground between the hydraulic power unit and the truck frame may result in damage to the hydraulic unit and/or the vehicle electrical system.

2. Install hydraulic hoses from the control valve to the hoist cylinder. Use hydraulic hoses with a pressure rating equal to or greater than the pressure at which the system will be operating. Information sheets for determining lift and lower ports for the control valve have been included with the unit.
3. Install switch cord from the hydraulic power unit to the cab of the truck. Route the cord around all hazards which may damage the cord such as catalytic converters, exhaust manifolds, mufflers, etc. Make sure the cord is not crushed, pinched or the outer casing is damaged. Use tie downs to properly secure the cord.
4. To ensure proper wiring, valve schematics have been included with this book to show proper wiring diagrams for the switch and control valves.
5. Install the main power cable to the starter solenoid on the motor of the hydraulic power unit.  
*Note: Do not attach the power cable to the main power source (battery) at this time.*  
Use 00 power cable on lengths up to 10 feet (3.05 m) from the battery to the power unit.  
Use 000 power cable on lengths from 11 to 20 feet (3.35 to 6.1 m) from the battery to the power unit.  
**NOTE:** A ground equal to or larger than the power cable is required between the hydraulic power unit and the vehicle. (Check for continuity before operating unit.) If the hydraulic power unit is attached to the vehicle frame, it may be required that a separate ground cable be mounted between the hydraulic power unit and vehicle engine block. This requirement is necessary due to some vehicle frames having a protective coating which does not allow for an adequate ground.
6. Fill reservoir 3/4" (1.9 cm) to 1" (2.5 cm) from the top. Use a premium fluid for hydraulic systems. We recommend automobile ATF (Automatic Transmission Fluid). These fluids provide good seal compatibility, protection against wear, ample rust protection and excellent anti-foam properties.
7. Check unit for proper wiring and grounding. Ensure switch is wired per the included sheets.
8. Attach the power cable to the power source.
9. Check to make sure all persons and/or all equipment is clear of the area before operating the truck hoist. Do not attempt any repairs or adjustments to the truck hoist, truck box or hydraulic power unit until the truck box is properly blocked/braced.

## Operating Instructions



**DANGER**

Never go under a raised truck box, unless the truck box is properly blocked/braced. Serious injury or death will result from truck box falling in one second or less.

### **To Raise a Load:**

1. Release the tailgate controls before raising the truck load.
2. From inside the cab, push the switch towards the up/raise position. When the truck box is at the appropriate height, release the switch.
3. Dump a loaded box slowly. Be careful the load does not shift rapidly.
4. Do not drive the truck while the truck box is raised.

### **To Lower a Load:**

1. From inside the cab, push the switch towards the down/lower position. When the box is at the appropriate height, release the switch.
2. Do not drive the truck while the truck box is raised.



## Charging a Hydraulic System

### Single Acting Cylinder Applications:

The reservoir must be sized to handle the full displacement of the lifting end of the cylinder. Fill the reservoir 3/4" to 1" (1.9 to 2.5 cm) from the top when the cylinder is completely retracted.

### Double Acting Cylinder Applications: Without Recycle Capabilities

The reservoir must be sized to handle the full displacement of the lifting end of the cylinder. Fill the reservoir 3/4" to 1" (1.9 to 2.5 cm) from the top when the cylinder is completely retracted.

### Double Acting Cylinder Applications: With Recycle Capabilities

The reservoir can be sized to handle the total displacement of the cylinder rod only. To charge a reservoir on a recycle application, follow the steps below:

