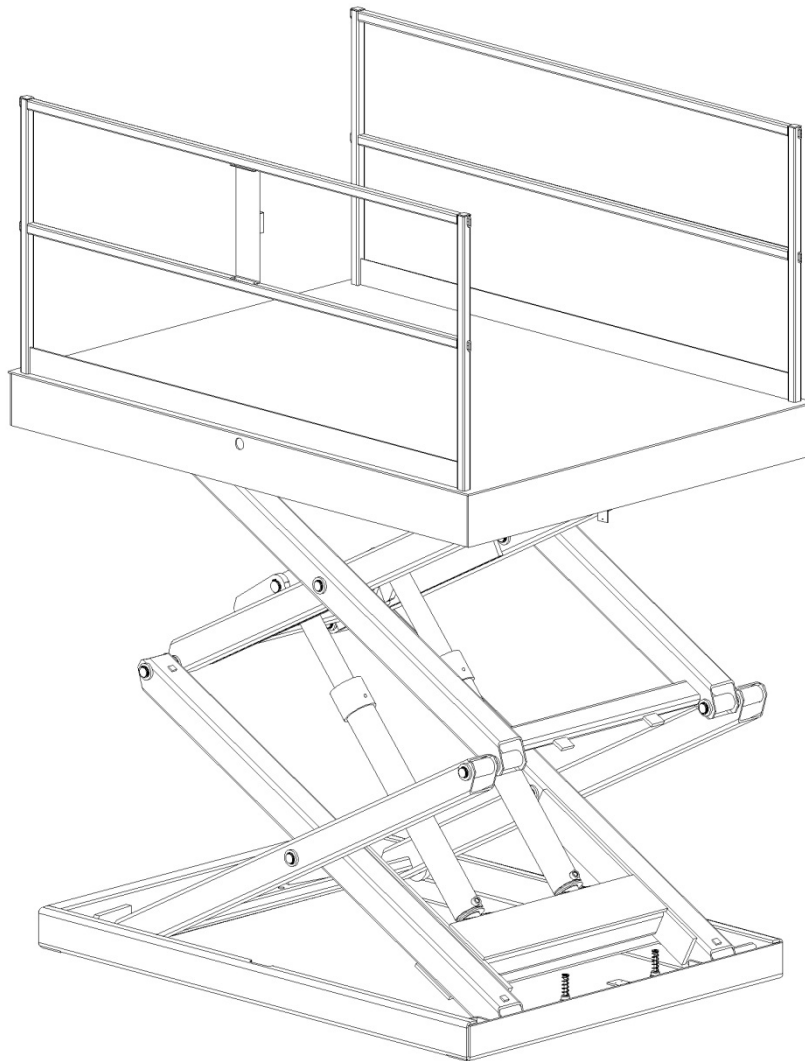

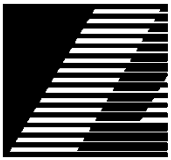


# **ADVANCE LIFTS**

*BFL SERIES LIFTS*



 A circular icon with a blue background. Inside, a white silhouette of a person is shown from the side, holding a document and a wrench, representing a user consulting a manual.	<p><b>NOTICE</b></p> <p>This manual is an important document. Keep it with the machine or located where readily available to operators and maintenance personnel for reference purposes.</p>
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# ADVANCE LIFTS

## Installation, Operation and Maintenance Manual for the Following Equipment:

All BFL Series Lifts

This manual contains specific information for your equipment, see manual inserts.

In any correspondence with your distributor, you will need the following information:

Model Number \_\_\_\_\_ Serial Number \_\_\_\_\_

Installation location: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### NOTICE

**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, Section 4, for proper procedure.**

Distributor Information: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Advance Lifts, Inc.**  
**701 S. Kirk Road**  
**St. Charles, IL 60174-3428**  
**Toll Free 1-800-843-3625**  
**Sales Fax 1-630-584-9405**  
**Parts and Service Fax 1-630-584-6837**  
**E-mail: [Parts@advancelifts.com](mailto:Parts@advancelifts.com)**

\*Advance Lifts, Inc. furnishes one manual with each unit. Additional manuals are available for \$25.00 each.

## SECTION 2. INDEX & INTRODUCTION

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<b>Index &amp; Introduction</b> .....	<b>Section 2</b>
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**\*Mandatory reading before attempting installation.**

**OPTIONS:**

**ADVANCE LIFTS ENCLOSURE**

**ADVANCE LIFTS LANDING LOCKS**

## SECTION 2. (CONTINUED) INTRODUCTION

Congratulations, the equipment that you have purchased is of the highest quality available. Advance Lifts industrial scissors lifts are designed and manufactured to comply with ANSI Standard MH29.1, "Safety Requirements for Industrial Scissors Lifts". Your Advance Lift will provide you with many years of trouble free service in return for the minimal maintenance described in this manual.

Please be sure that no individual is allowed to operate the lift until they have been fully familiarized with the operating instructions in this manual. Also, insure that at least one person at the lift site is familiar with the maintenance section of this manual and is assigned responsibility for doing the maintenance on a regular basis.

Please note that the lift has a metal nameplate attached to it that contains information such as the model number, capacities, and serial number. Do not remove the nameplate. Be sure that no operator ever exceeds the capacities shown on the nameplate or they may injure personnel or cause damage to the lift.

Also, be sure to have the serial number of the lift handy if you have to call your distributor. That number identifies your specific lift and will allow your distributors personnel to give you the most thorough and timely assistance possible.

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

Thank you for purchasing our product.

## SECTION 3. RESPONSIBILITIES OF OWNERS & USERS

**Basic Principles:** Owners/users shall apply sound principles of safety, training, inspection, maintenance, and expected operating environment.

It shall be the responsibility of the owner/user to advise the manufacturer where deflection may be critical to the application.

**Manuals:** Owners/users shall keep and maintain a copy of the operating and maintenance manual(s) and ensure its availability to operating and maintenance personnel.

**Inspection and Maintenance:** It shall be the responsibility of the users to inspect and maintain the industrial scissors lift as required to ensure proper operation. The frequency of inspection and maintenance shall be based upon the manufacturer's recommendations and be compatible with operating conditions and the severity of the operating environment.

Industrial scissors lifts that are not in proper operating condition shall be immediately removed from service until repaired. Maintenance and repairs shall be made by a qualified person and the repairs shall be in conformance with the manufacturer's recommendations.

**Maintenance Safety Precautions:** Before adjustments and repairs are started on an industrial scissors lift, the following precautions shall be taken as applicable:

1. Remove the load from the platform.
2. Lower platform to the full down position, if possible or secure by maintenance device and/or blocking as described by the manufacturer to prevent unintended platform movement.
3. Relieve system pressure from all circuits before loosening or removing any components.
4. All controls in the "off" position and all operating features secured from inadvertent motion by brakes, blocks, or other means.
5. Disconnect power and follow established owner/user lockout/tag out policies.
6. Follow precautions and directions as specified by the manufacturer.

