ADVANCE LIFTS

Installation, Operation and Maintenance Manual for the Following Equipment:

DP-122-15-4845U, DP-136-29-5454U, DP-148-41-5454U,

DP-160-53-5454U, DP-443-36-5465U

Any correspondence with the factory will require the following information:

Model Number_____ Serial Number_____

Installation Location:_____

_____

_____

CAUTION!
At initial installation, determine proper motor/pump rotation by starting the motor in very short intervals to prevent permanent pump damage. Running the pump backwards will damage it. See the installation instructions for proper procedure.

Distributor Information: _____

_____

_____

Advance Dumpers, Inc.
701 Kirk Road
St. Charles, Illinois 60174
(630) 584-9881
FAX (630) 584-9405

***ADVANCE LIFTS, INC**. furnishes one manual with each unit. Additional manuals are available for $25.00 each.

SECTION 2. INDEX

SECTION 3. INTRODUCTION

Congratulations, the equipment that you have purchased is of the highest quality. Your Advance Lifts Dumper will give you many years of trouble free service in return for the minimal maintenance described in this manual.

No person shall operate the Dumper until he/she becomes familiar with the operating instructions in this manual. Also, insure that at least one person at the Dumper site is familiar with the maintenance section of this manual and is given the responsibility for doing the maintenance on a regular basis.

Please note that the Dumper has a metal nameplate attached to it, which contains information such as the model number, load capacities and serial number (see page P 8-1, Label 2). Do not remove the nameplate. Be sure that no operator ever exceeds the capacities shown on the nameplate or they may cause damage to the Dumper or injure personnel.

Also, be sure to have the serial number of the Dumper handy if you have to call the factory. This number identifies your specific Dumper and will allow the factory personnel to give you the most thorough and timely help possible.

This manual is under constant review and we would appreciate any constructive suggestions that may add to its usefulness. Please send your suggestions to Advance Lifts, Inc. Attn: Service Manager

Thank you for purchasing our product.

SECTION 4. RESPONSIBILITIES OF OWNERS & USERS

Inspection and Maintenance: The Dumper shall be inspected and maintained in proper working order in accordance with this manual and safe operating practices.

Removal from Service: Any Dumper not in safe operating condition shall be removed from service until it is repaired to the original manufacturer's standards.

Repairs: All repairs shall be made by authorized personnel in conformance with the manufacturer's instructions.

Operators: Only trained and authorized personnel shall be permitted to operate the Dumper. They must understand to be alert to safety hazards during all operations.

Before Operation: Before using this Dumper, the operator shall have:

1. Read and understood the manufacturer's operating instructions and safety rules, or been trained by a qualified person.
2. Inspected the Dumper for proper operation and condition. Any suspect item shall be carefully examined and a judgement made by a qualified person as to whether it creates a safety hazard. All unsafe items shall be corrected before further use of the Dumper.

During Operation: The Dumper shall be used only in accordance with its intended use and within the manufacturer's limitations and safety rules:

1. Do not overload the Dumper.
2. Insure that all safety devices are operational and in place.
3. Insure that all personnel stand back from operating Dumpers so that clothing or body parts cannot be pinched by any of the moving parts. This will also keep personnel from being struck by items that may fall off the Dumper.

Modifications or Alterations: Modifications or alterations of industrial Dumpers shall be made in conformance with all applicable provisions of the Dumper manufacturer and shall be at least as safe as the equipment was before modification. These changes shall also satisfy recommendations of the original equipment manufacturer for the particular application of the Dumper.

SECTION 5. INSTALLATION INSTRUCTIONS

Equipment and Supplies Required:

1. Equipment or personnel to position the Advance Lift dumper into its location. All units will require at least two persons to move by hand with the transport feature engaged.
2. No hosing or piping is required with the self-contained power unit.
3. Material for shimming on uneven surfaces and anchor bolts, if desired. We recommend Rawl Power-Stud, Wedge Anchors, Wej-It or the equivalent bolts in the ½" x 5-½" size.
4. Standard hand tools.
5. A heavy pry bar for shifting the equipment and a drill for installing the lag down studs.

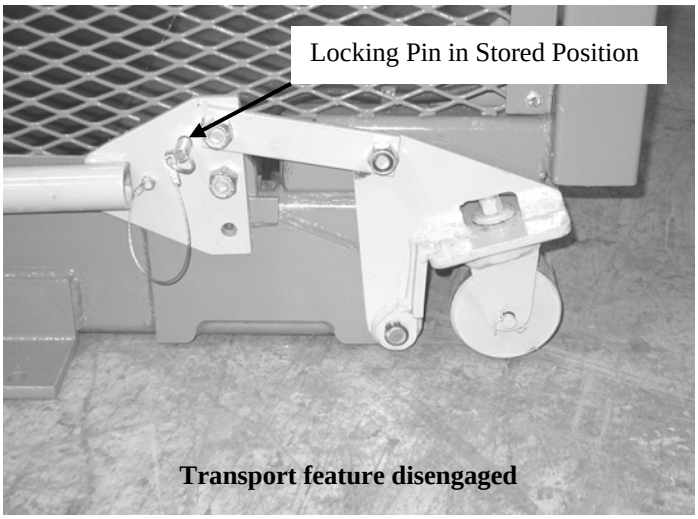
Installation Procedure:

1. Read the Installation, Operating and Maintenance instructions completely before starting the installation. You may find it helpful to read the remaining sections of the manual for a better understanding of how the equipment works. The model DP-443-36-5465 is equipped with a transport feature that allows the unit to be positioned without the aid of additional equipment on smooth and level surfaces. See page P 5-3 for instructions. All other models will require lifting equipment to move the units.
2. Model DP-443-36-5465 only: Once the unit has been positioned in the work area, disengage the transport feature before operation. **Caution!** Never operate the unit with the transport feature engaged. Operating the unit with the transport wheels engaged could cause the unit to move suddenly and damage the dumper or injure personnel.
3. All units are pre-wired at the factory but 3-phase units must still be checked for proper motor rotation when it is plugged in because rotation is strictly a function of your building's wiring. Follow the electrical diagrams, (see drawings on page P 10-2 & P 10-3), in the electrical section of this manual to insure that you have the correct motor rotation! **Caution!** Continued operation of a hydraulic pump in the wrong direction will destroy it! If, on initial start up, the unit does not function after 10 seconds of operation, **stop** and reverse the direction of the motor. **Danger!** If you are unfamiliar with electrical systems, **DO NOT ATTEMPT!** Call a qualified electrician to make the modification.
4. Raise the unit several times. Then fully lower it, holding the down switch an extra 10 seconds each time when the unit is fully lowered to remove the air from the cylinders. Note: Model DP-443-36-5465U has a double-acting cylinder and does not require this step.
5. It is critical to install the unit level. Shim or grout the base frame to insure proper support under the bin uprights, lag down locations and cylinder base locations.

6. No surface is perfectly level; some imperfections in the surface may cause the unit to lift up when the bin is completely retracted. To correct this problem it is necessary to shim the baseframe to keep the bin from hitting the surface. Place shims under the front, fixed roller wheels and under the lag-down angles located near the transport wheels. Use the thinnest shim possible to accomplish this task. **CAUTION! Model DP-443-36-5465U support base frame should never lift off the surface during operation. Continued operation of a unit in this manner could cause structural damage that will not be covered under warranty.**
7. Once the dumper is properly positioned, you may begin to lag down the unit. This unit does not need to be lagged down to operate but it is recommended.

8. If you choose to lag the unit down, drill the lag down holes and using ½" x 5-½" long Rawl Power-Studs, Wedge anchors, Wej-It or the equivalent, set the lag bolts. The studs must be embedded at least 4-1/2" in the concrete. Tighten the lag bolts.
9. Clean up any debris or spilled fluid, as this may give a false sign of trouble or cylinder leak.
10. Raise the unit one more time and inspect the area for any fluid spills. Be sure to clean all fluid.
11. Meet with the facility manager or maintenance foreman and turn over this manual with the reminder that no one shall be allowed to operate the unit unless they are familiar with all the operating instructions. Point out the metal nametag on the unit with the serial number and capacity ratings. We recommend that a specific person be assigned the responsibility for maintaining this equipment.
12. Instruct the user(s) in the unit's proper operation, safety precautions and equipment capacity.

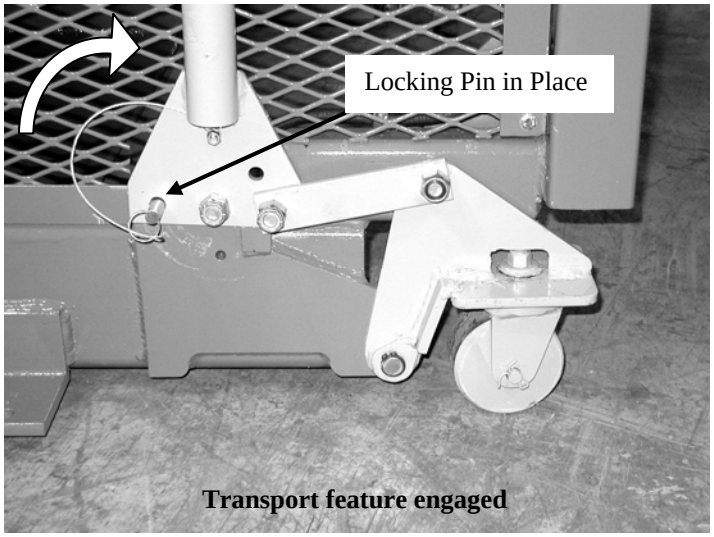
TRANSPORT WHEEL FEATURE



Transport feature disengaged

The transport feature is engaged by rotating the lever arms from the horizontal to vertical position and then inserting the locking pin into the hole shown.

Caution! Locking pin must be inserted before movement is attempted. Once both lever arms are in position, the unit can be moved. **Caution!** These units are heavy; they will require at least two persons to move on a clean smooth surface.



Transport feature engaged

SECTION 6 OPERATING INSTRUCTIONS

Hydraulic Dumpers have an excellent safety record overall, but as with all moving equipment, they can be dangerous. Operators must use common sense and take responsibility for the safety of everyone near the Dumper. They must be careful not to surprise anyone in the area with the movement of the Dumper.

Pre-operational checks:

1. Check the electrical wiring and connections that they are connected properly and in good working order.
2. Check for obstructions or debris that may prevent the safe operation of the Dumper.
3. Be sure that all personnel in the area are a safe distance away from the Dumper and aware that you are about to operate it.
4. Check that the transport wheels are disengaged.
5. Check that no objects are blocking the electric eye safety switches.

Test operate the equipment:

1. Begin by pressing the safety “Reset” button on the hand controller.

2. Raise the dumper carriage and note that the control is a constant pressure, dead-man type switch. When you press the corresponding “Up” and “Down” buttons the unit will operate in those directions. When you release a button, at any point, the unit will stop moving promptly and hold its height. If it does not, discontinue use and call your maintenance personnel.

