

ADVANCE LIFTS

Installation, Operation and Maintenance Manual for the Following Equipment:

Models 1035/1045
Series 2000, 2000K, 3000, 4000, 6000

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

Model Number _____ Serial Number _____

Installation location: _____

CAUTION:

At Initial Installation, determine proper motor/pump rotation by starting the motor in very short intervals to prevent permanent pump damage. Running the pump backwards will damage it. See the Installation Instructions, Section 4, for proper procedure.

Distributor Information: _____

Advance Lifts, Inc.
701 Kirk Road
St. Charles, IL 60174-3428
Toll Free 1-800-843-3625
Sales Fax 1-630-584-9405
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*Advance Lifts, Inc. furnishes one manual with each unit. Additional manuals are available at \$25.00 each.

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INTRODUCTION

Congratulations, the equipment that you have purchased is of the highest quality. 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 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 which contains information such as the model number, capacities, and the serial number. 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 lift or injure personnel. Also, be sure to have the serial number of the lift handy if you have to call the factory. That number identifies your specific lift and will allow, the factory 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: Service Manager

Thank you for purchasing our product.

*Mandatory reading before attempting installation.

SECTION 3. RESPONSIBILITIES OF OWNERS & USERS

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

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

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

Operators: Only trained and authorized personnel shall be permitted to operate the lift. Operators must be alert to the safety hazards of lift operation.

Before Operation: Before using the lift, the operator shall have:

1. Read and/or have had explained and understood, the manufacture's operating instructions and safety rules.
2. Inspected the lift for proper operation and condition. Any suspect item shall be carefully examined and a determination made by a qualified person as to whether it constitutes a hazard. All items not in conformance with the manufacturer's specification shall be corrected before further use of the lift.

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

Safety rules:

1. Do not overload lift.
2. Insure that all safety devices are operational and in place.
3. Insure that all personnel near an operating lift understand to stand so that no body parts can be pinched by the mechanism or platform and any items that may fall off the lift will not strike them.

Modifications or Alterations: Modifications or alternations of industrial scissors lifts shall be made only with written permission of the original manufacturer, Advance Lifts. These changes shall be in conformance with all applicable provisions of this standard and shall be as safe as the equipment was before modification. These changes shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application of the lift.

SECTION 4. INSTALLATION INSTRUCTIONS

Series 1000, 2000, 2000K, 3000, 4000 & 6000

Equipment and Supplies Required:

1. Equipment to maneuver the Advance Lift into position. Nylon slings are preferred, but padded alloy chains through the handrail socket holes will also work as rigging.
2. Approximately 10 gallons of oil and a funnel. See the oil viscosity sheet. Note that the 2000K & 6100 units only require 5 gals. and the 1000 series units, and model 6150, are filled with oil at the factory.
3. A ½", extra heavy, double wire braid hose (SAE 100R2A) or extra heavy seamless piping from the power unit to the equipment with ½" JIC female fittings on the ends. Advance supplies a ½" JIC male universal connector on the outlet of the power unit and the end of the connector hose on the lift. Note that no hosing or piping is required on the 1000 series lifts and model 6150, which are supplied with self contained power units and two hoses or pipes are required for 4000 series lifts because of their special piping. The model 6000 is supplied with (1) 20-foot hose and the 6200 & 6300 lifts are supplied with (2) 20-foot hoses. If hose or piping length will exceed 35 feet, consult the pressure chart to insure proper sizing. Be sure all hydraulic fittings are rated for hydraulic systems that may peak out at 4000 PSI and are not hardware store items that can burst at 150 PSI. Only buy from reputable hydraulic outlets.
4. Material for shimming and grouting, and anchor bolts. We recommend "Rawl-Stud Wedge Anchors", "Wej-It" or equivalent bolts in the 5/8" x 6" size. The 3000 and 4000 series and the models 6200 and 6300 will require the 1" x 9" size. The studs must be embedded at least 4 ½" into the concrete.
5. Electrical fused disconnect (if required).
6. Wire and electrical fittings for the branch circuit, pushbutton station, down solenoid, motor and any accessories. See branch and control circuit section of this manual. Note: The 6000 and 1000 series units are totally pre-wired ready to plug into the branch circuit.
7. Standard hand tools for electrical work and hydraulic maintenance.
8. A heavy pry bar for shifting the equipment and a drill for installing the lag down studs.
9. Safety leg maintenance bar. This is supplied by Advance Lifts on all units. Check the maintenance section of this manual for proper usage of each style of safety leg.
10. Pit mounted units will require timbers to temporarily support the unit over the pit.

SECTION 4. (CONTINUED) INSTALLATION INSTRUCTIONS

Installation Procedure:

1. Read the Installation, Operating, and Maintenance instructions completely before attempting installation. You may also find it helpful to read the remaining sections of the manual for a better understanding of how the equipment works.
2. If you are installing a pit mounted unit, check the pit dimensions against the pit drawing for conformity (length, width, and depth including bridge recesses) and be sure to check the diagonal of the pit for squareness of the rectangle. Also be sure whatever surface the base frame will sit on is flat and level or is shimmed to achieve that end. (See p 4-5 for a typical pit drawing.)
3. Locate the power unit, check to insure that there is no water contamination in the reservoir. Fill the reservoir through the breather hole with the appropriate hydraulic fluid (see fluid recommendation section of this manual). Ideally, you should mount the reservoir on a wall approximately 6 ½' above the ground. This prevents people from standing on or placing objects on the power unit. It will free up floor space and because the reservoir is higher than the lift, it will allow any air in the system to naturally rise to the highest point and purge itself from the system.
4. Run the hydraulic lines from the power unit to the lift and flush the lines with clean fluid before connecting them. If the lines must be pushed through chases or enclosures, be sure to cap the lines to prevent contaminants from entering the hose. Cleanliness is the single most important factor in the maintenance of any hydraulic system. Contamination will destroy cylinders, valves and pumps!
5. Following the electrical diagrams in the electrical section of this manual, make the electrical connection to the motor and controls for the unit. **Be sure that you have correct motor rotation!** Continued operation of a hydraulic pump in reverse rotation will destroy it! You can detect the 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 into the pump. If the rotation is reversed, 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 wire connections. With single-phase motors, rotation is set at the factory. Remember to have the discharge end of the hosing secure and discharging into a container or someone may take an oil bath.

Note: Some installers try to arrange all of the above work to be completed before they ever bring a lift to the job site. This allows them to use the crane that is used to offload and position the lift for as short a time as possible.

6. Units such as 1035's, 1045's and those 6000 series lifts with 3 phase motors, are pre-wired at the factory but must still be checked for proper motor rotation when they are plugged in, because this is strictly a function of each individual building's wiring.

SECTION 4. (CONTINUED) INSTALLATION INSTRUCTIONS

Installation Instructions:

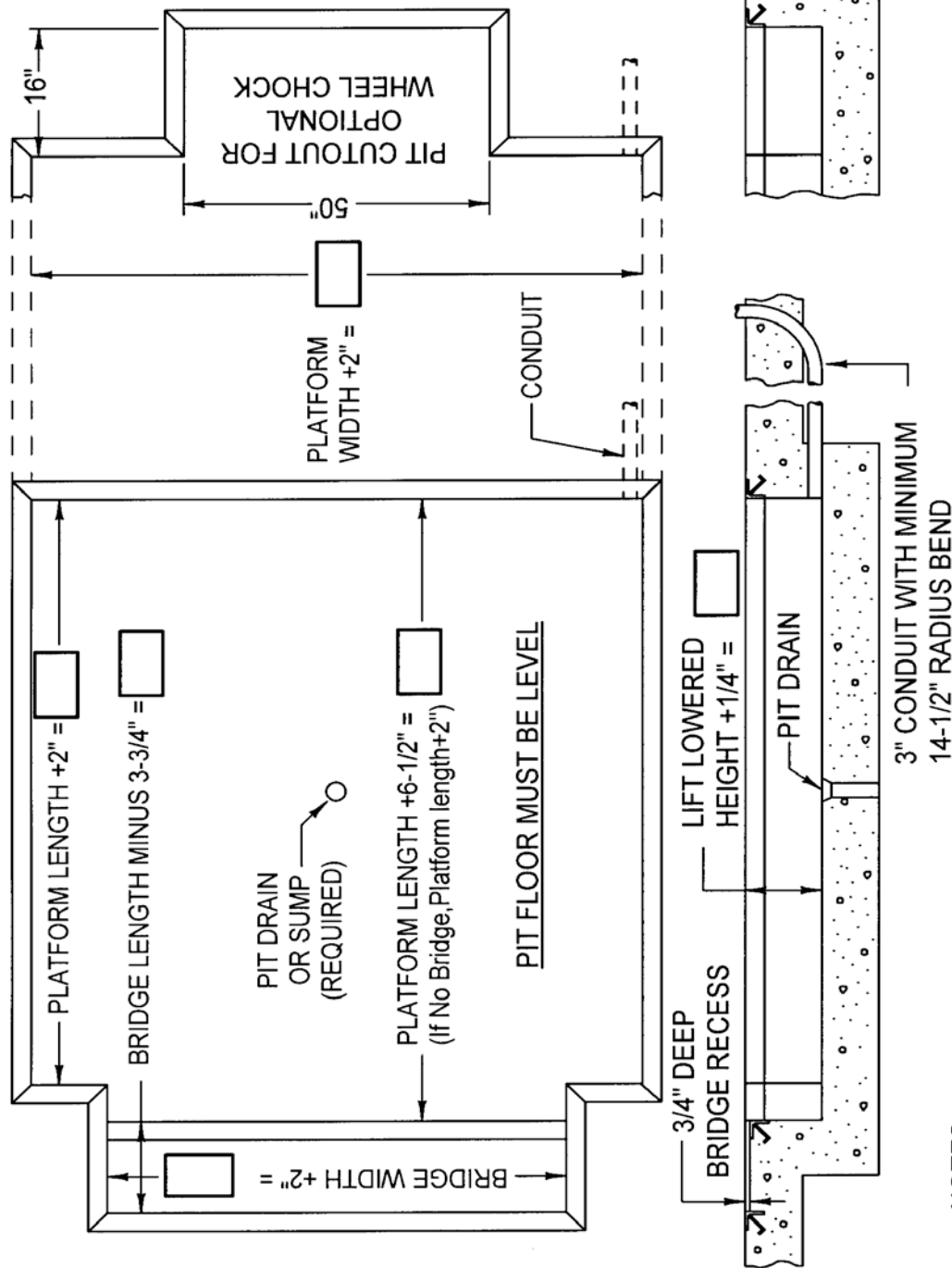
7. Figure out the proper orientation of the lift. (Surface mounted units may simply be put into place). Note: All dock lifts are built so that loads are transferred over the hinged (clevis) end of the platform when elevated to truck height and this is the end to which the hinged bridge is usually welded. Occasionally, the bridges are side mounted. Surface mounted units are equipped with approach ramps for transitioning on and off the unit from the ground level. The ramps are usually much larger than the bridge and located on the roller end of the platform and should never ever be used as a bridge to the truck!
8. For pit mounted units, place timbers diagonally across the corners of the pit and with shipping restraints still in place, but shipping blocks removed, place the lift on the timbers. Then you may make temporary hose connections being careful not to over-tighten and crack the hydraulic fittings. Finally, you may remove the timber supports and lower the lift into the pit.
9. You may now break the shipping restraints (banding). Use the lift's power unit to open the lift a few feet and use your crane to raise the clevis end (hinged bridge end) of the lift by hooking the bevel toe guard or use a plate grab attached to the hinged bridge. This will allow you to remove your chains or slings and the banding material from beneath the unit's base frame. The tipping may not be necessary if you hooked your lift chains through the handrail sockets of the platform and the shipping bands slide out from under the lift. **Do no allow anyone to get under the unit!**
10. Carefully lower the unit insuring that the platform edges clear the sides of the pit. The heavy pry bar may be used to reposition the unit with even clearance from all pit walls. Note the lowered height in relation to the surrounding pit edges for later shimming adjustments.
11. Once the lift is properly positioned, (whether it is pit mounted or surface mounted), you may begin the lag down procedure.
12. Raise the unit and position the safety leg or bar as shown in the maintenance section of this manual. Lower the unit onto the safety leg and press the down button for an extra 10 seconds to relieve all hydraulic pressure. Drill the lag down holes and set the lag bolts. Check the unit for side to side level and then shim and grout for continuous support beneath the base frame. The shimming should enhance the platform match with surrounding surfaces when fully lowered, but not at the expense of side to side levelness. A slight slope from clevis end to roller end is not a problem, but side to side slope will cause premature wear on all the moving parts of the lift. Tighten the lag bolts.
13. If a temporary hydraulic connection was made to lower the unit into the pit, now is the time to switch to your permanent hydraulic connection. Also, if there are any electrical options such as limit switches or electrical toe guards, now is the time to do that wiring.

SECTION 4. (CONTINUED)

Installation Instructions:

14. Check that there are no tools or debris in the pit or beneath the unit, raise the unit and remove the safety leg, then fully lower the unit. On pit mounted units, check that the bridges are flush with their curb angles and that they do not pivot when loads roll over them, shim any movement accordingly.
15. Operate the equipment through several cycles, holding the down button an extra 20 seconds after the lift is fully lowered to bleed air from the cylinders. Check the reservoir fluid level with the unit fully lowered and top off the fluid to ½" from the top of the reservoir.
16. Adjust accessories such as limit switches and if the unit has electric toe guards or roller shades, fasten the hose in the pit so that it does not move and interfere with proper operation.
17. Raise the unit one final time, install the safety leg and thoroughly clean the entire area. Be sure all fluid spills are cleaned up so that they are not later misinterpreted as new fluid leaks.
18. Meet with the facility manager or maintenance foreman and turn over this maintenance manual with the reminder that no one should be allowed to operate the unit unless they are familiar with the operating instructions. Show them the safety leg and any other safety devices. Point out the metal nametag on the unit with the serial number and capacity ratings. Make it clear that some specific person in their organization must be charged with responsibility for the maintenance of the unit and if they have no further questions, lower the unit and consider your job complete.

ADVANCE LIFTS PIT DIAGRAM

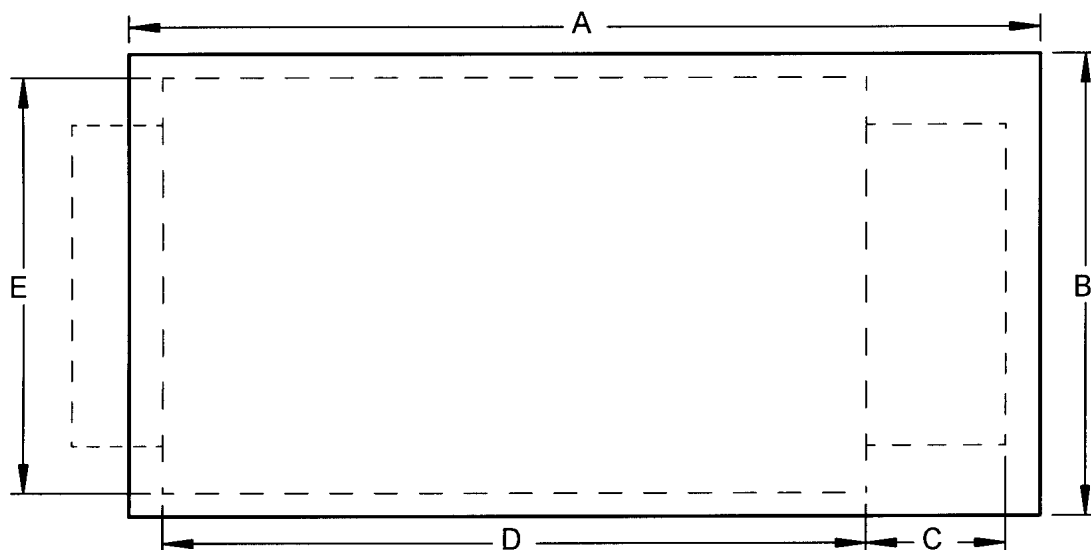


NOTES:

- Reinforce concrete to suit local soil conditions.
- All pit work and materials shown are the responsibility of the owner or his agent (by pit contractor).
- Installer to run 1/2" diameter hose through the 3" conduit from the power unit to the lift base.
- Dimension tolerances are plus 1/4" minus 0" (+1/4" -0")
- 180 degree steel hinge bridges require a bridge recess equal to bridge length minus 2-3/4".
- Consult factory for bridges longer than 30".
- 180 degree aluminum hinge bridges require a bridge recess length equal to bridge length minus 3-3/4" and a pit length equal to platform length plus 7-1/2".

B

ADVANCE LIFTS CONCRETE PAD DIAGRAM, NOTES AND BILL OF MATERIALS



MODEL NUMBER	A. CONCRETE PAD LENGTH	B. CONCRETE PAD WIDTH	C. RAMP LENGTH	D. LIFT LENGTH	E. LIFT WIDTH
1035	10 ft.	6.5 ft.	2 ft.	7 ft.	5.5 ft.
1045	9.5 ft.	8.5 ft.	2.5 ft.	6 ft.	7.75 ft.
6100	11.5 ft.	7 ft.	2.5 ft.	8 ft.	6 ft.
6150	12 ft.	7 ft.	3 ft.	8 ft.	7 ft.
6200	15 ft.	8.5 ft.	4 ft.	10 ft.	7.5 ft.
6300	18 ft.	8.5 ft.	5 ft.	12 ft.	7.5 ft.

----- = LIFT OUTLINE
 ----- = CONCRETE

Notes

- A. Reinforce concrete to suit local soil conditions.
- B. All concrete work is the responsibility of the owner or his agent.
- C. Installer to run 1/2" diameter hose(s) with female JIC fittings from power unit to lift base (6100, 6200, 6300 models only).
- D. Concrete pad must be flat and level.

Bill of Materials *

- 1. One (1) Advance Superdok Model Number _____
- 2. One (1) control cord for pushbutton.
- 3. Hydraulic hose(s) with female JIC fittings for models 6100, 6200, 6300.
- 4. Metal hose cover for models 6100, 6200, 6300.
- 5. One (1) electric disconnect switch for 2 or 5 HP motor.
- 6. One (1) plug recepticle.
- 7. DEXRON III automatic transmission fluid for the power unit reservoir.
 6100-5 gallons, 6200 and 6300-10 gallons. Included with other models.
- 8. Concrete anchor bolts and material for shimming and/or grouting.

* Seller furnishes items 1 through 4 only unless otherwise agreed to in writing.

SECTION 5. OPERATING INSTRUCTIONS

Hydraulic scissor 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 devices provided and be careful not to surprise anyone in the area with the movement of the lift.

The most common accidents that occur are people walking off the end of the lift and people tripping over the hinged bridge or knocking the bridge over onto someone's foot. These are prevented by simply using handrails and safety chains, and by being aware of the bridge position and size. **Be alert!**

Pre-operational checks:

1. Check all electrical wiring and connections to be sure that they are completed properly and are operational.
2. Check for the proper operating condition of all safety devices such as handrails, safety chains, and optional equipment such as electric toe guards, warning bells or automatic chocks.
3. Check for obstructions or debris that may interfere with the safe operation of the lift.
4. Be sure that all personnel in the area are a safe distance away from the lift and aware that you are about to move it.
5. Know the capacity of the lift to be sure not to overload it.

Test operate the equipment:

1. Station yourself so that you always see the equipment and surrounding area when it is in operation. Never operate the equipment in the blind.
2. Raise the equipment and note that the pushbutton is a constant pressure, "dead-man" type. When you release the up or down button, the unit should stop moving immediately and maintain its elevation. If it does not, notify your maintenance personnel immediately.
3. Cycle 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 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. If there is any evidence of binding or scraping in the operation you should immediately stop using the lift.
4. Check all safety devices for proper operation.
5. 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 the engineering department at the factory at 1-800-843-3625.

COMPATIBLE LOADING EQUIPMENT GUIDE:

Each Advance Superdok series of lifts is designed with a weight capacity and platform design for specific types of loading equipment. Using the wrong type of loading equipment on a given series of lifts will invite unintentional overloading. For safe operation, follow these guidelines and be careful to never exceed the nameplate.

Lift Series	Loading Equipment
SUPERDOK 1000 SERIES	Hand carts, four wheeled carts & manual Pallet jacks.
SUPERDOK 2000 SERIES SUPERDOK 5000 SERIES SUPERDOK MODELS 6100 & 6150	All of the above & small powered jacks.
SUPERDOK 3000 SERIES SUPERDOK MODELS 6200 & 6300	All of the above & straddle stackers, walkie, small stand-up & sit-down rider forktrucks.
SUPERDOK 4000 SERIES	All of the above & medium forktrucks.

Calculate the weight of the heaviest types of loads you expect to handle to be sure that they are within the rated capacity. Beware of surprisingly heavy materials such as liquids, grains, powder and paper; all of which can weigh much more than you suspect because of their density.

A little effort to determine the true weight of your heaviest loads before you start to use your equipment can save damage to your equipment and possible injury to your personnel. If you discover that some loads will exceed the capacity of the unit, make arrangements to have the loads split. All operating personnel should be warned about heavy loads, warning signs should be placed in the dock lift area as a reminder.

Daily operation:

1. All personnel should 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 capacity.
3. Operators must be alert to all personnel in the vicinity of the lift and avoid any surprises to these personnel in regard to movement of or the position of the lift at any time. Never operate the unit if you can not see it and the personnel around it.
4. On the first use of the lift each day, each operator should check to see that the lift is operating properly and smoothly. All safety devices should be in place and operating properly and the hinged bridge should be swung through its full arc of movement. The bridge stops should prevent the bridge from drooping more than 45 degrees below the horizontal in the forward position and the bridge should swing back 20 degrees beyond vertical toward the platform in the upright position. Any problems should be immediately reported to the maintenance personnel.

Daily Operation (Continued)

5. If the unit has a traveling electrical cord, the operator must insure that it is kept away from the lift as it raises and lowers.
6. Loads should be centered before raising or lowering the lift as this will help insure even wear on all moving parts.
7. If a unit is equipped with both a hinged bridge and a hinged ramp, be sure that the operators know the difference and never use the ramp for load transfer in the raised position. The ramps are usually much longer than the bridges which means they can work as a long lever creating severe eccentric loads and they are often positioned on the weakest side of the lift for load movement in the fully lowered position only. **Use ramps in the fully lowered position only!**
8. Do not allow bridges or ramps to “free fall” from near vertical positions to the position against their hinge stops. This type of abuse will definitely cause damage to the stops, hinges, and platform edges, eventually rendering the unit unsafe. Lower ramps by hand and lower bridges to the down stop position with the restraining chains.

Efficient lift usage:

The following procedures will help you maximize the efficient use of your lift in your loading and unloading operations.

1. First it should be noted that there is a long restraining chain on each lift that is designed to run from the hinged bridge to the handrail post farthest away from the bridge. The purpose of this chain is to allow an operator to pull the hinged bridge back from anywhere on the platform with minimal movement, once the bridge is raised to the near vertical position by the truck bed as the lift is lowered.
2. This means that the hinged bridge only has to be manually lifted once in a loading or unloading sequence. It should be raised to the vertical standing position before the lift is raised to truck height. After that, the bridge can be kicked flat into the truck with your foot or loading equipment when you arrive at truck height. Then when you lower the unit, the bridge is allowed to cam up on the truck bed to the near vertical position and then pulled back to a safe resting position with the chain. There is a second snap on the chain that allows you to lock the bridge in the raised position on those rare occasions when the load prevents the bridge from swinging back into a safe resting position. (See illustration at end of section.)
3. If your unit is equipped with an approach ramp, do not raise the ramp on each cycle. In fact, the ramp is intended to only be raised when the lift is being moved to a new location. Many of the ramps are designed with built in wheel chocks which help prevent a wheeled vehicle from rolling off the platform and only work properly when the ramp is lowered.

Model 1045 special instructions:

The special portability features for the Model 1045 are illustrated and explained on page 5-5.

How To Use Superdoks Efficiently.

Palletized Loads: One (1) man removes pallet from truck places it in storage area and returns for next pallet until truck is offloaded.

Non Palletized Loads: One (1) man in truck stacks material on pallet or 4 wheeled cart. Second (2nd) man removes pallet or cart from truck places it in storage area and returns for next load until truck is unloaded.

Objective

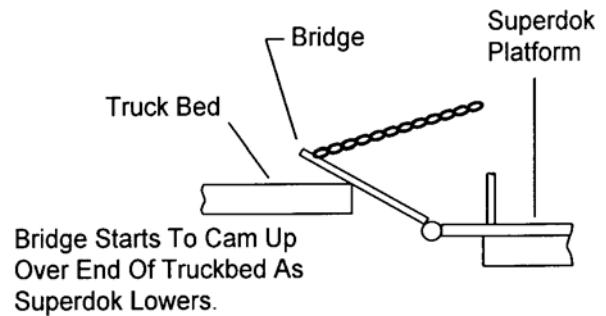
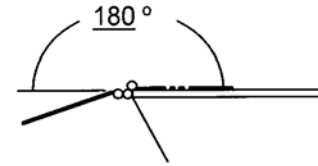
"TO FREE UP THE TRUCK AS QUICKLY AS POSSIBLE"

Operation

1. With bridge folded back toward platform raise Superdok to truckbed height.
2. Kick bridge over onto truckbed.
3. Roll load onto platform.
4. Begin to lower Superdok until bridge starts to cam up over end of truckbed.
5. With foot, chain or hand, flip bridge back toward platform.
6. With bridge folded back toward platform, lower Superdok.
7. As required attach snap hook (A) to hold bridge upright.

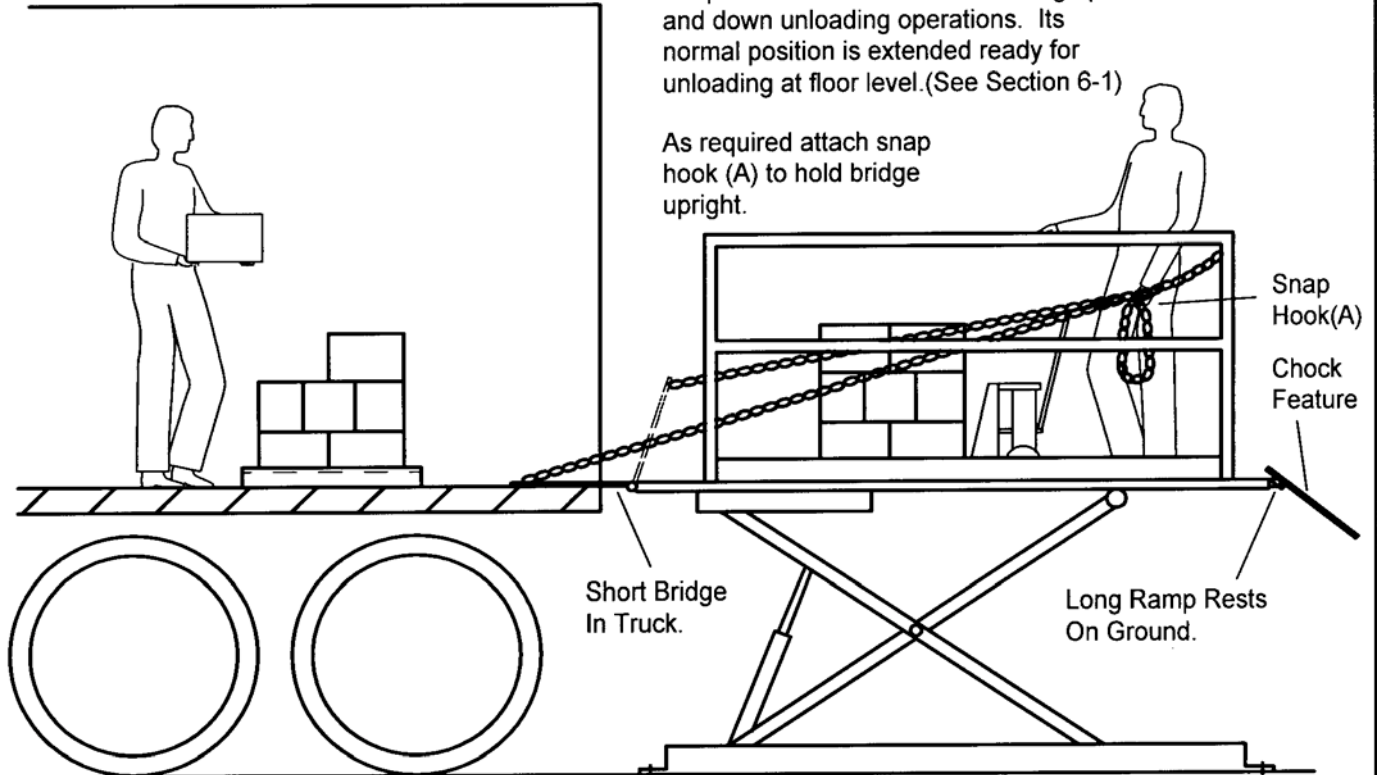
CAUTION:

With 180 Degree movement bridges exercise care in steps 5 & 7 as bridge will continue to pivot back flat on the platform.