**Replacement Parts:** When parts or components are replaced, they shall be replaced with parts or components approved by the original manufacturer of the industrial scissors lift.

**Maintenance Training:** The owner/user shall ensure only qualified personnel inspect and maintain the industrial scissors lift in accordance with the sections: Inspection and Maintenance, Replacement Parts and Operator Training and the manufacturer's recommendations as described in the maintenance manual.

**Operator Training:** An owner/user, who directs or authorizes an individual to operate an industrial scissors lift, shall ensure that the individual has been:

1. Trained in accordance with the manufacturer's operating manual.
2. Made aware of the responsibilities of operators as outlined under the Operators Section of this manual.
3. Retrained, if necessary, based on the owners/user's observation and evaluation of the operator.

**Modifications:** Modifications and additions shall not be performed without the manufacturer's prior written approval. Where such authorization is granted, capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

## SECTION 3. RESPONSIBILITIES OF OWNERS & USERS (Continued)

### Responsibility of Operators

**Basic Principles:** Operators shall apply sound principles of safety and good judgment in the application and operation of the scissors lift, with consideration given to its intended use and expected operating environment. Since the operator is in direct control of the industrial scissors lift, conformance with good safety practices is the responsibility of the operator. The operator shall make decisions on the consideration for the fact that his or her own safety as well as the safety of other personnel on or near the scissors lift is dependent on those decisions.

**General Training:** Only personnel who have received general instructions regarding the inspection, application and operation of industrial scissors lifts, including recognition and avoidance of hazards associated with their operation, shall operate an industrial scissors lift. Such topics covered shall include, but not necessarily be limited to, the following issues and requirements:

1. A pre-start inspection
2. Responsibilities associated with problems or malfunctions affecting the operation of the industrial scissors lift
3. Factors affecting stability
4. The purpose of placards and decals
5. Workplace inspection
6. Safety rules and regulations
7. Authorization to operate
8. Operator warnings and instructions
9. Actual operation of the industrial scissors lift. Under the direction of a qualified person, the trainee shall operate the industrial scissors lift for a sufficient period of time to demonstrate proficiency in actual operation of the industrial scissors lift.

**Prestart Inspection:** Before use each day or at the beginning of each shift, the industrial scissors lift shall be given a visual inspection and functional test including but not limited to the following:

1. Operating and emergency controls
2. Safety devices
3. Air or hydraulic system leaks
4. Electrical cables and wiring harness
5. Loose or missing parts
6. Wheels and casters
7. Nameplates, precautionary and instructional markings and/or labeling
8. Guardrail system
9. Items specified by the manufacturer

**Problem or Malfunctions:** Any problems or malfunctions that affect the safety of operations shall be repaired prior to the use of the industrial scissors lift.

**Before Operations:** The operator shall:

1. Read and understand the manufacturer's operating instruction(s) and user's safety rules or have them explained
2. Understand all labels, warnings, and instructions displayed on the industrial scissors lift or have them explained

## SECTION 3. RESPONSIBILITIES OF OWNERS & USERS (Continued)

### Responsibility of Operators

**Workplace Inspections:** Before the industrial scissors lift is used and during use, the operator shall check the area in which the industrial scissors lift is to be used for possible hazards such as, but not limited to:

1. Bumps, floor obstructions and uneven surfaces
2. Overhead obstructions and electrical hazards
3. Presence of unauthorized persons
4. Other possible unsafe conditions as noted in the operating manual.

**Operator Warnings and Instructions:** The operator shall ensure the operation of the industrial scissors lift is in compliance with the following:

1. **Slope.** The industrial scissors lift shall only be operated on flat and level surfaces.
2. **Guardrail system.** Guardrails shall be installed and positioned, and access gates or openings shall be secured per the manufacturer's instructions.
3. **Distribution of load.** The load and its distribution on the platform and any platform extension(s) shall be in accordance with the manufacturer's rated capacity for that specific configuration.
4. **Maintaining overhead clearance.** The operator shall ensure that adequate clearance is maintained from overhead obstructions and energized electrical conductors and parts.
5. **Point of Operation.** The operator shall not place any part of their body under the platform.
6. **Personnel footing.** Personnel shall maintain firm footing on dock lifts and work access lifts while working thereon. Climbing by occupants on the guardrail system is prohibited. The use of planks, ladders, or any other devices on the platform for achieving additional height is prohibited.
7. **Precaution for moving equipment.** When other moving equipment or vehicles are present, special precautions shall be taken to comply with the safety standards established for the workplace.
8. **Reporting problems or malfunctions.** The operator shall immediately report to a supervisor any problem(s) or malfunction(s) that become evident during operation. The operator shall ensure all problems and malfunctions that affect the safety of operations are repaired prior to continued use.
9. **Capacity limitation.** Rated capacity shall not be exceeded when loads are transferred to the platform at any level.
10. **Work area.** The operator shall ensure the area surrounding the industrial scissors lift is clear of personnel and equipment before lowering the platform.
11. **Battery charging.** Batteries shall be charged in strict accordance with the lift manufacturer's instructions.
12. **Securing the industrial scissors lift.** The operator shall comply with the means and procedures provided to protect against use by an unauthorized person(s).
13. **Altering safety devices.** Safety devices shall not be altered or disabled.
14. **Modifications.** Modifications or alterations of an industrial scissors lift or the fabrication and attaching of frameworks or the mounting of attachments for holding tools or materials onto the platform or the guardrail system shall only be accomplished with prior written permission of the manufacturer.
15. **Assistance to the operator.** If an operator encounters any suspected malfunction or any hazard or potentially unsafe condition relating to capacity, intended use or safe operation the operator shall cease operation of the industrial scissors lift and request further instruction from the owner/user.
16. **Problems or malfunctions.** Any problem(s) or malfunction(s) that affect the safety of operations shall be repaired prior to the use of the industrial scissors lift.

## SECTION 4. INSTALLATION INSTRUCTIONS

### INSTALLATION NOTES:

- A. If this job was ordered with Enclosures and/or Landing Locks, read and understand the accompanying installation manuals for these products before attempting to install this product.
- B. A level and rigid installation is critical to the success of the installation, step #6 of the installation instructions cannot be overlooked.
- C. Some systems are designed with a timed travel function. If lift does not reach the desired upper or lower targets within the programmed period, the unit will shut down. Pressing either the up or down button will reset the timer and resume function. **Notice:** Continual timing out may damage the pump.