3. Run the equipment several times to be sure that it is operating smoothly with no jerking or sudden movement. On initial start up, there may be some air in the lines or the cylinder may be dry due to storage so it may take several cycles to smooth out the operation. If the operation is not smooth after several cycles, call your maintenance personnel. Any signs of binding or scraping during operation shall cause you to stop using the Dumper.

4. Place a loaded container in the bin and raise the unit up 1-2 feet. Lower the bin down again making sure the bin does not meet the surface it is sitting on. If the bin does come into contact, it will be necessary to adjust the leveling shims to accommodate the flexing of the machine that an additional load represents.

Compatible Loading Equipment Guide:

Each Advance Lifts dumper is designed with a capacity and carriage size for use with specific containers. Using the wrong size container can lead to overloading and damage to the equipment. For safe operation, follow these guidelines and be careful to never exceed the nameplate capacity.

Model Number	DP-443-36-5465U	DP-122-15-4854U	DP-136-29-5454U	DP-148-41-5454U	DP-160-53-5454U
Max. Capacity, (Lbs.)	4000	1250	1250	1250	1250
Allowable Containers					
1033 Cloth Hamper	NO	YES	YES	YES	YES
1046 Cloth Hamper	YES	YES	YES	YES	YES
1046P Orange Plastic	YES	YES	YES	YES	YES
Wire Containers	YES	YES	YES	YES	YES
Low Palletized Cardboard	YES	YES	YES	YES	YES
High Palletized Cardboard	YES	NO	NO	NO	NO
All Purpose Metal	YES	NO	NO	NO	NO
All Purpose Plastic	YES	NO	NO	NO	NO
BMC	YES	NO	NO	NO	NO
Maximum Dump Angle	135º	125º	130º	135º	135º
Up Speed (Seconds)	36	27	27	37	48
Down Speed (Seconds)	24	10	10	14	18
Horsepower	5	1	1	1	1
Voltage (volts/cycle/phase)	230/60/3	115/60/1	115/60/1	115/60/1	115/60/1
Primary Fuse	1 Amp	1 Amp	1 Amp	1 Amp	1 Amp
Secondary Fuse	4 Amp	4 Amp	4 Amp	4 Amp	4 Amp
Powered Down	YES	NO	NO	NO	NO

CAUTION !

Determine the true weight of your heaviest loads before you start to use this equipment. This will save you from damage to the equipment and possible injury to your personnel. If you find out that some loads will exceed the capacity of the unit, then the load shall be divided up. All operating personnel shall be warned about heavy loads and warning signs placed in the work area as a reminder.

Daily operation:

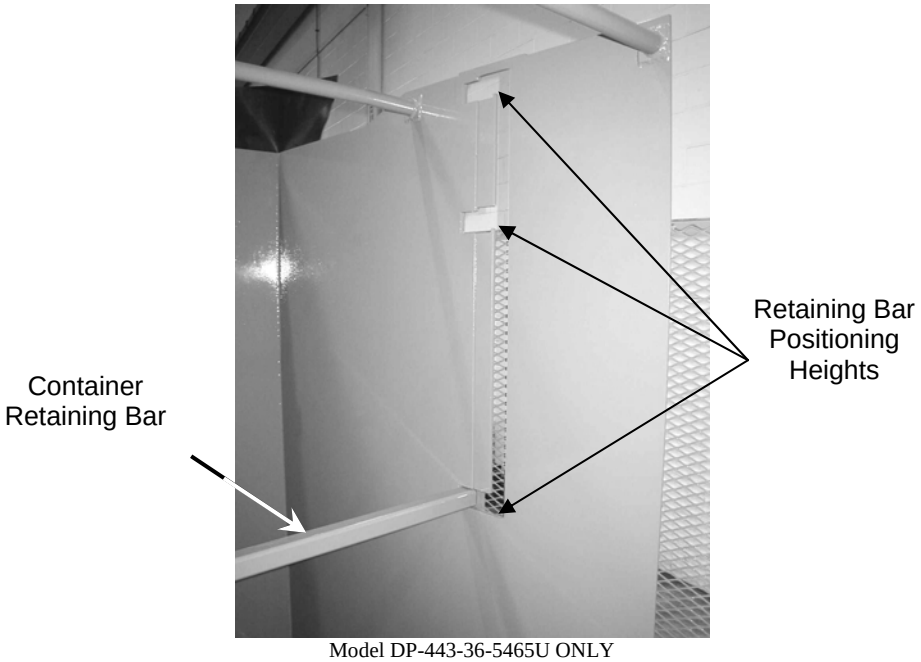
1. All personnel shall be required to read the entire operating instruction section of this manual prior to using the Dumper.
2. Operators must know the capacity of the unit and be aware of any loads that may exceed the capacity.

WARNING !

3. Operators must be alert to all personnel near the Dumper and avoid any surprises when moving or positioning the Dumper. Never operate the unit if your vision of the area is impaired.
4. On the first use of the Dumper each day, each operator shall check to see that the Dumper is operating properly and smoothly. Any problems shall be reported promptly to the maintenance personnel.
5. If the unit has a traveling electrical cord, the operator must insure that it is kept away from the Dumper as it raises and lowers.
6. Loads shall be centered before raising or lowering the Dumper as this will help insure even wear on all moving parts.

Adjustable Container Retaining Bar for Model DP-443-36-5465U Only:

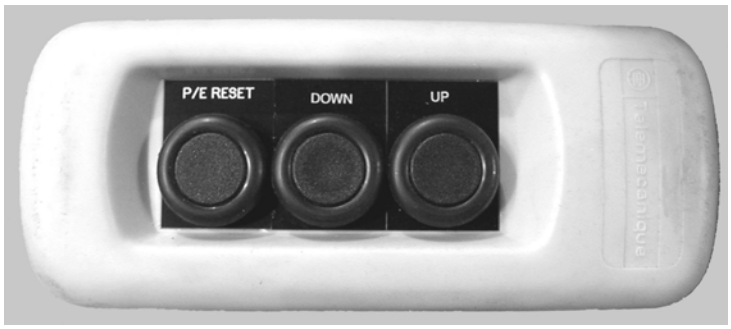
1. This model has an adjustable height retaining bar; all other units listed in this manual have fixed retaining bars.
2. The retaining bar is a safety feature must be used whenever a container is placed in the carriage for dumping. (See page P 5-1 for listing of containers).
3. The permanent retaining bar has three holding positions. Select the proper slot height for your container and use the lowest retainer hole possible that is the closest to the top of your container.
4. Place your container in the carriage.
5. Insert the retaining bar across the carriage.
6. Now the Dumper is ready to be rotated.



Model DP-443-36-5465U ONLY

Operation:

1. Load container bin into the equipment, at this time the electric eye safety switch will deactivate all unit functions. No movement of the unit will be possible until the “P/E Reset” button on the hand control switch is depressed.



Typical push button assembly for all USPS Advance Lifts Dumpers

2. If your unit has the adjustable retaining bar, lower the bar to the closest setting above the container before proceeding (see page P 6-3 for instructions). If all retaining bars are fixed, simply load the container into the unit, keeping in mind that loads shall be centered in the bin and pushed as far forward as possible.
3. Once the container is positioned properly and all personnel are clear of the loading area, the unit can be operated.
4. To begin dumping product, press the button labeled “P/E Reset”; this will reset the safety switches and allow the dumper to raise when the “UP” button is pressed.
5. While pressing the “UP” button, the unit can be stopped at any point during the dumping process by releasing the button, do this to control the flow of material being dumped.
6. Once the contents of the container have been emptied, the bin can be lowered by pressing the “Down” button. The bin can be stopped at any point by releasing the button.
7. If, at any point during operation, the photo eye safety beams are broken, all movement will be halted and the unit will remain disabled until the “P/E Reset” button is pressed again.
8. An emergency stop button is located on the front of every unit, use this button to stop all functions. (See page P 8-2).

SECTION 7. GENERAL MAINTENANCE

Structural:

1. Read carefully before doing any maintenance on the Dumper. Never reach under a Dumper unless it is properly shored or blocked.
2. Use only manufacturer recommended replacement parts.
3. Do not let the equipment stay in disrepair; fix little problems while they are small or they may get severe very quickly.
4. Clean all debris from around the unit.
5. Check for any signs of wear such as separated material or cracks.
6. Check the pins and bushings for any sign of wear such as flat spots, missing fasteners or separated bearing material.

Hydraulic:

1. Never work on the hydraulics unless the unit is fully lowered and all pressure is relieved from the hydraulic system.
2. Check the hydraulic fluid level by fully lowering the unit, removing the fluid level plug and filling reservoir until the fluid appears in the fluid level hole. Do not over fill.
3. Check the hydraulic fittings for cracks or leaks and clean up any fluid on or beneath the cylinder.
4. Check hoses for abrasions or other abuse and check for snug connections.
5. Change the hydraulic fluid when the room temperature changes, if appropriate, or if there is any sign of growing condensation creating water contamination. This shall be done seasonally or semiannually. (see page P 8-2 for temperature recommendations)

Electrical:

1. Never work on the electrical system unless the unit is fully lowered and the electrical cable unplugged.
2. Check the electrical connections for abrasions or other abuse and check for snug connections.

Miscellaneous:

1. Read this manual before doing any service work to the unit.
2. Operate the unit and check for any unusual noise or vibrations.
3. Use only replacement parts recommended by the manufacturer.
4. Do not let the equipment stay in disrepair; fix little problems before they become serious.
5. Inspect the equipment on a regular schedule, preferably monthly.
6. Never apply a load to the equipment unless the base is continuously supported and securely lagged to the ground.

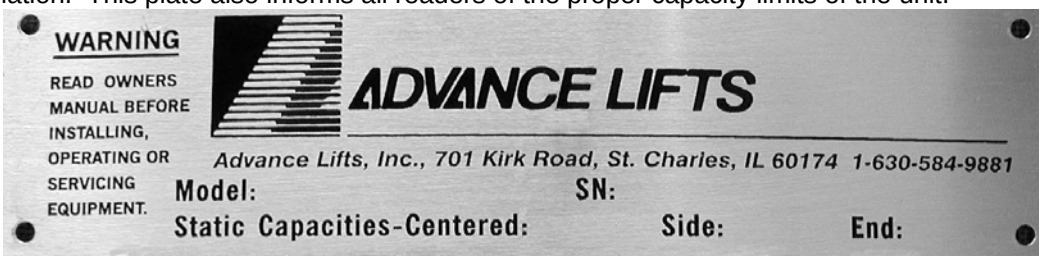
The equipment has been designed to safely provide many years of service if properly used and maintained.

