

ADVANCE LIFTS

Installation, Operation and Maintenance Manual for the Following Equipment:

ALL HIGH REACH DUMPERS

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: _____

Note: Please provide us with the serial number shown on the metal name tag affixed to your Dumper when you call for service, so that we can properly identify your exact equipment.

***ADVANCE LIFTS, INC.** furnished one manual with each unit. Additional manuals are available at \$25.00 each.

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SECTION 2. (CONTINUED)

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.

Please be sure that no person is allowed to 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 P7-1, 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: Engineering Dept.

Thank you for purchasing our product.

SECTION 3. 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 practice.

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 judgment 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 4. INSTALLATION INSTRUCTIONS

Equipment and Supplies Required:

1. Equipment to lift the Advance Lifts High Reach Dumper into its location and upright. Advance supplies four (4) lifting points for moving the unit and two (2) lifting points for standing the unit upright.
2. Material for shimming, grouting and anchor bolts. We recommend Rawl Power-Stud, Wedge Anchors, Wej-It or the equivalent bolts in the 7/8" x 6" size. The studs must be embedded at least 4-1/2" into the concrete.
3. Standard hand tools.
4. A heavy pry bar for shifting the equipment and a drill for installing the lag down studs.

**DANGER ! DO NOT REMOVE ANY SHIPPING RESTRAINTS
UNTIL UNIT IS IN FINAL LOCATION**

Removing the unit from the transport:

1. Standard High Reach Dumpers are shipped on their sides due to freight height restrictions.
2. There are four (4) lifting points on the unit. (See Figure 1) The unit must be lifted from these points.
3. Hook chains or straps to the lifting eyes. **Caution:** unit may tip slightly in one direction or the other as the lifting points do not span the actual center of gravity. Adjusting the chain lengths will level the unit but it is not necessary to off load this unit level.