### INSTALLATION INSTRUCTIONS:

1. Move the lift to the usage area; insuring the mounting surface is clean and level. If slings are used, encircle the entire lift, not just the platform. If unit is being lowered into a pit, make final hose connections before lowering into the pit. See # 2. **Note:** If enclosures are used, lift shall be orientated so the Maintenance Devices can be deployed from the lower enclosure opening without going under the lift.
2. Connect the hydraulic hoses to lift. NOTE: The hoses, valve block and connection points at the lift are marked with "A", "B" & "C". The letters correspond with the connection points at the power unit. Do not cross hose connections or lift will not function. **Note:** if you are using Landing Locks, additional hydraulic connections are necessary, see Landing Lock Manual.
3. If a pit is being utilized, lower lift into pit and square the unit to the pit using a heavy pry bar. Be careful with the hoses when lowering lift into pit. Do not cut the steel bands until the lift is in the final position and no further movement is required.
4. Plug hydraulic power unit into power supply. Switch the controls to "Maintenance". Note: motor will run anytime the controls are switched to "Maintenance. Using the "Maintenance" controls raise and lower the unit several times to begin the air bleeding process. Continued use will completely remove all air from system. No other bleeding is necessary. It is recommended that the power unit be located within visual range of lift so that any maintenance operations can be observed when using the "maintenance mode".
5. Once unit is in final position, raise unit fully then deploy the maintenance devices. Lower unit onto devices and lock out the electrical system to disable unit movement. Follow your companies lock out and tag procedures.

#### **NOTICE**

**Before securing the unit to the floor, shim or grout the entire base frame assembly to achieve a perfectly level installation/ if unit is not level, proper installation is not possible. Continuous base frame support is essential for proper installation.**



## SECTION 4. INSTALLATION INSTRUCTIONS (CONTINUED)

6. Level the unit using steel shims. Shim or grout any portion of the base frame that is not fully supported by the surface.
7. Lag the unit in place using 3/4" x 6-1/4", "Rawl-Studs" or wedge anchors in the holes provided, minimum embedment depth of 3-3/8".
8. The upper travel target switch is mounted and prewired. The upper travel target reflector must be field mounted so that the bottom of the reflector is used to signal the power unit to shut down at the desired raised height.
9. Lower proximity switch mounting hole is located on the base frame near the point where scissors legs and base frame meet. To set the lowered height, place a metal straight edge between the base frame structures over the top of the proximity switch. Insert the proximity switch from below and raise it until it senses the straight edge. Install the locking nut and tighten.
10. Connect the pushbutton wiring and bi-parting gate wires from the junction box on the base frame to the control box per the provided schematic.
11. Install pushbutton station(s) if unit is a "Call/Send" and wire to the control box per the provided schematic.
12. Operate the unit several times making certain the lift stops flush with the upper level. Adjust the photo eye reflector and test for accuracy, when complete, secure the reflector.
13. Clean any debris or spilled fluid as they may later be misinterpreted as mechanical trouble or a cylinder leak. Due to the rigors of shipping it may be necessary to tighten some hose fittings. Remove maintenance bars and lower the unit.
14. Instruct user(s) in the proper operation of the lift, safety precautions and equipment capacity. Supply maintenance personnel with this service manual.

## SECTION 5. OPERATING INSTRUCTIONS

Hydraulic scissors lifts 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 lift. They must use the safety devices provided and be careful not to surprise anyone in the area with the movement of the lift.

### **Pre-operational checks:**

1. Check all electrical wiring and connections to be sure that they are completed properly and are operational.
2. Check for obstructions or debris that may interfere with the safe operations of the lift.
3. Be sure that all personnel in the area are a safe distance away from the lift and aware that you are about to operate it.
4. If there are any optional safety devices such as gate interlocks and proximity switches, check them for proper operation.

### **Test operate the equipment:**

1. Station yourself so that you will always see the equipment when it is in operation. Never operate the equipment blind!
2. Raise the equipment and by pressing the "UP" and "DOWN" buttons with the unit in automatic mode or use the "Call/Send" buttons to raise and lower the lift, depending on the lift configuration.
3. Adjust upper proximity switch to stop platform at desired raised height, if needed.
4. Cycle the equipment several times to be sure that it is operating smoothly with no jerking or sudden movement. On initial startup, there may be some air in the lines or the cylinders 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, contact your maintenance personnel. Any evidence of binding or scraping in the operation shall cause you to immediately stop using the lift.
5. Check all safety devices for proper operation.
6. 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 stresses that may not show up for some time, but will diminish the life and capacity of the unit. If you have any questions about testing the unit, call our customer service department at 1-800-843-3625.

### **Daily operation:**

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

## SECTION 5. OPERATING INSTRUCTIONS (CONTINUED)

### Daily operation (continued):

3. **WARNING!** Operators must be alert to personnel in the vicinity of the lift. Avoid any surprises to these personnel in regard to movement of or the position of the lift. Never operate unit if you cannot see it and the personnel around it.
4. On the first use of the lift each day, the operator shall check to see that the lift is functioning properly and smoothly. All safety devices shall be in place and operating correctly.
5. Loads shall be centered before raising or lowering the lift as this will help insure even wear on all moving parts

## SECTION 6. MAINTENANCE INSTRUCTIONS

### **DANGER**

**Only authorized personnel should perform inspection or maintenance and service procedures. Unauthorized personnel attempting these procedures do so at the risk of severe injury or death.**

1. Always remember that machinery with large moving parts can seriously injure you.
2. Read and understand this manual before attempting any service work.

### **DANGER**

**Always use the maintenance device when working under the lift. Failure to use the maintenance devices properly can result in serious injury or death.**

3. Always use the maintenance device when working on the unit in the elevated position or reaching under the platform. (See photo on page 6-3, at the end of this section for proper positioning and engagement of the maintenance device).
4. When using the maintenance device, adhere to the following rules:
  - A. The unit must be unloaded.
  - B. Be sure the maintenance devices are properly engaged.
  - C. Hold the “Maintenance Down” button an extra 10 seconds when lowering onto the maintenance devices to be sure that all the weight of the lift is on the bars and hydraulic pressure is relieved.
  - D. Follow your companies Lock Out/Tag Out procedures to prevent accidental movement of the lift by other personnel.
  - E. Spend as little time as possible under the lift.
5. Only use replacement parts recommended by the manufacturer.
6. Do not let the equipment stay in disrepair; fix small problems before they become big problems. A unit in disrepair can become a severe hazard if left unattended.
7. Inspect the equipment on a regular schedule, preferably monthly.
8. Never work on the hydraulics or electrical systems unless the unit is fully lowered or properly sitting on the maintenance device.
9. Never apply a load to the equipment until the base frame is continuously supported.
10. Never expect to hold the leg assemblies open by simply lifting one end of a platform. The only safe way to hold a lift’s legs open is the factory designed maintenance device.

## SECTION 6. MAINTENANCE INSTRUCTIONS (CONTINUED)

### **Routine Maintenance:**

#### **Monthly:**

Check the hydraulic fluid level. When checking fluid levels, make sure the unit is fully lowered. Proper fluid level is 1" from the top of the reservoir.

Be sure the maintenance device(s) are properly engaged before performing maintenance checks 2 through 6 or reaching beneath a raised lift. (See instructions 3, 4 and 10 above).