SECTION 8. WARNING LABEL LOCATIONS & SPECIFICATIONS

The warning and informational labels normally attached to the Dumper are shown below and their locations for proper mounting are shown on page P 8-2. Please read all labels carefully before using this unit in order to avoid damage to the Dumper and personal injury.

Label 1: This is simply a promotional label identifying the unit as an Advance Dumper product.

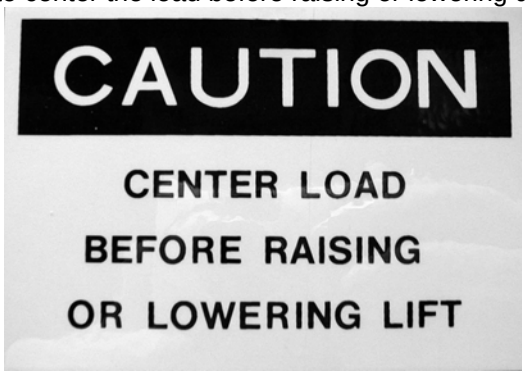
Label 2: This is the formal nameplate and it shall never be removed from the unit. The serial number on this nameplate is critical in identifying the specific unit for correct parts and service information. This plate also informs all readers of the proper capacity limits of the unit.

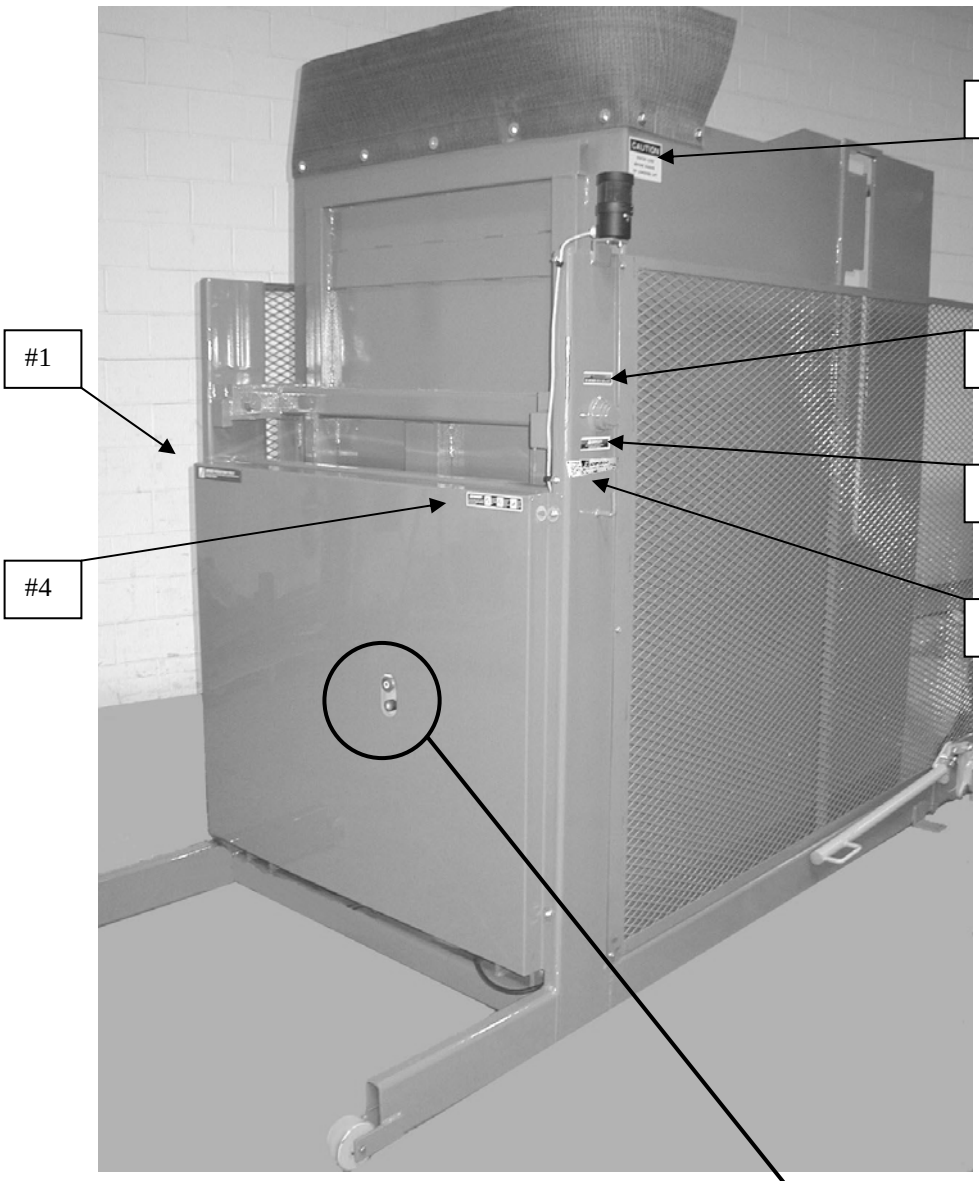


Label 3: This is a "Warning" label to not ride on the unit.

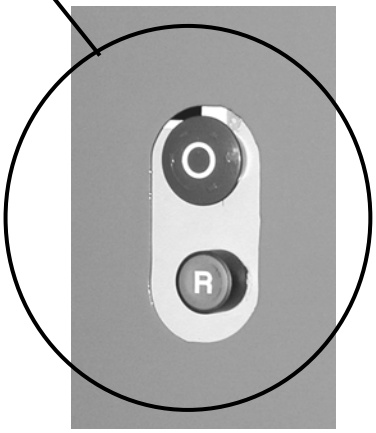
Labels 4 & 5: These are "Danger" labels to avoid personnel injury.

Label 6: Caution reminder to center the load before raising or lowering unit.





This emergency stop button located on the front of the unit will stop all functions when pressed. The button with the “R” is for resetting the motor overload.



SECTION 9. HYDRAULIC DETAILS

1. **General Hydraulic Information:**
   A. The hydraulic cylinder(s) will need to have the seals replaced after a period of time depending on the use and environmental conditions. However, small amounts of fluid may be observed around the cylinder seals, this is called “weepage”. It is a normal function of the cylinder.
   B. Weeping is the normal gathering of fluid that passes the seals in the course of normal use as the hydraulic fluid properly lubricates the cylinder wall and piston rod. It may be seen squirting from cylinder breathers, but should stop squirting after several cycles of full stroke when the small gathering is cleared.
   C. Leakage is the fluid that leaks past worn or cut packing and seals. It may be seen squirting, but does not stop after several cycles and the Dumper will probably not hold position under a load.
   D. See repacking under Cylinder Repair Procedures on pages P 9-6 and P 9-7.
   E. Always be careful when working around the cylinder not to nick the extended rod or dent the cylinder casing, as this may cause damage to the cylinder seals or packing.
   F. If you decide to repaint or retouch part of the Dumper, cover the exposed rod with plastic or soluble grease. This can be removed after painting, to insure that no paint sticks to the rod and damages the packing or seals.
2. **General precautions:**
   A. Be sure that all pressure is removed from the hydraulic system before disassembling any components. Continue to hold the control lever in the down position for about 20 seconds after the carriage is fully lowered before opening a line or component.
   B. Always be careful to avoid contamination entering the system. Be especially careful with the ends of the hoses that may fall into oil dry or dirt. If you suspect contamination, flush the system and components.
3. **Hydraulic fitting sealant and torque:**
   A. This Dumper is equipped with JIC fittings, which are flared and SAE fittings (with “O” ring seals). Know the difference!
   B. Be careful when securing JIC fittings not to over tighten and crack them. Swivel fittings are especially vulnerable and shall only be tightened enough to stop any leaking.
   C. If leakage continues after tightening the fittings, then inspect the fittings for burrs on the mating edges. There is also the possibility of a 37-degree SAE fitting being mixed with the standard 30-degree NPT fittings supplied by Advance or either one being mixed with SAE 45-degree fittings.
   D. When using Teflon tape on NPT fittings, be sure the tape is started 1-1/2 threads back from the leading edge and only use 2 wraps to be sure that the tape does not break off and contaminate the system. You may use pipe sealant with Teflon tape from Pro Lock or Locktite, but do not over apply. Never use sealant or tapes on swivel fittings.
   E. Never reuse old Teflon tape. Once a connection has been opened, remove all tape and apply fresh.

Oil Recommendations and Seal Compatibility

Fluids:

1. As of 1/1/03 the current standard hydraulic fluid is Rykon® ISO 46, (group II base) hydraulic fluid. This is the fluid normally supplied by the factory and is suitable for a temperature range of –10 to +100 degrees Fahrenheit. When replacing or adding fluid to an Advance Lift, use only ISO 46 hydraulic fluid that is manufactured with a group II base oil. ISO 46 hydraulic fluid can be identified by its clear color and is available from the factory.

2. **Caution!** Do not use any fluid that has not been approved by the Advance Lifts engineering department. Brake fluids and other hydraulic fluids may attack the system's seals or hoses.

3. Biodegradable and fire resistant fluids are also available. Contact the factory for the names, because it is also necessary to change some seals and/or hoses for total system compatibility, depending upon the specific model lift that you have.

Seals:

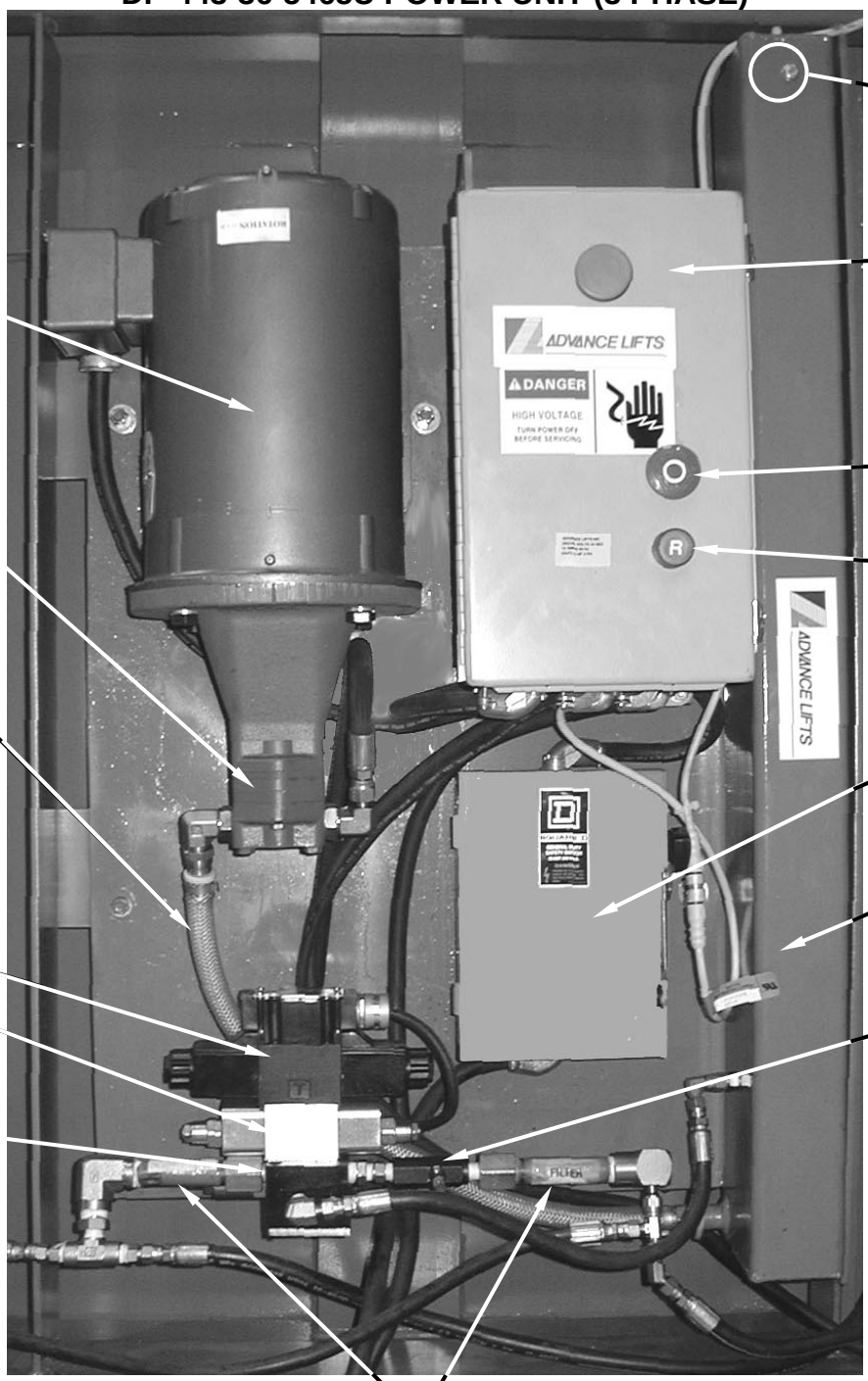
Generally, the seals in the unit are Buna-N-Nitrile and polyurethane. The hoses are composed of either PVC for suction lines or braided wire. Always call the factory about special fluids rather than make assumptions on your own.

Options:

1. For extremely cold applications we recommend an oil immersion heater which simply fits in the drain coupling on most units, replacing the drain plug, these are available in appropriate sizes from the factory.

2. For extremely warm temperature ranges over +100 degrees Fahrenheit consult the factory.

DP-443-36-5465U POWER UNIT (3 PHASE)



FLUID LEVEL PLUG

CONTROL BOX

MOTOR

E-STOP BUTTON

PUMP

MOTOR OVERLOAD RESET

SUCTION LINE

ELECTRICAL DISCONNECT

RESERVOIR

DIRECTIONAL VALVE

ADJUSTABLE FLOW CONTROL SET BY ADVANCE (DO NOT ADJUST)

COUNTER-BALANCE VALVE

SUB-PLATE

DISCHARGE FILTERS, (INSIDE PIPE)

See page 9-9 for hydraulic diagram and page 10-2 for electrical schematic.

All Single Phase (115V) Units

See page 9-10 for hydraulic diagram and page 10-3 for electrical schematic.

Repair Procedures for All USPS Dumper Cylinders

Tools & Supplies Required:

1. Hydraulic fluid that will match the fluid in the system for topping off the reservoir when finished.
2. Wrenches to disconnect hydraulic fittings.
3. Two small screwdrivers.
4. Emery cloth.
5. Clean, lint free cloth and hose caps.
6. Clean work surface (butcher paper on top of most surfaces works well), with a means of holding the cylinder end fixed for disassembly and reassembly.
7. Cylinder hone (Craftsman glaze breaker #9K4633 or equivalent).
8. Cylinder Repair drawing on page P9-8.

Cylinder Removal: All models except DP-443-36-5465U

1. Remove the power unit guard.
2. Hold the controller button in the down direction for an additional 20 seconds after the carriage has been fully lowered to remove any pressure from the cylinder. Remove the power connection to the power unit.
3. Undo the hydraulic hose from the cylinder and cap the hose to prevent contamination.
4. Remove the cylinder from the Dumper by freeing the upper pin first and swinging the cylinder into an easily supported position.
5. Remove the lower cylinder pin next.
6. Place the hose connection end of the cylinder in a five-gallon bucket and force the cylinder open to drain the remaining hydraulic fluid. Push the cylinder rod about halfway back into the housing. Do not reuse the fluid unless you are sure that it is free from contamination by careful straining.

Cylinder Removal: Model DP-443-36-5465U Only

1. Lower the unit completely and disconnect the power source.
2. Remove the power unit guard.
3. The model DP-44-36-5465U has a double-acting cylinder that must be treated differently. First, fully lower the unit and remove the lower cylinder fitting. Then slowly loosen the upper cylinder fitting. **Danger!** The upper cylinder fitting will be under high pressure, loosen only enough to relieve the pressure and then wait for the pressure to subside before completely removing the connection.
4. Follow steps 3-6 in the previous section to complete the removal, keeping in mind that the topside of the cylinder is filled with oil at the time of removal.

Cylinder Disassembly (All models):

1. Secure the cylinder in place with a rod through the lower cylinder pin boss. **Warning!** Do not place the cylinder housing in a vise, which will crush or otherwise damage the housing.

Cylinder Disassembly (All models continued):

2. Use a pick or pointed dental tool to remove the outside retaining ring, in front of the cylinder bearing. Remove the spacer ring and slide the front bearing into the cylinder by gently tapping it in with a blunt instrument, be careful not to mar the surface of the bearing or rod. Remove inner retaining ring.
3. Pull out the entire rod, bearing and piston assembly. Note that the groove in the cylinder housing has a sharp edge on the front side and a beveled back edge. The sharp edge is necessary for proper snap ring retention and will probably cut the packing when it is pulled out, but the beveled back edge will allow the new packing to slide in uncut. Carefully remove any debris from the retaining ring grooves.
4. Remove the hex nut, then slide the piston and bearing off the rod. The hex nut is Locktited on, so a small amount of heat may help break the nut loose. Be sure that all components are placed on clean surfaces to avoid contamination and are thoroughly cleaned before repacking.

Cylinder Repacking and Inspection (all models):

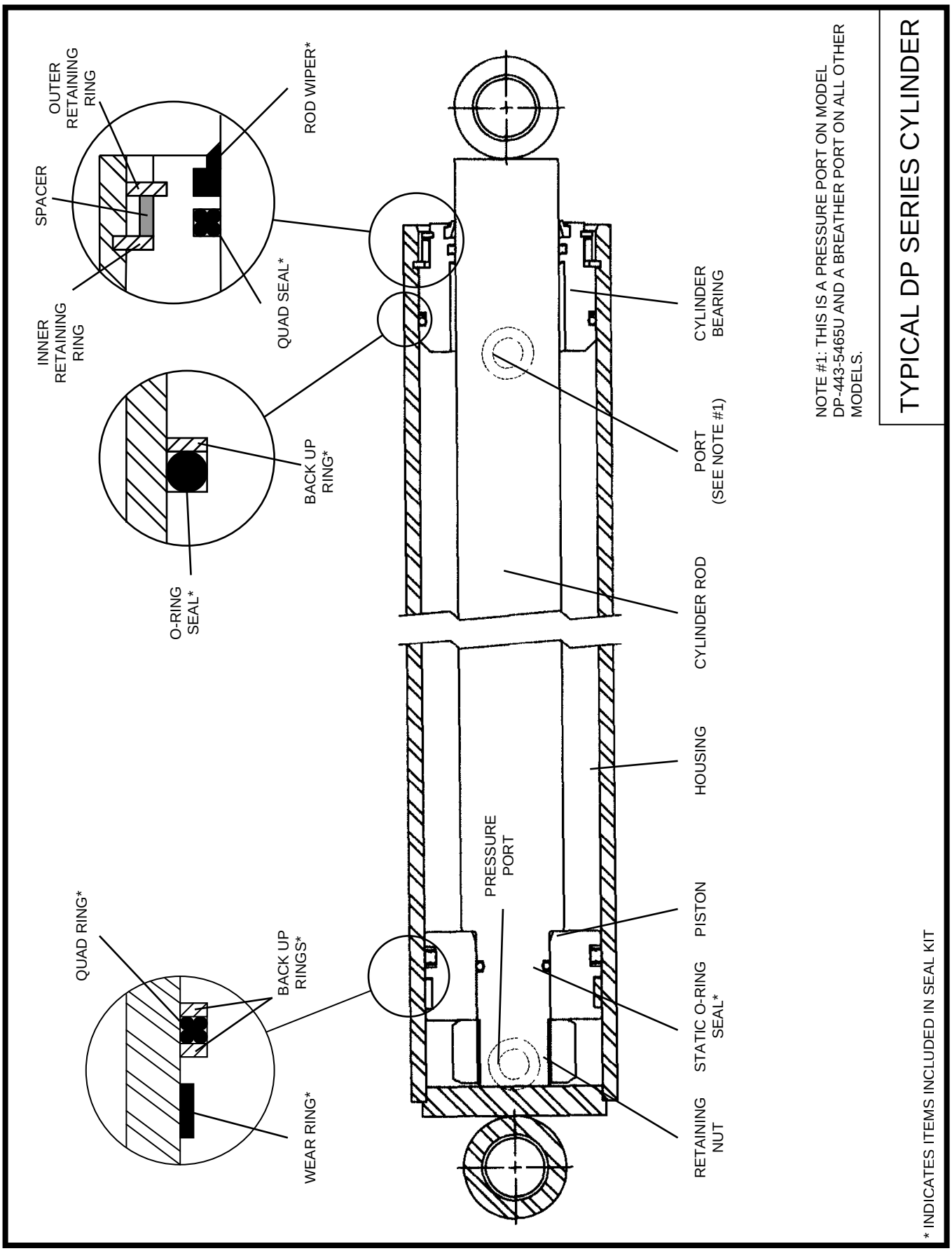
1. Carefully inspect the entire housing, with a flashlight, looking for any signs of rust, scratches or surface blemishes. Small blemishes may be removed with fine emery cloth and larger faults will need the use of the hone listed above. Be sure to thoroughly clean the housing when you are done to avoid contamination.
2. Do not become the victim of a false economy by using only part of a repacking kit. Once you have invested the time in disassembling the cylinder, use all new packing parts and seals or the reused parts may fail in the near future causing a repeat of the entire process.
3. Remove the rod wiper, from the bearing by using a screwdriver to bend the seal inward to collapse and remove it. Inspect and clean the groove.
4. Lightly lubricate the rod wiper with system oil and insert a new wiper, sliding it into its groove. Depending upon temperature, the rod wiper may slide in much easier if it is warmed in hot water, then dried, lubricated and inserted.
5. Remove the Backup rings, Quad rings and O-rings. Be careful to leave the grooves nick free, clean and dry. Lightly grease the I.D. of the seals with Pennzoil Premium 707L Wheel Bearing Grease or the equivalent. Replace the above parts with the new ones from the kit.
6. Remove the wear ring, Leave the grooves nick free and clean.
7. The bearing may now be slid back onto the rod.
8. Begin repacking the piston by cleaning the grooves on the piston. Replace the above parts and wear ring with the new ones making sure that the grooves are clean and dry. Lubricate the O.D. of the piston seals, wear ring and the housing snap ring grooves
9. Place the static O-ring seal, into the clean and dry groove on the cylinder rod, then lubricate the seal surfaces and the I.D. of the piston bore. Slide the piston back into position noting that the flat side, not the chamfered side, shall rest against the retaining ring or nut.