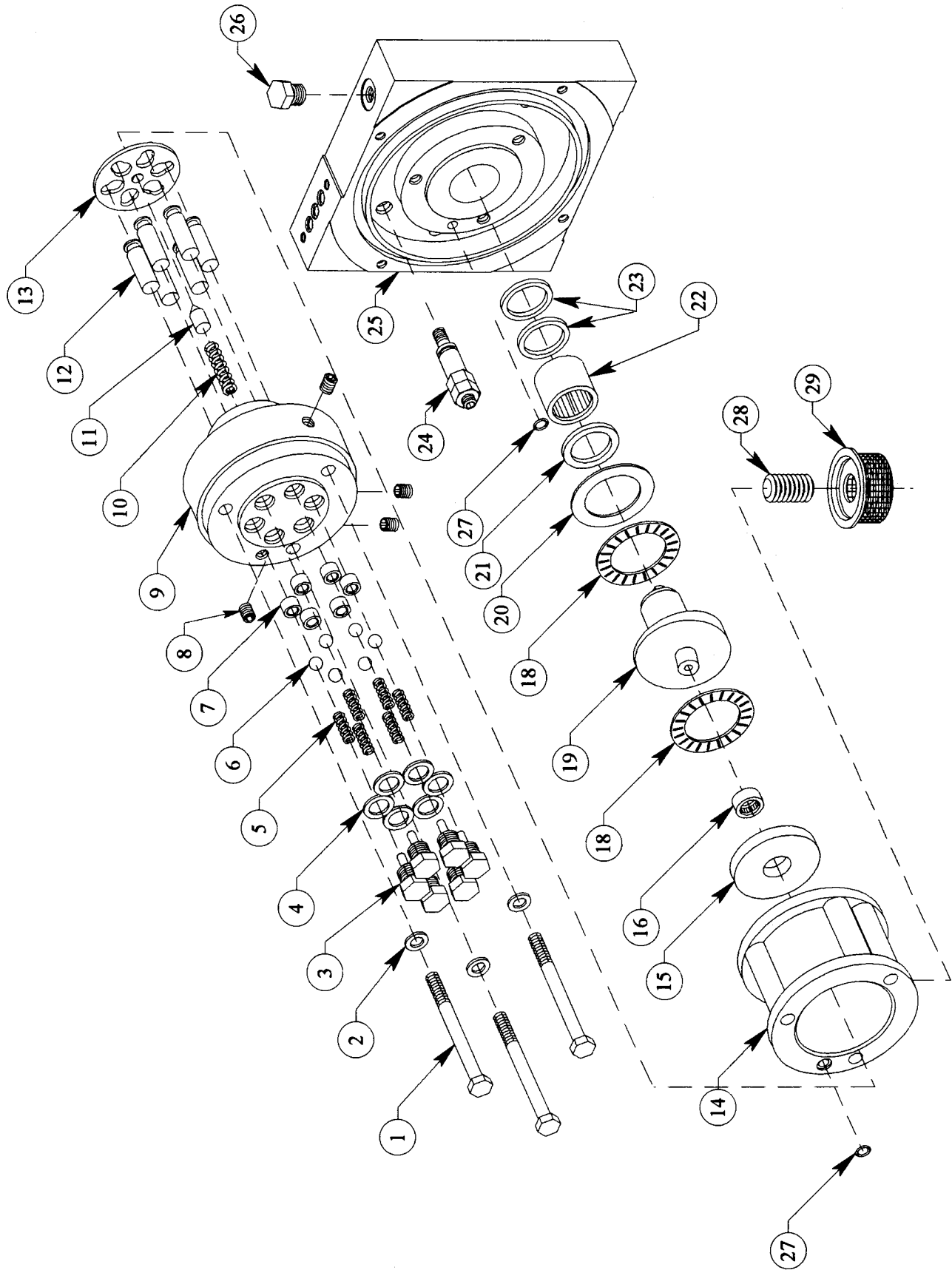
1. Fill the reservoir 1" (2.5 cm) from the top when the cylinder is completely retracted.
2. Operate the pump for a short time to extend the cylinder. Do not run the reservoir dry as this will introduce air into the system.
3. Properly block/brace the truck box. Never go under the truck box unless it is properly blocked/braced.
4. Again, fill the reservoir 1" (2.5 cm) from the top. Repeat steps 2,3, and 4 until the cylinder is completely extended.
5. Retract the cylinder completely and adjust the fluid level inside the reservoir 3/4" to 1" (1.9 to 2.5 cm) from the top.

NOTE: Never fill the reservoir completely when the cylinder is even slightly extended. The reservoir will overflow with fluid when it is retracted.