If a unit has a chock ramp the chock ramp is not to be folded back during up and down unloading operations. Its normal position is extended ready for unloading at floor level. (See Section 6-1)

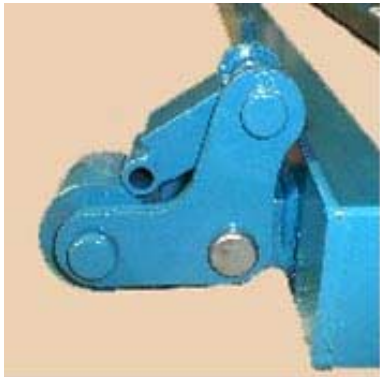
As required attach snap hook (A) to hold bridge upright.



Model 1045 Portability Feature

Moving the Equipment with the Casters and Dolly Handle:

1. Raise the lift approximately 3 feet (with no load on the platform) and flip the two caster bars into the caster position as shown. Lower the lift fully, and the lift will raise 1" off the floor on the caster end.
2. Use the Dolly Handle as shown to raise and move the entire lift.



Normal Caster Bar Position



Caster bars in position to raise lift. (BOTH CASTERS MUST BE USED!)



With the platform down, the lift is raised 1" off the floor.



Insert the dolly handle into the tongue on the baseframe



The unit is now portable. Never load the unit when casters are in use. Casters are for transporting the unit only.

SECTION 6. MAINTENANCE INSTRUCTIONS

The routine maintenance of this equipment is minor and consists of periodic checks.

Weekly: Once a week, or after repetitive operation, the lift should be raised to its full height. This will get rid of cylinder oil seepage build-up and lubricate the upper cylinder barrel.

Monthly: Check that the hydraulic fluid level in the reservoir is $\frac{1}{2}$ " from the top of the tank with the unit fully lowered. It is strongly urged that a maintenance log be maintained with the dates of monthly inspections, the name of the inspector and results of the inspection.

CAUTION:

Be sure the maintenance safety leg is properly engaged before performing maintenance checks 2 through 6 or reaching beneath a raised lift. (See instructions under "Maintenance Cautions" P 6-2)

1. Clean all debris from the pit or the vicinity of floor 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, cylinders 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 seepage on or beneath the cylinders.
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.
7. Check all safety devices on the unit such as handrails, safety chains, etc. including any options such as electric toe guards or chocks, for proper operation.
8. Check the hinged bridge to insure that its stops are not damaged, allowing it to droop more than 45 degrees below horizontal, check the hinge spools for cracks and or broken welds, be sure the bridge leans back over the platform at least 20 degrees beyond vertical.

Seasonal or semiannual maintenance:

Change hydraulic fluid for ambient temperature changes if appropriate. Check the fluid reservoir to see if there is any evidence of accumulated condensation creating water contamination. The fluid will appear "milky" and light pink in color. Water accumulation will damage the hydraulic pump.

Maintenance Cautions:

1. Always remember that this is a piece of machinery with large moving parts that can seriously hurt you.
2. Read this manual in its entirety before attempting service work.
3. Always use the safety bar or leg if you are going to work on the unit in the elevated position or reach under the platform. (See the illustrations at the end of this section for proper positioning and engagement of the safety supports.)
4. When using the safety supports observe the following rules:
 - A. Be sure there is no load on the platform
 - B. Be sure the safety support is properly engaged.
 - C. Hold the down button an extra 10 seconds when lowering onto the safety support to be sure that all the weight of the lift is on the support.
 - D. Use shoring or blocking as a backup to the safety support.
 - E. Disconnect and tag the electricity to the unit to prevent accidental movement of the lift by other personnel.
 - F. Spend as little time as possible under the lift.
5. Use only replacement parts recommended by the manufacturer.
6. Do not let the equipment stay in disrepair; fix little problems while they are little problems or some of them may get severe very quickly.
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 a safety support.
9. Never apply a load to the equipment unless the base is continuously supported and non-portable units are securely lagged to the ground.
10. Never expect to hold a leg assembly open by simply lifting one end of a platform.
 - A. The roller end of most lifts are not gibbed or captured in any way, so lifting on the roller end simply tilts the platform.
 - B. Even if you raise the clevis end of the platform, if the base frame is not firmly lagged to the ground or held down by some other means, the legs will come up with the platform in a spongy and unpredictable manner and could cause serious injury.
 - C. The only safe way to hold a lift's legs open other than the factory designed safety support, is to block between the clevis end of the platform and the base frame.

CAUTION:

ALL MODELS

Never use the safety maintenance bar when the platform has a load. Remove the load first, then brace for service or maintenance. Check that the safety bar is well seated and remains so during heavy wrenching or maintenance operations.

SERIES 2000, 2000K, 6100, 6150

Place the maintenance bar near the center of the torque tubes, then lower the equipment until it is totally supported by the bar.

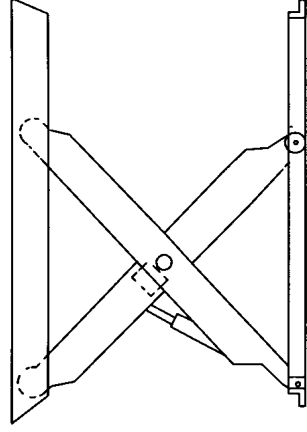
SERIES 2000K, 6100

Move the hydraulic hose out of the way so the safety bar will not crimp or damage these hoses and connectors.

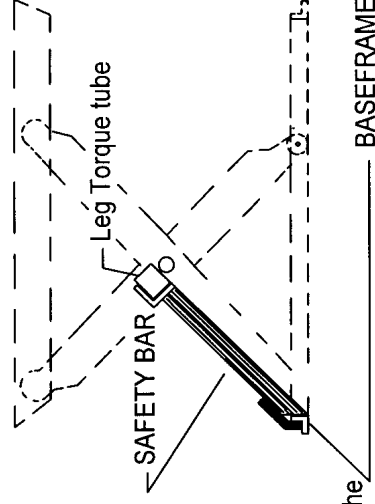
ALL MODELS

Every unit of the above models is supplied with a safety maintenance bar.

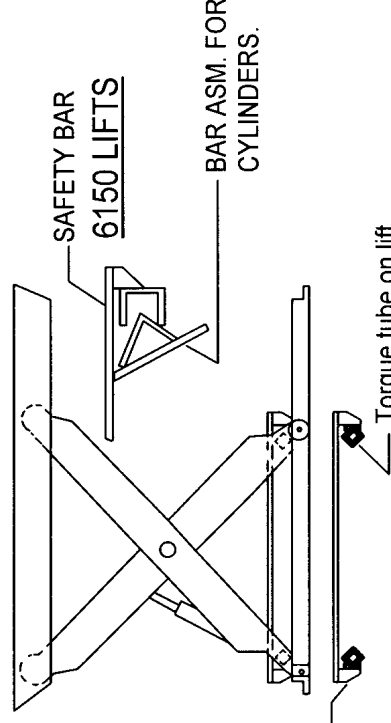
The only safe way to hold a lift's legs open other than the factory designed safety maintenance bar, is to block between the clevis end of the platform and the baseframe.



SAFETY MAINTENANCE BAR. One person lowers the equipment while another holds the bar on the center of the torque tube and on the baseframe. Lower the equipment until it is totally supported by the bar.



SERIES 2000K & 6100 LIFTS



Place the safety maintenance bar on the center of the torque tubes and lower the lift until it is totally supported by the bar.

SERIES 2000, & 6150 LIFTS

Safety Maintenance Bar- Series 2000, 2000K, 6100, 6150.

CAUTION:

ALL MODELS

Never use the safety maintenance bar when the platform has a load. Remove the load first, then brace for service or maintenance. Check that the safety bar is well seated and remains so during heavy wrenching or maintenance operations.

SERIES 3000

Place the maintenance bar or leg near the center of the torque tube and on baseframe, then lower the equipment until it is totally supported by the bar or leg.

SERIES 4000

Place the maintenance bar or leg near the center of the torque tubes, then lower the equipment until totally supported by the bar or leg.

SERIES 6200 & 6300

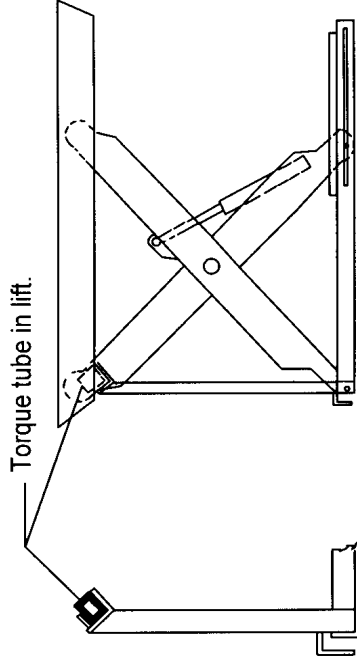
Place the (2) maintenance bars in the tabs welded to the inside of the baseframe, in line with the bottom roller wheel, then lower the equipment until the curved member totally engages both roller wheels. Insure the maintenance bars are straight, in line with the wheels, not tilted sideways at an angle.

ALL MODELS

Every unit of the above models is supplied with a safety maintenance bar. The only safe way to hold a lift's legs open other than the factory designed safety maintenance bar, is to block between the clevis end of the platform and the baseframe. Blocking between rollers and the baseframe is also acceptable if the blocking is solid and is as tall as the full diameter of the roller.

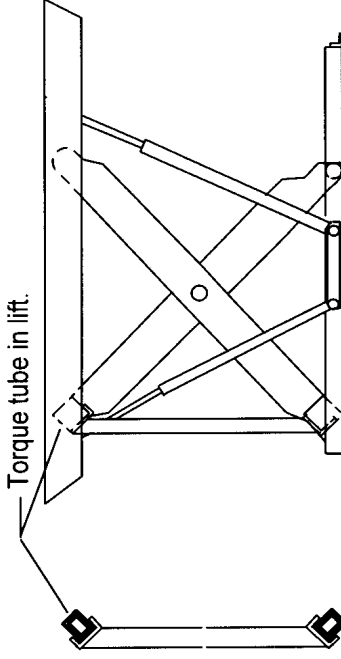
Safety Maintenance Bar-

Series 3000, 4000, 6200, 6300



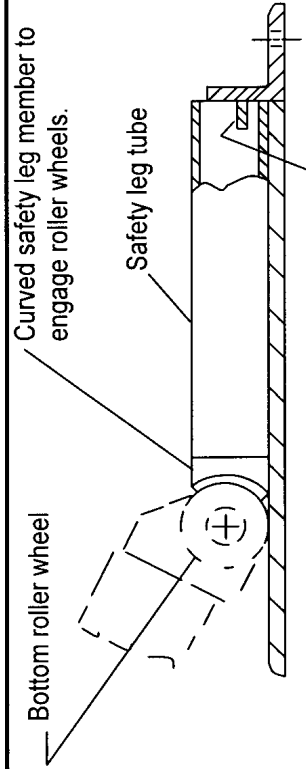
SAFETY MAINTENANCE BAR. One person lowers equipment while another holds the bar on the center of the torque tube and on the baseframe. Lower the equipment until it is totally supported by the bar.

SERIES 3000 LIFT



SAFETY MAINTENANCE BAR. One person lowers the equipment while another holds the bar on the center of the torque tubes. Lower the equipment until it is totally supported by the bar.

SERIES 4000 LIFT



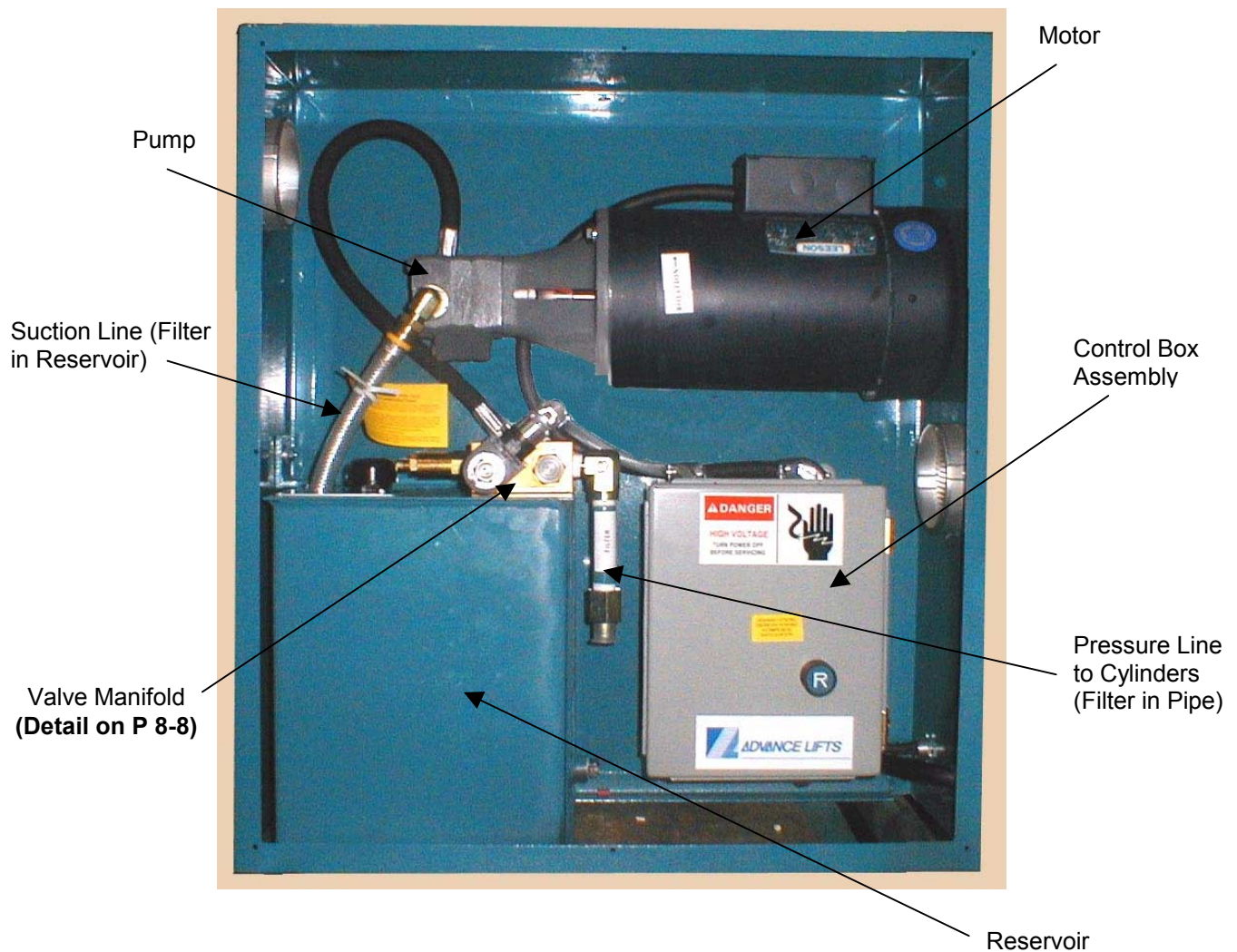
Tab on inside of baseframe at roller end

SERIES 6200 & 6300 LIFTS

SECTION 7. POWER UNIT ASSEMBLIES

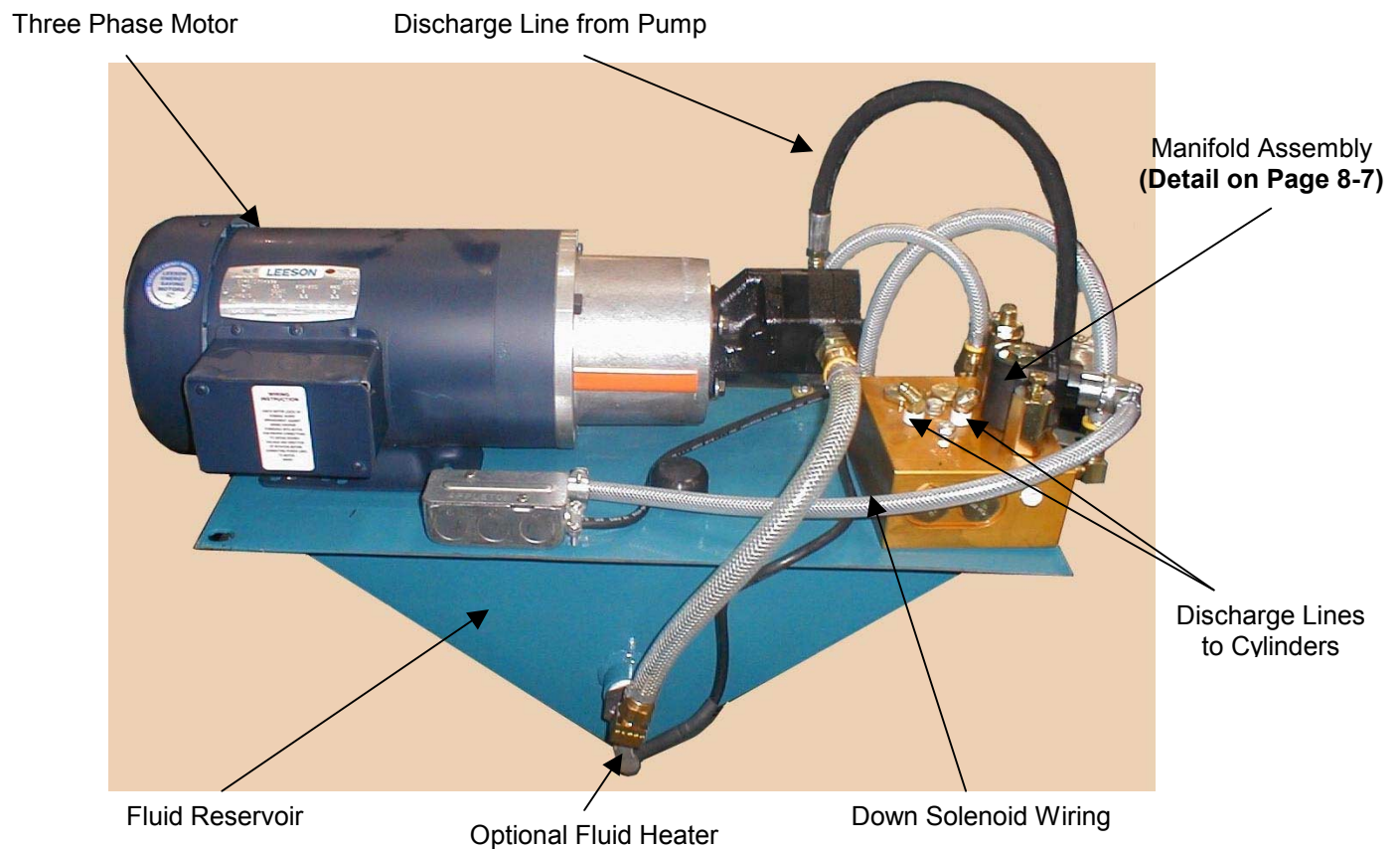
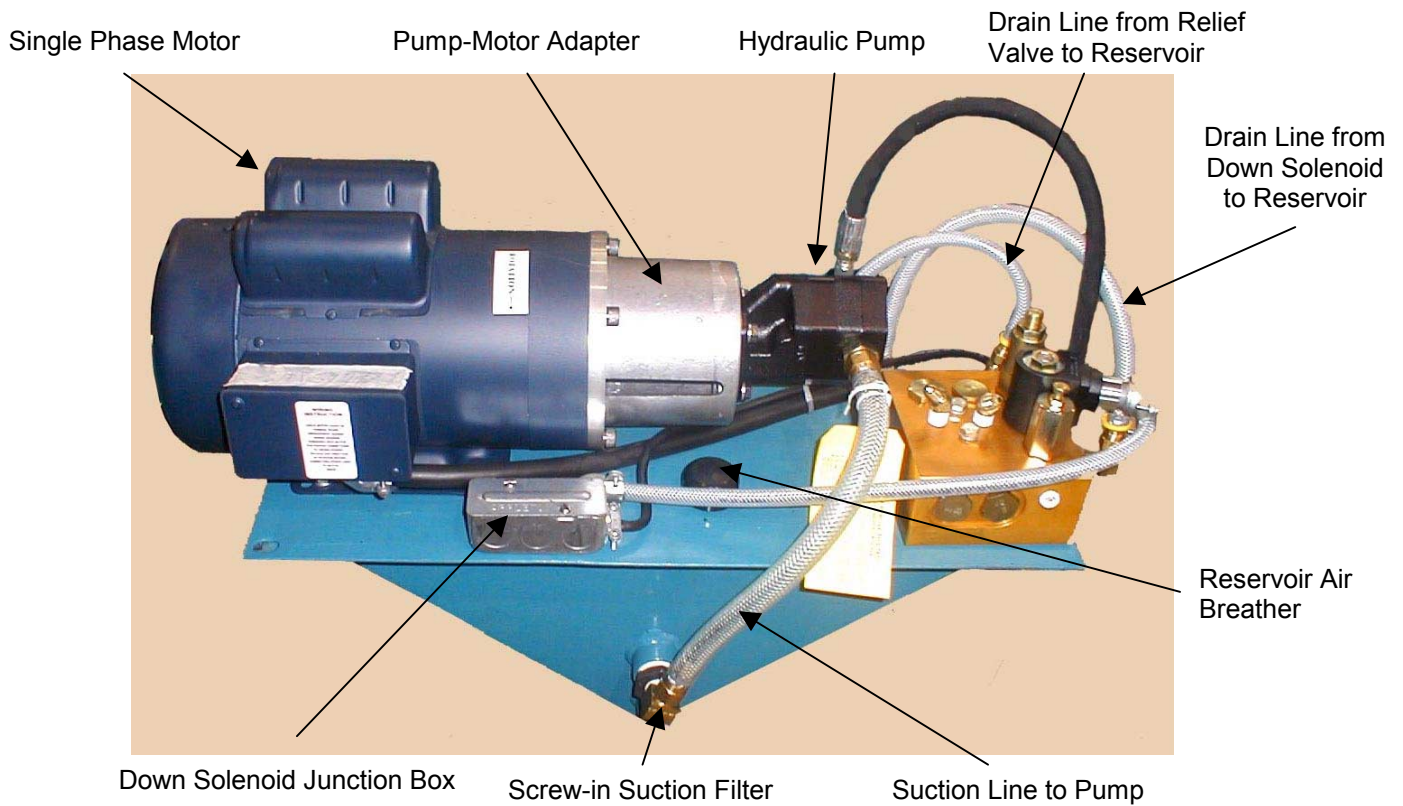
This section contains drawings and photos of completed power units to aid service personnel in identifying each component. Please be careful to match the correct voltage and horsepower as well as model number, when you are trying to identify the power unit for your lift. Advance Lifts uses several different brand name motors and pumps, so the ones shown in the pictures may not be the same exact brands as on your unit. More information about individual components may be available in the hydraulic or electrical sections of this manual. Also note that these illustrations may show options that were not included on your particular unit.