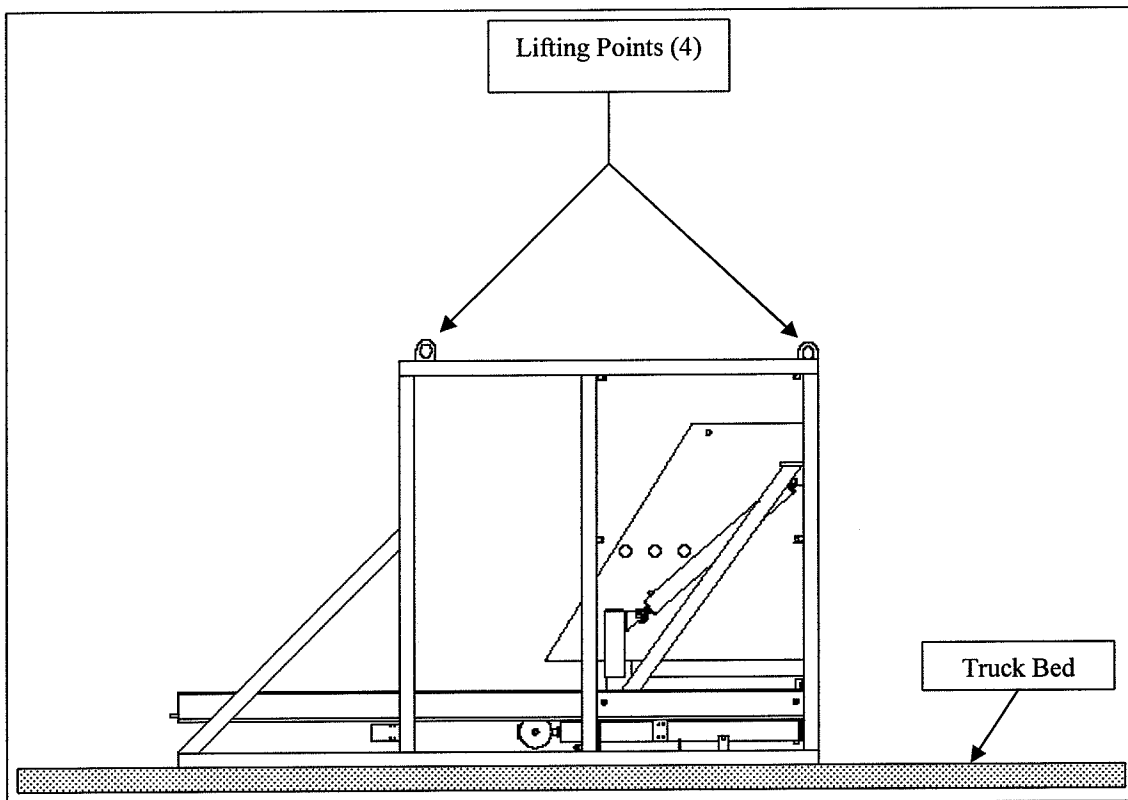


Fig. 1

SECTION 4. INSTALLATION INSTRUCTIONS (Continued)

Installation Procedure:

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.

**DANGER ! DO NOT REMOVE ANY SHIPPING RESTRAINTS
UNTIL UNIT IS IN FINAL POSITION**

1. Move the unit to its usage area using all four (4) lifting points as show on page P 4-1, figure 1. A forklift may be used but fork extensions that span the width of the unit are required.
2. Insure that the floor in the final location is clean and level.
3. Remove the two (2) chains or straps from the lower lift points, (see figure 2).
4. With the chains or straps secured to the upper lift points only, raise and tilt the unit to an upright position.
5. Position the unit in its final location and begin the lag down procedure.
6. Typically, there are four (4) lag down locations on the base frame.

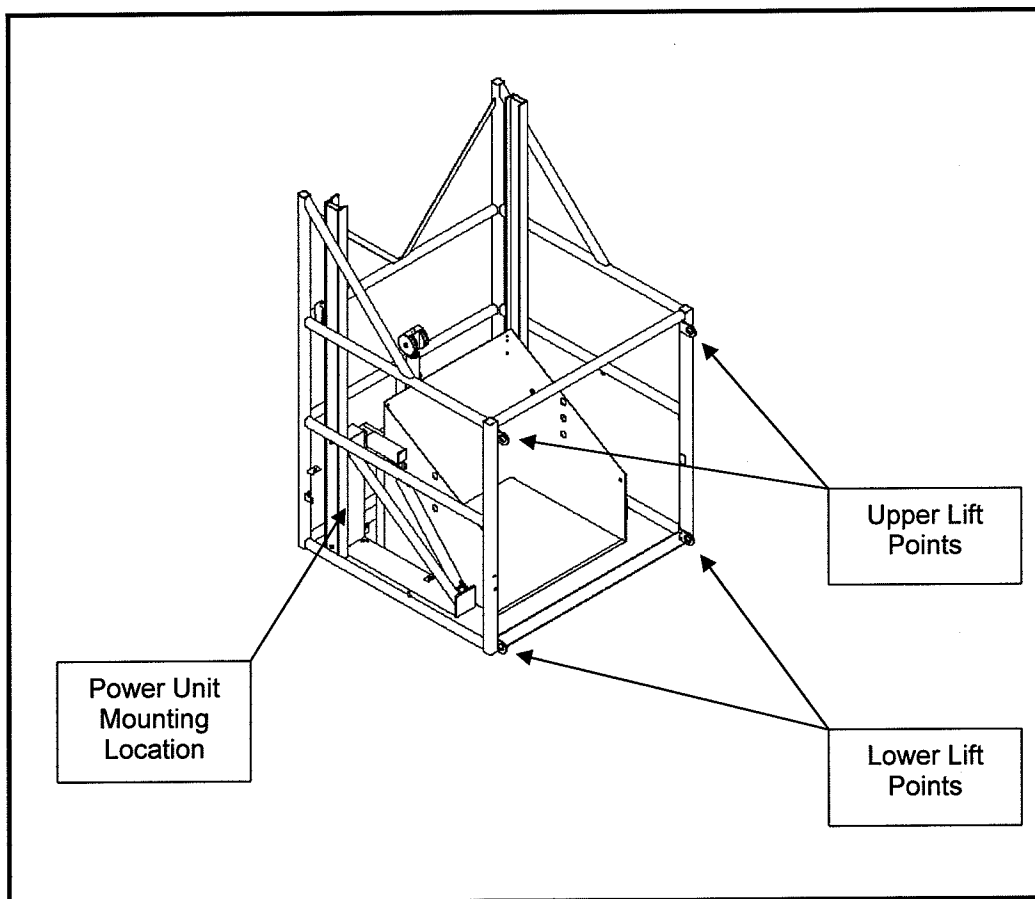


Fig. 2

SECTION 4. INSTALLATION INSTRUCTIONS (Continued)