**CAUTION**

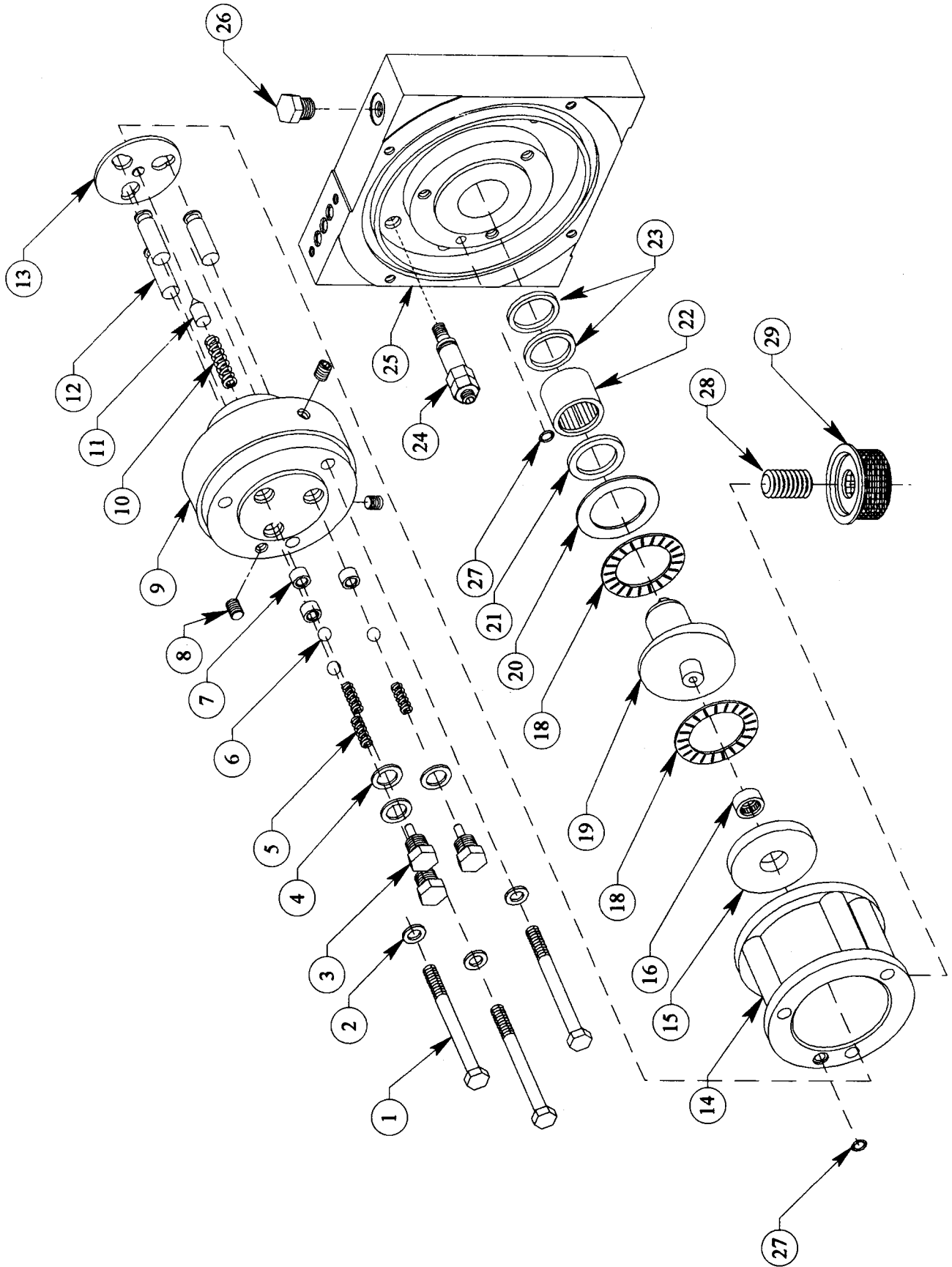
Used hydraulic fluid is considered hazardous waste in some states. If used fluid is spilled, check your local regulations for proper handling & cleaning procedures.