Model 1035 Power Unit



See Page 8-4 for Hydraulic Diagram and Page 9-1, 2 for Electrical Diagram

Model 1045 Power Units



See Page 8-6 for Hydraulic Diagram and Pages 9-1, 2 for Electrical Diagram

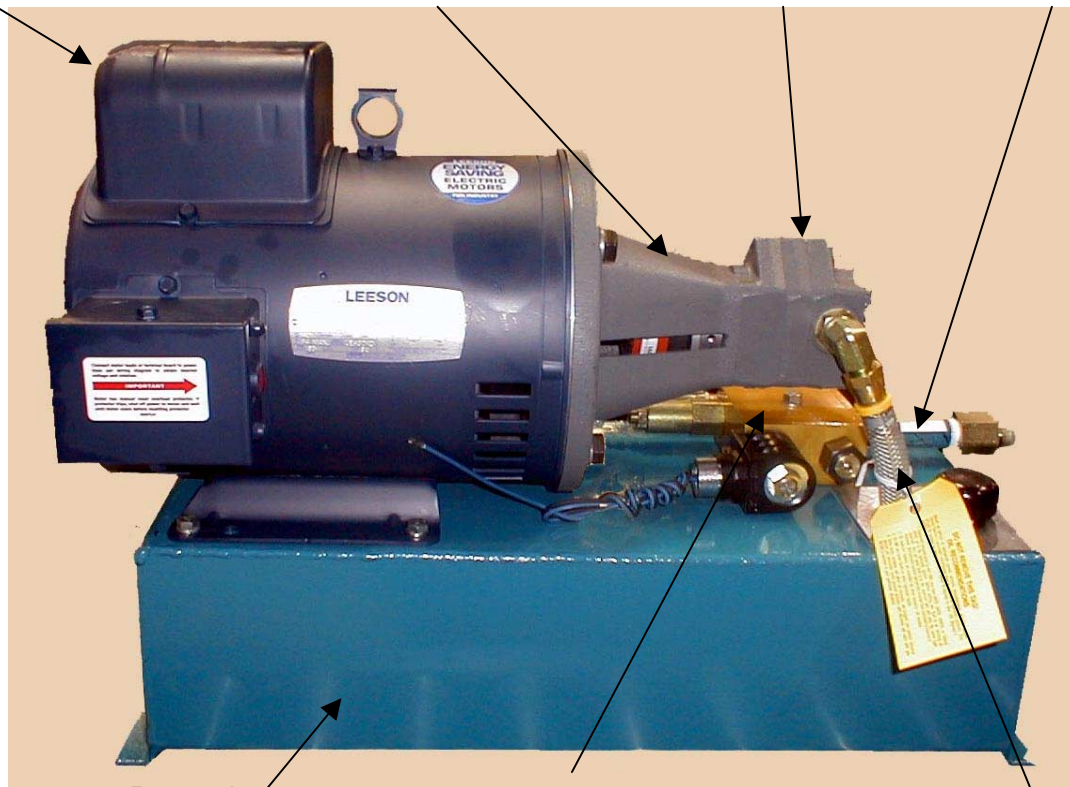
Model 2000K and 6100 Power Units

Single Phase Motor

Pump-Motor Adapter

Hydraulic Pump

Pressure Line
Filter in Pipe



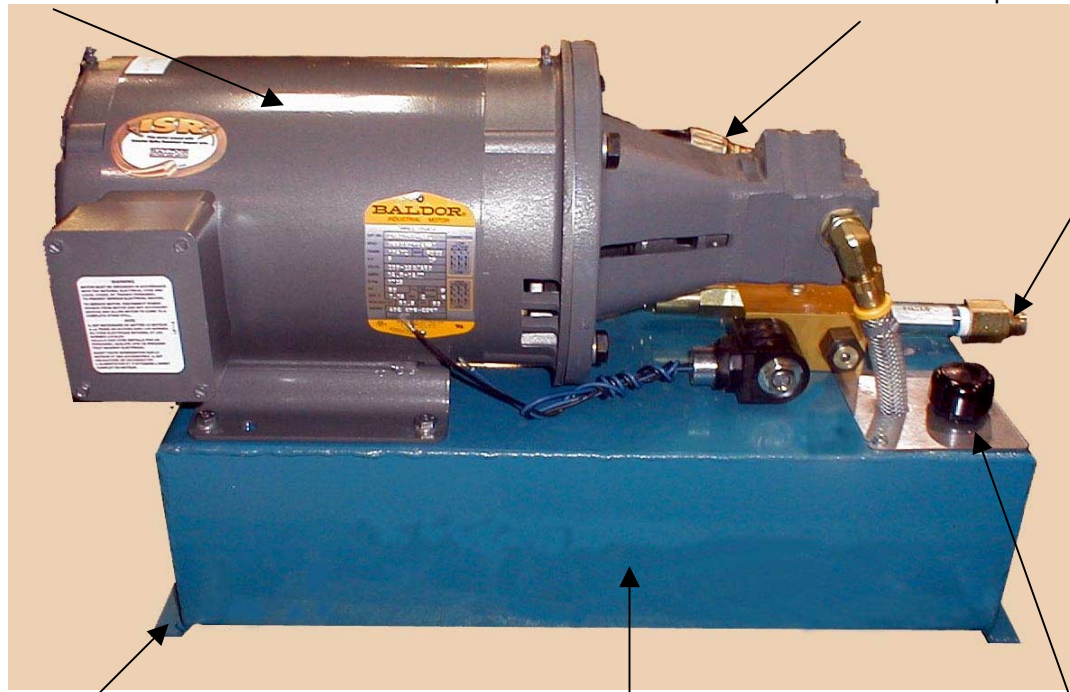
Reservoir

Valve Manifold Block
(Detail on Page 8-8)

Suction Line

Three Phase Motor

Pressure Line from Pump



Pressure Line
to Cylinders

Floor Mounting Flanges

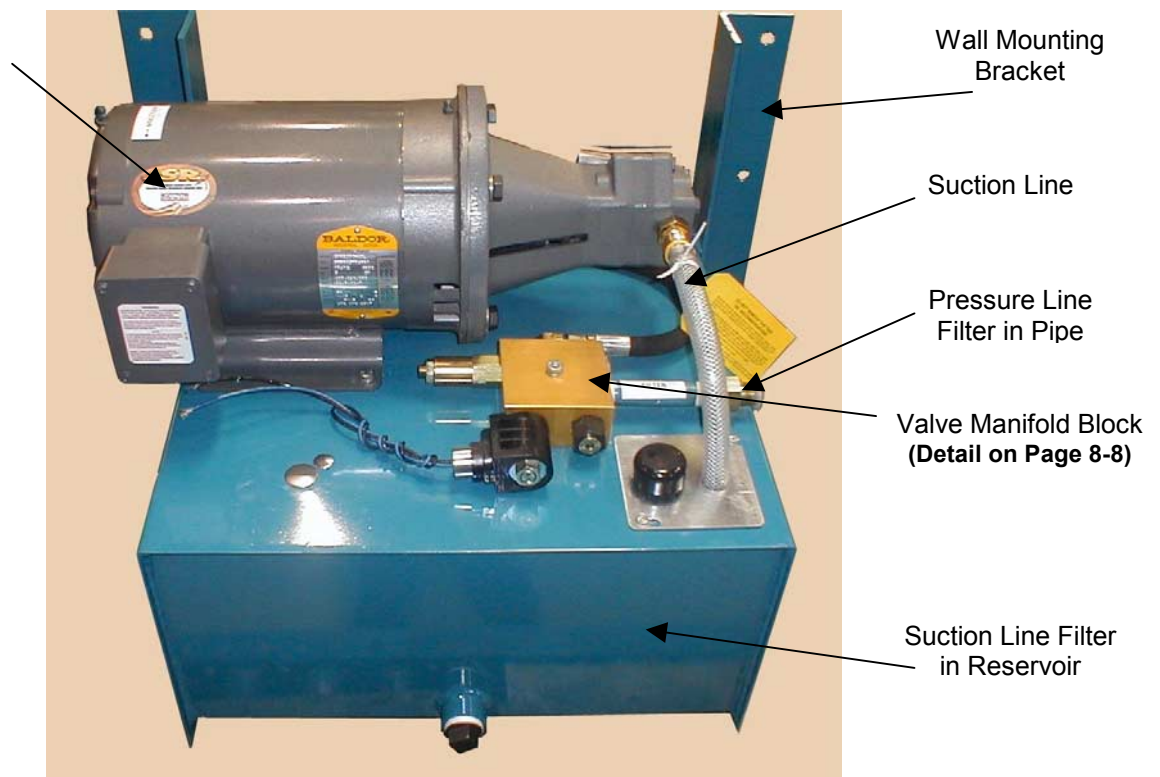
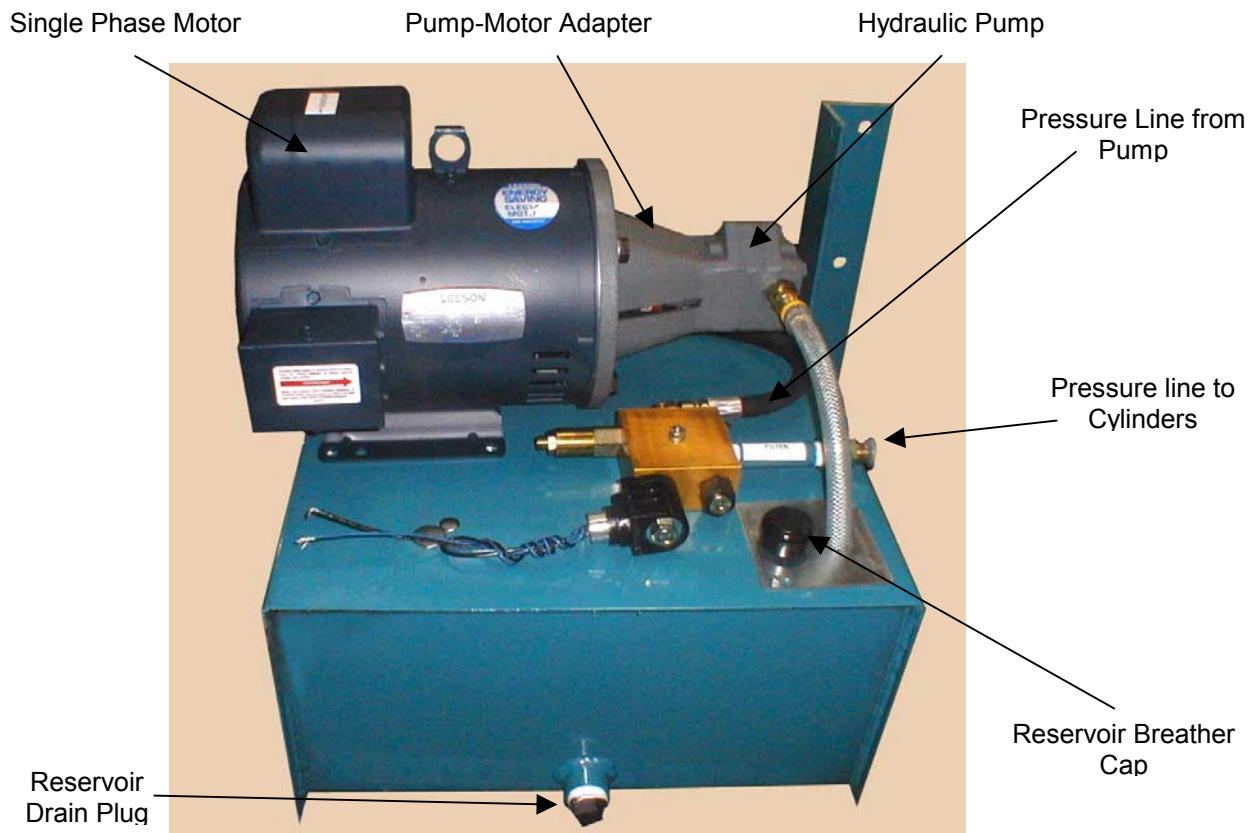
Suction Filter in Reservoir

Reservoir Breather Cap

NOTE: Model 6100 Power Unit is pre-wired to a controller mounted above the motor (not shown)

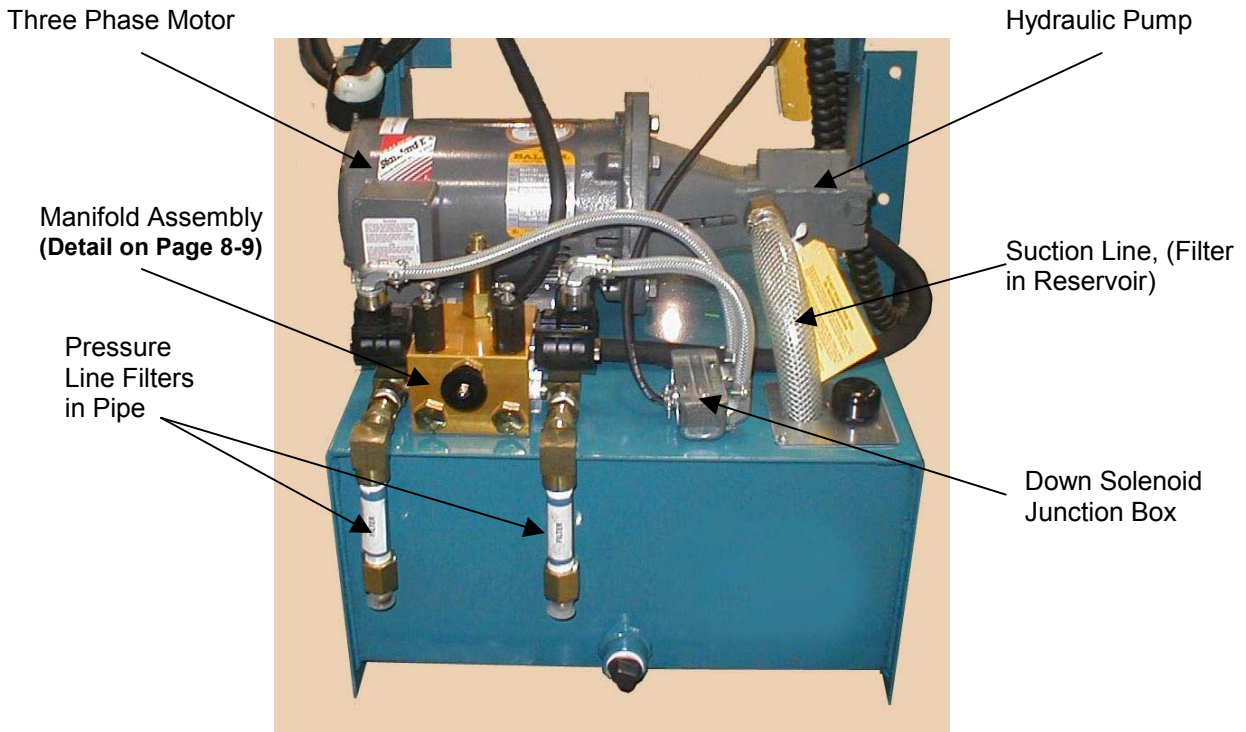
See Page 8-4 For Hydraulic Diagram and Pages 9-1, 2 For Electrical Diagram

Series 2000 and 3000 Power Units

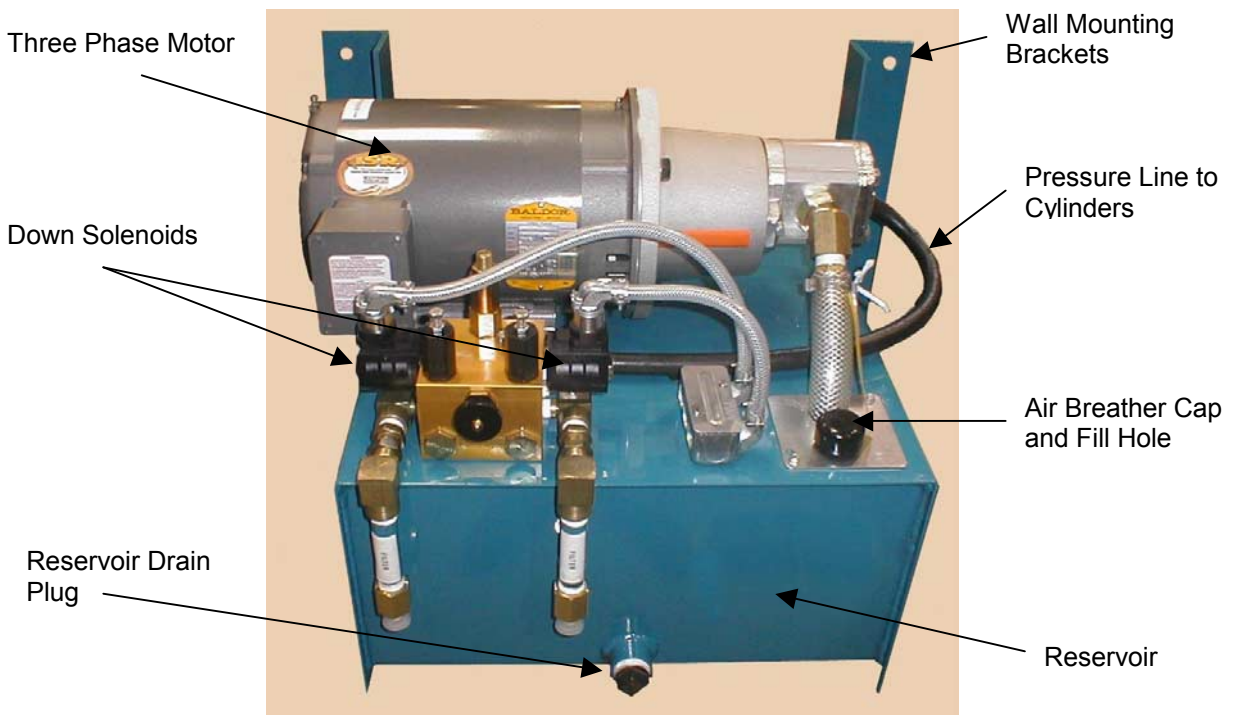


See Page 8-4 for Hydraulic Diagram and Pages 9-1, 2 for Electrical Diagram

Series 4000 and Model 6200 & 6300 Power Unit

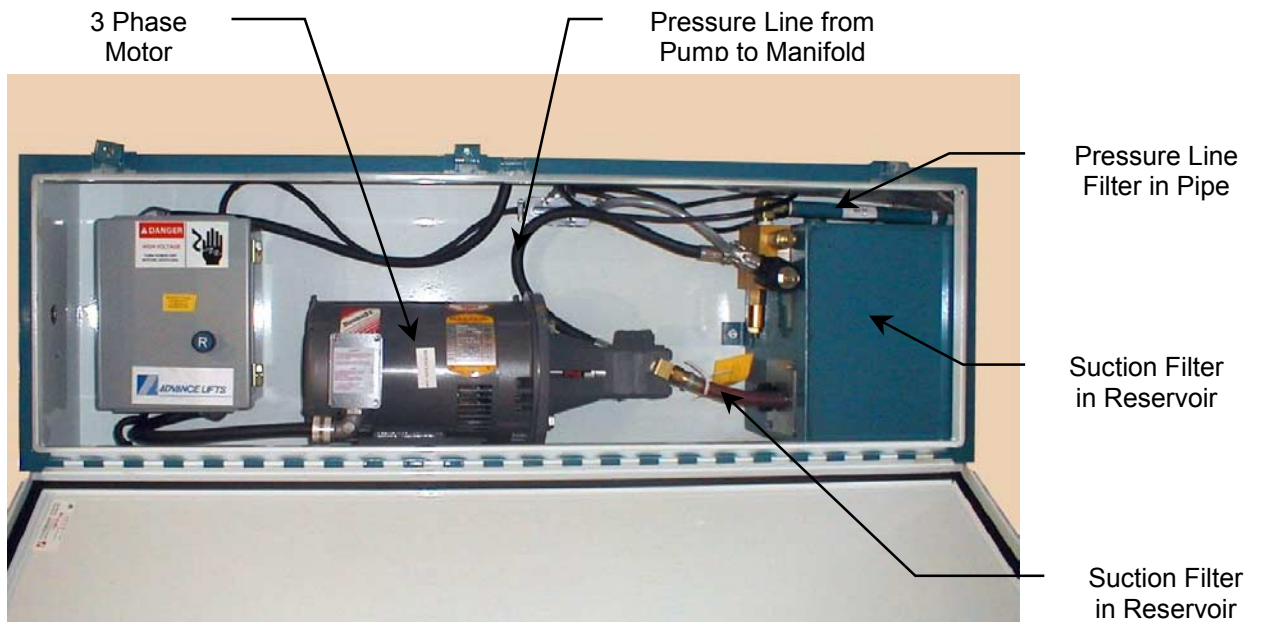
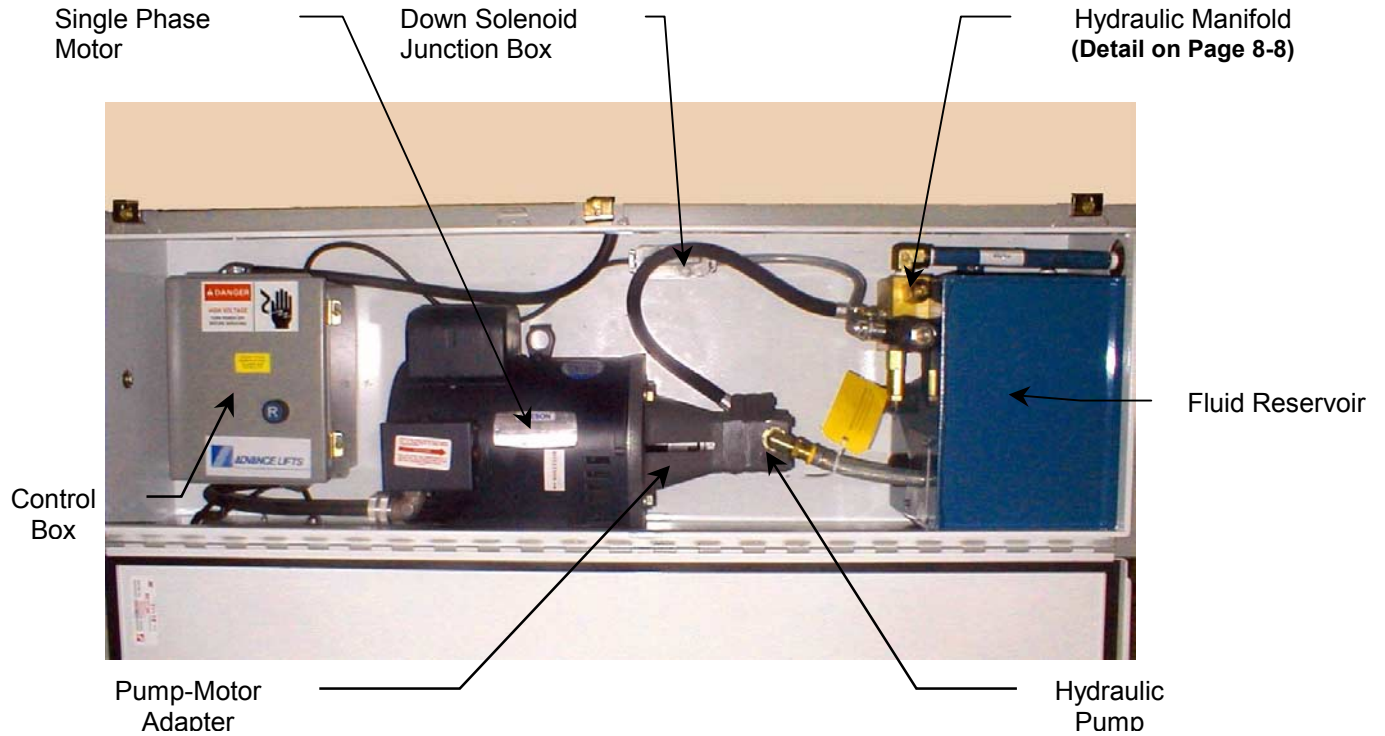


Series 4100 Power Unit



See Page 8-5 for Hydraulic Diagram and Page 9-1 for Electrical Diagram

Model 6150 Power Units



Note: Actual Power Unit Orientation is 90 degrees from pictures shown above.

See Page 8-4 for Hydraulic Diagram and Pages 9-1, 2 for Electrical Diagram

SECTION 8. HYDRAULIC DETAILS

1. General Hydraulic Information:

- A. All hydraulic cylinders will require the replacement of packings and seals after a period of time, depending on usage and environmental conditions. It is normal maintenance just like changing oil in an automotive engine. However, maintenance personnel should recognize the difference between leakage and weepage:
- B. Weepage is the normal accumulation of fluid that passes the seals in the course of operations, as the hydraulic fluid properly performs its lubrication function on cylinder walls and piston rods. It may be occasionally observed squirting from cylinder breathers, but should stop squirting after several cycles of full stroke when the small accumulation is cleared.
- C. Leakage is the fluid that leaks past worn or cut packings and seals. It too may be observed squirting but does not stop after several cycles and the lift will probably not hold position under load.
- D. See repacking under cylinder repair procedures.
- E. 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 or packings.
- F. If you elect to repaint or retouch part of the lift, cover exposed rods with plastic or soluble grease that can be removed after painting to insure that no paint sticks to the rods and damages packings or seals.

2. General precautions:

- A. Be sure that all pressure is relieved from the hydraulic system before disassembling any components. Continue to hold the down button for several seconds after fully lowering the unit on its safety support or the ground, before opening a line or component.
- B. Always be careful to avoid contamination entering the system. Be especially careful with the ends of 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. Advance lifts may be equipped with either NPT fittings (tapered), or SAE fittings (with "O" ring seals). Know the difference!
- B. Be careful when tightening NPT fittings not to over tighten and crack them. Swivel fittings are especially vulnerable and should only be snug enough to stop leaking.
- C. If leakage persists after tightening the fittings fairly hard, inspect fittings for burrs on the mating edges or the possibility of a 37 degree SAE fitting being mixed with the standard 30 degree NPT fittings, or either one being mixed with SAE 45 degree fittings.
- D. When using Teflon tape on NPT fittings, be sure the tape is started 1-1/2 threads back from the leading edge and only use 2 wraps to be sure that tape does not break off and contaminate the system. You may substitute pipe sealant with Teflon paste from Pro Lock or Locktite, but again don't over apply. Never use sealant or tapes on swivel fittings or SAE fittings.
- E. Never reuse old Teflon tape. Once a connection has been opened, remove all old tape and apply fresh tape.

Oil Recommendations & Seal Compatibility

Fluids:

1. The first choice for fluid is Dexron III automatic transmission fluid. This is the fluid normally supplied by the factory and is suitable for a temperature range of –10 to +100 degrees Fahrenheit.
2. Older units may be filled with 5W30 motor oil that is suitable for the same temperature range and was supplied by the factory prior to 3/25/85. Be sure not to mix fluids. If you wish to switch from one fluid to another, drain the reservoir and system, then refill with the new fluid.
3. **Caution!** Do not use any fluid that has not been approved by the Advance Lifts engineering department. Brake fluids and other hydraulic fluids may attack the system's seals or hoses.
4. A biodegradable and fire resistant fluid is also available, however you must contact the factory for its name, because it is also necessary to change some seals and/or hoses for total system compatibility, depending upon the specific model lift that you have.

Seals:

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

Options:

1. For extremely cold applications we recommend an oil immersion heater which simply fits in the drain coupling on most units, replacing the drain plug, these are available in appropriate sizes from the factory.
2. For extremely warm temperature ranges of +20 to +140 degrees Fahrenheit, you may switch to 10W30 motor oil. If ambient temperatures are expected above 140 degrees, consult the factory.

Pressure Chart for Hoses & Pipes

Hose	SAE	Working PSI	Bursting PSI
1/4"	100-R2A	5000	20000
3/8"	100-R2A	4000	16000
1/2"	100-R2A	3500	14000
3/4"	100-12	4000	16000

Seamless Pipe	Working PSI	Bursting PSI
1/2" Schedule 80	4100	21000
3/4" Schedule 80	3500	17600
1" Schedule 80	3500	15900

Caution: Never use any hose or piping that does not meet or exceed the ratings listed above.

Line Size Calculations

Formula: $P = \frac{V \times Q}{8,300 \times D \times D \times D \times D}$

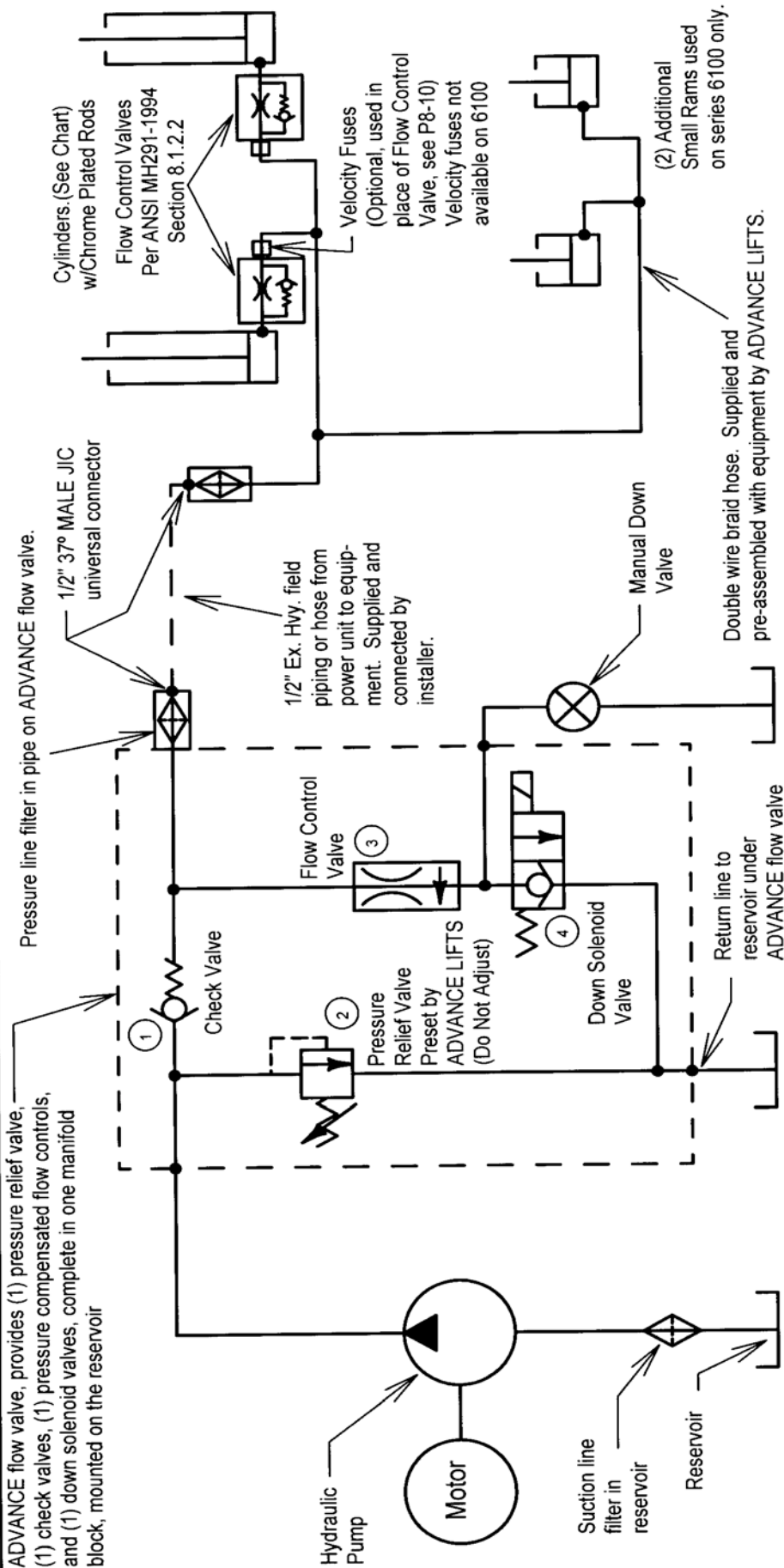
Where: P=PSI loss per foot
 Q=GPM flow
 V=SUS viscosity @
 Operating temp.
 D=Inside dia. Of pipe
 in inches

Example: For a standard Series 2000 lift with a flow rate of approximately 3GPM, we recommend 1/2" SAR 100R2A hose up to 35 feet and 3/4" pipe or hose for distances slightly beyond that. This keeps the line pressure loss at 40 PSI and allows for efficient lowering speeds.