1. Clean all debris from the vicinity of floor and pit mounted units in order to avoid interference with the lift mechanism or rollers.
2. Check for presence and proper seating of all snap rings and clips on all axles, cylinder and rollers.
3. Check rollers, pins and bushings for any signs of wear such as flat spots, missing fasteners, or dislodged bearing material.
4. Check the hydraulic fittings for cracks or leaks and clean up any weepage on or beneath the cylinder.
5. Check hoses and electrical lines for abrasions or other abuse and check for snug connections.
6. Operate the unit and check for any abnormal noise or vibrations.

**Seasonal or Semiannual Maintenance:** Advance Lifts recommends that you change your hydraulic fluid annually. Change hydraulic fluid for ambient temperature change if appropriate or if there is any evidence of accumulated condensation creating water contamination. Oil should be changed at least once per year under normal operating conditions and more frequently in dirty environments or under heavy usage.

## MAINTENANCE DEVICE INSTRUCTIONS

### **DANGER**

**Failure to properly adhere to lift blocking procedures is to risk the sudden and uncontrolled descent of the lift during maintenance or inspection. A falling lift can cause severe injury or death.**

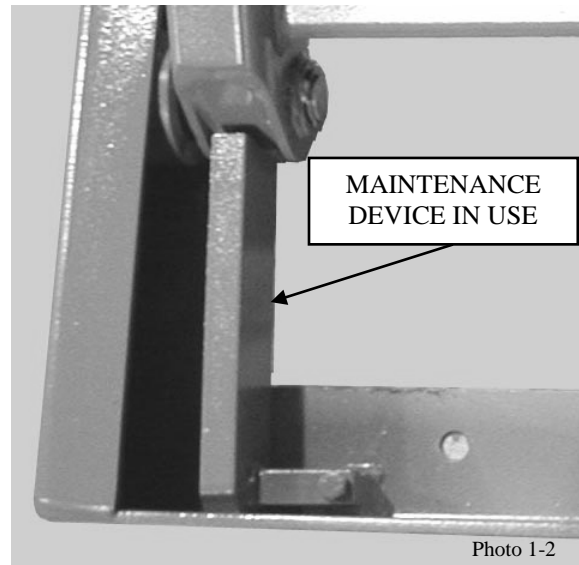
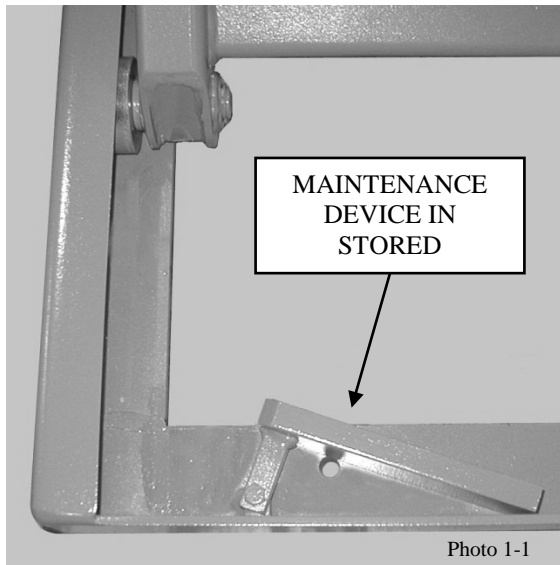
**Always** use the maintenance device for any service or maintenance. **Never** go or reach under the lift unless both maintenance devices are securely in place and the power to the unit has been disconnected from its power source to prevent others from operating the lift. **Never** use the maintenance device with a load on the platform.

### **Maintenance Device Usage**

1. Rotate maintenance device until they come into contact with the base frame. Always use both devices when doing maintenance.
2. Once both bars are in position, lower the unit on to them. Be certain the devices are positioned as shown in photo 1-2.
3. Once the unit has been lowered onto the device, continue pressing the “Down” button to relieve all system pressure making hydraulic disassembly possible.
4. When storing the maintenance device be certain they are rotated completely as shown in photo 1-1 or they may be damaged or interfere with the unit collapsing fully.

### **NOTICE**

**Never use the lift unless the maintenance devices are properly stored or they may be damaged by the scissors legs.**



SECTION 7. REQUIRED IDENTIFICATION AND LABEL PLACEMENT



Label #1 placed on all sides of the platform.



Label #2 placed on all sides of the platform.



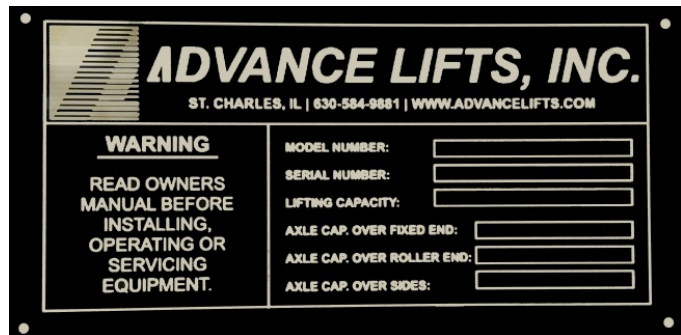
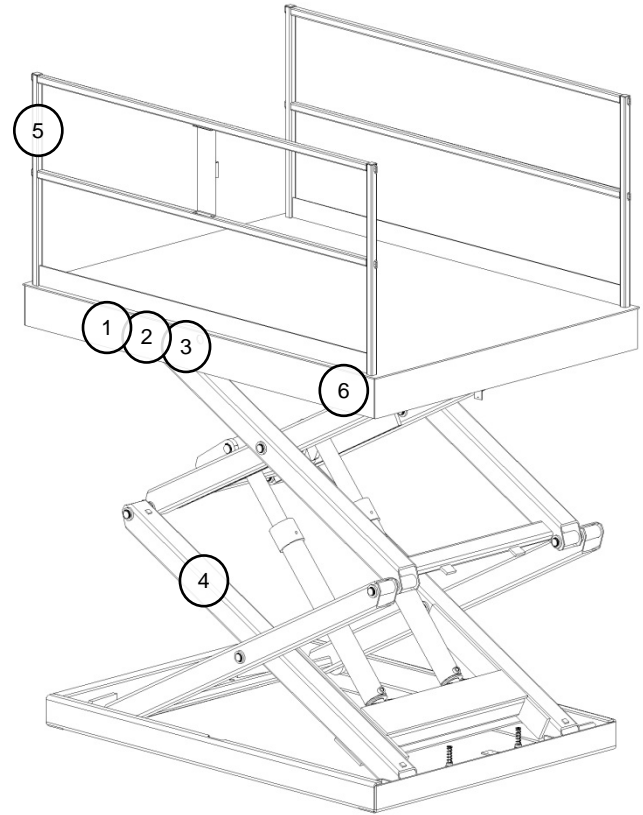
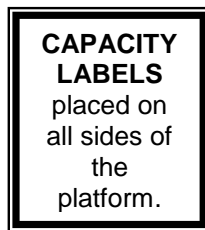
Label #3 placed on all sides of the platform.