7. Power unit is shipped loose and will need to be mounted to the location as shown in figure 2.
8. Hoses are marked with corresponding letters and must be connect to the proper locations. Do not over tighten fittings.
9. This unit is pre-wired at the factory but must still be checked for proper motor rotation when it is plugged in because this is strictly a function of your building's wiring. Follow the electrical diagrams in the electrical section of this manual to insure that you have the correct motor rotation! Continued operation of a hydraulic pump in the wrong rotation will destroy it! You can find the right rotation by making short motor jogs and watching the clear suction line from the reservoir to the pump. If the rotation is correct, the fluid will leap up the line to the pump. If the rotation is wrong, there will be no fluid in the suction line. You may change the rotation of a 3-phase motor by simply exchanging the positions of any two of the three power lead connections.
Caution ! – continued operation of a reversed direction hydraulic pump for about 30 seconds can burn up the pump, so use short jogs.
10. Raise the unit halfway (never fully raise the Dumper until it is lagged down) 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. Check the reservoir oil level with equipment fully lowered fluid should be 1" from the top of the reservoir.
11. Once the dumper is properly positioned, you may begin to lag the unit in place.
12. Drill the lag down holes and using 7/8" x 6" 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. Check that the unit is level, if not, shim and grout under the base frame for continuous support. A slight side to side slope will cause early wear on all the moving parts of the Dumper. Tighten the lag bolts.
13. Clean up any debris or spilled fluid, as this may give a false sign of trouble or cylinder leak.
14. Operate the equipment through a few more complete cycles, holding the down control an extra 20 seconds after the dumper is fully lowered to bleed any remaining air from the cylinders.
15. Raise the unit one more time and inspect the area for any fluid spills. Be sure to clean all fluid.
16. Meet with the facility manager or maintenance foreman and turn over this manual with the reminder that no one should 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.
17. Instruct the user(s) in the unit's proper operation, safety precautions and equipment capacity.

SECTION 5. OPERATING INSTRUCTIONS

Hydraulic High Reach 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. Being certain that there are no obstructions under the container.
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.

Test operate the equipment:

1. Raise the dumper carriage and note that the control is a constant pressure, dead-man type. When the control button is pressed up or down, the Dumper should move in the same direction. When you release the buttons, the unit should stop moving promptly and hold its height. If it does not, call your maintenance personnel.
2. 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 should cause you to stop using the Dumper.
3. If you elect to test load the equipment, be sure that you do not exceed the capacities shown on the nameplate. Overloading may cause structural damage that may not show up for some time, but will reduce the life and capacity of the unit. If you have any questions about testing the unit, call the engineering department at the factory at 1-800-843-3625.

Daily operation:

1. All personnel should 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 should check to see that the Dumper is operating properly and smoothly. Any problems should 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 should be centered before raising or lowering the Dumper as this will help insure even wear on all moving parts.

SECTION 5. OPERATING INSTRUCTIONS (Continued)

Container Retaining Bar, If Used:

1. This is a safety feature must be used whenever a container is placed in the carriage for dumping.
2. The retaining bar is inserted into the holes located on the sides of the carriage. The bar should rest above the container and will prevent the container from falling out when the Dumper is rotated.
3. There are two quick release pins to keep the retaining bar in place. These pins must always be used whenever the Dumper is operated.
4. Select the proper hole height for your container. Use the lowest retainer hole possible that is the closest to the top of your container.
5. Place your container in the carriage.
6. Insert the retaining bar across the carriage.
7. Insert the quick-release pins into the retaining bar on the outside of the carriage.
8. Now the Dumper is ready to be rotated.