For each T or 90-degree elbow add 3 feet to length.

For each 45-degree elbow add 1 foot to length.

Target the pressure to below 50 PSI. The empty lift going down will see any excess piping losses as restrictions and increase the time it takes the lift to lower.



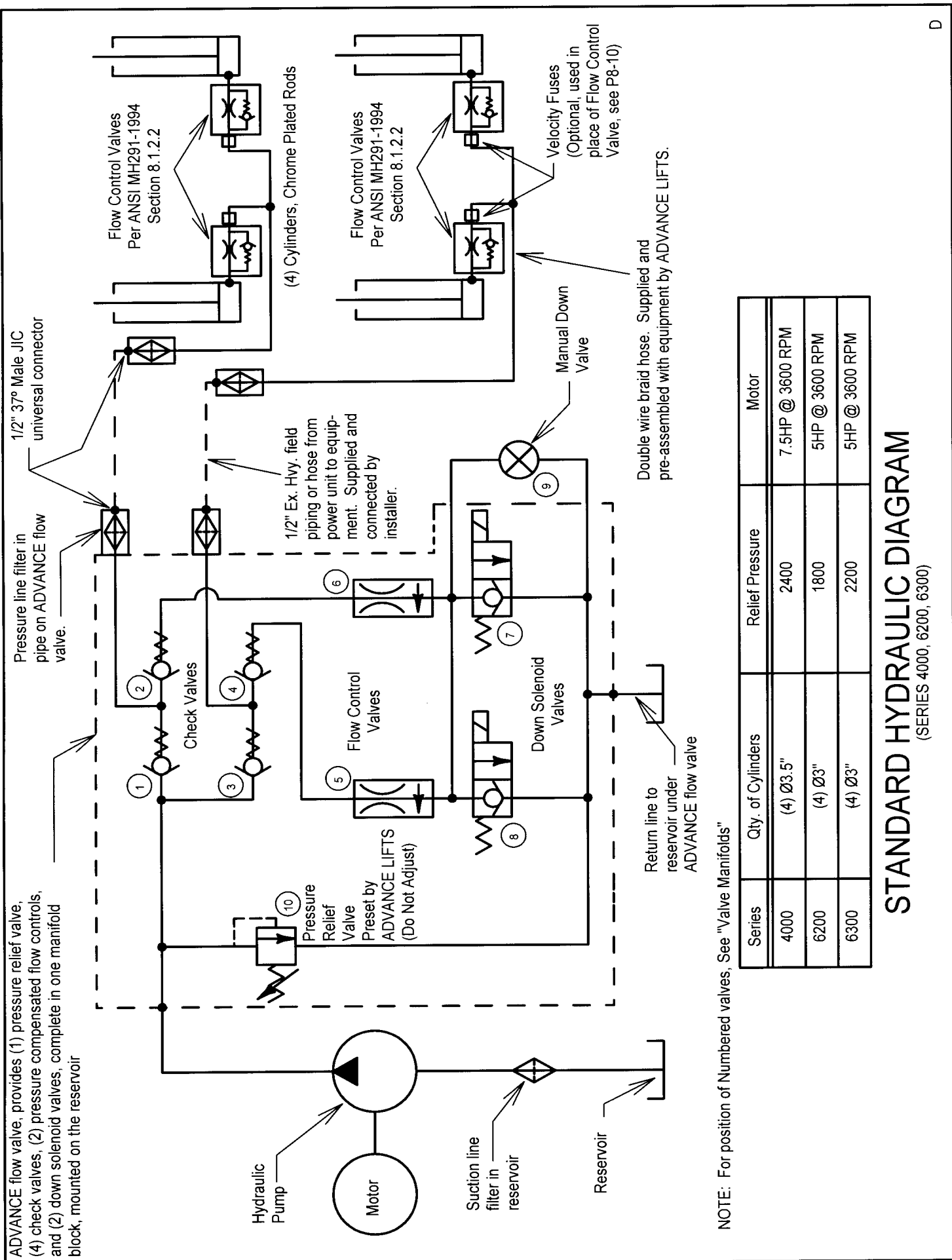
NOTE: For position of Numbered valves, See "Valve Manifolds"

Series	Qty. of Cylinders	Relief Pressure	Motor
1035	(2) Ø3"	1350	2HP @ 1800 RPM
2000	(2) Ø3"	3150	5HP @ 1800 RPM
2000K	(2) Ø3"	3150	5HP @ 1800 RPM
3200	(2) Ø3.5"	2650	5HP @ 1800 RPM
3300	(2) Ø4"	2450	5HP @ 1800 RPM
5000	(2) Ø3"	3150	5HP @ 1800 RPM
6100	(4) Ø3"	3150	5HP @ 1800 RPM
6150	(3) Ø3.5"	3050	5HP @ 1800 RPM

8000# CAPACITY
10,000# CAPACITY

STANDARD HYDRAULIC DIAGRAM

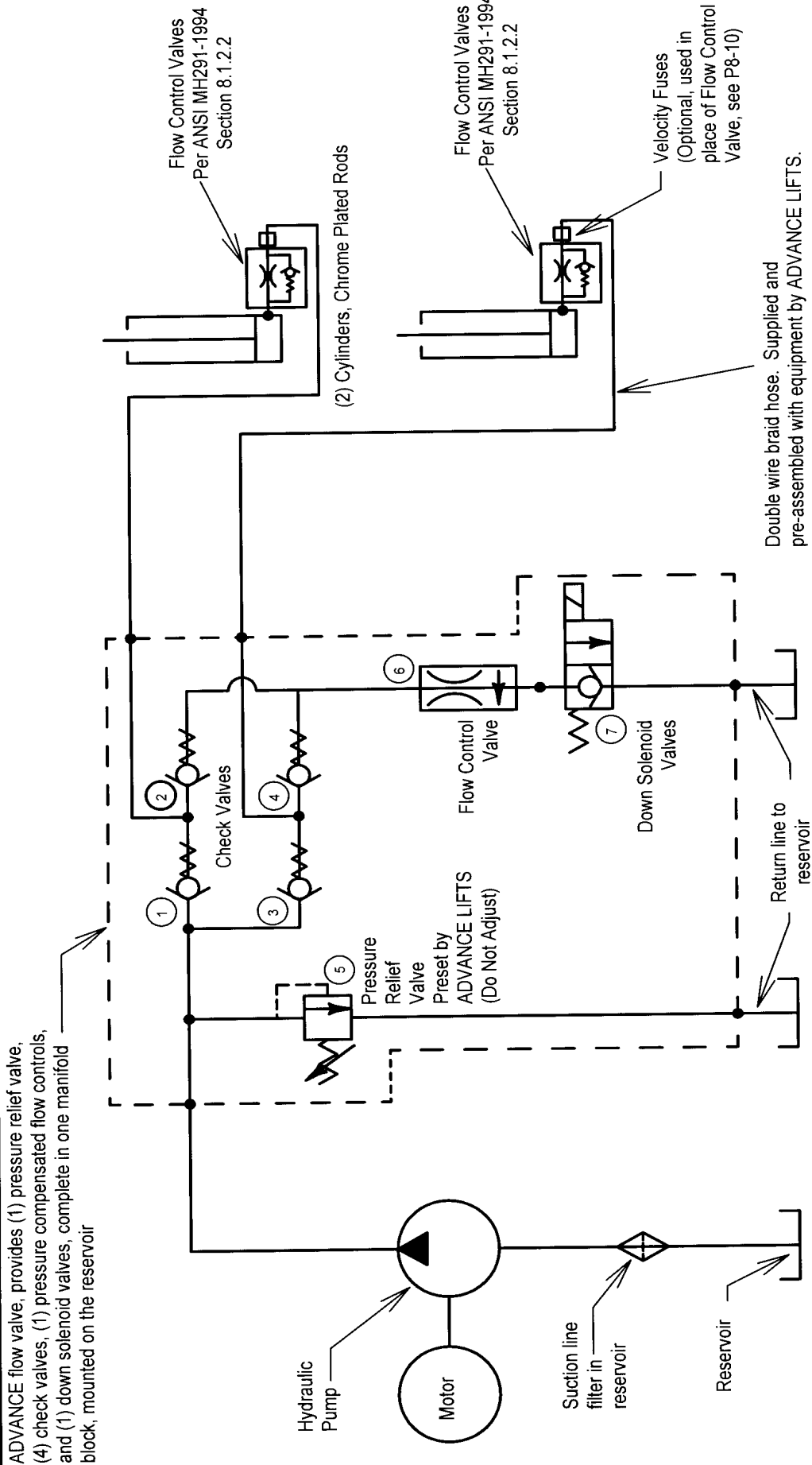
(SERIES 1035, 2000, 2000K, 3000, 5000, 6100, 6150)



NOTE: For position of Numbered valves, See "Valve Manifolds"

Series	Qty. of Cylinders	Relief Pressure	Motor
4000	(4) Ø3.5"	2400	7.5HP @ 3600 RPM
6200	(4) Ø3"	1800	5HP @ 3600 RPM
6300	(4) Ø3"	2200	5HP @ 3600 RPM

STANDARD HYDRAULIC DIAGRAM (SERIES 4000, 6200, 6300)



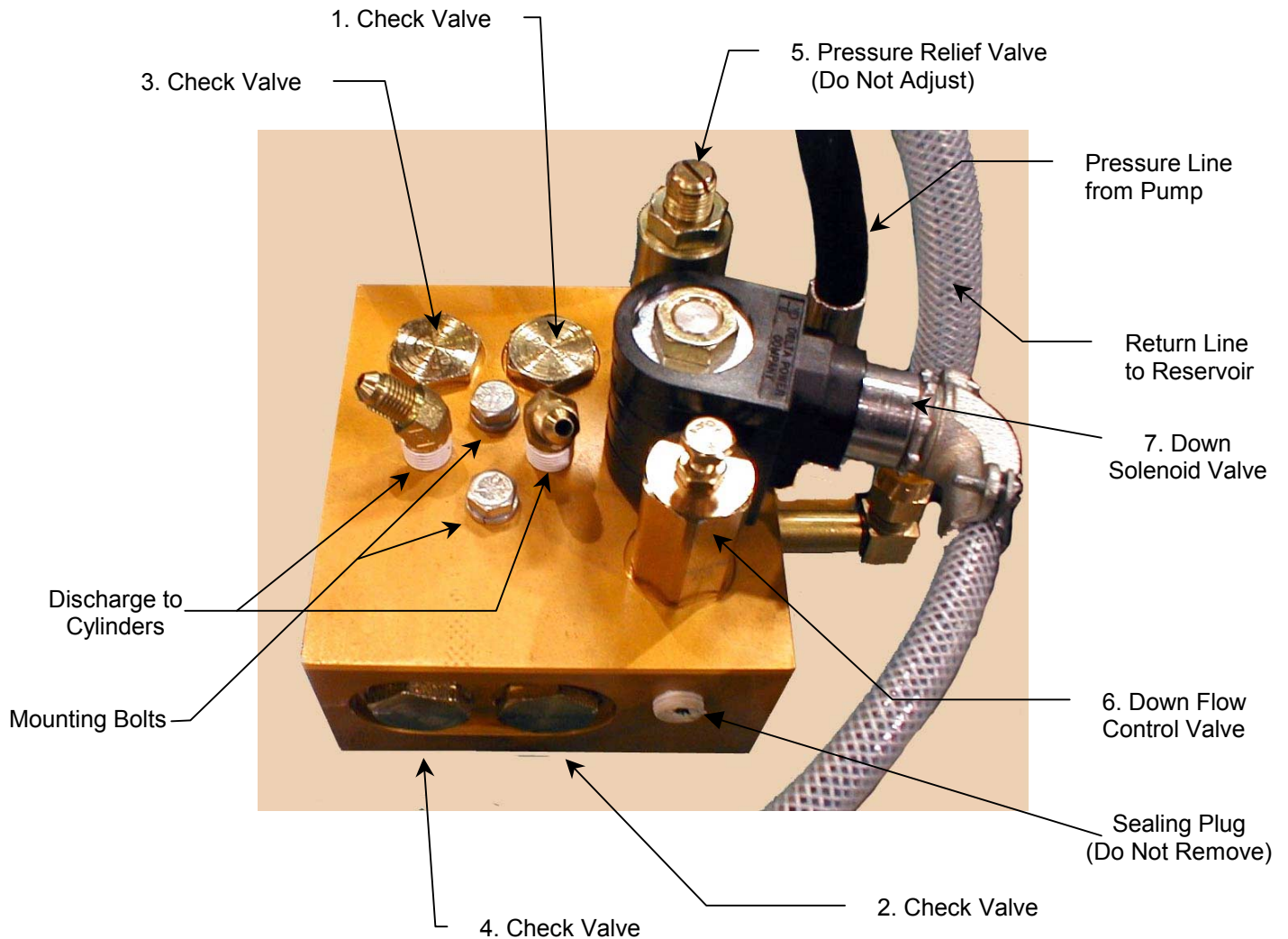
NOTE: For position of Numbered valves, See "Valve Manifolds"

Series	Qty. of Cylinders	Relief Pressure	Motor
1045	(2) Ø1.75"	2150	2HP @ 1800 RPM

STANDARD HYDRAULIC DIAGRAM

(SERIES 1045)

Model 1045 Valve Manifold



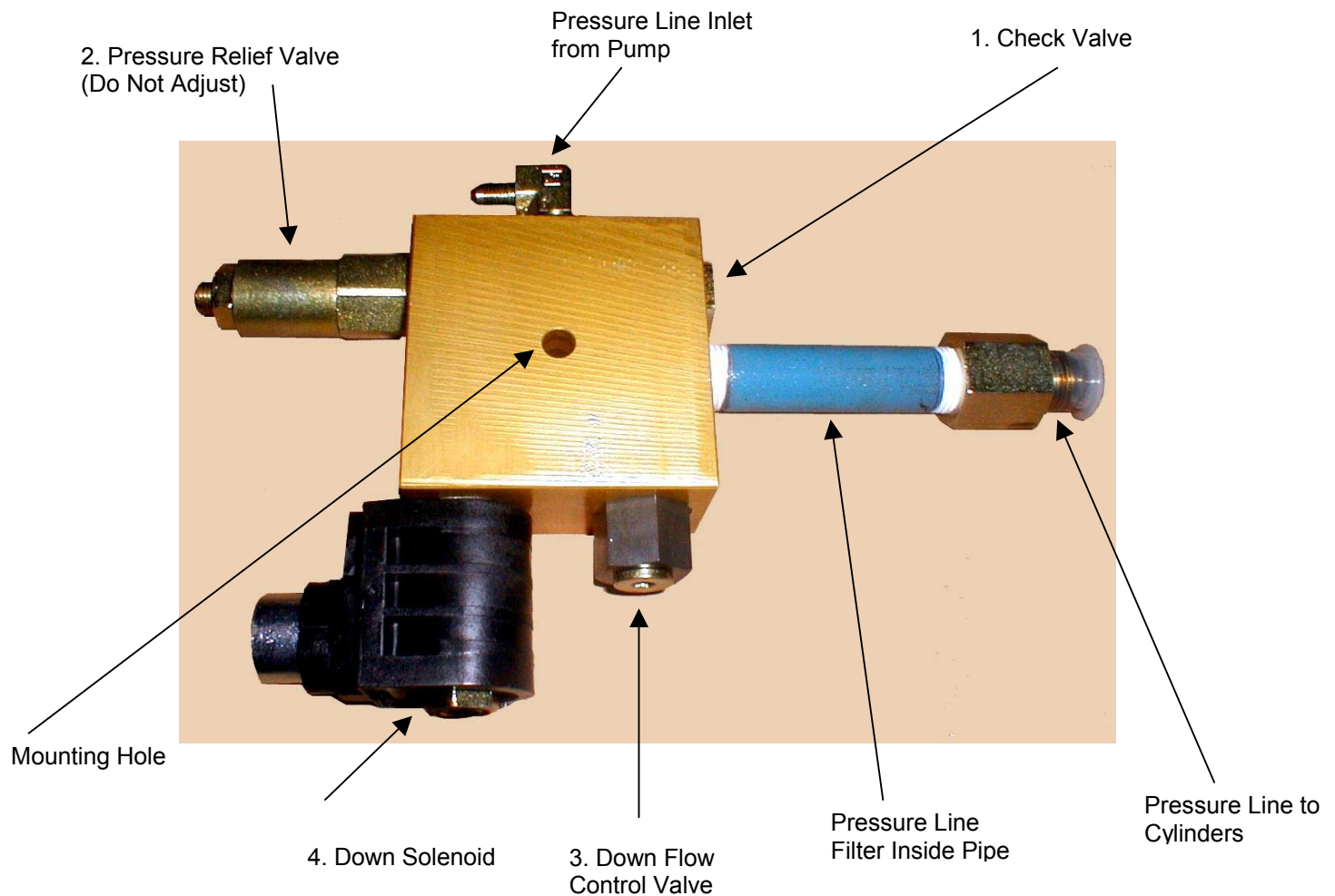
Reference Page 8-10 for Valve Cartridge Details

NOTE: Valve numbers coincide with those shown in the hydraulic diagram on Page 8-6

Part Number Reference

Description	Part Number
1-4. Check Valves	P-001-262
5. Pressure Relief Valve	P-001-263
6. Down Flow Control Valve	P-001-265
7. Down Solenoid Valve	P-001-279

Series 1035, 2000, 2000K, 3000, 6100, 6150
Standard Valve Manifold



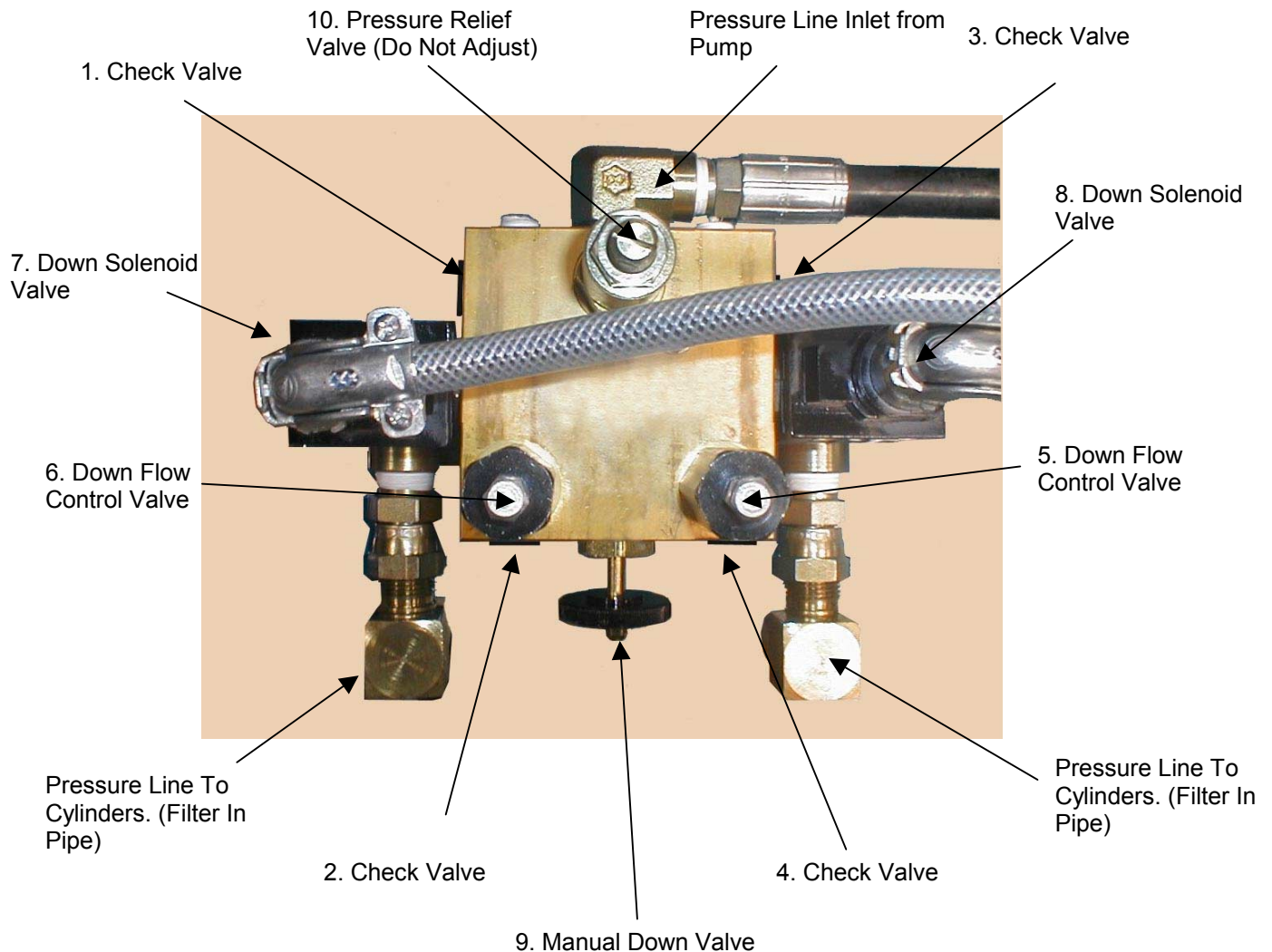
Reference Page 8-10 for Valve Cartridge Details

NOTE: Valve numbers coincide with numbers shown in the hydraulic diagram on Page 8-4.

Part Number Reference

Description	Part Number
1. Check Valve	P-001-262
2. Pressure Relief Valve	P-001-263
3. Down Flow Control Valve	P-001-293
4. Down Solenoid Valve	P-001-279

**Series 4000, Model 6200, Model 6300
Standard Valve Manifold**

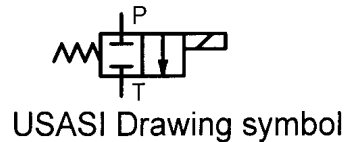
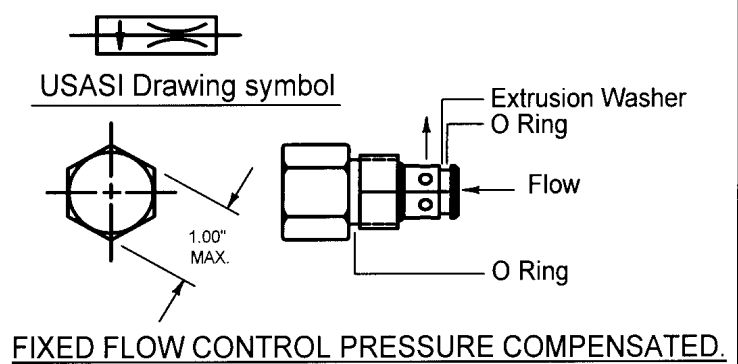
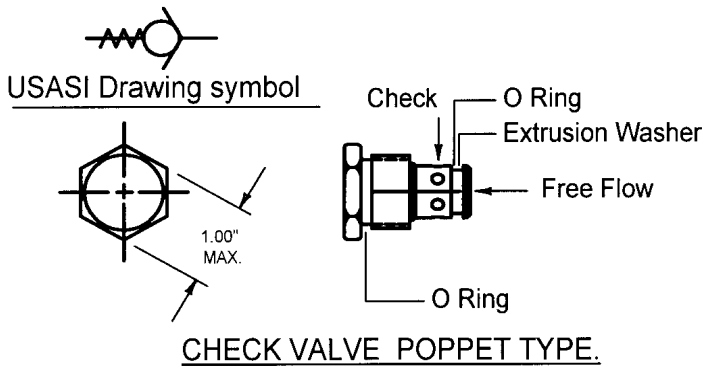


Reference Page 8-10 for Valve Cartridge Details

NOTE: Valve numbers coincide with those shown in the hydraulic diagram on Page 8-5

Part Number Reference

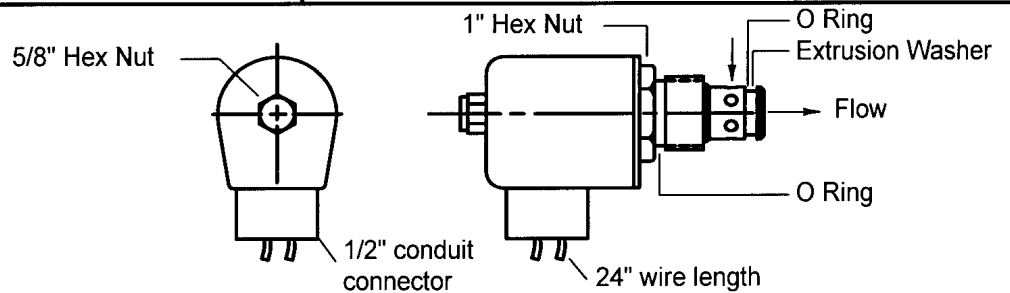
Description	Part Number
1-4. Check Valves	P-001-262
5,6. Down Flow Control Valves	P-001-303
7,8. Down Solenoid Valves	P-001-293
9. Manual Down Valve	P-001-277
10. Pressure Relief Valve	P-001-263



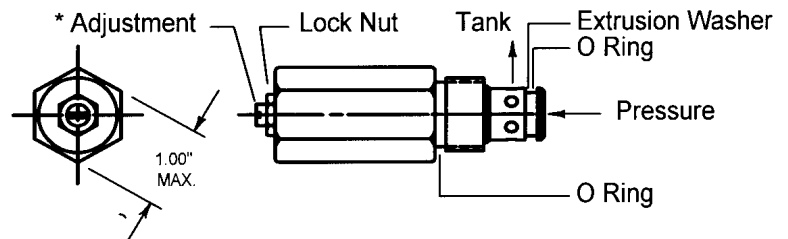
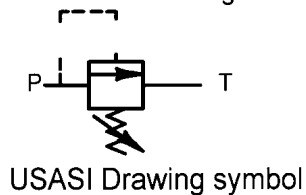
Coil can be removed with 5/8" Hex Nut without disturbing Hydraulic System integrity.

1" Nut then removes entire valve.

To clean Flow Control Down Solenoid Valve and check Valve, use pencil w/ eraser or other Non-shedding nor sharp object. Push in seat at free flow end, repeat several times while immersed in kerosene then blow dry. Inspect O Rings and teflon extrusion washer, then Re-install.



In the event the Relief Valve setting has been changed the following procedure will approximate the correct setting. Lower the equipment completely and hold the down button a few extra seconds. Loosen the locking nut without changing the screw setting. Gently turn the screw clockwise counting the turns until the screw gently bottoms out. Return to the original setting. Place a test load on the equipment (if applicable) not exceeding the nameplate rated load. With the equipment fully lowered turn the adjustment clockwise in 1/8 turn steps counting the turns until the equipment lifts the rated load. DO NOT bottom out the screw adjustment lock the nut at the setting.