**6 Piston Pump and Manifold Assembly**

# 6 Piston Pump and Manifold Assembly Parts List

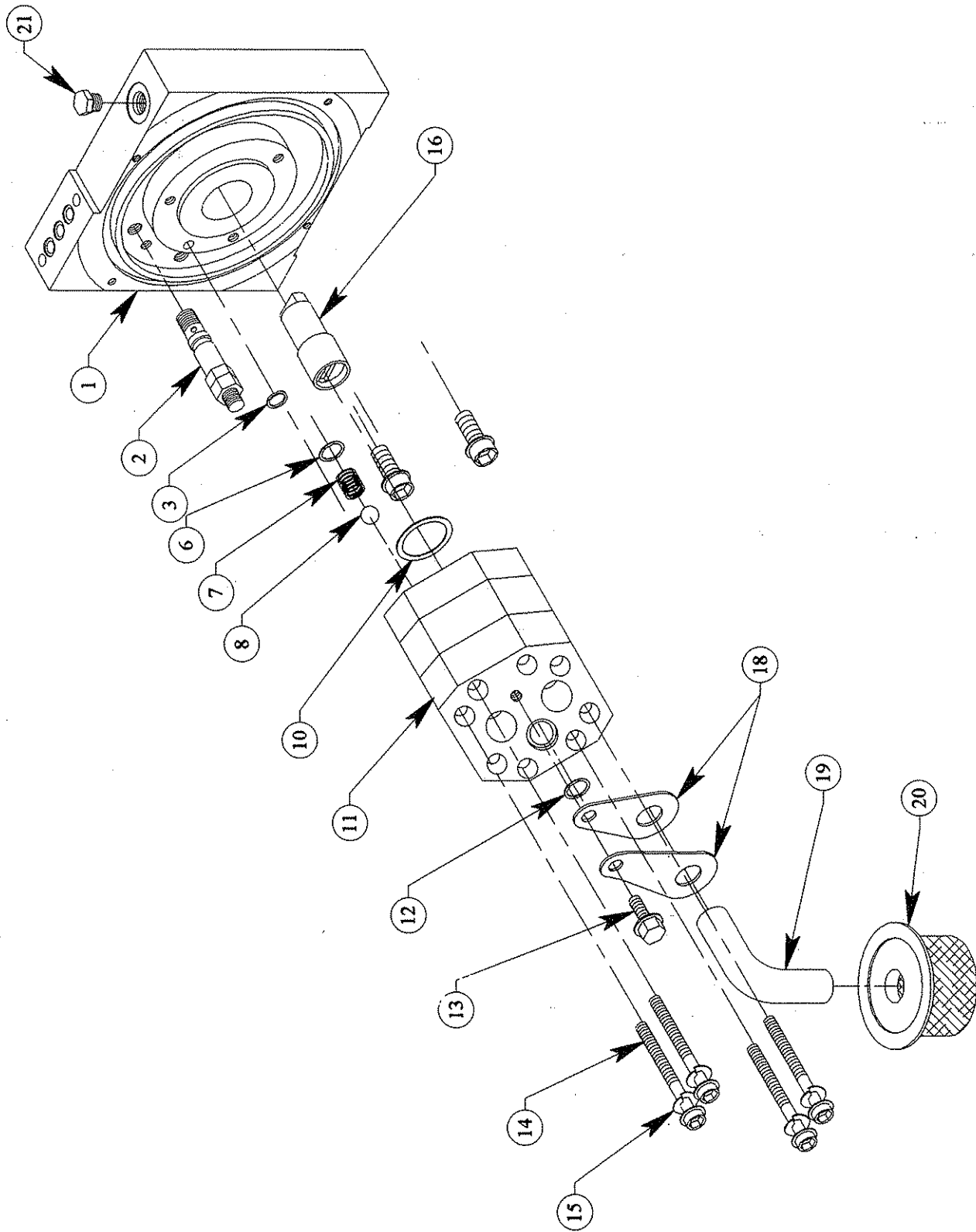
Item	Part No.	Quantity Req'd	Part Description
1	1857	3	Cap Screw
2	1030	3	Washer
3	1008	6	Port Stud w/Pin
4	1009	6	Washer
5	2264	6	Spring, Long Exhaust Port Stud
6	1015	6	Bearing
7	1636	6	Seat, Electric Pump
8	1579	4	Plug
9	2004	1	Casting Machined, 6 Piston (Not Sold Separately)
10	1642	1	Spring, Return Plate Pivot
11	1635	1	Pivot, Piston Return Plate
12	1633	6	Piston (Not Sold Separately)
13	1973	1	Plate, Piston Return E6P HT
14	1998	1	Intake Housing, Machined
15	1637	1	Thrust Plate, Piston
16	1643	1	Bearing
18	1644	2	Bearing, Thrust Roller
19	1632	1	Wobble, Electric Pump
20	1645	1	Race, Thrust
21	1638	1	Spacer, Bearing
22	1023	1	Bearing
23	1028	2	Oil Seal
24	1588	1	Relief Assembly, Pump
25	—	1	Manifold, Machined
26	1399	1	Port Stud, No Pin
27	21616A	2	O-Ring
28	1765	1	Nipple
29	1744	1	Screen, Intake



**3 Piston Pump and Manifold Assembly**

### 3 Piston Pump and Manifold Assembly Parts List

Item	Part No.	Quantity Req'd	Part Description
1	1857	3	Cap Screw
2	1030	3	Washer
3	1008	3	Port Stud w/Pin
4	1009	3	Washer
5	2264	3	Spring, Long Exhaust Port Stud
6	1015	3	Bearing
7	1636	3	Seat, Electric Pump
8	1579	3	Plug
9	1855	1	Casting Machined, 3 Piston (Not Sold Separately)
10	1642	1	Spring, Return Plate Pivot
11	1635	1	Pivot, Piston Return Plate
12	1633	3	Piston (Not Sold Separately)
13	1634	1	Plate, Piston Return
14	1998	1	Intake Housing, Machined
15	1637	1	Thrust Plate, Piston
16	1643	1	Bearing
18	1644	2	Bearing, Thrust Roller
19	1632	1	Wobble, Electric Pump
20	1645	1	Race, Thrust
21	1638	1	Spacer, Bearing
22	1023	1	Bearing
23	1028	2	Oil Seal
24	1588	1	Relief Assembly, Pump
25	—	1	Manifold, Machined
26	1399	1	Port Stud, No Pin
27	21616A	2	O-Ring
28	1765	1	Nipple
29	1744	1	Screen, Intake