Deflectors, If Used:

1. These are used to funnel the material that you are dumping into the receiving container.
2. There are three positions that you can choose from. The first position is with the Deflector Plate against the carriage side panel. The second is with the Deflector Plate about 26° and the third is about 35° from the side panel. A fourth position is removing the Deflectors entirely.
3. The positions are adjusted by moving the Deflector Stop. Simply remove the bolt attaching the Stop to the Carriage Back Plate and insert the bolt in one of the two holes or remove the Stop completely. If you decide to not use the Deflectors, you will need to store the components in a safe location that does not interfere with the operation of the Dumper.
4. To change the Deflector Plate angle, simply loosen the retaining bolt and swing the Deflector Plate into the desired position.
5. If the Deflector Plate is placed against the side panel, we have a slotted hole to allow you to secure the Plate, as close as possible, to the side panel to prevent material from getting between the Plate and the side panel. Securely tighten the Plate.
6. If you are using one of the angular settings, first securely tighten the Deflector Stop at the desired angle. Then swing the Deflector Plate, snugly, against the Stop and securely tighten the Plate.
7. This is also a safety feature of the Dumper. If your receiving container is not as wide as the Dumper opening, the Deflectors will prevent any material from dumping outside the receiving container.

SECTION 6. 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 replacement parts recommended by the manufacturer.
3. Do not let the equipment stay in disrepair; fix little problems while they are little or some of them 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.
2. Check the hydraulic fluid level, should be 1" below the top of the reservoir.
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 on an annual basis.

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.

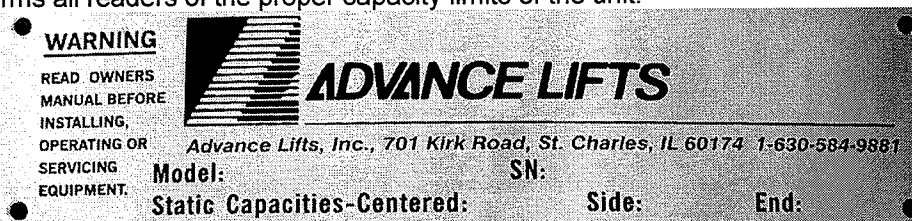
SECTION 7. WARNING LABELS

The warning and informational labels normally attached to the Dumper are shown below and their locations for proper mounting are shown on page P 7-3. 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.



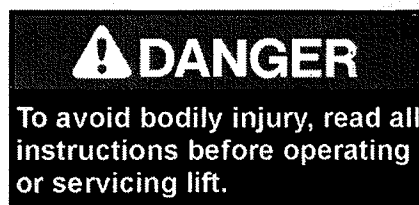
Label 2: This is the formal nameplate and it should never be removed from the unit. The serial number on this nameplate is critical in identifying the specific unit for correct parts and service information. This plate also informs all readers of the proper capacity limits of the unit.



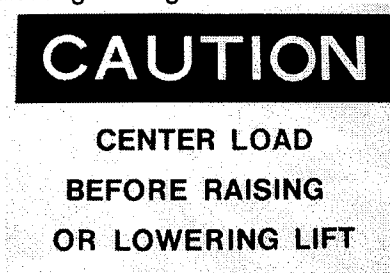
Label 3: This is a "Warning" label to not ride on the unit.



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



Label 6: This is a "Caution" label indicating loading information.



SECTION 8. GENERAL HYDRAULIC INFORMATION

1. The hydraulic cylinder(s) will need to have the packing and seals replaced after a period of time, depending on the use and environmental conditions. It is normal maintenance, just like changing the oil in an automotive engine. However, maintenance personnel should know the difference between leakage and weeping:
 - A. 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.
 - B. 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.
 - C. See repacking under Cylinder Repair Procedures on pages P 8-5 and P 8-6.
 - D. 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.
 - E. 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) and NPT fittings. The fittings are not interchangeable, know the difference!
 - B. Be careful when securing JIC fittings not to over tighten and crack them. Swivel fittings are especially vulnerable and should be only be tightened enough to stop leakage.
 - C. If leakage continues after tightening the fittings, then inspect the fittings for burrs on the mating edges.