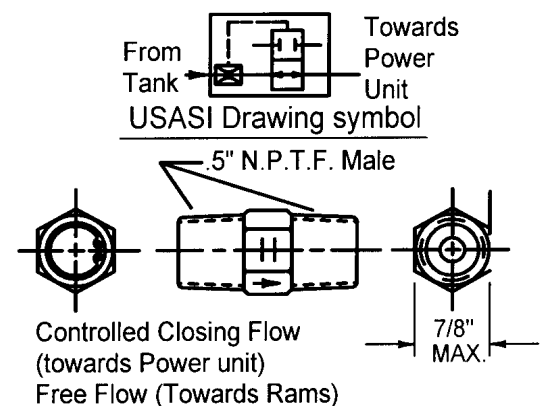
* DO NOT CHANGE FACTORY SETTING.
Relief Valve is used to Prevent Overloading Equipment.
ADJUSTABLE PRESSURE RELIEF VALVE POPPET TYPE.

NOTES: Velocity Fuse will close in controlled direction at nominal flow (plus 15% minus 0%) and remain closed at pressure above 50 PSI.
Rated 3000 PSI service material-steel.

If Velocity Fuse actuates support the equipment securely and correct the cause of the high flow rate ie. cracked hose loose fitting etc. Then put the hydraulic system under pressure again to re-set the Velocity Fuse. Raise the equipment remove supports then operation is normal. If Velocity Fuse is to be field installed:

Velocity Fuse is piped into Base of each Ram. Use elbows and adapters as needed to hose hydraulic line 90 from Velocity Fuse laying the hydraulic hose so it will not be pinched when the equipment is lowered. (by installer)

(OPTIONAL)
VELOCITY FUSE.



Repair Procedures for 3", 3 ½", & 4" Cylinders

Cylinders for models 1035, 1045, 2000, K, 3000, 4000, 6000, & Truck Dock

Tools & Supplies Required:

- (2) small screwdrivers to remove retaining rings and rod wipers.
- (1) snap ring tool (Waldes Truarc external type #S-660 or Industrial pliers #P-104.)
- A (5) gallon bucket to collect fluid from the cylinders.
- Wrenches to disconnect hydraulic fittings.
- Cylinder hone (Craftsman glaze breaker #9K4633 or equivalent).
- Emery cloth.
- Clean lint free cloths and hose caps.
- Clean work surface (butcher paper on top of most surfaces works well), with a means of holding cylinder end fixed position for disassembly and assembly.
- "Lubriplate" Grease and hydraulic fluid matching the existing fluid in the system for topping off when finished.
- Safety leg supplied with each Advance unit.

Cylinder Removal:

1. Raise the empty lift and settle it securely on its safety leg. (Note that the model 1045 is the only unit that will allow cylinder removal in the fully lowered position.)
2. Once settled securely, depress the down button an additional 20 seconds to relieve any pressure from the cylinders. Remove the power connection to the power unit and mark with a warning label or lock the connection out to prevent unintended reconnection.
3. Disconnect the hydraulic hoses from the cylinders, on units made after April 1st 2000 remove the internal "Hexagonal" flow control from the cylinder fitting nipple and cap the hose ends to prevent contamination.
4. Remove the cylinder from the lift by freeing the upper pin first and swinging the cylinder into an easily supported position. Old 1040 cylinders require bolt removal.
5. 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.
6. Note that if you are going to repack one cylinder on a lift, it is usually a good idea to do all cylinders at the same time. Packings generally wear at the same rate and if you only repack one cylinder, you may have to pull the lift out of service soon thereafter to do the others.

Cylinder Disassembly:

1. Secure the cylinder with a rod through the clevis or cross tube, or bolt through the mounting plate on 1040 housings. Do not use a vise, which will crush or otherwise damage the housing.
2. Using snap ring pliers (or screwdrivers with spiral type retaining rings), remove the retaining rings in front of the cylinder bearings. Some cylinders also have spacer rings, which are easily removed if the bearing is pushed back into the housing slightly, and these units will have a second retaining ring to remove.

Cylinder Disassembly: (Continued)

3. Carefully remove any debris from the retaining grooves, and then pull out the entire rod, bearing & 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.
4. Remove the hex nut or snap ring adjacent to the piston, then slide the piston and bearing off of 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.

Repacking and Inspection:

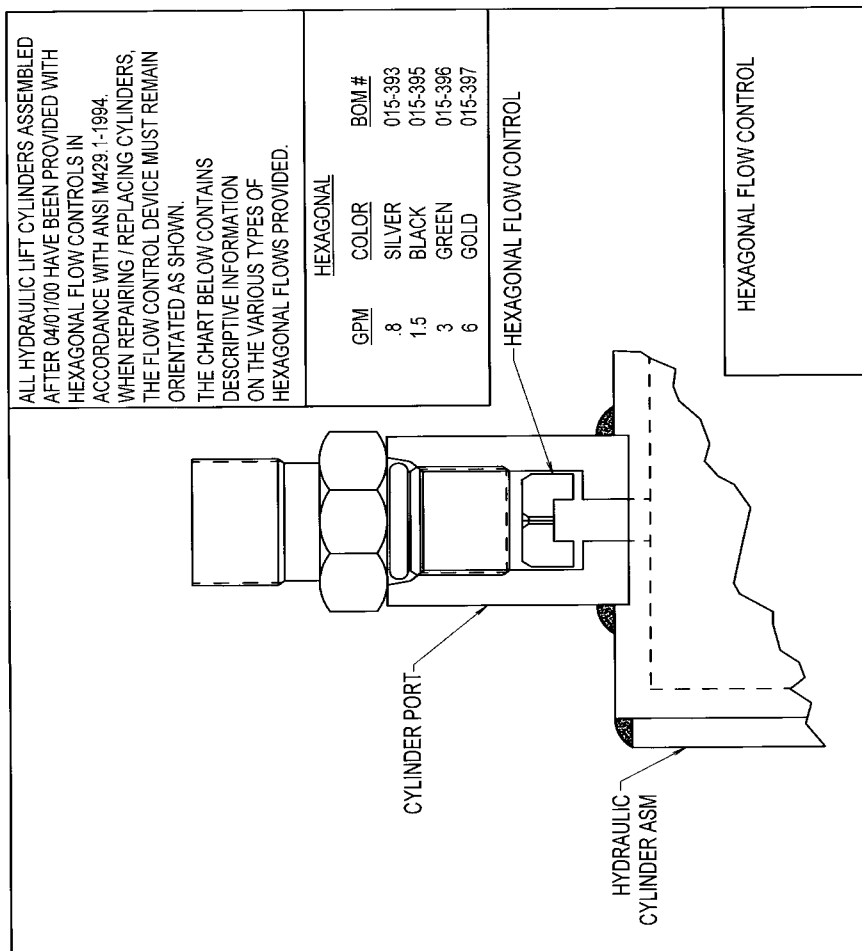
1. Carefully inspect the entire housing with a flashlight, looking for any evidence of rust, scratches or surface blemishes. Small blemishes may be removed with fine emery cloth and larger faults will require the use of the hone listed above. Be sure to thoroughly clean the housing when you are done to avoid contamination.
2. Do not become the victim of a false economy by using only part of a repacking kit. Since you have invested in disassembling the cylinder, use all new packing parts and seals of the reused old parts may fail in the near future causing a repeat of the whole exercise.
3. Remove the rod wiper 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 fingers, sliding it into its groove. Depending upon temperature, the rod wiper may slide in much easier if it is warmed in hot water, then dried, lubricated, and inserted. The bearing may now be slid back onto the rod.
5. Begin repacking the piston by using a screwdriver to carefully remove the old backup rings and seal from the groove. Newer cylinders are also equipped with a wear ring that should be removed at this time. Be careful to leave the grooves nick free and clean.
6. Lubricate the new backup rings, seal and wear ring and gently stretch them into place. Note that the seal fits between the rings.
7. Inspect the static seal groove on the cylinder rod, then lubricate the groove and slide a new static seal in place. Slide the piston back into position noting that the flat side, not the chamfered side, should rest against the retaining ring or nut. Reinstall the retaining ring or nut using Locktite if the fastener is a plain nut.

Reassembly:

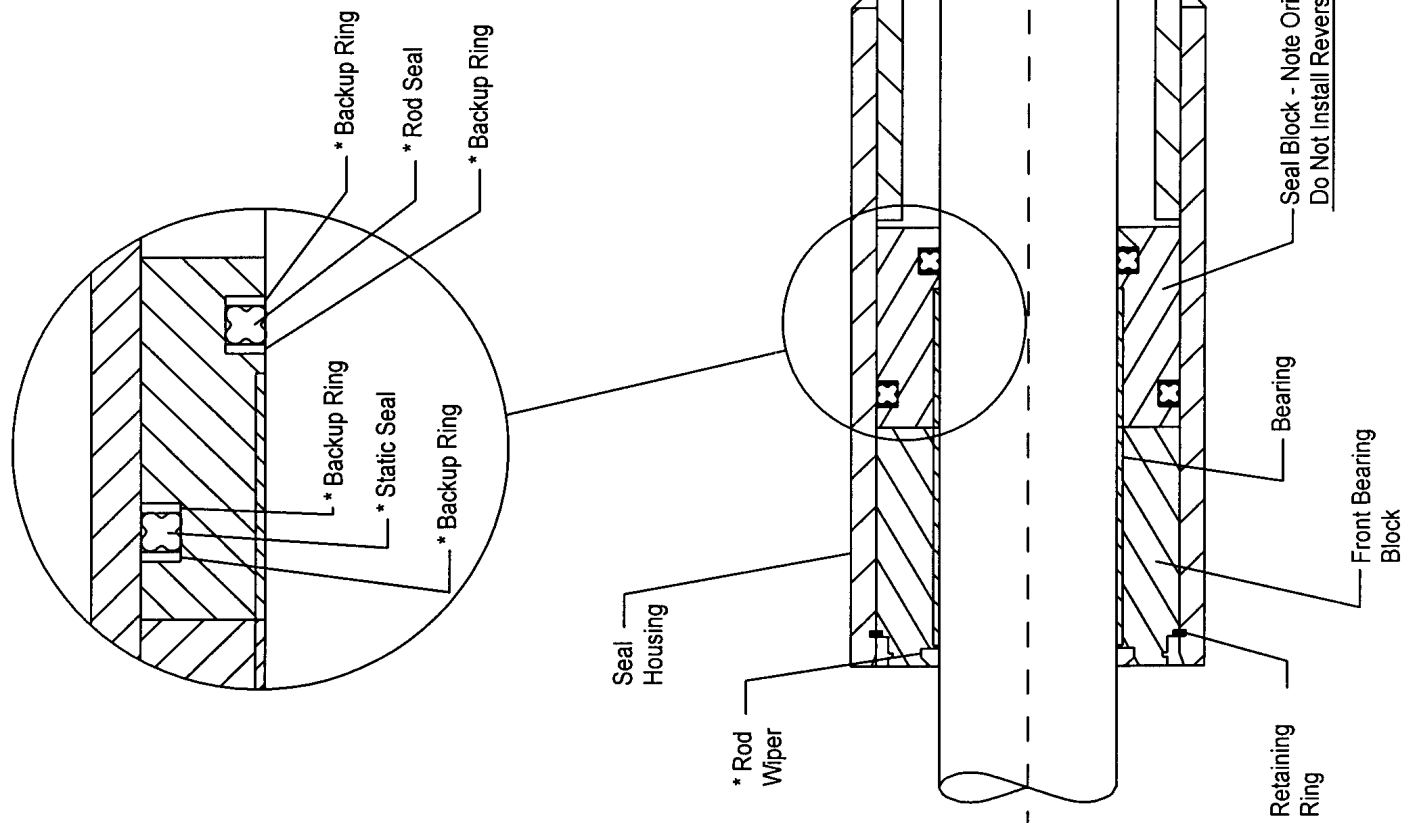
1. Liberally lubricate the outside of the new packing kit and the groove in the cylinder housing, align the piston carefully and slide the entire assembly back into the housing.
2. With 3-1/2" & 4" cylinders you may simply compress the retaining ring and slide the bearing into position and release the ring into its groove. With 3" cylinders you must slide the bearing beyond its normal position to install the inner retaining ring, insert the spacer washer, then install the outer ring. In all cases be sure that the retaining rings are fully seated in their grooves or the cylinders will come apart when fully extended, causing an accident.

Reinstallation:

1. Remount the cylinders in the lift.
2. On units made after 4/1/00 reinstall the "Hexagonal" flow controls in the cylinder-housing nipple, care must be taken to insure the flow controls are installed with the flat side visible and the grooved side down as illustrated below.
3. Reattach the hoses with special care to avoid contamination.
4. Clean up any spilled oil to insure that it is not later misinterpreted as a new oil leak.
5. Connect the electrical power and cycle the lift several times, holding the down button an extra 20 seconds each time to help bleed air from the hydraulic system. This will eliminate any "Spongy" operation. Check the oil level and top off $\frac{1}{2}$ " from the top of the reservoir with the same type fluid originally used.
6. The lift is now ready to go back into service.



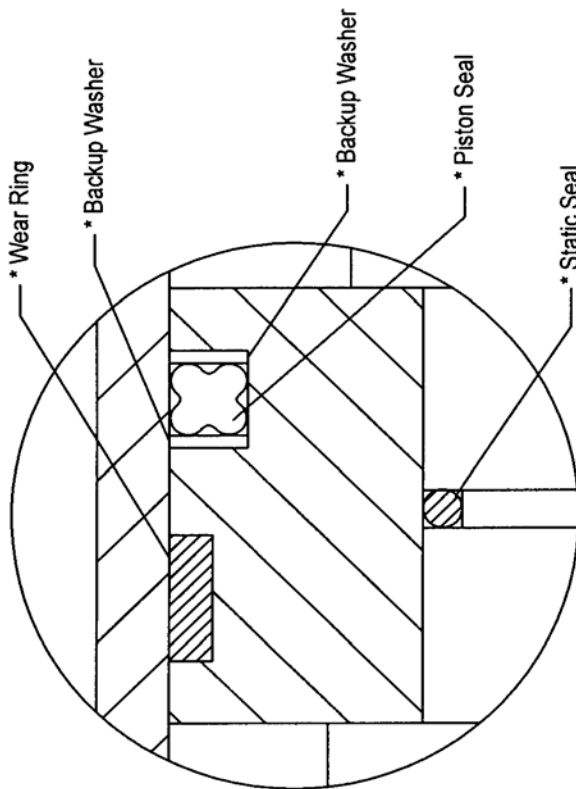
Model 1045 Cylinder



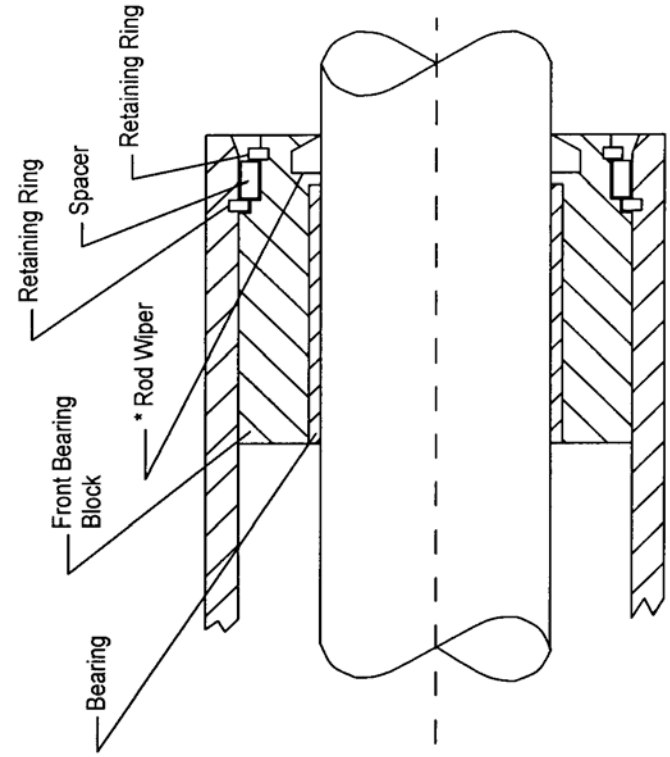
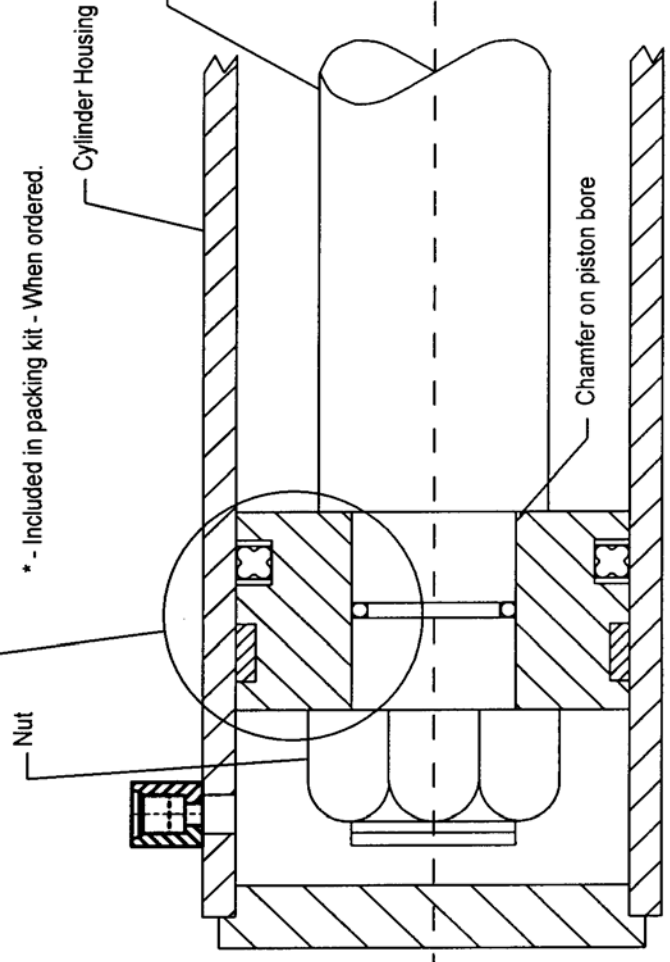
* - Included in packing kit - When ordered.

Series 1035, 2000, 2000K, 5000, 6100, 6200, 6300 Cylinders

Model Number	Cylinder Bore	Cylinder Rod Dia.
1035	3"	1 3/4"
2000		
2000K		
5000		
6100		
6200		
6300		



* - Included in packing kit - When ordered.

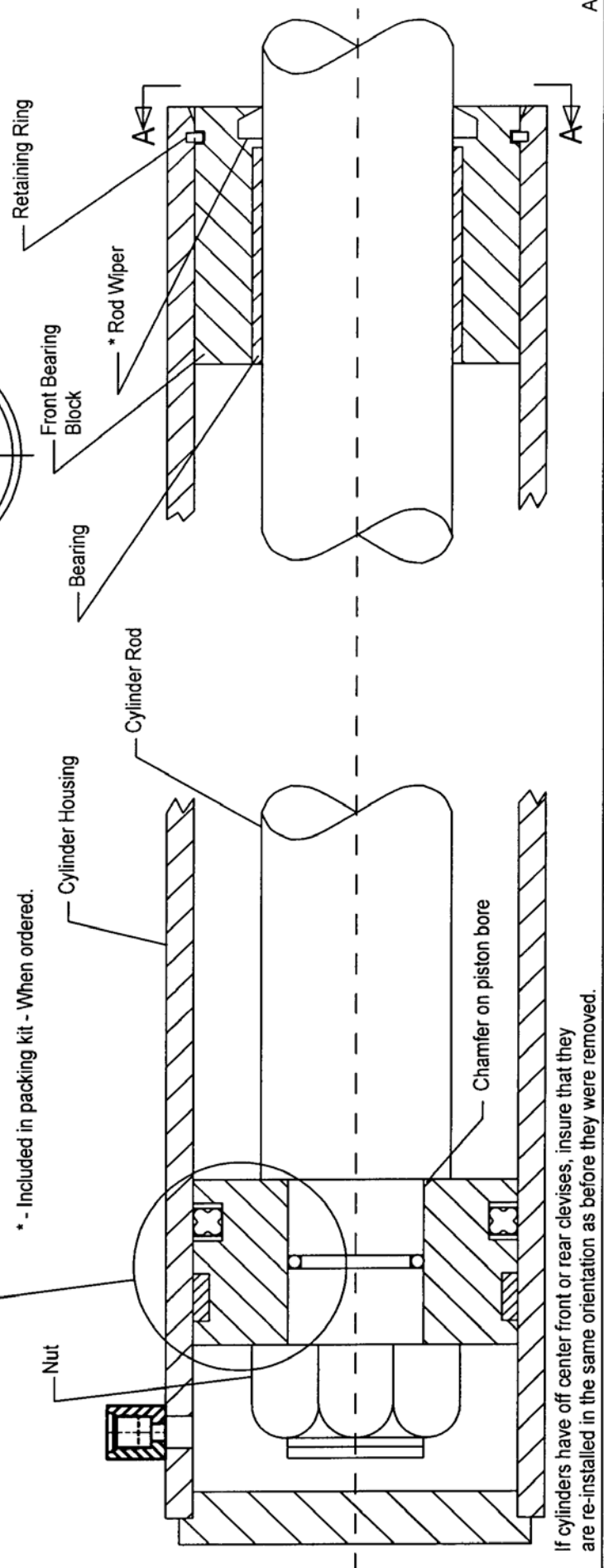
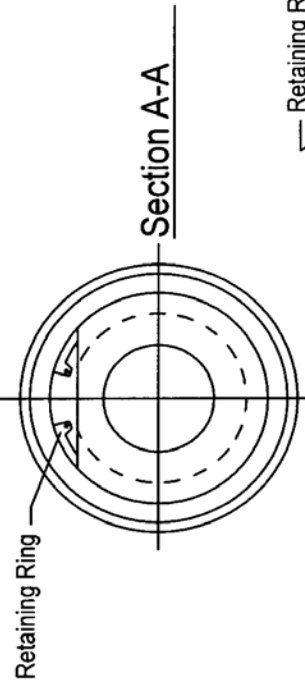
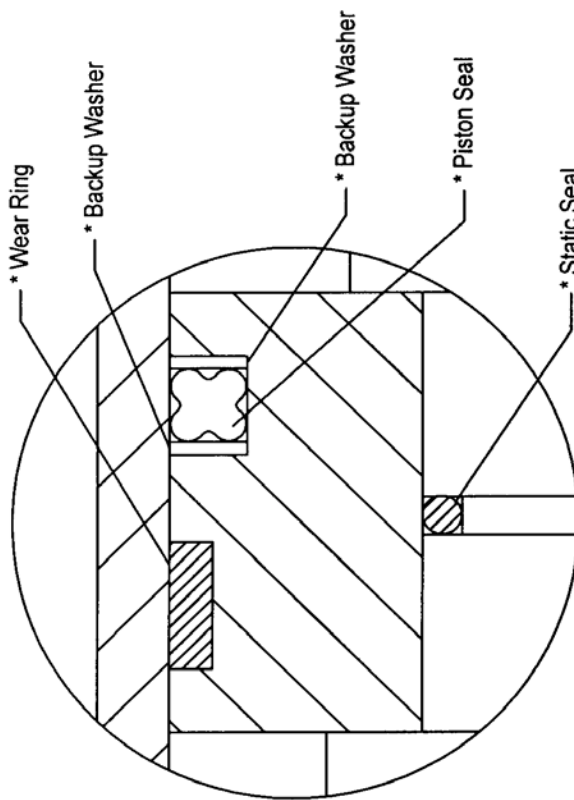


If cylinders have off center front or rear clevises, insure that they are re-installed in the same orientation as before they were removed.

Note: Future cylinder designs may use a front bearing block similar to the series 3000 cylinder.

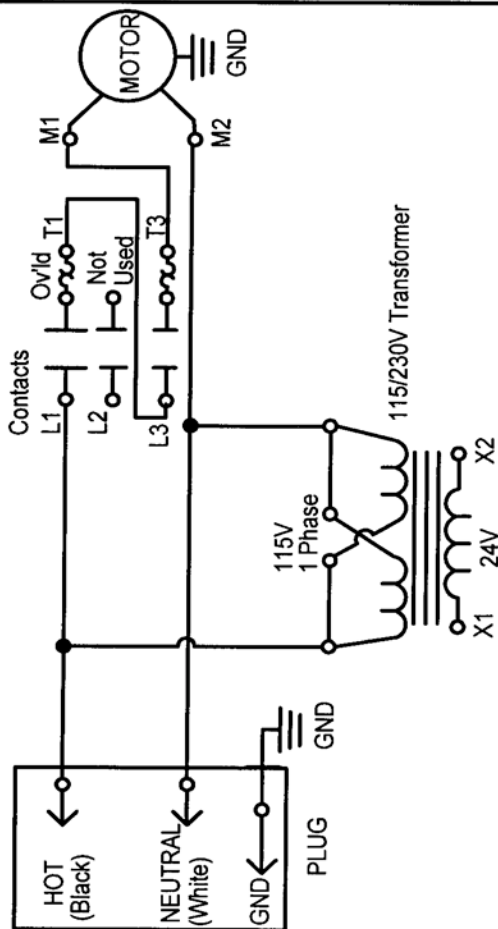
Series 3000, 4000, 6150 Cylinders

Model Number	Capacity	Cylinder Bore	Cylinder Rod Dia.
3000	8000	3 1/2"	1 3/4"
3000	10,000	4"	2"
4000	as noted	3 1/2"	2"
6150	5000	3 1/2"	2 1/2"

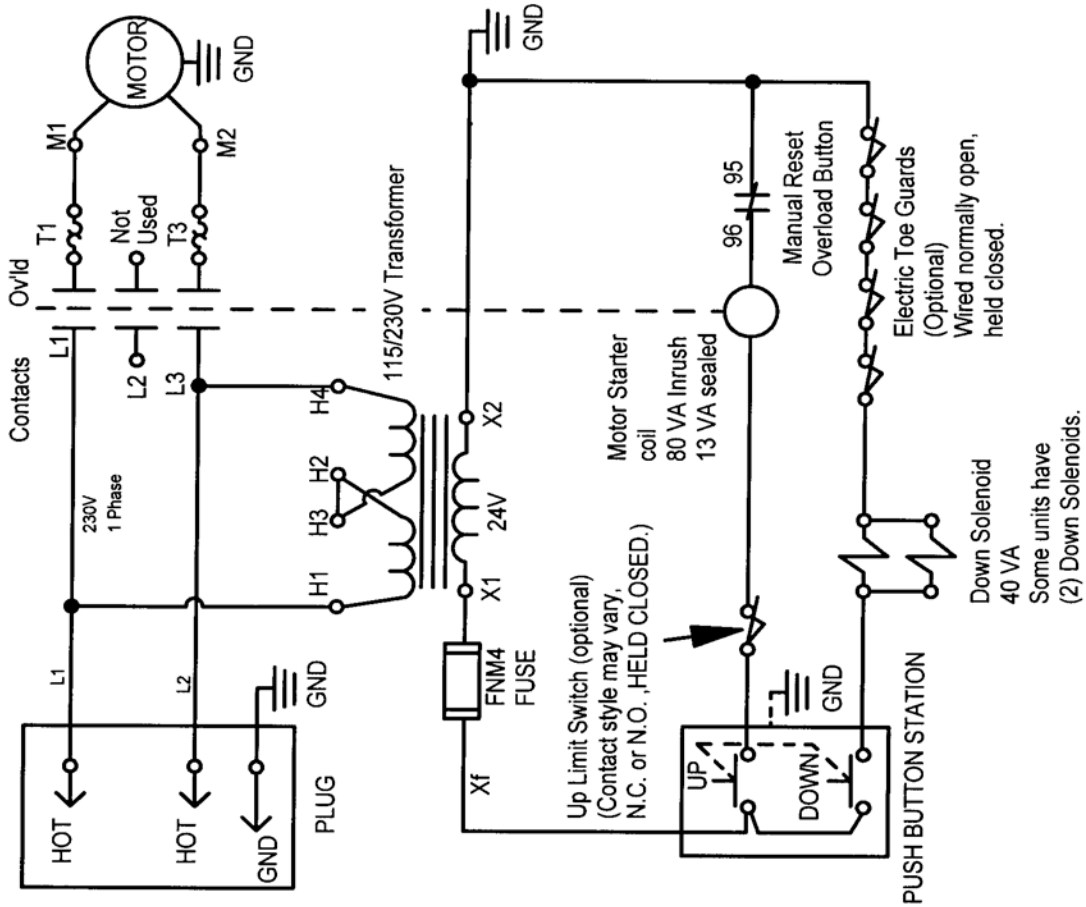


If cylinders have off center front or rear clevises, insure that they are re-installed in the same orientation as before they were removed.