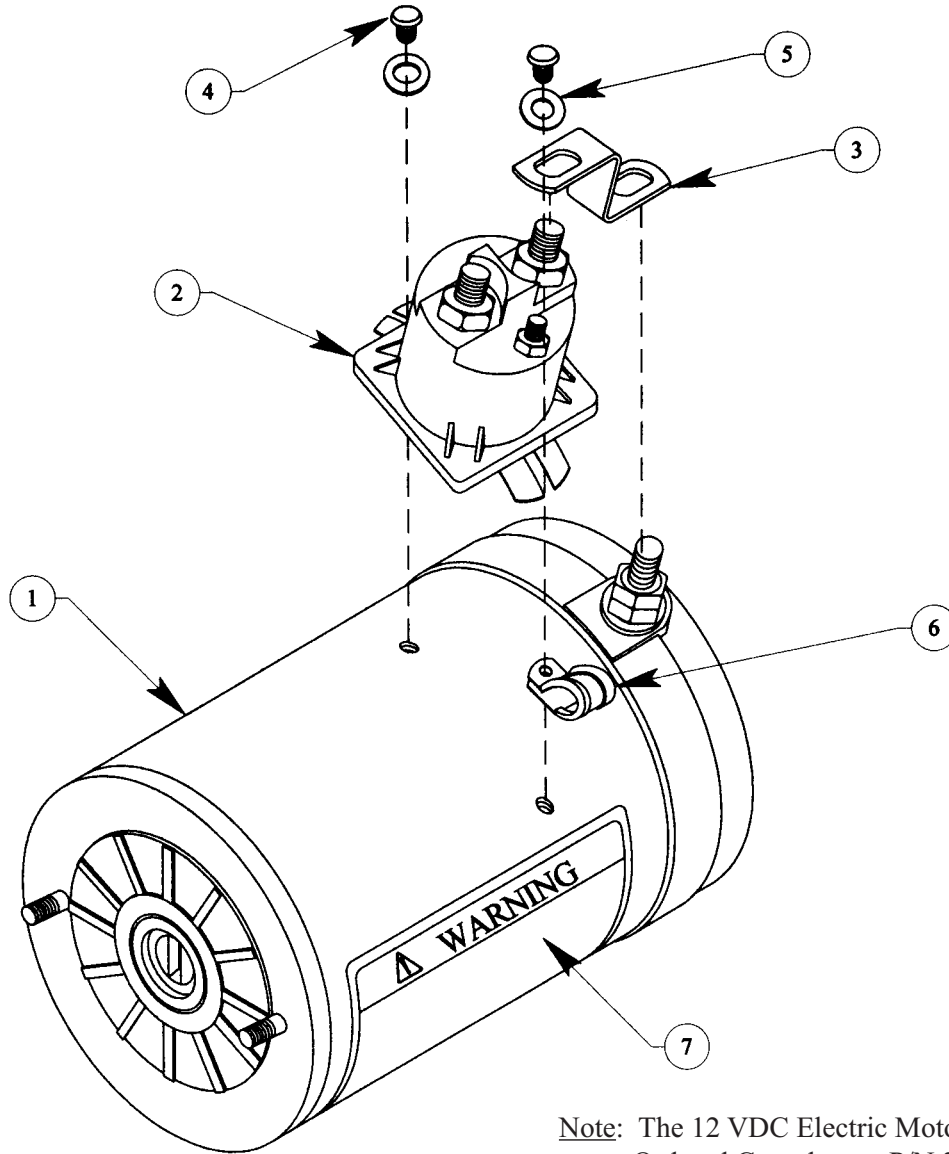
**Gear Pump and Manifold Assembly**

# Gear Pump and Manifold Assembly Parts List

Item	Part No.	Quantity Req'd	Part Description
1	—	1	Manifold, Machined
2	1588	1	Relief Assembly, Pump
3	1606	1	O-Ring
6	2465	1	O-Ring
7	2466	1	Spring, Gear Pump Load Check
8	1168	1	Bearing
10	2470	1	Pilot O-Ring
11A	2432	1	GC8000, .097 Cubic Inch Disp. (Kit)
11B	2433	1	GC8000, .129 Cubic Inch Disp. (Kit)
11C	2434	1	GC8000, .194 Cubic Inch Disp. (Kit)
12	2472	1	O-Ring
13	Kit	1	Self Tapping Screw
14	2473	4	Cap Screw
15	1290	4	Washer
16	Kit	1	Oldham Coupling
18	Kit	2	Inlet Tube Brackets
19A	Kit	1	Inlet Tube 90° (Round Horizontal Reservoirs)
19B	—	1	2474, 2475, 2476 (Round Vertical Reservoirs)
19C	—	1	2469 Inlet Tube 60° (Square Reservoirs)
20	Kit	1	Inlet Screen
21	1399	1	Port Stud No Pin

NOTE: Item 11 comes complete with items 10, 12, 13, 14, 15, 16, 18, 19, 20.