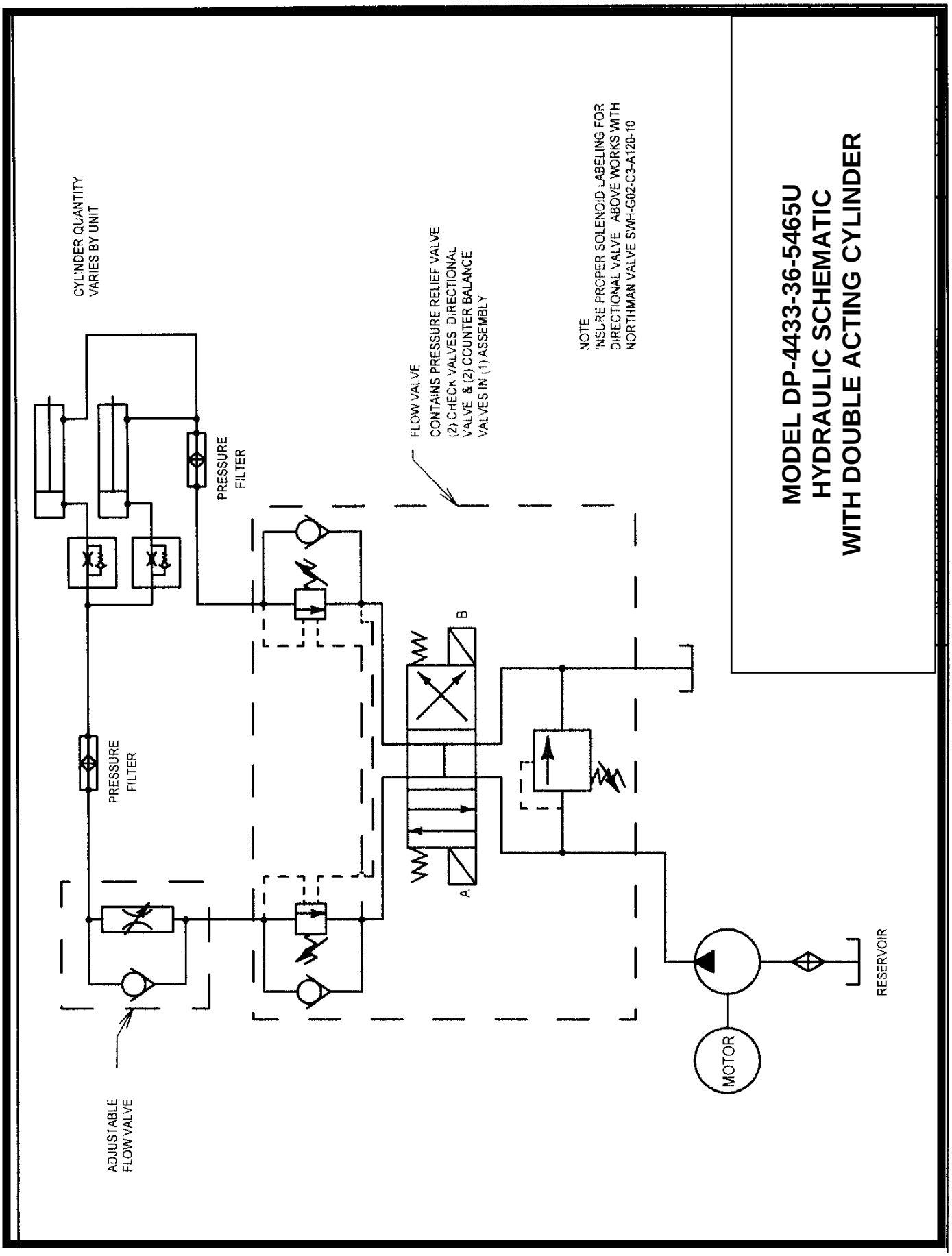
Cylinder Repacking and Inspection

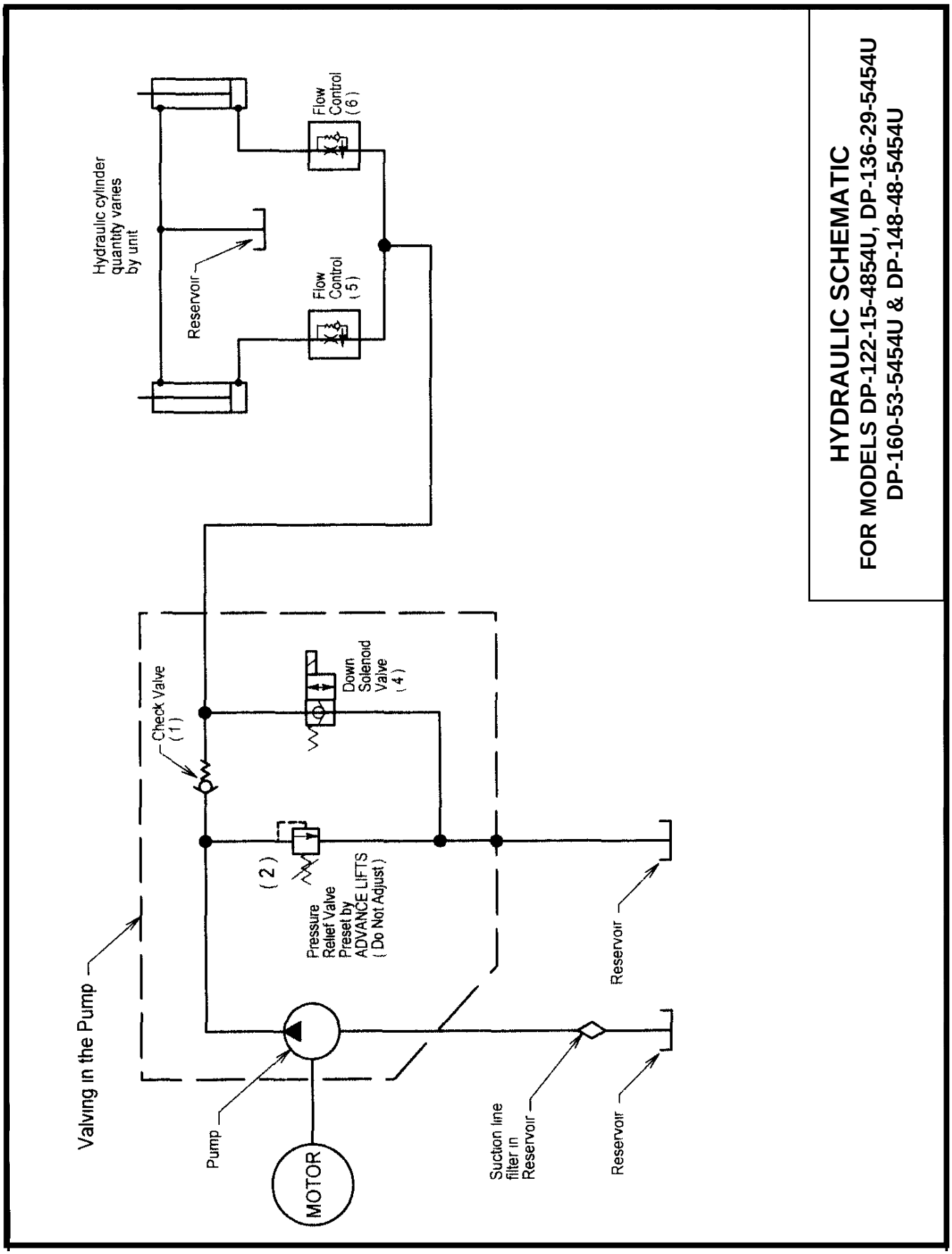
10. Reinstall the piston retaining nut using Locktite, the nuts torque specification is 600 ft./lbs. Once the piston is installed on the rod, lubricate the inner edge of the housing with grease and then slide the entire assembly into the housing.
11. Re-assemble the bearing block in the reverse manner that it was disassembled. In all cases, be sure the retaining ring(s) are fully seated into their grooves or the cylinder will come apart when fully extended, causing an accident.

Reinstall the Cylinder:

1. Remount the cylinder onto the Dumper and reattach the hose with special care to avoid contamination.
2. Be certain that all retaining clips are properly seated in their groves.
3. Clean up any spilled oil to insure that it is not interpreted as a leak later.
4. Connect the electrical power and cycle the Dumper several times, holding the down control an extra 20 seconds each time to help bleed air from the hydraulic system.
5. The Dumper is now ready to go back into service.


OUTER RETAINING RING
ROD WIPER*
SPACER
INNER RETAINING RING
QUAD SEAL*
BACK UP RING*
O-RING SEAL*
CYLINDER BEARING
PORT (SEE NOTE #1)
CYLINDER ROD
HOUSING
PRESSURE PORT
PISTON
STATIC O-RING SEAL*
RETAINING NUT
QUAD RING*
BACK UP RINGS*
WEAR RING*
NOTE #1: THIS IS A PRESSURE PORT ON MODEL DP-443-5465U AND A BREATHER PORT ON ALL OTHER MODELS.
TYPICAL DP SERIES CYLINDER
* INDICATES ITEMS INCLUDED IN SEAL KIT


MODEL DP-4433-36-5465U
HYDRAULIC SCHEMATIC
WITH DOUBLE ACTING CYLINDER
CYLINDER QUANTITY
VARIES BY UNIT
PRESSURE
FILTER
FLOW VALVE
CONTAINS PRESSURE RELIEF VALVE
(2) CHECK VALVES DIRECTIONAL
VALVE & (2) COUNTER BALANCE
VALVES IN (1) ASSEMBLY
NOTE
INSURE PROPER SOLENOID LABELING FOR
DIRECTIONAL VALVE ABOVE WORKS WITH
NORTHMAN VALVE SWH-G02-C3-A120-10
PRESSURE
FILTER
B
A
ADJUSTABLE
FLOW VALVE
MOTOR
RESERVOIR



HYDRAULIC SCHEMATIC
FOR MODELS DP-122-15-4854U, DP-136-29-5454U
DP-160-53-5454U & DP-148-48-5454U

SECTION 10. ELECTRICAL

General Electrical Information

The motor supplied as standard on the DP-443-36-5465U and the is a 208-230 3-phase, five Hp motor.