115V.1 Phase Operation



230V.1 Phase Operation



Electrical Diagram - Single Phase

Motor Controllers

Specifications:

Motor Starter with adjustable thermal overloads.

100VA transformer with 24 VAC secondary fused at 4 amps (Standard)

100VA transformer with 115 VAC secondary fused at 1.6 amps (Optional)

Reset is manual or automatic (manual is standard, automatic is not to be used)

Enclosure is NEMA 12 JIC supplied with (4) conduit openings (motor, down solenoid, power and push button station)

Completely wired with terminal strips for final secondary voltage control connections
All components UL, CSA

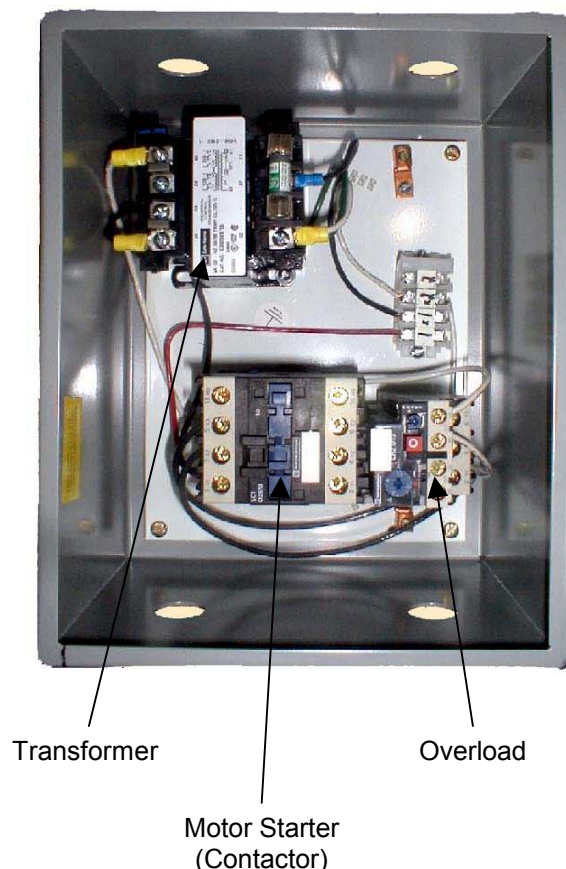
Overall dimensions: (approximate)

Metal Enclosures: 9"w x 12"h x 8"d

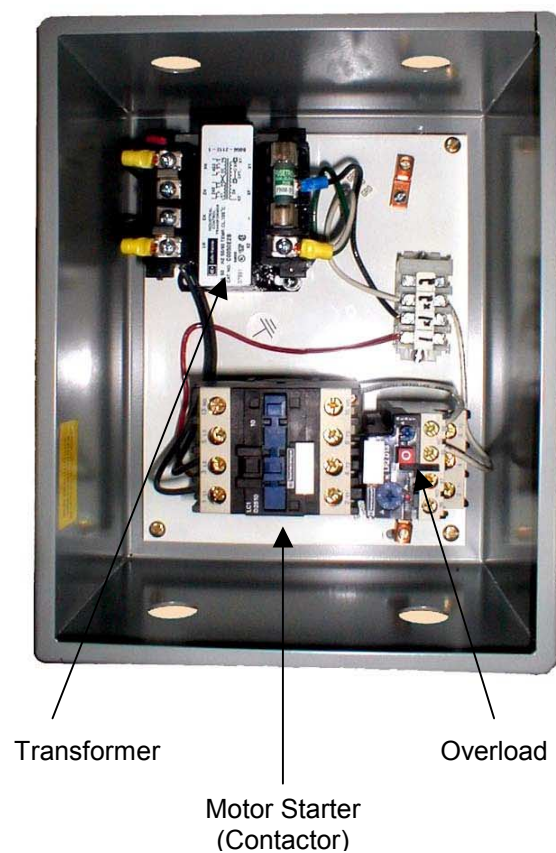
Polycarbonate Enclosure: 8"w x 9"h x 8"d

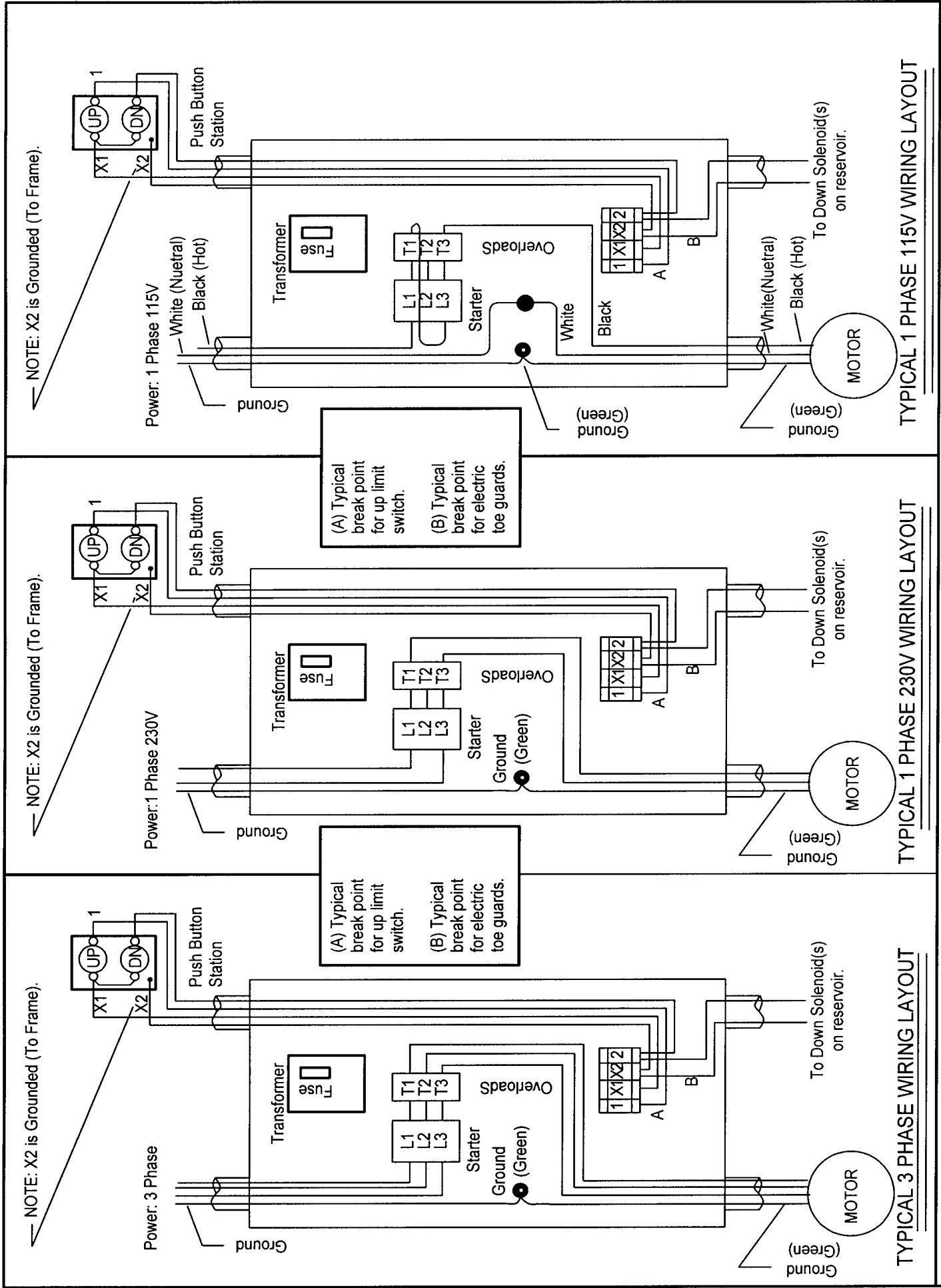
Typical motor controller – appearance may vary.

Single Phase



Three Phase





Wiring Diagrams

Typical Motor Information

Motors		
Series	Horsepower	Speed
1035	2	1800
1045	2	1800
2000	5	1800
2000K	5	1800
3000	5	1800
4000	7.5	3600
6000	5	1800
6100	5	1800
6150	5	1800
6200	5	3600
6300	5	3600

230 V. 3 PHASE

460 V. 3 PHASE

H.P.	Approx. Full Load Amps	Min. Copper Wire Size (75 C) THW, THHN- THWN, XHHW	Circuit Breaker Amps	Dual Element Time Delay Fuse Amps	H.P.	Approx. Full Load Amps	Min. Copper Wire Size (75 C) THW, THHN- THWN, XHHW	Circuit Breaker Amps	Dual Element Time Delay Fuse Amps
1	3.6	14	15	5.6	1	1.8	14	15	2.8
1.5	5.2	14	15	8	1.5	2.6	14	15	4
2	6.8	14	15	10	2	3.4	14	15	5.6
3	9.6	14	20	15	3	4.8	14	15	8
5	15.2	12	30	25	5	7.6	14	15	12
7.5	22	10	45	30	7.5	11	14	20	17.5
10	28	8	60	40	10	14	12	25	20

115 V. 1 PHASE

230 V. 1 PHASE

H.P.	Approx. Full Load Amps	Min. Copper Wire Size (75 C) THW, THHN- THWN, XHHW	Circuit Breaker Amps	Dual Element Time Delay Fuse Amps	H.P.	Approx. Full Load Amps	Min. Copper Wire Size (75 C) THW, THHN- THWN, XHHW	Circuit Breaker Amps	Dual Element Time Delay Fuse Amps
0.5	9.8	14	20	15	0.5	4.9	14	15	8
0.75	13.8	12	25	20	0.75	6.9	14	15	10
1	16	12	30	25	1	8	14	15	12
1.5	20	10	40	30	1.5	10	14	20	15
2	24	10	50	30	2	12	14	25	17.5
3	34	8	70	50	3	17	10	35	25
5	56	--	--	--	5	28	8	60	40

Note: This table is intended as a guideline, not to supersede the National Electrical or Local Codes.

Electrical Information

The motor supplied as standard is 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 connection is also rated for 208V. As any standard motor is rated for 10% of voltage variation, this motor will operate properly, within ratings, at 208, 220, 230, 240, 440, 460, and 480V, 3-phase supply.

If this motor is intended for 208V line usage, some caution is advised. If your motor is a 230V motor, and your 208V line voltage drops to 207 Volts (a drop of only ½%), the motor will be operating at -10% in a marginal region. Wiring runs and actual 208 voltage become very important. If your line voltage varies (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 on 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:

Advance Lifts' standard electrical supplied is 230V, 3-phase unless otherwise specified. Any field change in supply voltage would entail the following changes.

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.

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.

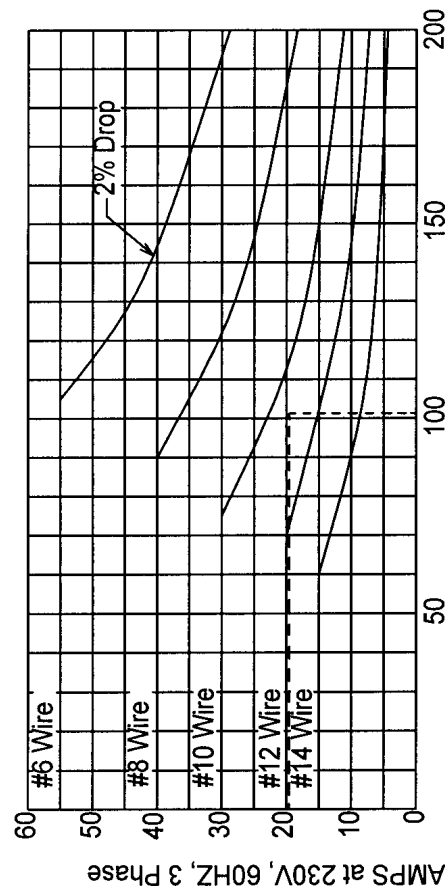
IMPORTANT: When changing voltages, insure motor rotation is correct.

Branch Circuit Wire Sizes For 230V & 460V, 3 Phase, 60HZ.*

(Calculated for 2% maximum allowable line voltage drop with copper conductors. Table is a guideline, not intended to supersede the National Electrical or local codes.)

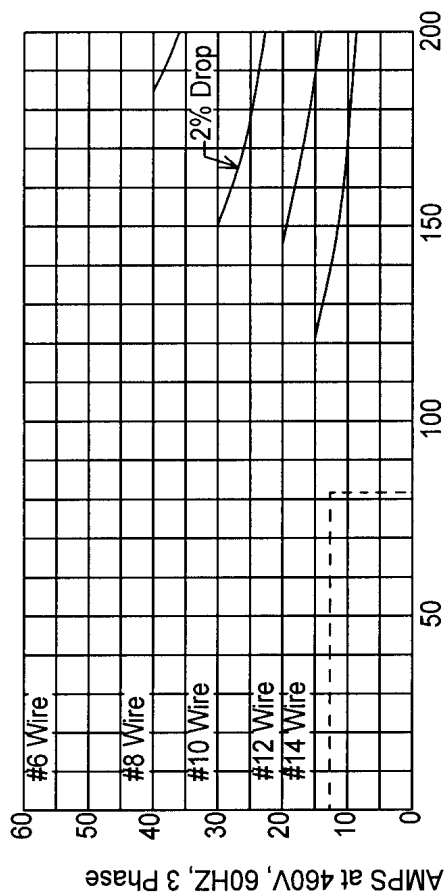
Directions: Locate Current on vertical axis, locate wire length on horizontal axis. Use wire size above point of intersection.

*Note: See table listing minimum wire sizes and fusing on motor data page.



Length of Wire in Feet

Example: 5HP, 230V, 3 phase, 19.6A motor, length of wire run is 102 FT. Wire size above point of intersection is #10. (#12 wire would have more than 2% drop.)



Length of Wire in Feet

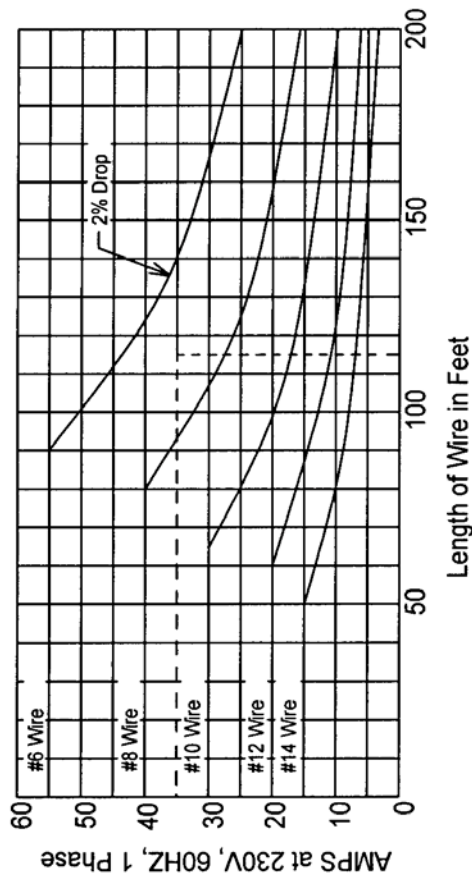
Example: 7.5HP, 460V, 3 phase, 12.6A motor, length of wire run is 82 FT. Wire size above point of intersection is #14.

Long wiring runs with undersized wire will cause voltage drops. Voltage measurements should therefore be made at the motor terminals, so that the true voltage supplied to the motor is determined. Measure the voltage when the motor is fully loaded (load on lifting equipment and lift leaving the fully lowered position). Measurements with the motor idling (no load) is at low current, and voltage drops will not be apparent under those circumstances. Consult the table in this manual for guidelines on wire run sizes. Note importance of 208V wire runs as noted in Motor Data.

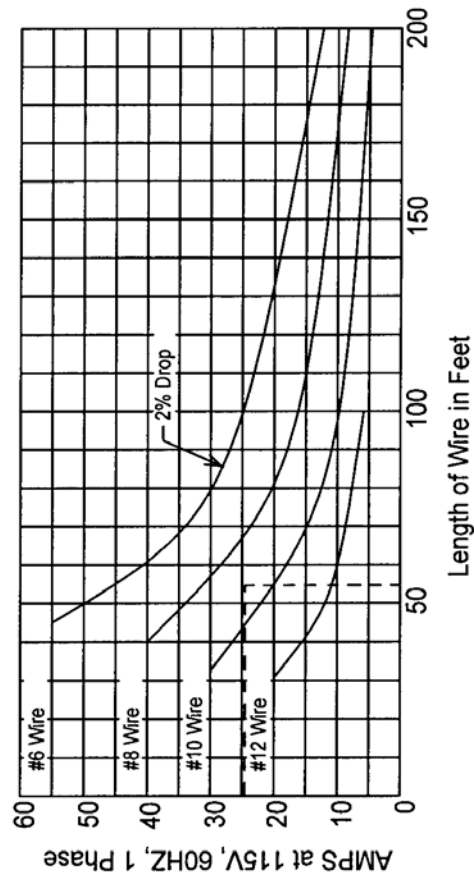
Branch Circuit Wire Sizes For 230V & 115V, 1 PHASE, 60HZ

(Calculated for 2% maximum allowable line voltage drop with copper conductors. Table is a guideline, not intended to supersede the National Electrical or local codes.)

Directions: Locate Current on vertical axis, locate wire length on horizontal axis. Use wire size above point of intersection.

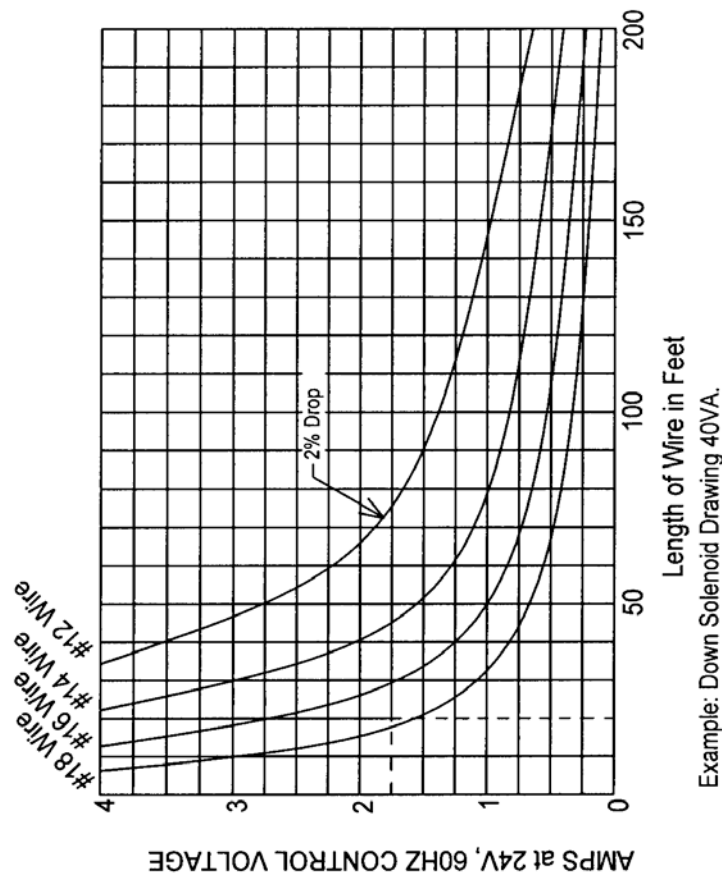


Example: 5HP, 230V, 1 phase, 35A motor, length of wire run is 115FT. Wire size above point of intersection is #6.



Example: 1.5HP, 115V, 1 phase, 24A motor, length of wire run is 55FT. Wire size above point of intersection is #8.

CONTROL CIRCUIT WIRE SIZE FOR 24V, 1 PHASE, 60HZ



Example: Down Solenoid Drawing 40VA.

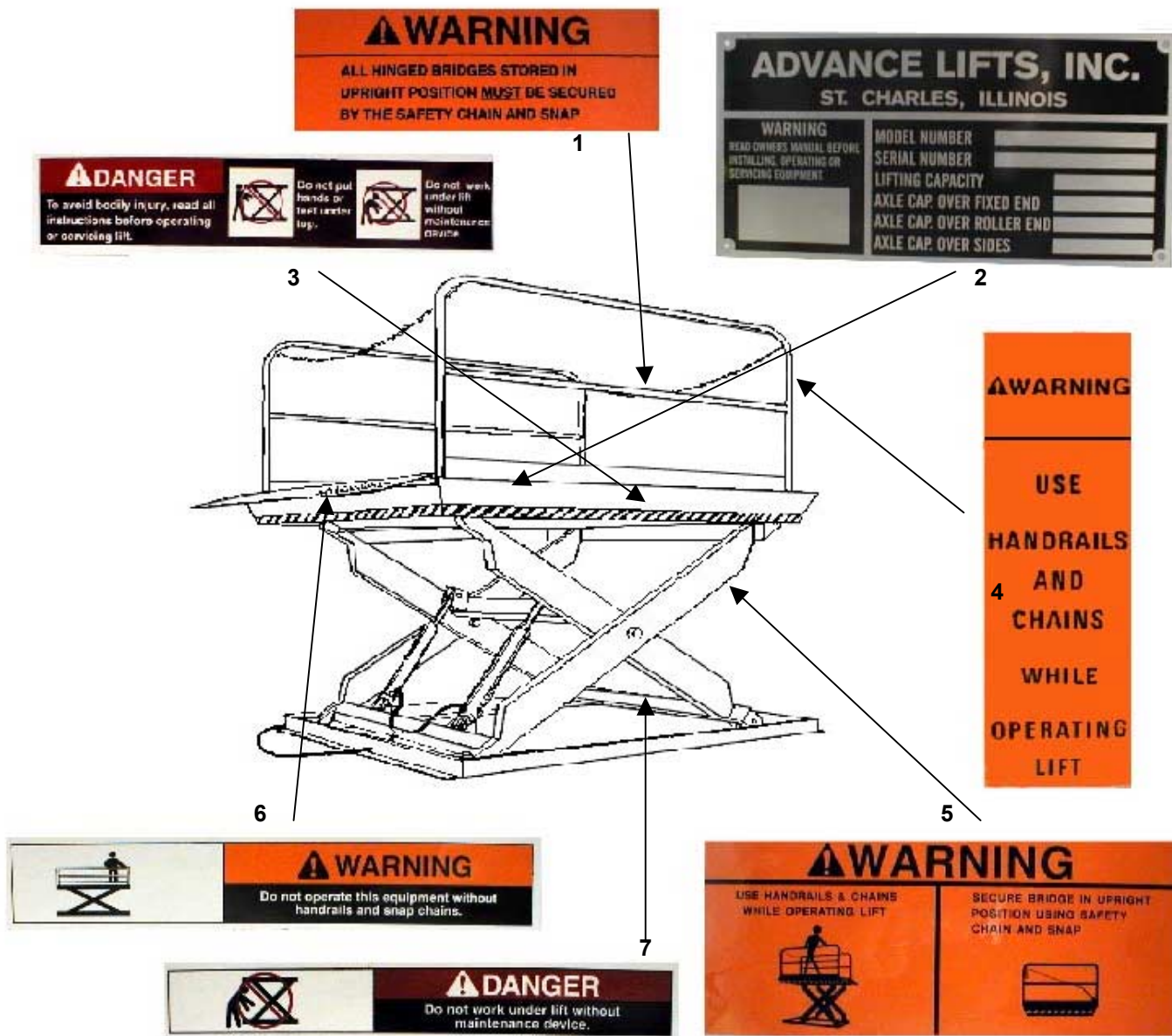
$$\left(I = \frac{W}{E} \right) \quad \frac{40VA}{24V} = 1.7A$$

Length of coil cord is 20FT. Wire size above point of intersection is #16.

Advance Lifts uses #16-4 wire size when 20FT coil cord is ordered for push button station control.

*Graph calculated for 4 wire copper cord, types S, SO, SJ, SJO.

SECTION 10. IDENTIFICATION AND LABEL PLACEMENT



TYPICAL PLACEMENT

(EACH DECAL KIT IS SUPPLIED WITH LOCATION INSTRUCTIONS)

No.	Qty.	Location
1.	(2)	Centers of handrail, both sides
2.	(1)	Cylinder end, right side of platform
3.	(4)	Centered on each side of platform
4.	(4)	Upper vertical section of handrail
5.	(2)	Outer leg
6.	(1 per bridge)	Under bridge
7.	(2)	Torque tubes each end

DECAL KITS BY MODEL/SERIES

MODEL 1035 (P-005-765) MODEL 1045 (P-004-407) SERIES 2000 (P-004-059) SERIES 2000K (P-003-993)
 SERIES 3000 (P-004-261) SERIES 4000 (P-004-375) SERIES 6000 (P-005-564)

SECTION 11. TROUBLESHOOTING

A. Equipment does not rise; pump is running: (see also Section M)

1. The motor rotation may be reversed. See the installation procedure on how to jog the motor to check for proper rotation. If the lift has been installed for some time and the motor is 3-phase, it is possible that the plant wiring “upstream” has been changed during plant maintenance or alteration, and the motor is now running reversed. A hydraulic pump can only run reversed for a short time (possibly 10 to 20 seconds) without causing permanent pump damage.
2. Motor may be single phasing. Check wiring and overloads to be certain that each three-phase line is present at the motor.
3. Voltage at motor terminals may be too low to run the pump at existing load. Check voltage directly at motor terminals while pump is running under load. (Reading source voltage with the pump idling will not give accurate results). Inadequate or incorrect wiring can starve the motor of voltage and current and will show up at the motor terminals when the motor is drawing the higher current that is required while motor is loaded.
4. Check for a hydraulic hose leak or pinching, and correct as necessary.
5. Check under the pump coupling to insure the keyway has not slipped off the pump shaft.
6. Check for oil shortage in the reservoir and correct by filling the reservoir. Refer to “Fluid Recommendations” in this manual for the correct fluid for your ambient temperature.
7. The suction filter in the reservoir or the pressure line filters in the pipe outlet of the power unit or the breather cap on the reservoir may be clogged. Clean as required.
8. Check if the load is exceeding equipment ratings causing the relief valve to bypass the fluid back to the reservoir. Never change the relief valve setting, these are 100% tested, adjusted and locked at the factory. Any change in the relief valve setting could cause your equipment either not to lift its capacity, or cause dangerous forces in the equipment, and void your warranty.
9. Check that the suction line fittings are not loose, causing the pump to pull in air instead of fluid. Check for a hairline crack on the suction port of the pump. The clear suction line should stay full of oil at all times, clear, no air. Check that the natural curve of the suction hose in the reservoir doesn’t cause the filter to rise out of the fluid. Re-install the suction line without rotating it and the tension of the hose will free the suction hose to lay against the reservoir wall and the filter to lay flat near the reservoir bottom. If you have the short round “pancake” type of filter with the filter screen on the bottom of the filter, insure that it does not rest against the bottom of the reservoir, as this will restrict the flow to the pump.