Label #4 placed on outside of lower leg assemblies.



Label #5 placed on guardrail uprights.



#6 Advance Lifts identification and data plate. Data plate located on side of platform.

## SECTION 8. HYDRAULIC DETAILS

### 1. General Hydraulic Information

- A. Over time, all hydraulic cylinders will require replacement seals depending on usage and environmental conditions. Seal wear and replacement is normal maintenance.
- B. Always be careful when working around cylinders, not to nick the extended rod or dent the cylinder casing, as this may cause damage to cylinder seals.
- C. If you elect to repaint any part of the lift, cover exposed rods with plastic or soluble grease, which can be removed after painting to insure that no paint sticks to the rods and damages the seals.

### 2. General precautions:



Failure to relieve operating system pressure could result in the sudden and unexpected release of high-pressure fluids (or air) during maintenance and/or repair of the lift and result in severe injury or death.

- A. Be sure that all pressure is relieved from the hydraulic system before disassembling any components. Continue to hold the “Maintenance Down” control for several seconds after fully lowering the unit on its maintenance device or the ground, before opening a hose line or hydraulic component.
- B. Always be careful to avoid contamination entering the system. Be especially careful with the ends of hoses, which may fall into oil dry, or dirt. If you suspect contamination, flush the system and components.

### 3. Hydraulic fittings, sealant and torque's:

- A. Advance Lifts may be equipped with either NPT fittings (tapered), or SAE fittings (with O-ring seals), or JIC fittings (37° flare). None of these fittings are interchangeable, know the difference.
- B. Be careful when tightening NPT fittings not to over-tighten and crack them. Swivel fittings are especially vulnerable and shall only be tightened enough to stop leaking.
- C. If leakage persists after tightening the fittings fairly hard, inspect fittings for burrs on the mating edges or replace the fitting.
- 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 tape does not break off and contaminate the system. You may substitute pipe sealant with Teflon paste from “Pro Lock” or “Loctite”, but again do not over apply. Never use sealant or tapes on JIC, or SAE O-ring fittings.
- E. Be extremely careful not to over-tighten SAE fittings, thread the fitting finger tight and then tighten the nut on the fitting.
- F. Never reuse old Teflon tape. Once a connection has been opened, remove all tape and apply fresh tape.



## OIL RECOMMENDATIONS AND SEAL COMPATIBILITY

### Fluids:

1. The current standard hydraulic fluid is a multi-viscosity ISO-46 group II base oil 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.
2. Unless approved by the Advance lifts engineering department do not use any other fluid. Brake fluids and other hydraulic fluids may damage the system's seals or hoses. If it is required to switch from one fluid to another, drain the reservoir and system completely, and then refill with the new fluid.
3. Biodegradable and fire retardant fluids are available. Contact the factory for specifications. It may be necessary to change some seals and/or hoses for total system compatibility, depending upon the specific model lift and the requested fluid.

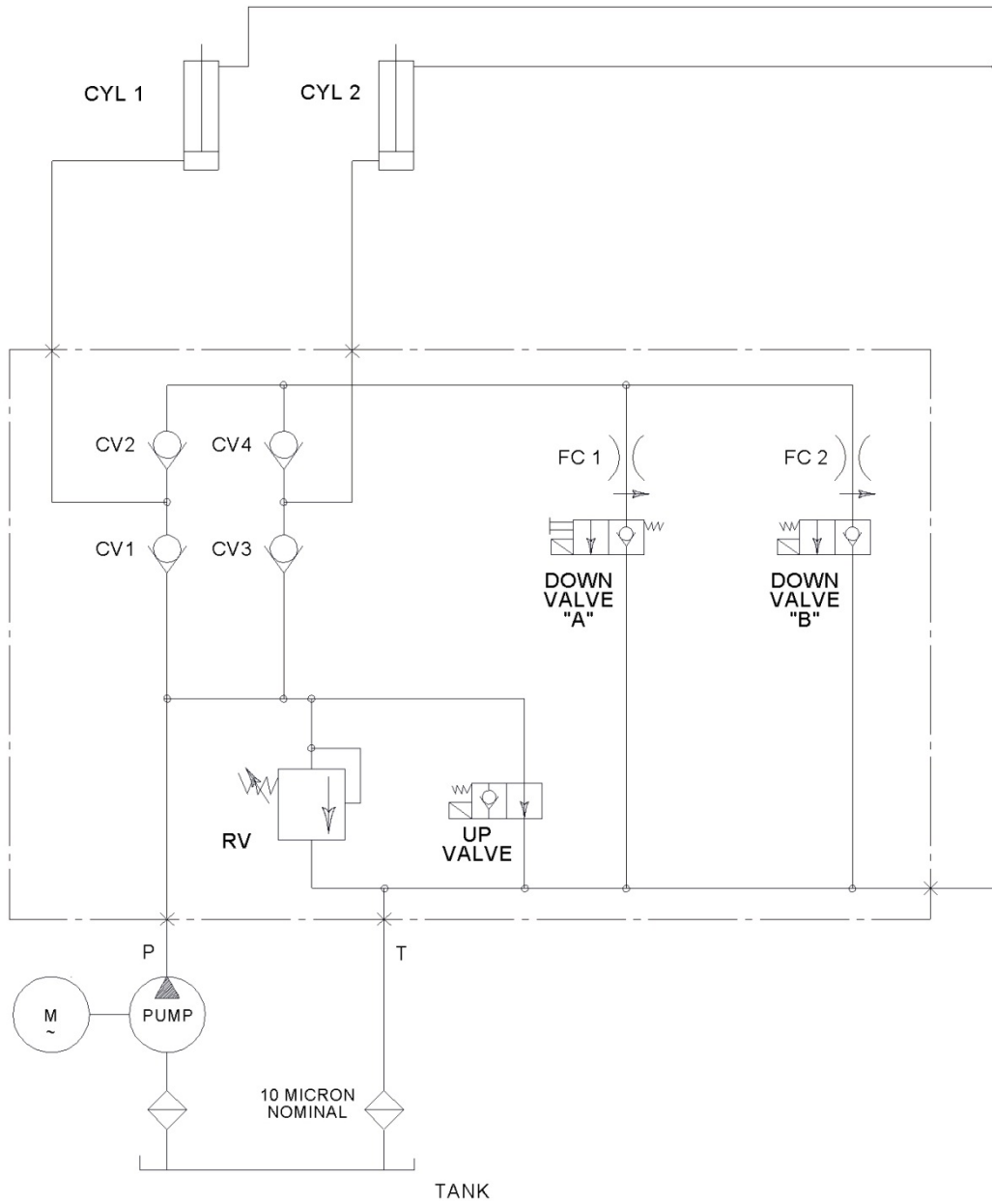
### Options:

For oil options, contact the factory, 800-843-3625.