# Electric Motor Assembly

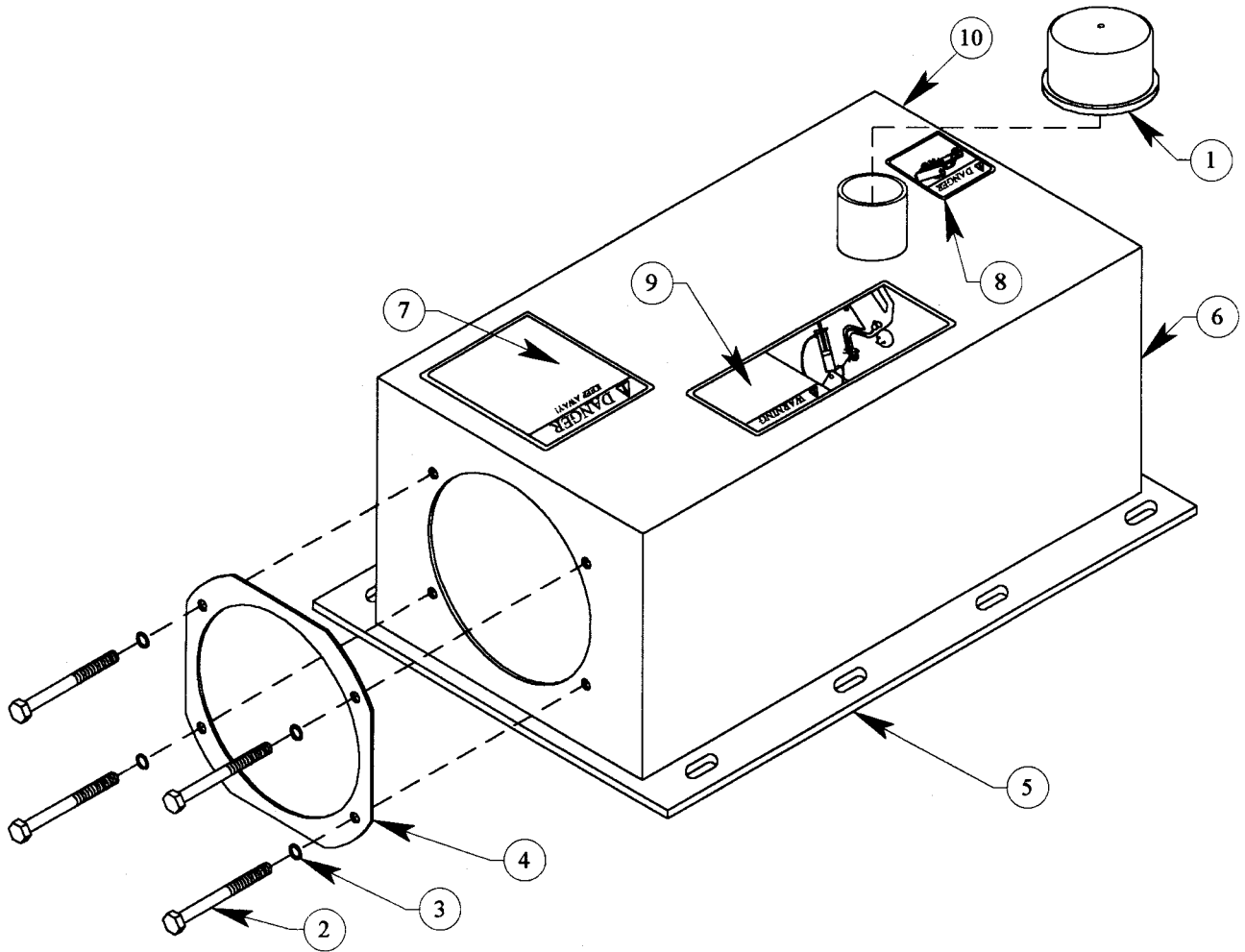


Note: The 12 VDC Electric Motor Assembly Can Be Ordered Complete as P/N 2654

Drawing No.	Part No.	Quantity Req'd	Part Description
1	2613	1	DC Motor
2	2521	1	Solenoid, 12 VDC Phenolic
3	2511	1	Copper Strap
4	—	2	Thread Roll Torx Drive
5	1805	2	Washer
6	2066	1	Clamp
7	1974	1	Decal, Warning: Wire Size Reqm.
Not Shown	2656	1	Terminal Ring (#10)