SECTION 11. TROUBLESHOOTING (Continued)

10. The down solenoid may be energized due to incorrect wiring, or mechanically stuck open, bypassing fluid.
 - A. Check the wiring. Hold a non-magnetized screwdriver to the top of the down solenoid coil and press the up button. If you can feel magnetism, the wiring is faulty.
 - B. Lightly tap the down solenoid to seat it properly. Do not bang it hard, as internal stem parts may be permanently damaged. The solenoid coil can be removed, and the down valve removed for cleaning as explained in the hydraulic "Component Information" section.
 - C. Disconnect the pressure line from the valve manifold to the equipment. Place a pressure gauge at the valve output, using high-pressure reducers. Press the up button in a short jog and read the pressure. Press the down button to relieve the pressure. If the system will not put out the pressure indicated on the hydraulic diagram, the trouble is either the valving or pump. If a load is not available, then the maximum hydraulic system pressure can be checked on a gauge by raising the unit to its full height momentarily against its physical stops. Proceed to step 11 to determine which place the trouble exists.
11. The hydraulic pump may be inoperative. Disconnect a hydraulic line at the power unit, use a large bucket (5-gallon) and run the pump a short time. If no flow appears either the pump or pump motor coupling inside motor mounting flange is defective, or pump rotation is reversed. Connect a pressure gauge to the outlet of the pump, through a high-pressure tee and bleeder valve with hose to a bucket. Slowly turn the bleeder valve and see if it produces specified pressure. Do not close the valve all the way as the pressure buildup of a good pump could cause the pump to explode. If the pump does not put out the required pressure, then the problem is in other areas, such as a down solenoid valve leaking fluid back to the reservoir, allowing pressure not to be built up in the system. If the pump will not put out the required pressure, replace the pump.
12. Repeated continuous type operation of the equipment may cause thinning of oil due to heat buildup. Feel the side of the reservoir to check the temperature of the oil. The equipment is intended for dock type operation, not elevator type operation that would make the equipment cost several times as much. The thin oil can cause the equipment not to rise, and in time, ruin the hydraulic pump. This type of operation could void the warranty considerations.

B. Equipment raises too slowly:

1. Small amounts of foreign material could stick in the down solenoid, bypassing some of the fluid. Lower equipment and clean the down solenoid valve.
2. Foreign material clogging the suction filter, breather cap, pressure line filter, or a hose that is pinched. See A-4, 5, 6, 7 and 9.
3. Low motor voltage. See A-3.
4. Load exceeding equipment ratings. See A-8.
5. Oil may be too thick (ambient temperature) for proper operation. Refer to "Fluid Recommendations".

SECTION 11. TROUBLESHOOTING (Continued)

6. Equipment in which the cylinders are field installed may have incorrect alignment of cylinders, causing binding. Measure and ascertain that the cylinders are in the correct alignment with the equipment and with each other. Binding cylinders will often cause a “shuddering” vibration when the equipment is operating.
7. Oil may be too thin for ambient temperatures. See A-12

C. Motor labors or heats excessively:

1. Voltage may be too low. See A-3.
2. Wiring may be incorrect. Check that one leg of the motor lines is not open or grounded.
3. Pump may be overheating from oil starvation that develops high internal heat, heating both the motor and the pump, eventually causing pump failure. See A-1 through A-9.
4. Oil may be too thick for ambient temperature. See “Fluid Recommendations”. Binding cylinders. See B-6.
5. Pump may be overheating due to insufficient lubrication caused by oil being too thin. See A-12.

D. Operation is “spongy”:

1. Bleed the cylinders to release trapped air by lowering the equipment to the fully down position and hold the down button depressed for an additional 20 seconds. Raise lift and repeat this procedure several times. Check that the oil completely fills the clear suction hose at all times. If the level falls back to the reservoir oil level, check suction lines and fittings for an air leak.
2. Check for oil starvation. See A, 1-9.
3. Do not confuse “spongy” operation with small surges caused by foreign material on equipment wheel roller plates.

E. Equipment lowers too slowly:

1. Pressure filter in pipe outlet of power unit may require cleaning. See “Component Information” for proper procedure.
2. Check for pinched hose, tubing, or obstruction in piping lines.
3. Check “Fluid Recommendations” for your ambient temperature type. Oil may be too thick. See also H-6.
4. Foreign material in flow control valve. With equipment fully lowered, remove and flush out any foreign material. Do not change flow control setting, as equipment could be damaged by high speeds. See “Component Information” for proper way to remove, clean and install the flow control valve.
5. Equipment having two down solenoid valves and/or flow control valves may have one valve inoperative.
6. Binding cylinders. See B-6.

SECTION 11. TROUBLESHOOTING (Continued)

F. Equipment lowers too fast:

CAUTION: This can develop into a dangerous condition, the equipment reaching destructive speed. Find and correct this condition before allowing use of this equipment.

1. Check for leaking hoses, particularly cracked fittings or other damage caused by equipment motion near the equipment and power unit, over-tightening of fittings until they develop hairline cracks. Check underground conduits for evidence of fluid leaks.
2. Inspect the check valve. The combination of the flow rates of the down flow control valve and a check valve stuck open due to foreign material, could increase the lowering speed. See G-2.
3. If the equipment lowers initially at a normal rate, then speeds up as the equipment lowers, check the flow control valve(s). Foreign material could stick, not allowing the pressure compensated function of the control to operate normally. See "Component Information" for the method of removal and replacement.
4. Oil may be too thin. See A-12.

G. Lift raises then lowers back down:

1. Down valves may be incorrectly wired or stuck open due to dirt in the system. See A-10, a. & b.
2. Check valve may be stuck open due to dirt in the system. See "Component Information" for removal, cleaning and installation. If pump and motor turns backward while the lift is lowering back down, the check valve is certainly inoperative.
3. Cylinder packing may be leaking. Check for oil leakage, see "General Hydraulic Information" and section on "Cylinder Repair Procedures".
4. Check for leaking hoses, fittings, or evidence of oil in underground conduit runs.

H. Equipment has raised but will not lower, or lowers partly:

1. Check both main and transformer secondary fuses.
2. Incorrect down solenoid wiring.
3. Stuck down solenoid valve. See A-10b, however do not remove the down solenoid body, as the equipment will come down with nothing to hold it in place.
4. Faulty down solenoid coil. Coil can be removed safely for replacement. As in step 3, do not remove valve body.
5. Down limit switch (if used) or electric toe guards (if used) inoperative or incorrectly wired. If you have electric toe guards, check that the hydraulic hose is secured to the bottom of the pit so it cannot accidentally trip the electric toe guard.
6. Safety maintenance bar or leg or other object blocking down travel. Do not pry out any object blocking down travel, because the hydraulic pressure has already been removed when the down button was pressed, and the equipment will fall at a dangerous speed. Raise the equipment slightly using the up button, remove object, then press the down button.

SECTION 11. TROUBLESHOOTING (Continued)

7. Improper oil for ambient temperatures. Oil may be too thick, causing improper operation of velocity fuses (if used). See "Component Information" on velocity fuses. Warm the cylinders by wrapping heat tape (of the type used for water pipes) around the cylinder. Later, after operation is normal, change to proper oil as per "Fluid Recommendations".
8. Binding Cylinders. See B-6

I. Equipment raises slightly, then equipment stops and motor stalls:

Check the suction line filter. Filter may be clogged, allowing slight movement until grime seals off filter. Check the suction filter for buildup of "varnish". If necessary, remove the suction filter, hold the suction hose down into the oil and try normal up operation of equipment. If operation returns to normal either clean or replace the suction line filter. See the "Component Information" section for procedure and proper placement of the suction hose.

J. Oil leaking or spraying out of the reservoir:

1. Reservoir may be mounted on its side. The motor should sit on top of the reservoir, the mounting bracket positioned vertical for lagging the power unit to the wall.
2. Clogged air breather allowing reservoir to build up positive pressure, then spraying oil. Try unit operation with air breather removed and clean or replace the air breather if this corrects the condition.

K. Equipment will not raise, motor will not run:

1. Control fuse has blown.
2. Motor starter overload has tripped. Depress reset button on controller.
3. Line fuse blown, single phasing motor and tripping motor starter overload. See #2 above.
4. Initial installation: Line voltage 230V and transformer wired for 460V. This will give 12V control voltage instead of 24V, and motor starter will not operate. Check to make sure motor was not wired for 460V before trying operation. The same situation applies to 115V control voltage. Use a good AC voltmeter to check for proper control voltage.
5. Check transformer for loose screw terminals at the various connection points including jumpers and under the fuse clips.
6. Check push button station for proper operation and its wiring to the controller.

L. Down solenoid or Magnetic Starter Coil burns out routinely:

1. Transformer may be wired wrong. As an example, a 460V line with the transformer and primary wired for 230V will give the control voltage of 48V instead of 24V. (Same doubling voltage applies to 115V control transformers.) This will burnout coils ranging from immediately to several month intervals, depending on the stamina of the coil. Correct the condition. P 10-5
2. The transformer may be defective. Check control voltage with a good AC voltmeter.

SECTION 11. TROUBLESHOOTING (Continued)

3. Although very rare, high voltage spikes may be coming in on the power lines at random, burning out coils. This cannot be detected with a power company recorder, A “Varistor” can be purchased and easily installed on control systems to protect the coils. More severe cases on both 115V or 24V control systems may need a special “High Insulation Transformer” in place of the standard control transformer.

M. Equipment does not lift rated load, or raises load about 1” then stops:

1. Check troubleshooting section (A), 2 through 11. Check if platform roller wheels roll freely with no binding as lift raises and lowers.
2. Lift may be overloaded. If a lift is listed as capable of fork truck loading, bear in mind that most “sit-down” rider fork trucks weigh at least 5,000 to 7,500 pound empty.
3. Platform may be shifted or damaged from transit or unintentional abuse.
 - A. Check if the inside edge of the bevel toe guard is rubbing against the base frame in the fully lowered position. Look for scratch marks on the base frame. Bend back bevel toe guards as required and see “b” below.
 - B. Check if the platform roller wheels are running straight on their platform members as the lift raises and lowers and legs or wheels are not rubbing on nearby platform members. Consult Advance Lifts on how to straighten out a platform.
 - C. Check that the platform roller wheels are actually rolling as unit raises.
4. There may actually be no problem. Many shipping tickets contain estimated weights much lower than the actual weight. The lift may be seeing a load based on shipping tickets, well above lift capacity. In this case the lift would not generally raise the 1” and stop, generally it will not lift at all from the full lowered position.

SECTION 12. ADVANCE LIFTS INC. PARTS AND LABOR WARRANTY

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

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

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

ADVANCE LIFTS INC PART LISTS

1035 PARTS LIST

GENERAL DESCRIPTION	PART #
MECHANICAL:	
WHEEL	P-005-692
WHEEL PIN (1" x 4-5/8")	P-A-0394
WHEEL PIN SNAP RING	P-001-876
MAIN AXLE PIN (1-3/4" x 8-1/2")	P-A-0401
MAIN AXLE PIN SNAP RING	P-001-063
HANDRAIL	P-005-764
HINGED STEEL BRIDGE (18" x 44")	P-A-0976
HINGED RAMP (30" x 60")	P-D-1747S11
CYLINDER: Lifts manufactured before 4/1/00 require an elbow part # P-010-219 when replacing a complete cylinder assembly.	
COMPLETE CYLINDER	P-D-1747S
CYLINDER PACKING KIT FOR 1035	P-005-754
CYLINDER ROD	P-005-752
CYLINDER PISTON	P-A-1409
CYLINDER BEARING ASSEMBLY	P-003-923
CYLINDER SPACER	P-A-0892
LOWER CYLINDER PIN (1" x 3-5/8")	P-A-4000
UPPER CYLINDER PIN (1" x 4-1/2")	P-A-0410
CYLINDER PIN SNAP RING	P-001-876
FLOW CONTROL CARTRIDGE (6 GPM) PRE 4/00	P-001-305
GOLD HEXAGONAL FLOW CONTROL AFTER 4/00	P-015-397
ADAPTER FITTING (ORB X NPT ELBOW)	P-010-219
HYDRAULIC: (COMMON TO ALL POWER UNITS)	
HYDRAULIC PUMP	P-000-357
MANIFOLD VALVE ASSEMBLY	P-009-024
MANIFOLD BLOCK ONLY	P-D-4900
CHECK VALVE	P-001-262
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259
24V DOWN SOLENOID COIL ONLY	P-001-260
DOWN SOLENOID VALVE 24V/115V	P-001-279
115V DOWN SOLENOID AND COIL ASM	P-001-296
115V DOWN SOLENOID COIL ONLY	P-001-297
FLOW CONTROL VALVE (6 GPM)	P-001-292
RELIEF VALVE	P-001-263
SUCTION LINE FILTER	P-001-280

GENERAL DESCRIPTION	PART #
COMPLETE CONTROL BOX:	
115V,PRI,1PH,24V,SEC, NO OPTIONS	P-004-399
230V,PRI,1PH,24V,SEC, NO OPTIONS	P-004-800
230V,PRI,3PH,24V,SEC, NO OPTIONS	P-004-802
480V,PRI,3PH,24V,SEC, NO OPTIONS	P-004-806
TRANSFORMER: (SELECT BY VOLTAGE AND OPTIONS)	
100VA transformers used with warning light or bell.	
115-230V,24V, 1 PHASE	P-001-845
240-480V,24V, 3 PHASE	P-001-844
115-230V,24V, 1 PHASE, WITH A BELL OR LIGHT	P-000-746
240-480V,24V, 3 PHASE, WITH A BELL OR LIGHT	P-000-399
CONTACTOR, MOTOR STARTER:	
115V,1PH CONTACTOR	P-000-413
230V,1PH CONTACTOR	P-000-413
230V,3PH CONTACTOR	P-000-430
480V,3PH CONTACTOR	P-000-430
OVERLOAD: (SELECT BY VOLTAGE AND PHASE)	
115V/1PH OVERLOAD	P-000-419
115V/1PH OVERLOAD	P-000-419
230V/1PH OVERLOAD	P-000-763
230V/3PH OVERLOAD	P-000-417
460V/3PH OVERLOAD	P-000-415
MOTOR: (SELECT BY VOLTAGE AND PHASE)	
115/208/230 VOLT, 1 PH	P-000-319
208/230/460/480 VOLT, 3 PH	P-000-318
OPTIONS:	
BELL AND TIMER KIT, 24V	P-005-821
BELL AND TIMER KIT, 110V	P-005-825
STROBE LIGHT, 24V	P-000-805
STROBE LIGHT, 110V	P-001-422
OIL IMMERSION HEATER	P-000-803
BLUE SPRAY PAINT, 16 oz	P-015-173
YELLOW SPRAY PAINT, 16 oz	P-015-174
POWER UNIT DECAL KIT	P-003-868
COMPLETE DECAL KIT FOR A 1035	P-005-765
REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448

TO ORDER PARTS CALL 800-843-3625
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1045/1055 PARTS LIST

GENERAL DESCRIPTION	PART #	GENERAL DESCRIPTION	PART #
MECHANICAL:		COMPLETE CONTROL BOX:	
WHEEL	P-A-0074	115V,PRI,1PH,24V,SEC, NO OPTIONS	P-004-399
WHEEL PIN (3/4" x 3-3/4")	P-A-0075	230V,PRI,1PH,24V,SEC, NO OPTIONS	P-004-800
WHEEL PIN SNAP RING	P-001-877	230V,PRI,3PH,24V,SEC, NO OPTIONS	P-004-802
MAIN AXLE PIN (1-3/4" x 10-13/16")	P-A-0073	480V,PRI,3PH,24V,SEC, NO OPTIONS	P-004-806
MAIN AXLE PIN SNAP RING	P-001-063		
HANDRAIL	P-004-440	TRANSFORMER: (SELECT BY VOLTAGE AND OPTIONS)	
SNAP RING FOR HANDRAIL	P-001-876	100VA transformers with a warning light or bell.	
SAFETY CABLE 67" SPAN	P-004-387	115-230V,24V, 1 PHASE	P-001-845
HINGED STEEL BRIDGE (18" x 60")	P-B-0277	240-480V,24V, 3 PHASE	P-001-844
HINGED RAMP (30" x 60")	P-D-2764S6	115-230V,24V, 1 PHASE, WITH A BELL OR LIGHT	P-000-746
BASE MOUNTED FLIPPER WHEEL ASSEMBLY	P-D-2764S5	240-480V,24V, 3 PHASE, WITH A BELL OR LIGHT	P-000-399
DOLLY HANDLE ASSEMBLY	P-D-1465S11		
COVER PANEL FOR POWER UNIT	P-005-778	CONTACTOR, MOTOR STARTER:	
		115V,1PH CONTACTOR	P-000-413
		230V,1PH CONTACTOR	P-000-413
		230V,3PH CONTACTOR	P-000-430
		480V,3PH CONTACTOR	P-000-430
CYLINDER:		OVERLOAD: (SELECT BY VOLTAGE AND PHASE)	
CYLINDER, 1045/1055	P-D-2765	115V/1PH OVERLOAD	P-000-419
CYLINDER PACKING KIT FOR 1045/1055	P-003-517	230V/1PH OVERLOAD	P-000-763
CYLINDER ROD (1-3/4" x 53-1/16")	P-A-0312	230V/3PH OVERLOAD	P-000-417
CYLINDER BEARING ASSEMBLY	P-006-482	460V/3PH OVERLOAD	P-000-415
LOWER CYLINDER PIN (1" x 4-1/8")	P-A-0408		
UPPER CYLINDER PIN (1" x 3-5/8")	P-A-0400	MOTOR: (SELECT BY VOLTAGE AND PHASE)	
CYLINDER PIN SNAP RING	P-001-876	115/208/230 VOLT, 1 PH, LEESON, 1202274-00	P-000-319
FLOW CONTROL CARTRIDGE (6 GPM) PRE 4/00	P-001-305	208/230/460/480 VOLT, 3 PH, LEESON 120276-00	P-000-318
GOLD HEXAGONAL FLOW CONTROL AFTER 4/00	P-015-397		
HYDRAULIC HOSE (1/4"x 24") M/NPT (2) ENDS	P-001-328	OPTIONS:	
HYDRAULIC HOSE (1/4"x 30") M/NPT (2) ENDS	P-000-449	BELL AND TIMER KIT, 24V	P-005-821
ADAPTER FITTING (ORB X NPT ELBOW)	P-010-219	BELL AND TIMER KIT, 110V	P-005-825
		STROBE LIGHT, 24V	P-000-805
HYDRAULIC: (COMMON TO ALL POWER UNITS)		STROBE LIGHT, 110V	P-001-422
HYDRAULIC PUMP	P-000-356	OIL IMMERSION HEATER	P-000-803
MANIFOLD VALVE ASSEMBLY	P-004-420	BLUE SPRAY PAINT, 16 oz	P-015-173
MANIFOLD BLOCK ONLY	P-D-1140	YELLOW SPRAY PAINT, 16 oz	P-015-174
CHECK VALVE	P-001-262	POWER UNIT DECAL KIT	P-003-868
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259	COMPLETE DECAL KIT FOR A 1045	P-004-407
24V DOWN SOLENOID COIL ONLY	P-001-260	REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448
DOWN SOLENOID VALVE 24V/115V	P-001-279		
115V DOWN SOLENOID AND COIL ASM	P-001-296		
115V DOWN SOLENOID COIL ONLY	P-001-297		
ADJUSTABLE FLOW CONTROL	P-001-265		
RELIEF VALVE	P-001-263		
SUCTION LINE FILTER	P-001-280		
VELOCITY FUSE	P-001-270		
COMPLETE POWER UNIT:			
115 VOLT, 1 PH, 24VA, WITH PUSHBUTTON	P-004-403		
230 VOLT, 1 PH, 24VA, WITH PUSHBUTTON	P-004-797		
230 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-004-798		
460 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-004-799		

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SERIES 2000 PARTS LIST

GENERAL DESCRIPTION	PART #
MECHANICAL:	
WHEEL ASSEMBLY	P-005-244
WHEEL BASE & PLATFORM PIN (1-1/4" x 3-3/4")	P-A-0216
WHEEL, BASE AND PLATFORM PIN SNAP RING	P-001-061
MAIN AXLE PIN (1-3/4" x 6-7/8")	P-A-0227
MAIN AXLE PIN SNAP RING 1-3/4"	P-001-063
UPPER WHEEL PIN ASM (TATTLE-TALE)	P-015-484
UPPER WHEEL PIN PLUG (TATTLE-TALE)	P-A-4258
STEEL HANDRAIL WITH SAFETY CHAIN	P-004-433
SAFETY CABLE, (64-3/4")	P-004-386
STEEL BRIDGE (12" X 72")	P-003-572
CYLINDER: CURRENT STANDARD (5/88 TO DATE)	
Lifts manufactured before 4/1/00 require an elbow part	
# P-010-219 when replacing a complete cylinder assembly.	
COMPLETE CYLINDER	P-D-0024
CYLINDER PACKING KIT	P-003-514
CYLINDER HOUSING	P-004-053
CYLINDER ROD ASSEMBLY	P-004-054
CYLINDER BEARING ASSEMBLY	P-003-923
CYLINDER PISTON ASSEMBLY	P-A-1409
CYLINDER PIN UPPER	P-A-1951
CYLINDER PIN LOWER	P-A-0209
CYLINDER PIN SNAP RING 1"	P-001-876
FLOW CONTROL CARTRIDGE (BEFORE 4/00)	P-001-302
GREEN HEXAGONAL FLOW CONTROL (AFTER 4/00)	P-015-396
CYLINDER: (PRE 5/88)	
COMPLETE CYLINDER	P-005-755
CYLINDER ROD ASSEMBLY	P-005-756
UPPER CYLINDER PIN, (OLD STYLE)	P-A-0226
LOWER CYLINDER PIN, (OLD STYLE)	P-A-0209
HYDRAULIC: (COMMON TO ALL POWER UNITS)	
HYDRAULIC PUMP	P-000-357
FLOW VALVE	P-004-334
CHECK VALVE	P-001-262
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259
24V DOWN SOLENOID COIL (ONLY)	P-001-260
24V/115V DOWN SOLENOID VALVE (ONLY)	P-001-279
115V DOWN SOLENOID AND COIL ASM	P-001-296
115V DOWN SOLENOID COIL (ONLY)	P-001-297
FLOW CONTROL VALVE (3.5 GPM)	P-001-293
RELIEF VALVE	P-001-263
BREATHING CAP FOR RESERVOIR	P-001-890

GENERAL DESCRIPTION	PART #
COMPLETE POWER UNIT:	
230 VOLT, 1 PH, 24VA, WITH PUSHBUTTON	P-004-896
230 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-003-562
460 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-004-895
CONTROL BOX. COMPLETE:	
230 VOLT, 1 PHASE	P-004-790
230 VOLT, 3 PHASE	P-003-966
460 VOLT, 3 PHASE	P-004-783
TRANSFORMER: (SELECT BY VOLTAGE AND PHASE)	
100VA transformers used on lifts with warning light or bell.	
230V, 24V, 1 PHASE	P-001-845
240-460V, 24V, 3 PHASE	P-001-844
230V,24V,1 PHASE, WITH BELL OR LIGHT	P-000-746
240-460V,24V,3 PHASE WITH BELL OR LIGHT	P-000-399
CONTACTOR, MOTOR STARTER:	
230V, 1 PHASE, CONTACTOR	P-000-414
230V, 3 PHASE, CONTACTOR	P-000-413
460V, 3 PHASE, CONTACTOR	P-000-413
OVERLOAD:	
230V, 1 PHASE, OVERLOAD	P-000-420
230V, 3 PHASE, OVERLOAD	P-000-418
460V, 3 PHASE, OVERLOAD	P-000-417
MOTOR: (SELECT BY VOLTAGE AND PHASE)	
208/230V 1 PHASE	P-001-327
208/230/460/480V 3 PHASE	P-003-373
OPTION:	
BELL AND TIMER KIT, 24V	P-005-823
BELL AND TIMER KIT, 110V	P-005-825
STROBE WARNING LIGHT, 24V	P-000-805
STROBE WARNING LIGHT, 110V	P-001-422
FLUID HEATER	P-001-347
BLUE SPRAY PAINT, 16 oz	P-015-173
YELLOW SPRAY PAINT, 16 oz	P-015-174
POWER UNIT DECAL KIT	P-003-868
COMPLETE DECAL KIT FOR 2000K	P-003-993
LIMIT SWITCH ASSEMBLY	P-003-898
INSTALLATION KIT, 20' HOSE AND 10 GAL FLUID	P-006-400
OWNERS MANUAL	P-003-566
REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448

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SERIES 2000K PARTS LIST

GENERAL DESCRIPTION	PART #
MECHANICAL:	
WHEEL ASSEMBLY	P-005-244
WHEEL BASE & PLATFORM PIN (1-1/4" x 3-3/4")	P-A-0216
WHEEL, BASE AND PLATFORM PIN SNAP RING	P-001-061
MAIN AXLE PIN (1-3/4" x 6-7/8")	P-A-0227
MAIN AXLE PIN SNAP RING 1-3/4"	P-001-063
UPPER WHEEL PIN ASM (TATTLE-TALE)	P-015-484
UPPER WHEEL PIN PLUG (TATTLE-TALE)	P-A-4258
STEEL HANDRAIL WITH SAFETY CHAIN	P-004-433
SAFETY CABLE, (64-3/4")	P-004-386
STEEL BRIDGE (12" X 72")	P-003-572

CYLINDER: CURRENT STANDARD (5/88 TO DATE)

Lifts manufactured before 4/1/00 require an elbow part

P-010-219 when replacing a complete cylinder assembly.

COMPLETE CYLINDER	P-D-0024
CYLINDER PACKING KIT	P-003-514
CYLINDER HOUSING	P-004-053
CYLINDER ROD ASSEMBLY	P-004-054
CYLINDER BEARING ASSEMBLY	P-003-923
CYLINDER PISTON ASSEMBLY	P-A-1409
CYLINDER PIN UPPER	P-A-1951
CYLINDER PIN LOWER	P-A-0209
CYLINDER PIN SNAP RING 1"	P-001-876
FLOW CONTROL CARTRIDGE (BEFORE 4/00)	P-001-302
GREEN HEXAGONAL FLOW CONTROL (AFTER 4/00)	P-015-396

CYLINDER: (PRE 5/88)

COMPLETE CYLINDER	P-005-755
CYLINDER ROD ASSEMBLY	P-005-756
UPPER CYLINDER PIN, (OLD STYLE)	P-A-0226
LOWER CYLINDER PIN, (OLD STYLE)	P-A-0209

HYDRAULIC: (COMMON TO ALL POWER UNITS)

HYDRAULIC PUMP	P-000-357
FLOW VALVE	P-004-334
CHECK VALVE	P-001-262
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259
24V DOWN SOLENOID COIL (ONLY)	P-001-260
24V/115V DOWN SOLENOID VALVE (ONLY)	P-001-279
115V DOWN SOLENOID AND COIL ASM	P-001-296
115V DOWN SOLENOID COIL (ONLY)	P-001-297
FLOW CONTROL VALVE (3.5 GPM)	P-001-293
RELIEF VALVE	P-001-263
BREATHING CAP FOR RESERVOIR	P-001-890

GENERAL DESCRIPTION	PART #
COMPLETE POWER UNIT:	
230 VOLT, 1 PH, 24VA, WITH PUSHBUTTON	P-004-896
230 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-003-562
460 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-004-895

CONTROL BOX. COMPLETE:

230 VOLT, 1 PHASE	P-004-790
230 VOLT, 3 PHASE	P-003-966
460 VOLT, 3 PHASE	P-004-783

TRANSFORMER: (SELECT BY VOLTAGE AND PHASE)

100VA transformers used on lifts with warning light or bell.