Oil Recommendations and Seal Compatibility

Fluids:

1. This unit is supplied with an ISO 46 Hydraulic Fluid and is good for a temperature range of -10 to +100 degrees Fahrenheit.
2. Be sure not to 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. If you wish to switch from one fluid to another, drain the reservoir and system, then refill with the new fluid.
3. A biodegradable and fire retardant fluid is also available. Call the factory for its name because it is necessary to change some seals and/or hoses for total system compatibility, depending upon the specific model Dumper that you have.
4. There are three reservoir sizes. The following chart gives the amount of Dexron III fluid that will be needed when completely refilling the system.

Dump Height
All

Volume of Hydraulic fluid
10 Gallons

SECTION 8. GENERAL HYDRAULIC INFORMATION (CONTINUED)

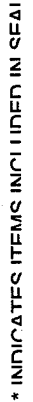
Seals:

Generally, the seals in the unit are Buna-N-Nitrile and polyurethane. The hoses are either PVC for suction lines or braided wire. Always call the factory about special fluids to verify compatibility issues or concerns.

Options:

1. For very warm temperature ranges of +120 to +140 degrees Fahrenheit, you may switch to 10W30 motor oil. If the room temperatures are expected above 140-degrees, call the factory.

TYPICAL DP SERIES



SECTION 8. GENERAL HYDRAULIC INFORMATION (CONTINUED)

Repair Procedures for Dumper Cylinders

Tools & Supplies Required:

1. Lubricant and hydraulic fluid that will match the fluid in the system for topping off the reservoir when finished. (Standard fluid ISO 46 Hydraulic fluid)
2. A five-gallon bucket for the fluid from the cylinders.
3. Wrenches to disconnect hydraulic fittings.
4. Two small screwdrivers.
5. Emery cloth.
6. Clean, lint free cloth and hose caps.
7. 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.
8. Cylinder hone (Craftsman glaze breaker #9K4633 or equivalent).
9. Cylinder Repair drawing on page P8-4.

Cylinder Removal:

1. Hold the controller 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.
2. Undo the hydraulic hoses from the cylinder and plug the hoses to prevent contamination.
3. Remove the cylinder from the Dumper by first removing the lifting chains.
4. Remove lower cylinder retaining pin and remove cylinder from structure.

Cylinder Disassembly:

1. Secure the cylinder with a rod through the housing boss, item #6. Do not use a vise, which will crush or otherwise damage the housing.
2. Use a pick or pointed dental tool to remove the outside retaining ring, item #13, in front of the cylinder bearing, item #3. Remove the spacer ring, slide the front bearing into the cylinder then remove the second retaining ring, item #12.
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, item #14 or snap ring adjacent to the piston, item #4, then slide the piston and bearing off the rod. If the hex nut is assembled with Locktite, a small amount of heat may help break the nut loose. Be sure that all components are placed on clean surfaces to avoid contamination.

SECTION 8. GENERAL HYDRAULIC INFORMATION (CONTINUED)