The motor supplied as standard on all other models listed in this manual is 115V, Single-Phase, one Hp motor designed for use with 20 Amp circuits.

If the unit is intended for 208V, 3-Phase use, some caution is advised. The motor supplied is a dual voltage motor that can operate at either 230V or 208V. If you are operating at 208V and the line voltage drops to 207V (a drop of only ½%), the motor will be operating at –10% in a marginal region. Wiring runs and actual voltage become very important. If the line voltage will be varying (due to loads elsewhere in the system, etc.) you may have an advantage by ordering as an option a 208V +/-10% motor.

To reverse the direction of rotation of a 3-phase motor, reverse any two of the three power leads to the motor.

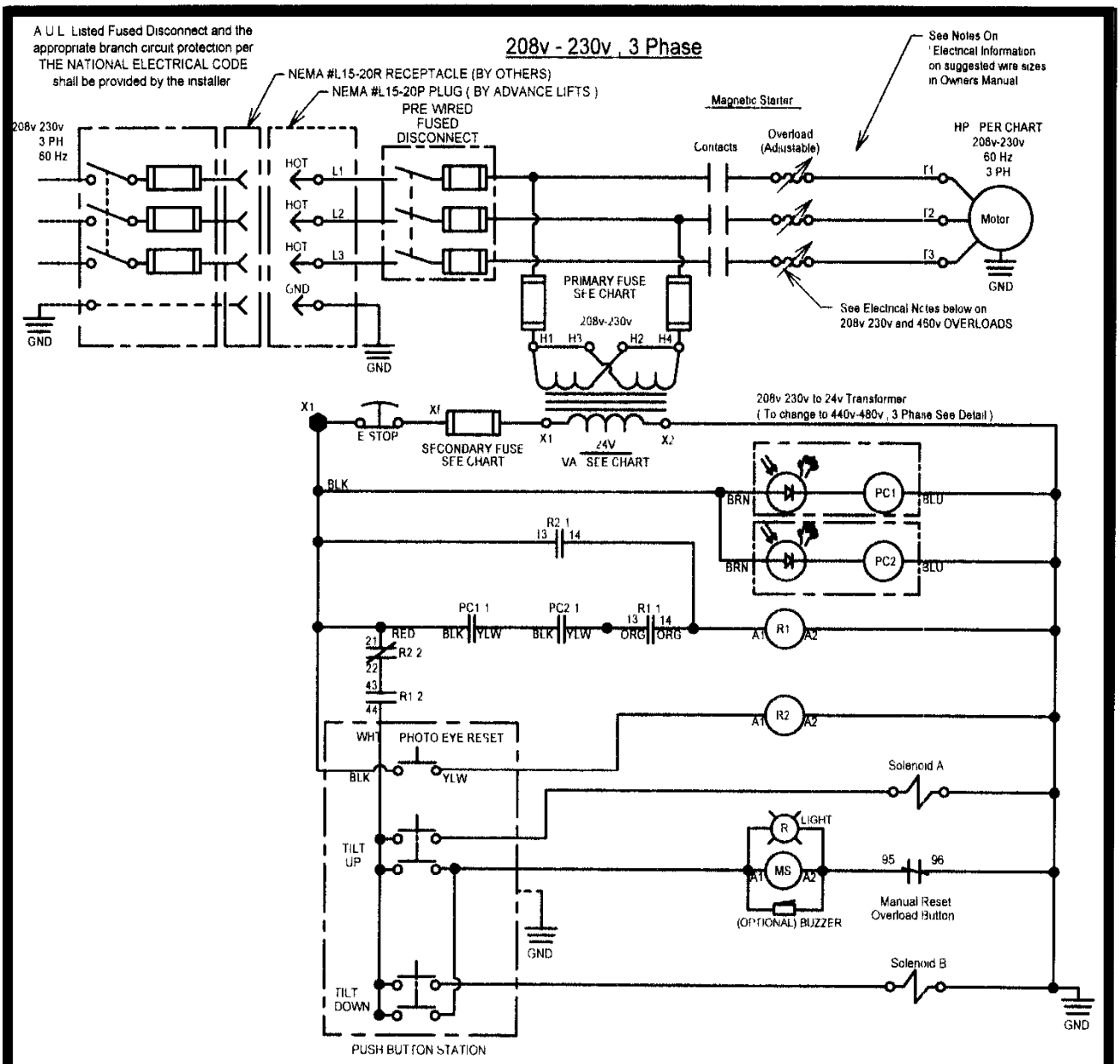
Field Changes in Voltage:
Advance Lifts standard electrical supplied is 230V, 3-phase unless otherwise specified. Any field change in supply voltage would need the following changes:

230V to 460V:
A. Change the transformer primary connections to 460V.
B. Change overload protection to proper value as per currents in the motor tables. Order new overload; adjust new overload to motor full load current setting. Insure the overload is set to “manual” reset, not “automatic” to insure the equipment cannot re-start automatically.
C. Change motor connections for high (460V).
D. Change plug and receptacle for power, if required.

460V to 230V:
A. Change transformer primary connections to 230V.
B. Change overload protection to proper value as per currents in motor tables. Order new overload; adjust new overload to motor full load current setting. Insure the overload is set to “manual” reset, not “automatic” to insure the equipment cannot re-start automatically.
C. Change motor connections for low (230V).
D. Change plug and receptacle for power, if required.

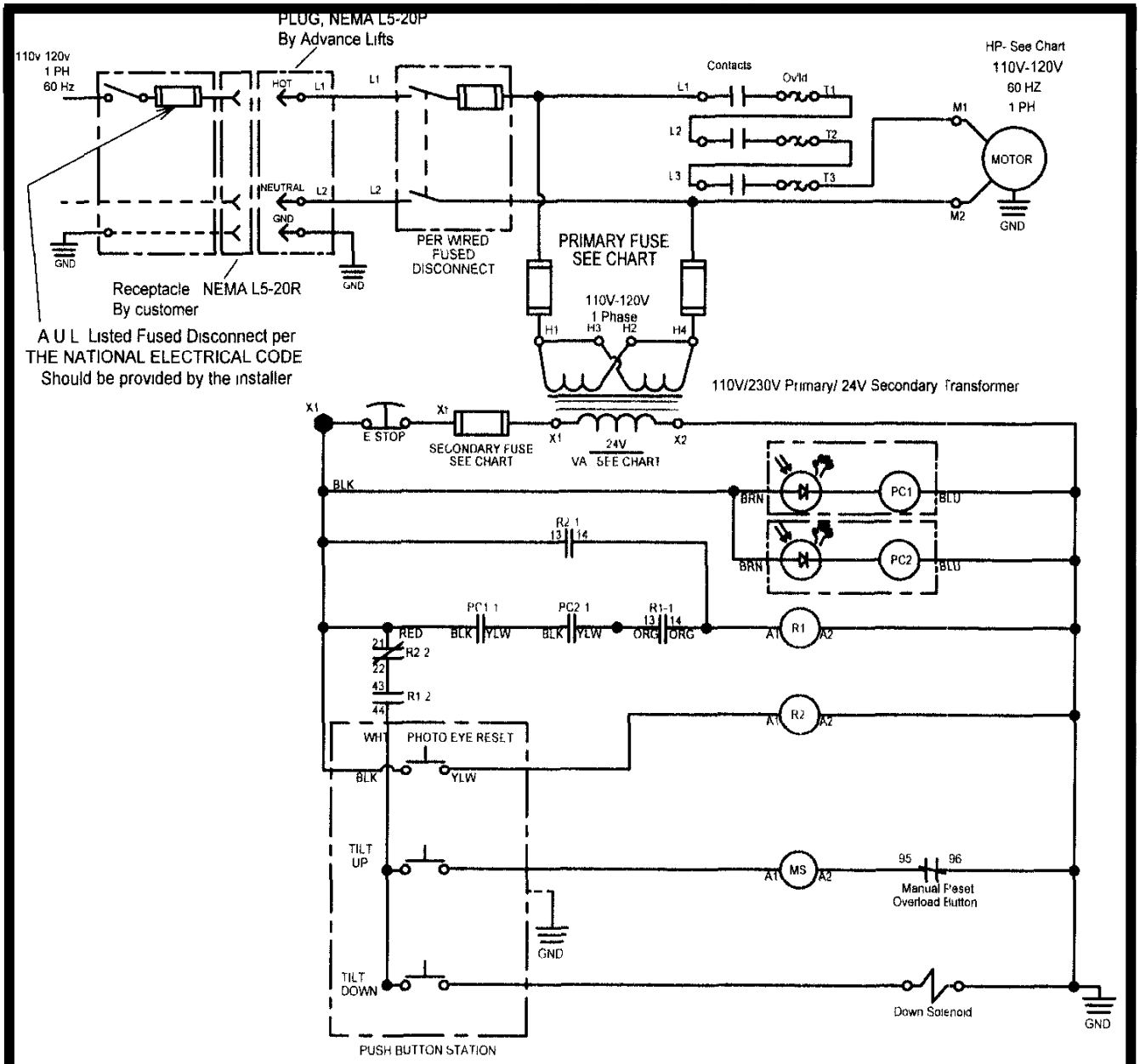
IMPORTANT: When changing voltages, insure motor rotation is correct.

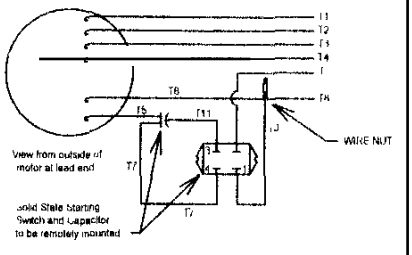
Three-Phase to Single-Phase:
The three-phase power unit and control box are not interchangeable and must be replaced, contact the factory for information.