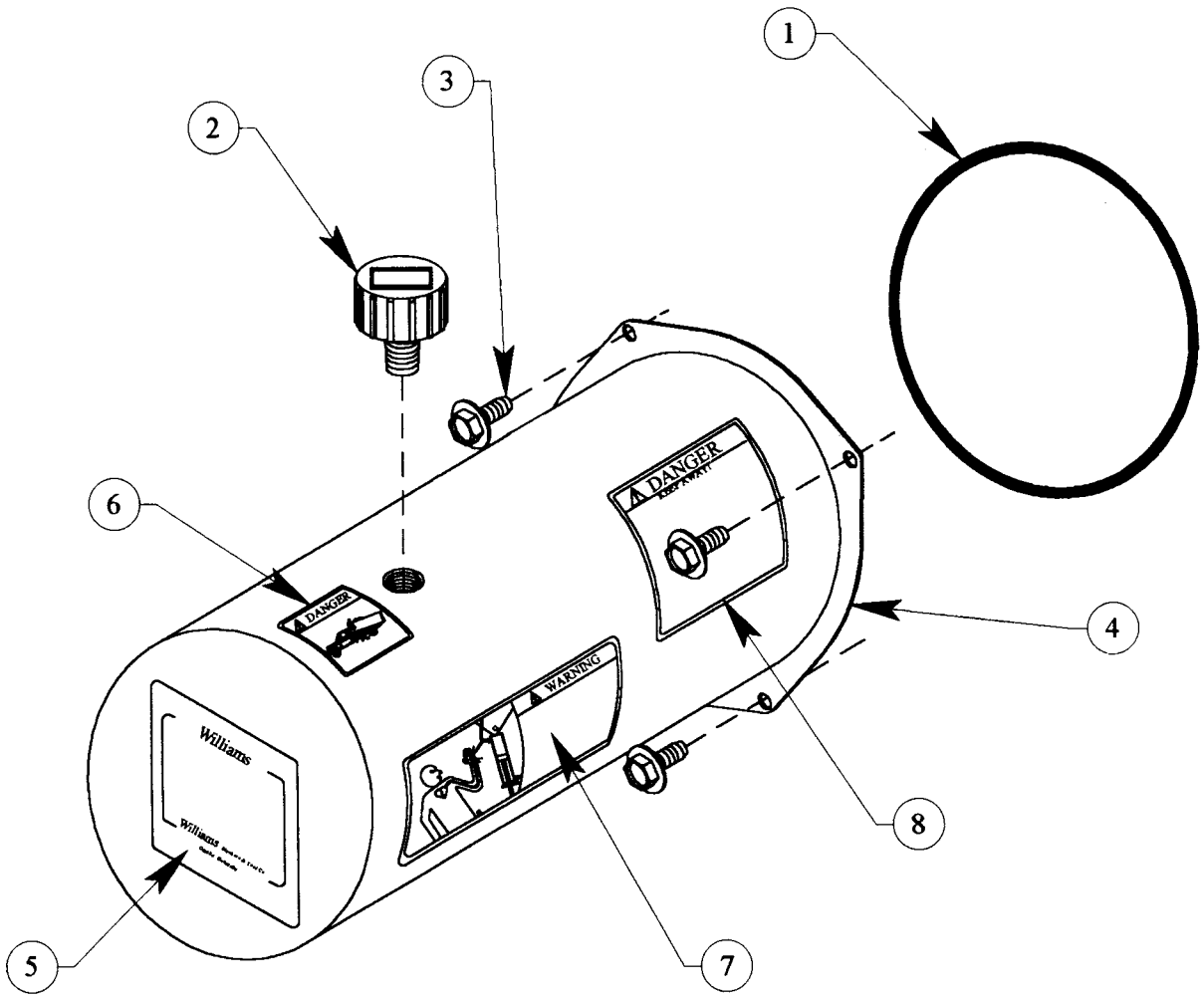


# Square Electric Reservoir Assembly



Drawing No.	Part No.	Quantity Req'd	Part Description
1	1013	1	Breather Cap
2	1938	4	Cap Screw
3	2493	4	Washer
4	2491	1	Gasket, Electric Reservoir
5	—	1	Reservoir, Square Electric
6	1595	1	Sticker, Info (Electric)
7	1840	1	Sticker #1, Wording w/Address
8	1842	1	Sticker #3 Small Truck Picto
9	1858	1	Warning Label, 2" x 5-1/4"
10	1974	1	Decal, Warning: Wire Size Reqm.

# Round Electric Reservoir Assembly



Drawing No.	Part No.	Quantity Req'd	Part Description
1	1605	1	O-Ring
2	1589	1	Breather Cap
3	1126	4	Screw
4	—	1	Reservoir, Round Electric
5	1595	1	Sticker, Info (Electric)
6	1842	1	Sticker #3, Small Truck Picto
7	1858	1	Warning Label, 2" x 5-1/4"
8	1840	1	Sticker #1, Wording w/Address

# ENERGY®

## WARRANTY

Energy Manufacturing Co., Inc., and its division, Williams Machine & Tool (hereafter collectively referred to as "Energy"), warrants its products against defects in materials and / or workmanship for a period of one (1) year from Energy's date of manufacture. No other warranty is expressed, implied, or made. Energy's Warranty does not extend beyond the cost of the goods sold as shown on Energy's sales invoice. Normal in-service "wear and tear" of products and components are not covered under this Warranty. *Specifically, Energy makes no warranties of merchantability or the goods of their fitness for a particular purpose.* However, Energy does warrant that goods sold shall be free from defects in materials and workmanship at the time of manufacture. Energy's Warranty does not extend to goods or materials produced by others which are incorporated into goods produced by Energy. Any claim under the Warranty contained within this document must be stated in writing to Energy within ten (10) days of the customer's receipt of any applicable goods. Energy's warranty liability is limited to the repair of, replacement of, credit for, or payment for, as Energy may elect, any goods determined by Energy to be defective in materials and / or workmanship. Notwithstanding any other provision contained herein, Energy will not be liable for any amount in excess of the sales price received by Energy for the goods which are determined to be defective under the provisions of this Warranty.