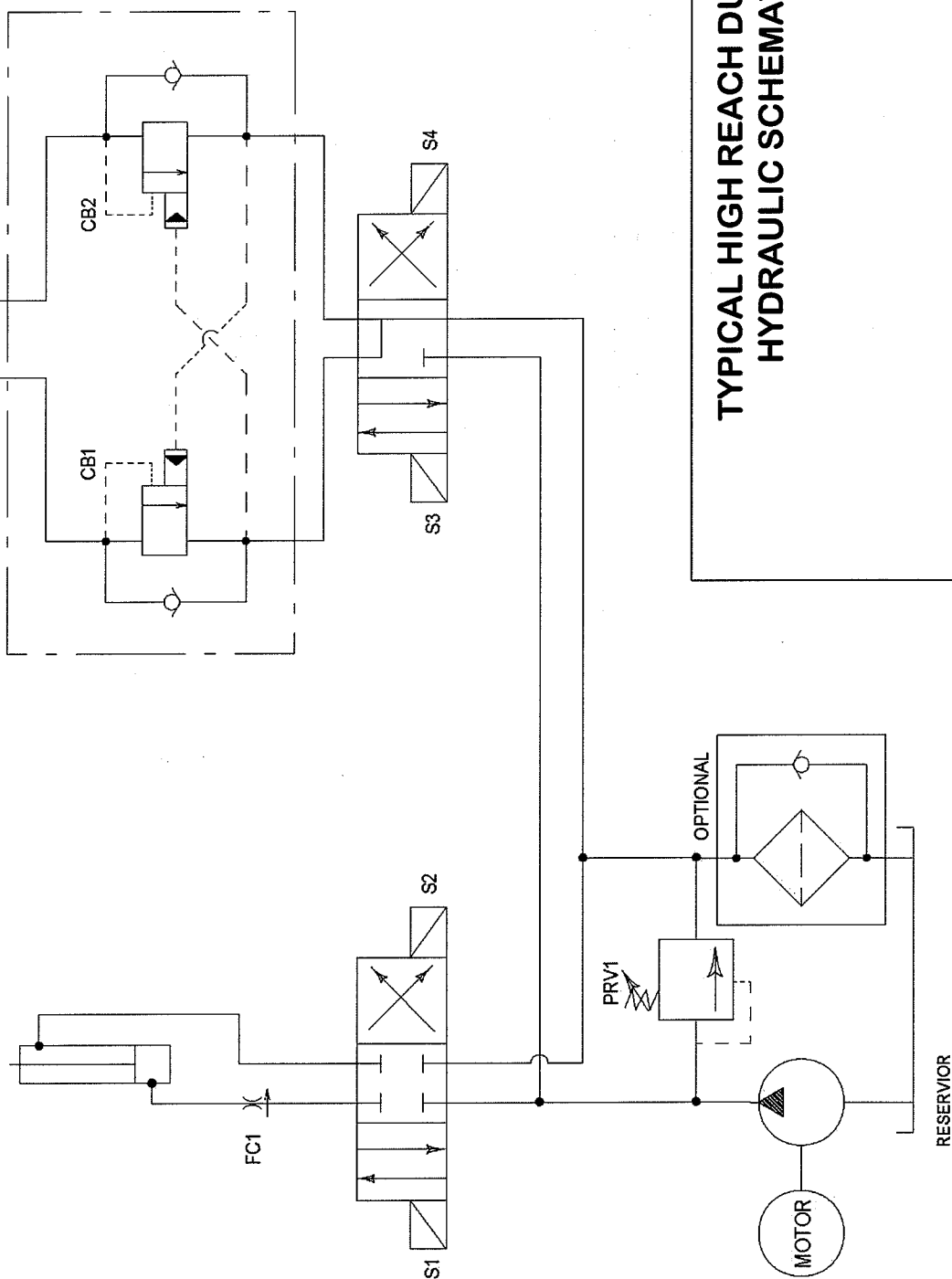
Cylinder Repacking and Inspection:

1. Carefully inspect the entire housing, item #1, 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 invested 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, item #16, on the bearing by using a screwdriver to bend the seal inward to collapse and remove it. Inspect the groove.
4. Lubricate and insert a new wiper with your finger, sliding it into its groove. Depending upon temperature, the rod wiper may slide in much easier if it is warmed in hot water, dried, lubricated and inserted.
5. Remove the Backup rings, items #17 & 18, and the Quad rings items #19 & 20. Be careful to leave the grooves nick free, clean and dry. Replace the above parts with the new ones from the kit. Lightly grease the I.D. of the seals with Pennzoil Premium 707L Wheel Bearing Grease or the equivalent.
6. Remove the wear ring, item #22. Leave the grooves nick free and clean.
7. The bearing may now be slid back onto the rod.
8. Begin repacking the piston. Clean 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, item #21, 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, should rest against the retaining ring or nut.
10. Reinstall the retaining ring or nut using Locktite if the fastener is a plain nut, torqueing the nut to 600 ft./lbs. 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. Clean up any spilled oil to insure that it is not interpreted as a leak later.
3. 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. Check the oil it is 1" from the top of the reservoir when the unit is in the fully lowered position.
4. The Dumper is now ready to go back into service.