Horsepower	R.P.M	FLA (230/ 460)	Transformer	Primary fuse (230 / 460)	Secondary Fuse Size	Disconnect Fuse Size
5	1725	14.8 / 7	100VA	KLDR 1 / KLDR 1/2	FNM 4	FLNR 25

MODEL DP-443-36-5465U (ONLY)





LEESON MOTORS

FOR THE FOLLOWING MODELS:

DP-122-15-4854U
DP-136-29-5454U
DP-148-41-5454U
DP-160-53-5454U

HP	MOTOR RPM	FULL LOAD AMPERAGE (115V)	TRANSFORMER SIZE	PRIMARY FUSE SIZE (115V)	SECONDARY FUSE SIZE	PRE WIRED FUSED DISCONNECT SIZE	ROTATION FACING LEAD END		L1	L2	JOIN
1	1725	13.8	24VA	FLM 1	FNM 4	FLNR 25	115V 1Ø	C C W	T1 T3 T8	T2 T4 T5	
								C W	T1 T3 T5	T2 T4 T8	

FLM 1

SECTION 11. TROUBLESHOOTING

Warning! Only qualified service personnel shall undertake service work on hydraulic Dumpers. Service personnel shall be able to read and understand wiring and hydraulic diagrams, know how to safely troubleshoot live electrical circuits and be familiar with this manual and all safety devices on this Dumper. Contact Advance Lifts at 1-800-843-3625 for recommended service organizations in your area.

Warning! No work shall be performed beneath a raised carriage, for any reason.

Symptom	Probable Cause	Corrective Action
Equipment does not raise, motor is running	Load is too heavy.	Reduce load to rated load size.
	Motor rotation is reversed.	Have an electrician reverse any two power leads on the power plug to reverse rotation. Note that the hydraulic pump can not be run backwards for more than a few seconds without suffering severe damage.
	Motor may be single phasing.	Check wiring and overloads to determine that all 3-phase lines are present at the motor.
	Low voltage at motor terminals.	Check voltage at motor terminals while unit is under full load. If current is below requirements in section 9 of this manual, correct the wire size or run length.
	Pinched hydraulic line.	Check to see that no line is pinched. Correct as necessary.
	Low oil level in reservoir.	Check oil level and correct as necessary. If oil is low, check for leaks also.
	Clogged reservoir breather.	Check that air can pass freely through filter and correct as necessary. (see drawing P8-7)
	Clogged suction line.	Observe the clear suction line that it remains full of oil with no air bubbles at anytime. If there are any bubbles, check for loose fittings, cracked ports or clogged suction filter. (see drawing P8-7)
	Down solenoid wired incorrectly to energize with up circuit.	Hold screwdriver on down solenoid and press “up” switch. If you feel magnetism correct the Dumper wiring.

Symptom	Probable Cause	Corrective Action
Equipment raises too slowly.	Load is too heavy.	Reduce load to rated load size.
	Pinched hydraulic line.	Check to see that no line is pinched. Correct as necessary.
	Wrong oil for room temperature.	See oil recommendations in section 8 of this manual.
	Dirt in reservoir breather.	Clean air breather.
	Low voltage at motor.	Check voltage at motor terminals while unit is under full load. If current is below requirements in section 9 of this manual, correct the wire size or run length.
	Clogged suction line.	Observe the clear suction line that it remains full of oil with no air bubbles at anytime. If there are any bubbles, check for loose fittings, cracked ports or clogged suction filter. (see drawing P8-7)
Motor heats or labors excessively	Low voltage at motor terminals.	Check voltage at motor terminals while unit is under full load. If current is below requirements in section 9 of this manual, correct the wire size or run length.
	Wrong oil for room temperature.	See oil recommendations in section 8 of this manual.
	Load is too heavy.	Reduce load to rated load size.
Operation is spongy.	Air in cylinders.	Bleed the cylinders to remove air trapped in them. If this recurs, check for air bubbles in the suction line and air leaks.

Symptom	Probable Cause	Corrective Action
Equipment lowers too slowly.	Pinched hydraulic line.	Check to see that no line is pinched. Correct as necessary.
Dumper raises then lowers.	Down solenoid wired incorrectly to energize with up circuit.	Hold screwdriver on down solenoid and press “up” switch, if you feel magnetism correct the Dumper wiring.
	Leaking cylinder packing.	Repack cylinder(s).
Dumper raises but will not lower.	Control voltage fuse blown.	Replace fuse.
	Obstruction in base frame.	Raise Dumper to clear obstruction.
	Center of gravity of bin is in front of pivot point.	Add counter weight to base of carriage or push carriage while operating “down” control.
Oil spraying out of reservoir.	Clogged air breather.	A dirty breather filter may build up positive pressure, which will spray oil. Clean air breather. (see drawing P8-7)
Dumper will not raise and motor will not run.	Control voltage fuse blown.	Replace fuse.
	Motor starter overload tripped.	Reset motor starter.
	Wrong voltage to unit.	Check wiring in controller and on motor to confirm wiring is compatible with available power.
	Transformer connections loose.	Check and tighten terminal screws on transformer. (see drawing P8-7)
	Transformer defective.	Replace transformer.

SECTION 12. ADVANCE LIFTS INC. PARTS AND LABOR WARRANTY

For a period of one year from date of shipment from the Company’s plant, the Company agrees to replace or repair, free of charge, any defective parts, material or workmanship on new equipment. This shall include electrical and hydraulic components.

For a period of ten years or 125,000 cycles (whichever occurs first) from date of shipment from Company’s plant, the Company agrees to replace or repair any defective structure.

Company authorization must be obtained prior to the commencement of any work. The Company reserves the right of choice between effecting repairs in the field or paying all freight charges and effecting the repairs at the Company’s plant. The Company further reserves the right of final determination in all warranty considerations. Evidence of overloading, abuse or field modification of units without Company approval shall void this warranty. No contingent liabilities will be accepted.

Damage incurred in transport is the responsibility of the carrier and is not covered by this warranty. Any damage detected upon receipt of equipment should be immediately reported to the carrier. If you need assistance filing your claim, please contact Advance Lifts.

PARTS LIST FOR MODEL DP-443-36-4865U

DESCRIPTION	QTY	PART #
CYLINDER:		
COMPLETE CYLINDER	1	P-D-13898
CYLINDER HOUSING	1	P-029-190
CYLINDER ROD	1	P-029-179
CYLINDER PISTON	1	P-A-1409
CYLINDER BEARING	1	P-A-11166
CYLINDER SEAL KIT	1	P-004-167
CONTROL BOX:		
TRANSFORMER	1	P-029-920
PRIMARY FUSE (KLDR1)	2	P-029-444
SECONDARY FUSE (FNM4)	1	P-000-747
MOTOR STARTER / CONTACTOR	1	P-000-692
MOTOR OVERLOAD	1	P-000-699
RELAY (R1)	1	P-001-744
RELAY (R2)	1	P-000-424
OVERLOAD RESET BUTTON	1	P-023-770
EMERGENCY STOP BUTTON	1	P-001-407
MISCELLANEOUS ELECTRICAL:		
MOTOR	1	P-003-373
PHOTO EYE	2	P-028-762
FUSED DISCONNECT	1	P-029-973
DISCONNECT FUSE	3	P-029-976
PUSHBUTTON	1	P-029-853
PLUG	1	P-001-671
BULB FOR FLASHING LIGHT	1	P-023-634
HYDRAULIC:		
PUMP	1	P-000-357
DIRECTIONAL VALVE	1	P-001-698
COUNTERBALANCE VAVLE	1	P-001-386
ADJUSTIBLE FLOW CONTROL	1	P-001-285
PRESSURE FILTER	2	P-001-319
SUCTION FILTER	1	P-001-319
HEXIGONAL FLOW CONTROL	2	P-015-396
MECHANICAL:		
MAIN PIVOT PIN	2	P-A-7240
MAIN PIVOT PIN RETAINING CLIPS	2	P-001-063
UPPER CYLINDER PIN	1	P-A-7239
LOWER CYLINDER PIN	1	P-A-0209
CYLINDER PIN RETAINING CLIPS	4	P-001-876
TRANSPORT WHEEL	4	P-029-369
TRANSPORT WHEEL PIN	4	P-A-0673
TRANSPORT WHEEL PIN CLIPS	8	P-029-608

PARTS LIST FOR MODEL DP-122-15-4854U

DESCRIPTION	QTY	PART #
CYLINDER:		
COMPLETE CYLINDER	1	P-029-790
CYLINDER HOUSING	1	P-029-699
CYLINDER ROD	1	P-029-667
CYLINDER PISTON	1	P-A-1409
CYLINDER BEARING	1	P-A-11166
CYLINDER SEAL KIT	1	P-004-167
CONTROL BOX:		
TRANSFORMER	1	P-029-921
PRIMARY FUSE (FLM 1)	2	P-029-221
SECONDARY FUSE (FNM 3.2)	1	P-002-591
MOTOR STARTER / CONTACTOR	1	P-000-692
MOTOR OVERLOAD	1	P-000-699
RELAY (R1)	1	P-001-744
RELAY (R2)	1	P-002-785
OVERLOAD RESET BUTTON	1	P-023-770
EMERGENCY STOP BUTTON	1	P-001-407
MISCELLANEOUS ELECTRICAL:		
MOTOR	1	P-030-021
PHOTO EYE	2	P-028-762
FUSED DISCONNECT	1	P-029-973
DISCONNECT FUSE	1	P-029-976
PUSHBUTTON	1	P-029-853
PLUG	1	P-015-166
BULB FOR FLASHING LIGHT	1	P-023-634
HYDRAULIC:		
PUMP	1	P-000-344
PRESSURE FILTER	1	P-001-319
SUCTION FILTER	1	P-001-319
MAIN FLOW CONTROL	1	P-001-302
MECHANICAL:		
MAIN PIVOT PIN	2	P-A-7240
MAIN PIVOT PIN RETAINING CLIPS	2	P-001-063
UPPER CYLINDER PIN	1	P-A-7733
LOWER CYLINDER PIN	1	P-A-0209
CYLINDER PIN RETAINING CLIPS	4	P-001-876
TRANSPORT WHEEL	4	P-029-369
TRANSPORT WHEEL PIN	4	P-A-0673
TRANSPORT WHEEL PIN CLIPS	8	P-029-608

PARTS LIST FOR MODEL DP-136-29-5454U

DESCRIPTION	QTY	PART #
CYLINDER:		
COMPLETE CYLINDER	1	P-D-14012
CYLINDER HOUSING	1	P-029-699
CYLINDER ROD	1	P-029-667
CYLINDER PISTON	1	P-A-1409
CYLINDER BEARING	1	P-A-11166
CYLINDER SEAL KIT	1	P-004-167
CONTROL BOX:		
TRANSFORMER	1	P-029-921
PRIMARY FUSE (FLM 1)	2	P-029-221
SECONDARY FUSE (FNM 3.2)	1	P-002-591
MOTOR STARTER / CONTACTOR	1	P-000-692
MOTOR OVERLOAD	1	P-000-699
RELAY (R1)	1	P-001-744
RELAY (R2)	1	P-002-785
OVERLOAD RESET BUTTON	1	P-023-770
EMERGENCY STOP BUTTON	1	P-001-407
MISCELLANEOUS ELECTRICAL:		
MOTOR	1	P-030-021
PHOTO EYE	2	P-028-762
FUSED DISCONNECT	1	P-029-973
DISCONNECT FUSE	1	P-029-976
PUSHBUTTON	1	P-029-853
PLUG	1	P-015-166
BULB FOR FLASHING LIGHT	1	P-023-634
HYDRAULIC:		
PUMP	1	P-000-344
PRESSURE FILTER	1	P-001-319
SUCTION FILTER	1	P-001-319
MAIN FLOW CONTROL	1	P-001-302
MECHANICAL:		
MAIN PIVOT PIN	2	P-A-7240
MAIN PIVOT PIN RETAINING CLIPS	2	P-001-063
UPPER CYLINDER PIN	1	P-A-7733
LOWER CYLINDER PIN	1	P-A-0209
CYLINDER PIN RETAINING CLIPS	4	P-001-876
TRANSPORT WHEEL	4	P-029-369
TRANSPORT WHEEL PIN	4	P-A-0673
TRANSPORT WHEEL PIN CLIPS	8	P-029-608