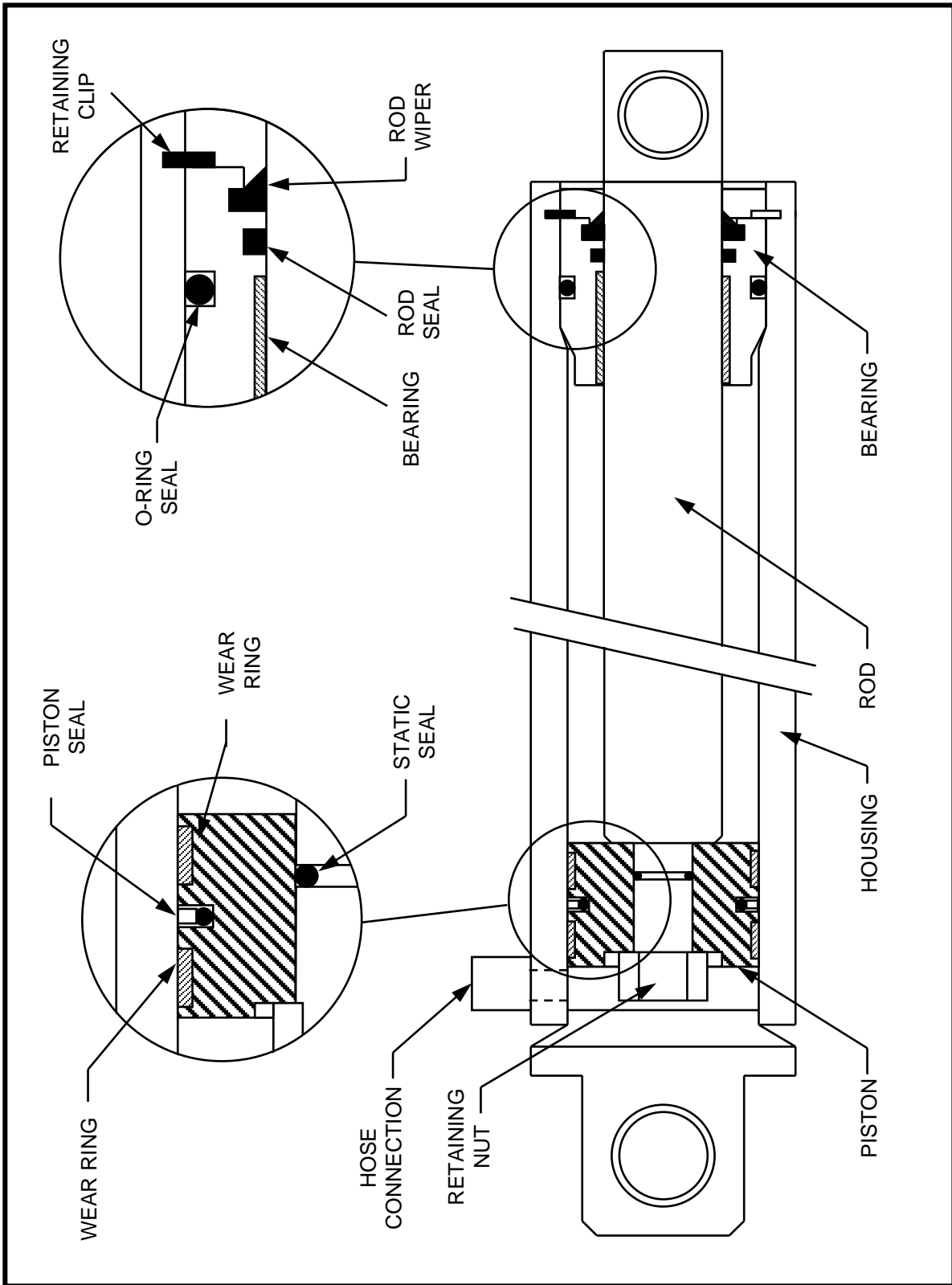
### Seals:

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

# HYDRAULIC SCHEMATIC



# BFL SERIES CYLINDER



## Cylinder Removal Procedure for BFL-Series Lifts

### Tools & Supplied required:

Factory recommended hydraulic fluid  
Snap-ring pliers  
Hammer  
Drift pin

### Cylinder Removal, BFL-Series units:

**NOTE: Some BFL-Series cylinders can weigh in excess of 500lbs. great care should be taken when removing cylinders.**

1. Raise the empty lift and settle it securely on its maintenance devices. See page P 6-3 for proper lift blocking.
2. Once settled securely, depress the "Maintenance Down" control an additional 20 seconds to relieve any pressure from the hydraulic system. Disconnect the electrical supply following your companies Lock Out/Tag Out procedures.
3. Disconnect the hydraulic hoses from the cylinder and plug the hose to prevent contamination.
4. Secure the cylinder with a web sling connected to the structure. Remove the lower pin and remove the cylinder from the scissors legs. On larger units or units with a heavy lifting capacity, secure the web sling to a chain hoist from above. Note: It may be necessary to weld a chain hook to the underside of the platform to achieve this. On very large units, it may be necessary to remove the platform prior to removing the cylinder. Call the factory with any questions concerning your particular unit, 800-843-3625.
5. Carefully remove the lower pin and using the chain hoist, lower the cylinder to the ground
6. Place the hose connection end of the cylinder in a 5-gallon bucket and force the cylinder closed to drain the hydraulic fluid from the cylinder. Do not reuse the fluid unless you are sure it is contamination free by careful straining.

### Cylinder Repair:

All Advance Lifts cylinders use a high grade two-piece seal design comprised of a standard size O-ring with a glass-filled PTFE cap. These seals are not replaceable in the field without specialized tools. Advance recommends that you consult with a professional who has the necessary tools to install the seals.

## SECTION 9. ELECTRICAL DETAILS

### **General Electrical Information (BFL-Series Units):**

The motor supplied as standard on BFL-Series units is a 208/230/460v 3-phase motor, with connection diagrams on the outside of the motor for low voltage (230V) or high voltage (460V). This motor is also rated for 208V. As any standard motor is rated for  $\pm 10\%$  of voltage variation, this motor will operate properly, within ratings, at 208, 220, 230, 240, 440, 460, and 480V, 3-phase supply.

If motor is intended for 208V line usage, some caution is advised, if your motor is a 230 volt motor, and your 208V line voltage drops to 207 volts, (a drop of only  $\frac{1}{2}\%$ ), the motor will be operating at  $-10\%$  in a marginal region. Wiring runs and actual voltage become very important. If you 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  $\pm 10\%$  motor.

To reverse the direction of rotation of a 3-phase motor, reverse any two of the three power leads to the motor. On single-phase motors, see wiring diagram on motor.

### **Field Changes in Voltage, 3-Phase (230V to 460V):**

- A. Change transformer primary connections to 460V.
- 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 high (460V).
- D. Change plug and receptacle for power, if required.