MODEL	PRV1 (PSI)	FC1 (GPM)	FC2 (Ø)	CB1 (PSI)
HRDP-2XXX-XXXX				
HRDP-4XXX-XXXX	1850	6.0	.067	1900
HRDP-6XXX-XXXX		6.0	.067	



TYPICAL HIGH REACH DUMPER HYDRAULIC SCHEMATIC

SECTION 9. GENERAL ELECTRICAL INFORMATION

The motor supplied as standard is a 208-230/460V 3-phase motor, with connection diagrams on the outside of the motor for low (230V) or high (460V). As any standard motor is rated for 10% of voltage variation, this motor will operate properly, within ratings of 208-230 and 460V, 3-phase supply.

If this motor is intended for 208V line use, some caution is advised. If your motor is a 230 volt motor and your 208V line voltage drops to 207 volt (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.

SECTION 9. GENERAL ELECTRICAL INFORMATION (CONTINUED)

Electrical Information on Intermittent Duty High Torque Motors

High torque motor is ultra-compact with higher current draw than a standard (same HP) large frame motor and must always be wired accordingly.

Heavy power wiring must be single circuit direct from the power panel, without extra circuits attached (lighting, tools, etc.). Do not plug into a typical lighting circuit. #12 wire is listed below in some areas where #14 would work, however, most building constructions are #12 minimum. Wires are sized for 2% loss per NEC Handbook, 18th Edition, 1996, Article 215-2.

Up to 1-1/2 HP High Torque Motor:

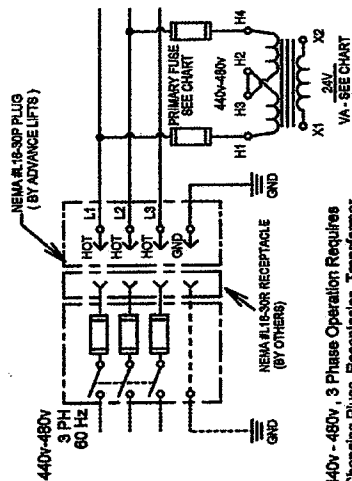
	<u>Wiring Run Wire Size</u>			<u>Full Load Motor Amperage</u>	<u>Dual Element Fuse Size</u>	<u>Circuit Breaker Size</u>
	40 ft.	100ft.	200 ft.			
115V, 60Hz, 1Ph.	#8	#6	#4	19.4	40A	50A
230V, 60Hz, 1Ph.	#12	#12	#10	9.7	25A	25A
230V, 60Hz, 3Ph.	#12	#12	#10	10	17-1/2A	25A
460V, 60Hz, 3Ph.	#12	#12	#12	5	10A	10A

This is a guideline, not intended to supersede the National Electrical Code.

A motor could fail to lift rated load, burn out, draw high current or fail if:

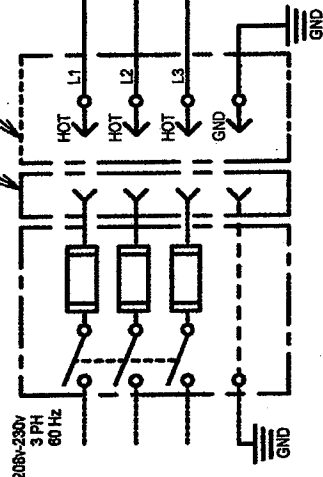
1. Long wiring runs of too small a wire size are used.
2. Low voltage conditions in general at the supply source exist.
3. Running against the upper travel physical stop of the Dumper, causing the pump to work constantly at relief valve pressure.
4. Low oil level in the reservoir causing the pump/motor to starve for fluid.
5. Improper duty cycle (not allowing the motor time to cool).
6. Loss of (1) of the 3-phase lines due to a blown fuse or faulty line.