PARTS LIST FOR MODEL DP-148-41-5454U

DESCRIPTION	QTY	PART #
CYLINDER:		
COMPLETE CYLINDER	1	P-D-14336
CYLINDER HOUSING	1	P-030-936
CYLINDER ROD	1	P-030-938
CYLINDER PISTON	1	P-A-1409
CYLINDER BEARING	1	P-A-11166
CYLINDER SEAL KIT	1	P-004-167
CONTROL BOX:		
TRANSFORMER	1	P-029-921
PRIMARY FUSE (FLM 1)	2	P-029-221
SECONDARY FUSE (FNM 3.2)	1	P-002-591
MOTOR STARTER / CONTACTOR	1	P-000-692
MOTOR OVERLOAD	1	P-000-699
RELAY (R1)	1	P-001-744
RELAY (R2)	1	P-002-785
OVERLOAD RESET BUTTON	1	P-023-770
EMERGENCY STOP BUTTON	1	P-001-407
MISCELLANEOUS ELECTRICAL:		
MOTOR	1	P-030-021
PHOTO EYE	2	P-028-762
FUSED DISCONNECT	1	P-029-973
DISCONNECT FUSE	1	P-029-976
PUSHBUTTON	1	P-029-853
PLUG	1	P-015-166
BULB FOR FLASHING LIGHT	1	P-023-634
HYDRAULIC:		
PUMP	1	P-000-344
PRESSURE FILTER	1	P-001-319
SUCTION FILTER	1	P-001-319
MAIN FLOW CONTROL	1	P-001-302
MECHANICAL:		
MAIN PIVOT PIN	2	P-A-7240
MAIN PIVOT PIN RETAINING CLIPS	2	P-001-063
UPPER CYLINDER PIN	1	P-A-7733
LOWER CYLINDER PIN	1	P-A-0209
CYLINDER PIN RETAINING CLIPS	4	P-001-876
TRANSPORT WHEEL	4	P-029-369
TRANSPORT WHEEL PIN	4	P-A-0673
TRANSPORT WHEEL PIN CLIPS	8	P-029-608

Material Safety Data Sheet

1. Chemical product and company identification

Product name	CASTROL DUAL RANGE HV 46 HYDRAULIC FLUID
MSDS #	460278
Historic MSDS #:	None.
Code	460278
Product use	Hydraulic fluid For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Supplier	BP Lubricants USA Inc. 9300 Pulaski Highway Baltimore, Maryland 21220-2495
EMERGENCY HEALTH INFORMATION:	1 (800) 447-8735 Outside the US: +1 703-527-3887 (CHEMTREC)
EMERGENCY SPILL INFORMATION:	1 (800) 424-9300 CHEMTREC (USA)
OTHER PRODUCT INFORMATION	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

2. Composition/information on ingredients

Ingredient name	CAS #	% by weight
Distillates (petroleum), hydrotreated, heavy paraffinic (Highly refined mineral oil)	64742-54-7	85 - 90
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity (Highly refined mineral oil)	72623-85-9	5 - 15
White mineral oil, petroleum (Highly refined mineral oil)	8042-47-5	1 - 5
Proprietary performance additives.	proprietary	5 - 10

3. Hazards identification

Physical state	Liquid.
Color	Purple.
Emergency overview	CAUTION! MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
Routes of entry	Skin contact. Eye contact. Inhalation. Ingestion.
Potential health effects	
Eyes	May cause eye irritation.
Skin	Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. High pressure skin injections are serious medical emergencies. Injury will not appear serious at first; within a few hours, tissue will become swollen, discolored and extremely painful.
Inhalation	Mist : May cause respiratory tract irritation.
Ingestion	Causes gastrointestinal irritation and diarrhea.
Medical conditions aggravated by over-exposure	None identified.

See toxicological information (section 11)

4. First aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops. Accidental high pressure injection through the skin requires immediate medical attention.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms appear.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

5. Fire-fighting measures

Flammability of the product	May be combustible at high temperature.
Flash point	232 °C (Open cup) Cleveland.
Products of combustion	These products are carbon oxides (CO, CO_2).
Unusual fire/explosion hazards	This material is not explosive as defined by established regulatory criteria.
Fire-fighting media and instructions	In case of fire, use water fog, foam, dry chemicals, or carbon dioxide. Do not use water jet.
Protective clothing (fire)	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental release measures

Personal precautions	Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (See Section: "Exposure controls/personal protection"). Follow all fire fighting procedures (See Section: "Fire-fighting measures").
Environmental precautions and clean-up methods	If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal Information.
Personal protection in case of a large spill	Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

7. Handling and storage

Handling	Avoid contact with eyes. Avoid contact with skin and clothing. Wash thoroughly after handling.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Distillates (petroleum), hydrotreated, heavy paraffinic (Highly refined mineral oil)	**ACGIH (United States).** STEL: 10 mg/m³ 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral **OSHA (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity (Highly refined mineral oil)	**ACGIH (United States).** STEL: 10 mg/m³ 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral **OSHA (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral
White mineral oil, petroleum (Highly refined mineral oil)	**ACGIH (United States).** STEL: 10 mg/m³ 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral **OSHA (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral
Proprietary performance additives.	None assigned.

Control Measures Provide exhaust ventilation or other engineering controls to keep the airborne concentrations o vapors below their respective occupational exposure limits.

Hygiene measures Wash hands after handling compounds and before eating, smoking, using lavatory, and at th end of day. Appropriate techniques should be used to remove potentially contaminated clothing Wash contaminated clothing before reusing. Ensure that eyewash stations and safety shower are close to the work-station location.

Personal protection

Eyes Avoid contact with eyes. Chemical splash goggles.

Skin and body Avoid prolonged or repeated contact with skin. Wear protective clothing if prolonged or repeated contact is likely.

Respiratory None required; however, use of adequate ventilation is good industrial practice. If heated and ventilation is inadequate, use a NIOSH certified respirator with an organic vapor cartridge and P9 particulate filter.

Hands Wear protective gloves if prolonged or repeated contact is likely.

Consult your supervisor or S.O.P. for special handling directions

Consult local authorities for acceptable exposure limits.

9. Physical and chemical properties

Physical state Liquid.

Color Purple.

Pour Point -45 °C

Specific gravity 0.8697

Solubility Insoluble in cold water.

Viscosity Kinematic: 46.5 mm^2/s (46.5 cSt) at 40°C
Kinematic: 7.9 mm^2/s (7.9 cSt) at 100°C
SUS: 216 SUS at 37.7°C

Viscosity Index 141

10. Stability and reactivity

Stability and reactivity The product is stable.

Conditions to avoid Keep away from heat, sparks and flame. Keep away from sources of ignition.

Incompatibility with various substances Reactive with oxidizing agents.

Hazardous decomposition products Products of combustion: carbon oxides (CO, CO_2).

Hazardous polymerization Will not occur.

11. Toxicological information

Acute toxicity Toxicity testing not conducted.

At normal ambient temperatures this product will be unlikely to present an inhalation hazard because of its low volatility. May be harmful by inhalation if exposure to vapor, mists or fumes resulting from thermal decomposition products occurs.

Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhea.

Chronic toxicity

Carcinogenic effects No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

Mutagenic effects No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a mutagen.

Reproductive effects No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a reproductive toxin.

Teratogenic effects No component of this product at levels greater than 0.1% is classified by established regulatory criteria as teratogenic or embryotoxic.

12. Ecological information

Ecotoxicity No testing has been performed by the manufacturer.

13. Disposal considerations

Waste information Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities.

Consult your local or regional authorities.

14. Transport information

Not classified as hazardous for transport (DOT, TDG, IMO/IMDG, IATA/ICAO)

15. Regulatory information

U.S. Federal regulations

US INVENTORY (TSCA): In compliance.

TSCA 12(b) one-time export notification:: naphthalene; naphthalene; mequinol

This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: CASTROL DUAL RANGE HV 46 HYDRAULIC FLUID: Immediate (Acute) Health Hazard

SARA 313

Form R - Reporting requirements

This product does not contain any hazardous ingredients at or above regulated thresholds.

Supplier notification

This product does not contain any hazardous ingredients at or above regulated thresholds.

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):: naphthalene: 100 lbs. (45.36 kg); Cumene: 5000 lbs. (2268 kg); Benzene: 10 lbs. (4.536 kg); Toluene: 1000 lbs. (453.6 kg); Xylene: 100 lbs. (45.36 kg); naphthalene: 100 lbs. (45.36 kg); phosphorodithioc acid, O,O - di-C1-14- alkyl esters zinc salts ; phenol: 1000 lbs. (453.6 kg); Ethyl acrylate: 1000 lbs. (453.6 kg); Lead: 10 lbs. (4.536 kg); Arsenic: 1 lbs. (0.4536 kg); Cadmium: 10 lbs. (4.536 kg);

State regulations

No products were found.

WARNING: This product contains a chemical known to the State of California to cause cancer.
naphthalene; naphthalene; Ethyl acrylate; Arsenic

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
Toluene

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.
Lead; Cadmium; Benzene

Inventories

AUSTRALIAN INVENTORY (AICS): Not determined.

CANADA INVENTORY (DSL): In compliance.

CHINA INVENTORY (IECS): Not determined.

EC INVENTORY (EINECS/ELINCS): Not determined.

JAPAN INVENTORY (ENCS): Not determined.

KOREA INVENTORY (ECL): Not determined.

PHILIPPINE INVENTORY (PICCS): Not determined.

16. Other information

Label requirements

CAUTION!

MAY CAUSE EYE IRRITATION.
MAY CAUSE SKIN IRRITATION.

HMIS® Rating :

Health	**1**
Flammability	**1**
Physical Hazard	**0**
Personal protection	**X**

National Fire Protection Association (U.S.A.)

History

Date of issue 07/07/2005.

Date of previous issue 07/02/2005.

Prepared by Product Stewardship

Notice to reader

NOTICE : This Material Safety Data Sheet is based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any damage or injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of the product.