### **Field Changes in Voltage, 3-Phase (460V to 230V):**

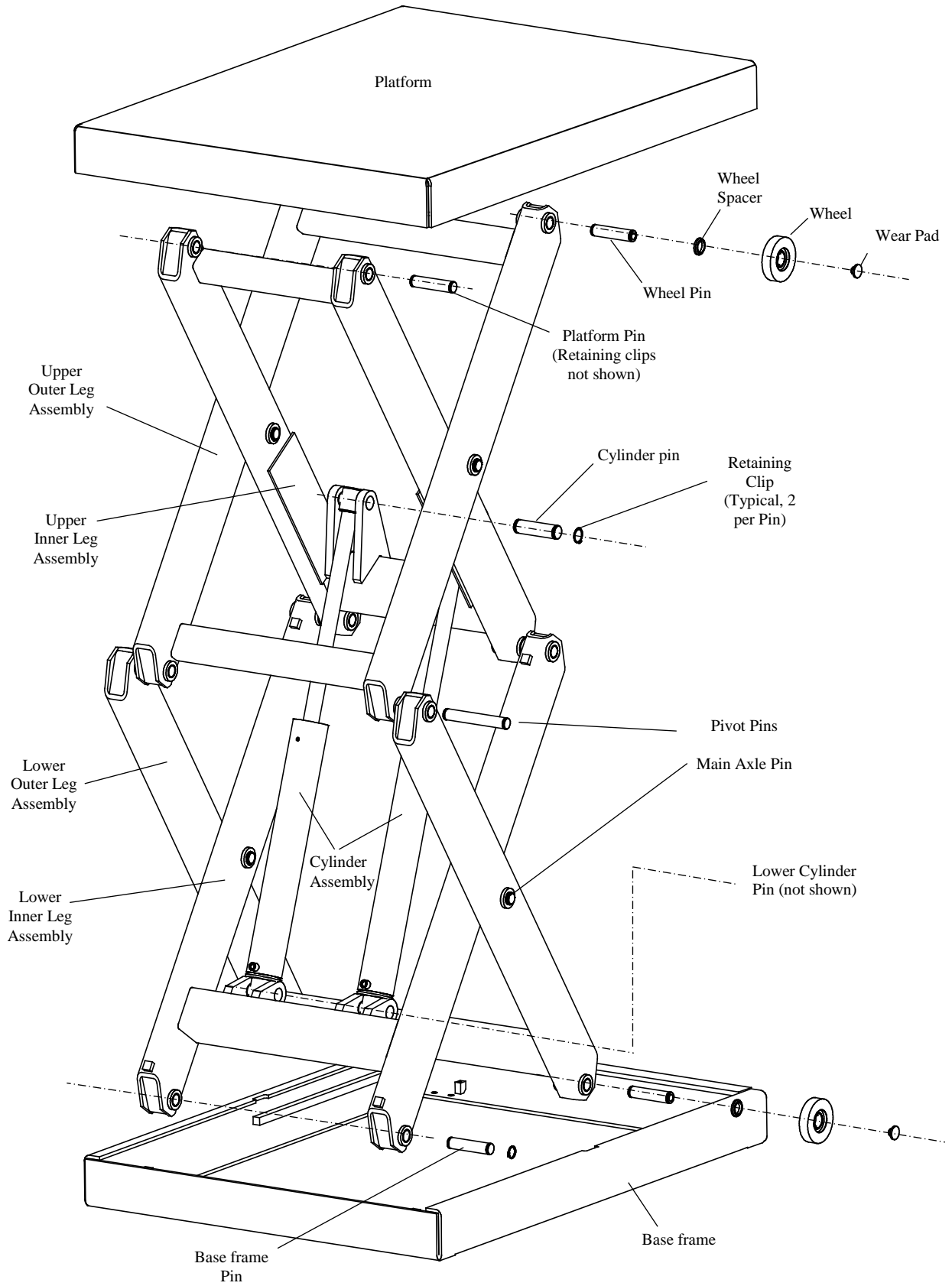
- A. Change transformer primary connections to 230V.
- B. Change overload protection to proper value as per currents in motor table. Order new overload; adjust new overload to motor full load current setting. Insure the overload is set to "manual" reset, not "automatic" to insure the equipment cannot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

**IMPORTANT: When making voltage changes, ensure motor rotation is correct.**

## ELECTRICAL SCHEMATIC

(INSERT ELECTRICAL SCHEMATIC HERE)

# SECTION 10. BASIC PART IDENTIFICATION



## SECTION 11. TROUBLESHOOTING HINTS

**Warning!** Only qualified service personnel shall undertake service work on hydraulic lifts. The service person 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 the lift. Contact your distributor if you need assistance in troubleshooting your equipment.

**Warning!** No work shall be performed beneath a raised lift platform unless the maintenance device is deployed in accordance with Section 6 of this manual

Symptom	Probable Cause	Corrective Action
<b>Equipment does not raise, motor is running</b>	Load is too heavy	Reduce weight to rated load
	Motor rotation is reversed	On three phase units, 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 three 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 lines are pinched. Correct as necessary.
	Low oil level in reservoir	Check oil level and correct as necessary. If oil is low, check for leaks also.
	Units with external Power units	Check breather cap on reservoir
	Clogged suction line	Observe the clear suction line to be sure that it remains full of oil with no air bubbles at anytime. If there are any bubbles, check for a loose fitting, cracked ports or a clogged suction filter.



SECTION 11. TROUBLESHOOTING HINTS (CONTINUED)

<b>Symptom</b>	<b>Probable Cause</b>	<b>Corrective Action</b>
<b>Equipment does not raise (continued)</b>	<p>Down solenoid wired Incorrectly to energize with up circuit</p> <p>Down solenoid stuck open</p> <p>Pump failure</p>	<p>Hold screwdriver on down solenoid and press “up” switch. If you feel magnetism correct the lift wiring.</p> <p>Remove the down solenoid and check for free movement of the plunger.</p> <p>Place gauge on pump and if it does not produce 3200 psi., replace pump.</p>
<b>Equipment raises too slowly</b>	<p>Load is too heavy</p> <p>Pinched hydraulic line</p> <p>Dirt in down solenoid</p> <p>Wrong oil for ambient temperature</p> <p>Dirt in reservoir breather</p> <p>Low voltage at motor</p>	<p>Reduce weight to rated</p> <p>Check to see that no lines are pinched. Correct as necessary.</p> <p>Clean the down so that it may fully close.</p> <p>See oil recommendations in Section 8 of the manual.</p> <p>Clean air breather.</p> <p>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.</p>

SECTION 11. TROUBLESHOOTING HINTS (CONTINUED)