440v - 480v , 3 Phase Change Detail



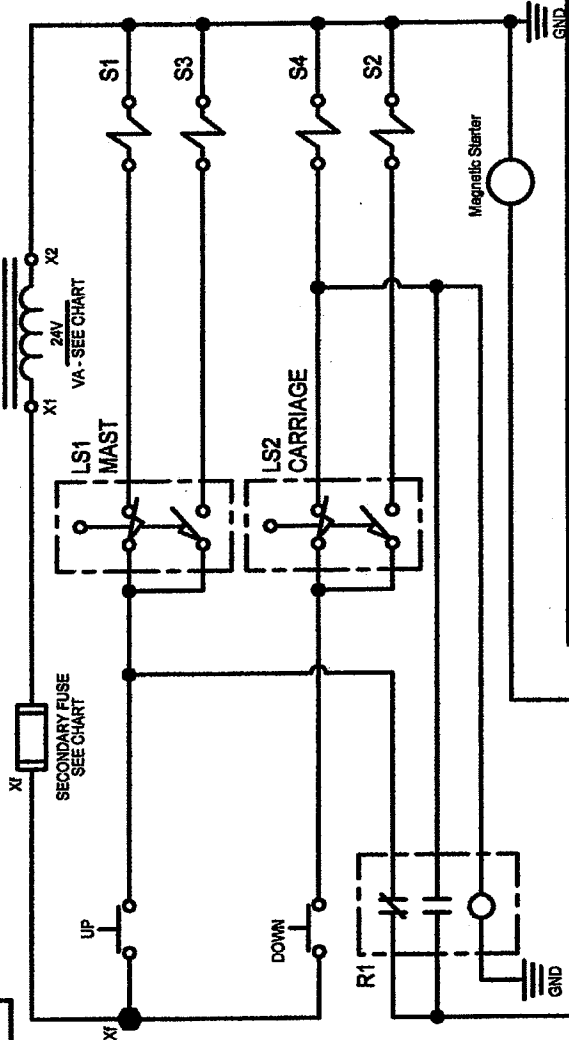
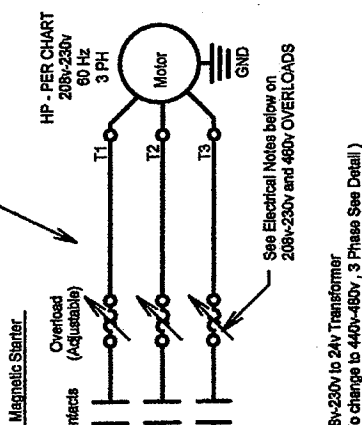
440v - 480v , 3 Phase Operation Requires Changing Plugs, Receptacles, Transformer Jumper Clips, Motor wiring, changing Motor Overload Protection, and replacing voltage sticker.

A U.L. Listed Fused Disconnect and the appropriate branch circuit protection per THE NATIONAL ELECTRICAL CODE shall be provided by the installer.



208v - 230v , 3 Phase

NEMA #15-20R RECEPTACLE (BY OTHERS)
NEMA #15-20P PLUG (BY ADVANCE LIFTS)



TYPICAL THREE-PHASE ELECTRICAL SCHEMATIC

H.P.	MOTOR R.P.M.	FULL LOAD AMPERAGE (208v-230v / 480v)	TRANSFORMER SIZE	PRIMARY FUSE SIZE (208v-230v/480v)	SECONDARY FUSE SIZE
5	1725	14.8-14.7	100 VA	KLDR 1/4LDR 1/2	FNM 4

SECTION 10. TROUBLESHOOTING

Warning: Only qualified service personnel should undertake service work on hydraulic Dumpers. Service personnel should 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 should be performed beneath a raised carriage.

<u>Symptom</u>	<u>Probable Cause</u>	<u>Corrective Action</u>
Equipment does not raise.	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.

SECTION 10. TROUBLESHOOTING (CONTINUED)

<u>Symptom</u>	<u>Probable Cause</u>	<u>Corrective Action</u>
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.
Motor heats or labors excessively	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)
	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.

SECTION 10. TROUBLESHOOTING (CONTINUED)

<u>Symptom</u>	<u>Probable Cause</u>	<u>Corrective Action</u>
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 11. 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.



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.

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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.

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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 of vapors below their respective occupational exposure limits.

Hygiene measures

Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers 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 P95 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 mm²/s (46.5 cSt) at 40°C

Kinematic: 7.9 mm²/s (7.9 cSt) at 100°C

SUS: 216 SUS at 37.7°C

Viscosity Index

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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.
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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)

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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.

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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.

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