Energy products are not covered under this, or any other warranty when used in: aerospace applications involving high duty-cycle industrial use, applications involving the lifting of people, or any other application that may place persons in dangerous positions during operation. Any exceptions to these exclusions must be specifically agreed to in writing by Energy per the terms and conditions of this document. Critical customer functions require review and special application sign-off by Energy's product engineering group in writing in order for this Warranty to be valid and in force. Energy shall not be responsible for unacceptable conditions, operation, or performance that results from Energy products being applied without specific written application review and approval by Energy. The purchaser of any Energy product is responsible for the testing of such product for all matters concerned with its use, including but not limited to: safety testing, endurance testing and performance testing. The purchaser is further responsible for determining if the product is suitable for the purchaser's particular use or application.

Energy warrants that the title to all goods sold shall be free from any security interest, other lien, or encumbrance, and that the transfer of all goods shall be rightful. Energy further warrants that goods which are shown in Energy's price list, and which are not modified in any manner at the request of customer, shall not be subject to a claim by third parties by way of infringement.

**The Warranty set forth herein is the exclusive warranty for all products produced by Energy, and there is no other warranty, expressed or implied. Energy hereby expressly disclaims any and all other warranties, including implied warranties of merchantability and fitness for a particular purpose and non-infringement. Warranty coverage is dependant on buyer complying with the then-current warranty procedures and failure to comply will void this warranty in its entirety.**

**IN NO EVENT SHALL ENERGY HAVE ANY LIABILITY OR RESPONSIBILITY TO BUYER OF ANY OTHER PERSON OR ENTITY FOR ANY CONSEQUENTIAL, INDIRECT, SPECIAL, PUNITIVE OR INCIDENTAL DAMAGES OR LOST PROFITS, WHETHER FORESEEABLE OR UNFORESEEABLE, BASED ON CLAIMS OF BUYER OR ITS CUSTOMERS (INCLUDING, BUT NOT LIMITED TO, CLAIMS FOR LOSS OF GOODWILL, PROFITS, USE OF MONEY OR USE OF GOODS, INTERRUPTION IN USE OR AVAILABILITY OF GOODS, STOPPAGE OF OTHER WORK OR IMPAIRMENT OF OTHER ASSETS, OR CLEAN-UP EXPENSES OR RELATED COSTS ASSOCIATED WITH ANY HYDRAULIC OIL SPILLS OR LEAKS OR ANY OTHER DAMAGE OR CLAIM RELATED TO THE USE OF PRODUCTS), ARISING OUT OF ANY BREACH OR FAILURE OF ANY EXPRESS WARRANTY, BREACH OF CONTRACT, MISREPRESENTATION, NEGLIGENCE, PRODUCT LIABILITY, STRICT LIABILITY IN TORT OR OTHERWISE, INCLUDING ANY LATENT OR PATENT DEFECTS, EXCEPT ONLY IN THE CASE OF DEATH OR PERSONAL INJURY WHERE AND TO THE EXTENT THAT APPLICABLE LAW REQUIRES SUCH LIABILITY. IN NO EVENT WILL THE AGGREGATE LIABILITY INCURRED BY ENERGY IN ANY ACTION OR PROCEEDING, EXCEED THE TOTAL AMOUNT ACTUALLY PAID TO ENERGY BY BUYER FOR THE PURCHASE OF THE GOOD(S) THAT ACTUALLY CAUSED THE DAMAGE OR LOSS. IN ADDITION, IN NO EVENT SHALL ENERGY BE LIABLE TO BUYER FOR ANY LOSSES, DAMAGES, CLAIMS, COSTS OR EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING FROM OR RELATED TO ANY LEAK OR SPILL OF HYDRAULIC FLUID OR ANY HAZARDOUS MATERIAL (AS DEFINED UNDER ANY APPLICABLE FEDERAL, STATE OR LOCAL STATUTE, REGULATION OR THE LIKE) OR THE FAILURE OF BUYER TO PROPERLY DISPOSE OF HYDRAULIC FLUID OR ANY HAZARDOUS MATERIAL. BUYER ALSO AGREES TO DEFEND AND HOLD ENERGY AND ITS EMPLOYEES, REPRESENTATIVES, AGENTS, SUCCESSORS OR ASSIGNS HARMLESS FROM ANY AND ALL LOSSES, DAMAGES, CLAIMS, COSTS OR EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING FROM OR RELATED TO ANY ENVIRONMENTAL OR HAZARDOUS MATERIAL CLAIMS.**

Written authorization for the return of products for warranty consideration must be obtained from Energy prior to return shipment. Any alleged nonconforming products shall be shipped to Energy, freight prepaid by the Shipper, along with a complete explanation of the alleged problem. Potential warranty items must be returned to Energy within thirty (30) days of receiving written authorization for return. If the products returned are not found to be nonconforming, the owner / shipper shall be responsible for and shall pay to Energy normal inspection and / or repair, and / or shipping charges.

No Warranty contained herein shall be enlarged or modified, nor shall any additional warranties be applicable, unless contained in writing and signed by a corporate officer of Energy at its headquarters in Monticello, Iowa, USA.

**Energy Manufacturing Company, Inc.**  
***Designers & Manufacturers of Hydraulic Cylinders, Valves, Pumps, and Power Systems***

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