Symptom	Probable Cause	Corrective Action
<b>Equipment raises too slowly (continued)</b>	Clogged suction line.	Observe the clear suction line to be sure 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.
<b>Motor heats or labors excessively.</b>	<p>Low voltage at motor terminals.</p> <p>Wrong oil for ambient temperature.</p> <p>Load is too heavy.</p>	<p>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.,</p> <p>See oil recommendations in Section 8 of manual.</p> <p>Reduce load to rated load.</p>
<b>Operation is spongy.</b>	Air in cylinders.	Bleed the cylinders to remove air trapped in them. If this reoccurs, check for air bubbles in the suction line and air leaks.
<b>Equipment lowers too slowly.</b>	<p>Pinched hydraulic line.</p> <p>Dirt in flow control valve.</p>	<p>Check to see that no lines are pinches. correct if necessary.</p> <p>Remove and clean flow control valve.</p>
<b>Equipment lowers too fast.</b>	<p>Dirt in check valve.</p> <p>Dirt in flow control valve.</p>	<p>Remove and clean check valve.</p> <p>Remove and clean flow control valve.</p>

SECTION 11. TROUBLESHOOTING HINTS (CONTINUED)

Symptom	Probable Cause	Corrective Action
<b>Lift raises, then Lowers.</b>	<p>Dirt in check valve.</p> <p>Down solenoid wired Incorrectly.</p> <p>Leaking cylinder packings.</p>	<p>Remove and clean check valve.</p> <p>Hold screwdriver on down solenoid and if you feel magnetism correct the lift wiring.</p> <p>Repack cylinders.</p>
<b>Lift raises, but will not lower.</b>	<p>Faulty solenoid valve</p> <p>Down solenoid incorrectly wired.</p> <p>Faulty solenoid coil.</p> <p>Obstruction in baseframe.</p>	<p>Replace valve.</p> <p>Rewire per diagram in Section 9 of this manual.</p> <p>Replace coil.</p> <p>Raise lift to clear obstruction then remove.</p>
<b>Oil spraying out of reservoir.</b>	<p>Clogged air breather.</p>	<p>A dirty breather filter may build up positive pressure which will spray oil. Clean air breather.</p>
<b>Lift will not raise and motor will not run.</b>	<p>Control voltage fuse blown.</p> <p>Motor starter overload</p> <p>Wrong voltage to unit.</p> <p>Transformer connections loose.</p> <p>Transformer defective.</p> <p>Pushbutton defective</p> <p>DC units:</p>	<p>Replace fuse.</p> <p>Reset motor starter.</p> <p>Check wiring to confirm wiring is compatible with available power.</p> <p>Check and tighten terminal screws on transformer.</p> <p>Replace transformer.</p> <p>Replace pushbutton</p> <p>See Battery charging instructions.</p>

## ADVANCE LIFTS INC. 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 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.

# Material Safety Data Sheet



## 1. Chemical product and company identification

<b>Product name</b>	CASTROL DUAL RANGE HV 46 HYDRAULIC FLUID
<b>MSDS #</b>	460278
<b>Historic MSDS #:</b>	None.
<b>Code</b>	460278
<b>Product use</b>	Hydraulic fluid For specific application advice see appropriate Technical Data Sheet or consult our company representative.
<b>Supplier</b>	BP Lubricants USA Inc. 9300 Pulaski Highway Baltimore, Maryland 21220-2495
<b>EMERGENCY HEALTH INFORMATION:</b>	1 (600) 447-8735 Outside the US, +1 703-527-3887 (CHEMTREC)
<b>EMERGENCY SKILL INFORMATION:</b>	1 (800) 424-9300 CHEMTREC (USA)
<b>OTHER PRODUCT INFORMATION</b>	1 (686) 4 BP - MSDS (866) 427-8737 Toll Free - North America email: bpcases@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

<b>Physical state</b>	Liquid.
<b>Color</b>	Purple.
<b>Emergency overview</b>	CAUTION! MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION.
<b>Routes of entry</b>	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.
<b>Potential health effects</b>	Skin contact. Eye contact. Inhalation. Ingestion.
<b>Eyes</b>	May cause eye irritation.
<b>Skin</b>	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.
<b>Inhalation</b>	Mist : May cause respiratory tract irritation.

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Ingestion  
Medical conditions aggravated by over-exposure  
Causes gastrointestinal irritation and diarrhea.  
None identified.

See toxicological information (section 11)

## 4. First aid measures

<b>Eye contact</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
<b>Skin contact</b>	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.
<b>Inhalation</b>	If inhaled, remove to fresh air. Get medical attention if symptoms appear.
<b>Ingestion</b>	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

<b>Flammability of the product</b>	May be combustible at high temperature.
<b>Flash point</b>	232 °C (Open cup) Cleveland.
<b>Products of combustion</b>	These products are carbon oxides (CO, CO <sub>2</sub> ).
<b>Unusual fire/explosion hazards</b>	This material is not explosive as defined by established regulatory criteria.
<b>Fire-fighting media and instructions</b>	In case of fire, use water fog, foam, dry chemicals, or carbon dioxide. Do not use water jet.
<b>Protective clothing (fire)</b>	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

## 6. Accidental release measures

<b>Personal precautions</b>	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").
<b>Environmental precautions and clean-up methods</b>	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.
<b>Personal protection in case of a large spill</b>	Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient, consult a specialist BEFORE handling this product.

## 7. Handling and storage

<b>Handling</b>	Avoid contact with eyes. Avoid contact with skin and clothing. Wash thoroughly after handling.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area. Empty containers may contain flammable, 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)	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> , 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity (highly refined mineral oil)	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> , 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral
White mineral oil, petroleum (highly refined mineral oil)	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> , 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral None assigned.

### Proprietary performance additives

**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	0.8597
Solubility	Insoluble in cold water.
Viscosity	Kinematic: 46.5 mm <sup>2</sup> /s (46.5 cSt) at 40 °C Kinematic: 7.9 mm <sup>2</sup> /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 <sub>2</sub> ).
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/CAO)

## 8. Exposure controls/personal protection

### Occupational exposure limits

Ingredient name	Occupational exposure limits
Distillates (petroleum), hydrotreated, heavy paraffinic (highly refined mineral oil)	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> , 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity (highly refined mineral oil)	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> , 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral
White mineral oil, petroleum (highly refined mineral oil)	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> , 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> , 8 hour(s). Form: Oil mist, mineral None assigned.

### Proprietary performance additives

**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	0.8597
Solubility	Insoluble in cold water.
Viscosity	Kinematic: 46.5 mm <sup>2</sup> /s (46.5 cSt) at 40 °C Kinematic: 7.9 mm <sup>2</sup> /s (7.9 cSt) at 100 °C SUS: 216 SUS at 37.7 °C
Viscosity Index	141

## 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(1)(3) 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); phosphorodithioic 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 (EMCS): 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.

Health **1**

Flammability **1**

Physical Hazard **0**

Personal protection **X**

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

Health **1**

Flammability **1**

Physical Hazard **0**

Personal protection **X**



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.

Product name

CASTROL DUAL RANGE HV 46 HYDRAULIC FLUID

Version 1

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