230V, 24V, 1 PHASE	P-001-845
240-460V, 24V, 3 PHASE	P-001-844
230V, 24V, 1 PHASE, WITH BELL OR LIGHT	P-000-746
240-460V, 24V, 3 PHASE WITH BELL OR LIGHT	P-000-399

CONTACTOR, MOTOR STARTER:

230V, 1 PHASE, CONTACTOR	P-000-414
230V, 3 PHASE, CONTACTOR	P-000-413
460V, 3 PHASE, CONTACTOR	P-000-413

OVERLOAD:

230V, 1 PHASE, OVERLOAD	P-000-420
230V, 3 PHASE, OVERLOAD	P-000-418
460V, 3 PHASE, OVERLOAD	P-000-417

MOTOR: (SELECT BY VOLTAGE AND PHASE)

208/230V 1 PHASE	P-001-327
208/230/460/480V 3 PHASE	P-003-373

OPTION:

BELL AND TIMER KIT, 24V	P-005-823
BELL AND TIMER KIT, 110V	P-005-825
STROBE WARNING LIGHT, 24V	P-000-805
STROBE WARNING LIGHT, 110V	P-001-422
FLUID HEATER	P-001-347
BLUE SPRAY PAINT, 16 oz	P-015-173
YELLOW SPRAY PAINT, 16 oz	P-015-174
POWER UNIT DECAL KIT	P-003-868
COMPLETE DECAL KIT FOR 2000K	P-003-993
LIMIT SWITCH ASSEMBLY	P-003-898
INSTALLATION KIT, 20' HOSE AND 10 GAL FLUID	P-006-400
OWNERS MANUAL	P-003-566
REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448

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SERIES 3000 PARTS LIST

GENERAL DESCRIPTION	PART #	GENERAL DESCRIPTION	PART #
MECHANICAL:		TRANSFORMER: (SELECT BY VOLTAGE AND PHASE)	
WHEEL ASSEMBLY	P-005-244	100VA transformers used on lifts with warning light or bell.	
UPPER WHEEL PIN (1-1/4" X 3-3/4")	P-A-0216	230V, 24V, 1 PH	P-001-845
LOWER WHEEL PIN (1-1/4" X 5-3/4")	P-A-0390	240-460V, 24V, 3 PHASE	P-001-844
WHEEL PIN SNAP RING 1-1/4"	P-001-061	230V,24V,1PH, WITH BELL OR LIGHT	P-000-746
MAIN AXLE PIN (2" x 7")	P-A-0379	240-460V,24V,3PH WITH BELL OR LIGHT	P-000-399
MAIN AXLE PIN SNAP RING 2"	P-001-057		
BASE AND PLATFORM PIN (1-1/2" X 3-3/4")	P-A-0216	CONTACTOR, MOTOR STARTER:	
STEEL HANDRAIL WITH SAFETY CHAIN	P-004-433	230V, 1PH, CONTACTOR	P-000-414
SAFETY CABLE, (64-3/4")	P-004-386	230V, 3PH, CONTACTOR	P-000-413
STEEL BRIDGE (12" X 72")	P-B-0190	460V, 3PH, CONTACTOR	P-000-413
CYLINDER:		OVERLOAD:	
Lifts manufactured before 4/1/00 require an elbow part # P-015-683 when replacing a complete cylinder assembly.		230V, 1PH, OVERLOAD	P-000-420
3200 COMPLETE CYLINDER	P-D-1434	230V, 3PH, OVERLOAD	P-000-418
3200 CYLINDER PACKING KIT	P-003-515	460V, 3PH, OVERLOAD	P-000-417
3200 CYLINDER HOUSING	P-004-267		
3200 CYLINDER ROD ASSEMBLY	P-004-268	MOTOR: (SELECT BY VOLTAGE AND PHASE)	
3200 CYLINDER BEARING ASSEMBLY	P-003-874	208/230V 1 PHASE	P-001-327
3200 CYLINDER PISTON ASSEMBLY	P-A-1551	208/230/460/480V 3 PHASE	P-003-373
3300 COMPLETE CYLINDER	P-D-1435		
3300 CYLINDER PACKING KIT	P-003-516	OPTION:	
3300 CYLINDER HOUSING	P-004-280	BELL AND TIMER KIT, 24V	P-005-823
3300 CYLINDER ROD ASSEMBLY	P-004-282	BELL AND TIMER KIT, 110V	P-005-825
3300 CYLINDER BEARING ASSEMBLY	P-004-284	STROBE WARNING LIGHT, 24V	P-000-805
3300 CYLINDER PISTON ASSEMBLY	P-A-1552	STROBE WARNING LIGHT, 110V	P-001-422
CYLINDER PIN (1" X 5-5/16")	P-A-0226	FLUID HEATER	P-001-347
CYLINDER PIN (1" X 7-5/16")	P-A-0416	BLUE SPRAY PAINT, 16 oz	P-015-173
CYLINDER PIN SNAP RING 1"	P-001-876	YELLOW SPRAY PAINT, 16 oz	P-015-174
FLOW CONTROL CARTRIDGE (BEFORE 4/00)	P-001-302	POWER UNIT DECAL KIT	P-003-868
GREEN HEXAGONAL FLOW CONTROL (AFTER 4/00)	P-015-396	COMPLETE DECAL KIT FOR 3000	P-004-261
HYDRAULIC: (COMMON TO ALL POWER UNITS)		INSTALLATION KIT, 20' HOSE AND 10 GAL FLUID	P-006-400
HYDRAULIC PUMP	P-000-357	OWNERS MANUAL	P-003-566
FLOW VALVE	P-004-334	PLUG 230V, 3 PHASE	P-001-671
CHECK VALVE	P-001-262	PLUG 460V, 3 PHASE	P-000-994
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259	PLUG 230V, 1 PHASE	P-002-049
24V DOWN SOLENOID COIL (ONLY)	P-001-260	PUSH BUTTON SWITCH	P-000-802
24V/115V DOWN SOLENOID VALVE (ONLY)	P-001-279	REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448
115V DOWN SOLENOID AND COIL ASM	P-001-296		
115V DOWN SOLENOID COIL (ONLY)	P-001-297		
FLOW CONTROL VALVE (3.5 GPM)	P-001-293		
RELIEF VALVE	P-001-263		
BREATHING CAP FOR RESERVOIR	P-001-890		
COMPLETE POWER UNIT:			
230 VOLT, 1 PH, 24VA, WITH PUSHBUTTON	P-004-896		
230 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-003-562		
460 VOLT, 3 PH, 24VA, WITH PUSHBUTTON	P-004-895		
CONTROL BOX. COMPLETE:			
230 VOLT, 1 PHASE	P-004-790		
230 VOLT, 3 PHASE	P-003-966		
460 VOLT, 3 PHASE	P-004-783		

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SERIES 4000 PARTS LIST

GENERAL DESCRIPTION	PART #	GENERAL DESCRIPTION	PART #
MECHANICAL:		COMPLETE POWER UNIT WITH PUSHBUTTON:	
4100,4200,4300,4400 INNER WHEEL	P-A-0499	4100,4200,4300,4400, 230 VOLT, 3 PH, 24VA	P-004-391
4100,4200,4300,4400 OUTER WHEEL	P-A-0500	4100,4200,4300,4400, 460 VOLT, 3 PH, 24VA	P-005-485
4100,4200,4300,4400 WHEEL PIN (1-3/4"X6-7/8")	P-A-0227	4100, 230 VOLT, 3 PH, 24VA (AFTER 1/00)	P-006-983
4100,4200,4300,4400 WHEEL PIN SNAP RING	P-001-063	4100, 460 VOLT, 3 PH, 24VA (AFTER 1/00)	P-010-684
4100,4200,4300,4400 MAIN AXLE PIN (2" x 9")	P-A-0370		
4100,4200,4300,4400 MAIN AXLE PIN SNAP RING	P-001-057	CONTROL BOX. COMPLETE:	
4100,4200,4300,4400 BASE AND PLATFORM PIN	P-A-0376	4100,4200,4300,4400, 230 VOLT, 3 PHASE	P-005-489
STEEL HANDRAIL ASSEMBLY	P-004-446	4100,4200,4300,4400, 460 VOLT, 3 PHASE	P-005-494
SAFETY CABLE, (64-3/4")	P-004-386	4100, 230V, 3 PHASE (AFTER 1/00)	P-006-308
STEEL BRIDGE (12" X 72")	P-B-0191	4100, 460V, 3 PHASE (AFTER 1/00)	P-007-202
MECHANICAL: 4100 AFTER 1/1/2000		TRANSFORMER:	
4100 INNER WHEEL (AFTER 1/00)	P-A-8206	240-460V,24V,3PH	P-000-399
4100 OUTER WHEEL (AFTER 1/00)	P-A-8205		
4100 PLATFORM WHEEL PIN (AFTER 1/00)	P-A-8203	CONTACTOR, MOTOR STARTER:	
4100 BASE FRAME WHEEL PIN (AFTER 1/00)	P-A-8202	208,230,460,480V, 3PH, CONTACTOR	P-000-413
4100 BASE AND PLATFORM PIN (AFTER 1/00)	P-A-8201		
CYLINDER: MODELS 4100, 4200, 4300, 4400		OVERLOAD:	
Lifts manufactured before 4/1/00 require an elbow part # P-015-683 when replacing a complete cylinder assembly.		230V, 3PH, OVERLOAD	P-000-419
COMPLETE CYLINDER	P-D-0498	460V, 3PH, OVERLOAD	P-000-763
CYLINDER PACKING KIT	P-004-365	230V, 3PH, OVERLOAD 4100 (AFTER 1/00)	P-000-418
CYLINDER HOUSING	P-004-361	460V, 3PH, OVERLOAD 4100 (AFTER 1/00)	P-000-417
CYLINDER ROD ASSEMBLY	P-004-363		
CYLINDER BEARING ASSEMBLY	P-004-364	MOTOR:	
CYLINDER PISTON ASSEMBLY	P-A-1551	208,230,460,480V 3 PHASE	P-001-344
UPPER CYLINDER PIN (1" X 4-1/2")	P-A-0410	208,230,460,480V 3 PHASE, 4100 (AFTER 1/00)	P-003-373
LOWER CYLINDER PIN (1-1/4" X 3-3/4")	P-A-0216		
CYLINDER PIN SNAP RING 1"	P-001-876	OPTIONS:	
CYLINDER PIN SNAP RING 1-1/4"	P-001-061	BELL AND TIMER KIT, 24V	P-005-823
		BELL AND TIMER KIT, 110V	P-005-825
		STROBE WARNING LIGHT, 24V	P-000-805
		STROBE WARNING LIGHT, 110V	P-001-422
		FLUID HEATER	P-001-347
		BLUE SPRAY PAINT, 16 oz	P-015-173
		YELLOW SPRAY PAINT, 16 oz	P-015-174
		POWER UNIT DECAL KIT	P-003-868
		COMPLETE DECAL KIT FOR 4000	P-004-375
		INSTALLATION KIT, 20' HOSE AND 15 GAL FLUID	P-006-401
		OWNERS MANUAL	P-003-566
		PLUG 230V, 3 PHASE	P-001-671
		PLUG 460V, 3 PHASE	P-000-994
		PUSH BUTTON SWITCH	P-000-802
		PRESSURE LINE FILTER	P-001-319
		REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448
CYLINDER: 4100 AFTER 1/1/00			
4100 COMPLETE CYLINDER	P-D-10162		
4100 CYLINDER PACKING KIT	P-004-365		
4100 CYLINDER HOUSING	P-004-361		
4100 CYLINDER ROD ASSEMBLY	P-006-971		
4100 CYLINDER BEARING ASSEMBLY	P-004-364		
4100 CYLINDER PISTON ASSEMBLY	P-A-1551		
4100 UPPER CYLINDER PIN (1" X 4-1/2")	P-A-0410		
4100 LOWER CYLINDER PIN (1-1/4" X 3-3/4")	P-A-0216		
4100 CYLINDER PIN SNAP RING 1"	P-001-876		
4100 CYLINDER PIN SNAP RING 1-1/4"	P-001-061		
HYDRAULIC: (COMMON TO ALL POWER UNITS)			
HYDRAULIC PUMP	P-000-358		
HYDRAULIC PUMP 4100 (AFTER 1/00)	P-007-114		
FLOW VALVE	P-003-458		
CHECK VALVE	P-001-262		
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259		
24V DOWN SOLENOID COIL (ONLY)	P-001-260		
24V/115V DOWN SOLENOID VALVE (ONLY)	P-001-279		
115V DOWN SOLENOID AND COIL ASM	P-001-296		
115V DOWN SOLENOID COIL (ONLY)	P-001-297		

**TO ORDER PARTS CALL 800-843-3625
OR E-MAIL PARTS@ADVANCELIFTS.COM**

SERIES 6000 PARTS LIST

GENERAL DESCRIPTION	PART #	GENERAL DESCRIPTION	PART #
MECHANICAL:		COMPLETE POWER UNIT WITH PUSHBUTTON:	
6100 WHEEL ASM	P-009-379	6100 230 VOLT, 1 PH, 24V	P-012-180
6100 WHEEL PIN	P-A-0404	6100 115 VOLT, 1 PH, 24V	
6100 WHEEL PIN SNAP RING	P-001-061	6100 230 VOLT, 3 PH, 24V	P-012-170
6100 MAIN AXL PIN	P-A-0405	6100 460 VOLT, 3 PH, 24V	P-012-176
6100 MAIN AXL SNAP RING	P-001-062		
6100 BASE PIN	P-A-0378	CONTROL BOX. COMPLETE:	
6100 BASE PIN SNAP RING	P-001-061	6100 230 VOLT, 1 PH, 24V	P-004-790
STEEL HANDRAIL ASSEMBLY	P-A-2260	6100 115 VOLT, 1 PH, 24V	
SAFETY CABLE, (64-3/4")	P-004-386	6100 230 VOLT, 3 PH, 24V	P-003-966
STEEL BRIDGE (18"X60")	P-A-0979	6100 460 VOLT, 3 PH, 24V	P-004-783
SAFETY LEG	P-A-0682		
CYLINDER :MODEL 6100 (LONG)		TRANSFORMER:	
Lifts manufactured before 4/1/00 require an elbow part # P-015-683 when replacing a complete cylinder assembly.		6100 230V/115V, 24 VOLT, 1 PH, 50VA	P-001-845
COMPLETE CYLINDER	P-D-1597	6100 230V/460V, 24 VOLT, 3 PH, 50VA	P-001-844
CYLINDER PACKING KIT	P-005-663	6100 230V/115V, 24 VOLT, 1 PH, 100VA	P-000-746
CYLINDER HOUSING	P-005-659	6100 230V/460V, 24 VOLT, 3 PH, 100VA	P-000-399
CYLINDER ROD ASSEMBLY	P-005-660		
CYLINDER BEARING ASSEMBLY	P-003-923	CONTACTOR, MOTOR STARTER:	
CYLINDER PISTON ASSEMBLY	P-A-1409	230V/115V, 1 PH STARTER CONTACTOR	P-000-414
UPPER CYLINDER PIN	P-A-0226	230V/460V, 3 PH STARTER CONTACTOR	P-000-413
UPPER CYLINDER PIN SNAP RING	P-001-876		
LOWER CYLINDER PIN	P-A-0209	OVERLOAD:	
LOWER CYLINDER PIN SNAP RING	P-001-876	115V, 1 PH OVERLOAD	P-000-419
CYLINDER PIN SNAP RING 1-1/4"	P-001-061	230V, 1 PH OVERLOAD	P-000-420
		230V , 3 PH OVERLOAD	P-000-418
		460V, 3 PH OVERLOAD	P-000-417
CYLINDER:MODEL 6100 (SHORT)		MOTOR:	
COMPLETE CYLINDER	P-D-1586	115V/230V 1 PHASE	P-001-327
CYLINDER PACKING KIT	P-005-664	230V/460V PHASE MOTOR	P-003-373
CYLINDER HOUSING	P-005-665		
CYLINDER ROD ASSEMBLY	P-005-666	OPTIONS:	
CYLINDER BEARING ASSEMBLY	P-003-923	BELL AND TIMER KIT, 24V	P-005-823
CYLINDER PISTON ASSEMBLY	P-A-1409	BELL AND TIMER KIT, 110V	P-005-825
CYLINDER PIN (SHORT)	P-A-0402	STROBE WARNING LIGHT, 24V	P-000-805
CYLINDER PIN (LONG)	P-A-0407	STROBE WARNING LIGHT, 110V	P-001-422
CYLINDER PIN SNAP RING	P-001-876	FLUID HEATER	P-001-347
RAM LINKAGE PIN (SHORT)	P-A-0406	BLUE SPRAY PAINT, 16 oz	P-015-173
SNAP RING	P-001-877	YELLOW SPRAY PAINT, 16 oz	P-015-174
RAM LINKAGE PIN (LONG)	P-A-0407	POWER UNIT DECAL KIT	P-003-868
SNAP RING	P-001-876	COMPLETE DECAL KIT FOR 6100	P-005-564
		INSTALLATION KIT, 20' HOSE AND 15 GAL FLUID	P-006-401
HYDRAULIC: (COMMON TO ALL POWER UNITS)		OWNERS MANUAL	P-003-566
HYDRAULIC PUMP	P-000-357	PLUG 230V, 3 PHASE	P-001-671
FLOW VALVE ASSEMBLY	P-003-457	PLUG 460V, 3 PHASE	P-000-994
CHECK VALVE	P-001-262	PUSH BUTTON SWITCH	P-000-802
24V DOWN SOLENOID VALVE AND COIL ASM	P-001-259	PRESSURE LINE FILTER	P-001-319
24V DOWN SOLENOID COIL (ONLY)	P-001-260	REPLACEMENT NAME/SERIAL NUMBER TAG	P-001-448
24V/115V DOWN SOLENOID VALVE (ONLY)	P-001-279		
115V DOWN SOLENOID AND COIL ASM	P-001-296		
115V DOWN SOLENOID COIL (ONLY)	P-001-297		
FLOW CONTROL VALVE(MAIN)	P-001-293		
RELIEF VALVE	P-001-263		
IN-LINE FILTER	P-001-319		

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MATERIAL SAFETY DATA SHEET

1. PRODUCT IDENTIFICATION

MANUFACTURER'S NAME PENNZOIL COMPANY

CAS NUMBER: MIXTURE

ADDRESS P.O. BOX 2967
HOUSTON, TX 77252-2967

MSDS CODE: 006067

EMERGENCY TELEPHONE NO. (800) 546-6040

NFPA HAZARD IDENTIFICATION
DEGREE OF HAZARD HAZARD RATINGS
HEALTH: 1 0 – LEAST
FIRE: 1 1 – SLIGHT
REACTIVITY: 0 2 – MODERATE
3 – HIGH
4 – EXTREME

TRADE NAME: PENNZOIL ≈ ATF AUTOMATIC TRANSMISSION FLUID

SYNONYMS: ATF DEXRON III, DEXRON III/MERCON, HYDRA-FLO DEXRON II

BY: ENVIRONMENTAL, SAFETY & HEALTH
(800) 546-6227

EFFECTIVE DATE: AUGUST 15, 1997
SUPERSEDES DATE: JANUARY 12, 1993

2. INGREDIENTS

COMPONENT NAME CAS NUMBER	HAZARDOUS IN BLEND	PERCENTAGE MIN MAX	COMPONENT EXPOSURE LIMIT	UNIT
BASE LUBRICATING OILS MIXTURE	NO	85 TO 90	OSHA PEL ACGIH TLV	NO LIMIT NO LIMIT
DETERGENT / INHIBITOR SYSTEM MIXTURE	NO	10 TO 15	OSHA PEL ACGIH TLV	NO LIMIT NO LIMIT
DYE MIXTURE	NO	< 1	OSHA PEL ACGIH TLV	NO LIMIT NO LIMIT

3. HEALTH INFORMATION AND PROTECTION

EYE CONTACT: THIS PRODUCT IS PRACTICALLY NON-IRRITATING TO THE EYES UPON DIRECT CONTACT. BASED ON TESTING SIMILAR PRODUCTS AND / OR COMPONENTS.

SKIN CONTACT: AVOID SKIN CONTACT. THIS PRODUCT MAY CAUSE SLIGHT SKIN IRRITATION UPON DIRECT CONTACT. BASED ON TESTING OF SIMILAR PRODUCTS AND / OR COMPONENTS. PROLONGED OR REPEATED CONTACT MAY RESULT IN CONTACT DERMATITIS, WHICH IS CHARACTERIZED BY DRYNESS, CHAPPING, AND REDDENING. THIS CONDITION MAY MAKE THE SKIN MORE SUSCEPTIBLE TO OTHER IRRITANTS, SENSITIZES, AND DISEASE. PROLONGED OR REPEATED CONTACT MAY RESULT IN OIL ACNE, WHICH IS CHARACTERIZED BY BLACKHEADS WITH POSSIBLE SECONDARY INFECTION. SEE HEALTH DATA SECTION BELOW.

INHALATION: THIS PRODUCT HAS A LOW VAPOR PRESSURE AND IS NOT EXPECTED TO PRESENT AN INHALATION HAZARD OT AMBIENT CONDITIONS. CAUTION SHOULD BE TAKEN TO PREVENT AEROSOLIZATION OR MISTING OF THIS PRODUCT. THE PERMISSIBLE EXPOSURE LIMIT (PEL) AND THRESHOLD LIMIT VALUE (TLV) FOR THIS PRODUCT AS OIL MIST IS 5 MG/M3. EXPOSURES BELOW 5 MG/M3 APPEAR TO BE WITHOUT SIGNIFICANT HEALTH RISK. THE SHORT-TERM EXPOSURE LIMIT FOR THIS PRODUCT AS AN OIL MIST IS 10 MG/M3.

INGESTION:	DO NOT INGEST. THIS PRODUCT IS RELATIVELY NON-TOXIC BY INGESTION. THIS PRODUCT HAS LAXATIVE PROPERTIES AND MAY RESULT IN ABDOMINAL CRAMPS AND DIARRHEA. SEE HEALTH DATA SECTION BELOW.
HEALTH DATA:	ON RARE OCCASIONS, PROLONGED AND REPEATED EXPOSURE TO OIL MIST POSES A RISK OF PULMONARY DISEASE SUCH AS CHRONIC LUNG INFLAMMATION. THIS CONDITION IS USUALLY ASYMPTOMATIC AS A RESULT OF REPEATED SMALL ASPIRATIONS. SHORTNESS OF BREATH AND COUGH ARE THE MOST COMMON SYMPTOMS.
INHALATION:	THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER HAS CONCLUDED THAT HIGHLY REFINED MINERAL OILS ARE GROUP 3 SUBSTANCES, "NOT CLASSIFIABLE AS TO THEIR CARCINOGENICITY TO HUMANS," BASED ON INADEQUATE HUMAN AND INADEQUATE ANIMAL EVIDENCE. PRODUCT IS NOT CARCINOGENIC, TERATOGENIC, MUTAGENIC, A REPRODUCTIVE TOXIN OR AN ALLERGIC SENSITIZER ACCORDING TO THE OSHA HAZARD COMMUNICATION STANDARD.

4. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT:	IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER AND CONTINUE FLUSHING UNTIL IRRITATION SUBSIDES. IF MATERIAL IS HOT, TREAT FOR THERMAL BURNS AND TAKE VICTIM TO HOSPITAL IMMEDIATELY.
SKIN CONTACT:	REMOVE CONTAMINATED CLOTHING. WASH CONTAMINATED AREA THOROUGHLY WITH SOAP AND WATER. IF REDNESS OR IRRITATION OCCURS, SEEK MEDICAL ATTENTION. IF MATERIAL IS HOT, SUBMERGE INJURED AREA IN COLD WATER, IF VICTIM IS SEVERELY BURNED, REMOVE TO A HOSPITAL IMMEDIATELY.
INHALATION:	THIS MATERIAL HAS A LOW VAPOR PRESSURE AND IS NOT EXPECTED TO PRESENT AN INHALATION EXPOSURE AT AMBIENT CONDITIONS.
INGESTION:	DO NOT INDUCE VOMITING. SEEK MEDICAL ATTENTION.

5. PERSONAL HEALTH PROTECTION INFORMATION

EYE PROTECTION:	EYE PROTECTION IS NOT REQUIRED UNDER CONDITIONS OF NORMAL USE. IF MATERIAL IS HANDLED SUCH THAT IT COULD BE SPLASHED IN EYES, WEAR PLASTIC FACE SHIELD OR SPLASH-PROOF SAFETY GOGGLES.
SKIN PROTECTION:	NO SKIN PROTECTION IS REQUIRED FOR SINGLE, SHORT DURATION EXPOSURES. FOR PROLONGED OR REPEATED EXPOSURES, USE IMPERVIOUS CLOTHING, (BOOTS, GLOVES, APRONS, ETC.), OVER PARTS OF THE BODY SUBJECT TO EXPOSURE. IF HANDLING HOT MATERIAL, USE INSULATED PROTECTIVE CLOTHING, (BOOTS, GLOVES, APRONS, ETC.). LAUNDER SOILED CLOTHES. PROPERLY DISPOSE OF CONTAMINATED LEATHER ARTICLES INCLUDING SHOES, WHICH CANNOT BE DECONTAMINATED.
RESPIRATORY PROTECTION:	RESPIRATORY PROTECTION IS NOT REQUIRED UNDER CONDITIONS OF NORMAL USE, IF VAPOR OR MIST IS GENERATED WHEN THE MATERIAL IS HEATED OR HANDLED, USE AN ORGANIC VAPOR RESPIRATOR WITH A DUST AND MIST FILTER. ALL RESPIRATORS MUST BE NIOSH CERTIFIED. DO NOT USE COMPRESSED OXYGEN IN HYDROCARBON ATMOSPHERES.
VENTILATION:	IF VAPOR OR MIST IS GENERATED WHEN THE MATERIAL IS HEATED OR HANDLED, ADEQUATE VENTILATION IS ACCORDANCE WITH GOOD ENGINEERING PRACTICE MUST BE PROVIDED TO MAINTAIN CONCENTRATIONS BELOW THE SPECIFIED EXPOSURE OR FLAMMABLE LIMITS.

OTHER: CONSUMPTION OF FOOD AND BEVERAGE SHOULD BE AVOIDED IN WORK AREA WHERE HYDROCARBONS ARE PRESENT. ALWAYS WASH HANDS AND FACE WITH SOAP AND WATER BEFORE EATING, DRINKING, OR SMOKING.

6. FIRE PROTECTION INFORMATION

FLASH POINT: 320° F TEST METHOD: C. O. C.

AUTOIGNITION TEMPERATURE: NO DATA TEST METHOD: NO DATA

FLAMMABLE LIMITS IN AIR % BY VOLUME LOWER: NO DATA UPPER: NO DATA

EXTINGUISHING MEDIA: USE DRY CHEMICAL, FOAM OR CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES: WATER MAY BE INEFFECTIVE BUT CAN BE USED TO COOL CONTAINERS EXPOSED TO HEAT OR FLAME. CAUTION SHOULD BE EXERCISED WHEN USING WATER OR FOAM AS FROTHING MAY OCCUR, ESPECIALLY IF SPRAYED INTO CONTAINERS OR HOT, BURNING LIQUID.

UNUSUAL FIRE AND EXPLOSIVE CONDITIONS: DENSE SMOKE MAY BE GENERATED WHILE BURNING. CARBON MONOXIDE, CARBON DIOXIDE AND OTHER OXIDES MAY BE GENERATED AS PRODUCTS OF COMBUSTION.

7. REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.): STABLE

CONDITIONS TO AVOID: NONE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE

INCOMPATIBILITY MATERIALS TO AVOID: MAY REACT WITH STRONG OXIDIZING AGENTS

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

8. ENVIRONMENTAL PRECAUTIONS

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: CONSULT HEALTH EFFECT INFORMATION IN SECTION III, PERSONAL HEALTH PROTECTION INFORMATION IN SECTION V, FIRE PROTECTION INFORMATION SECTION VI, AND REACTIVITY DATA IN SECTION VII. NOTIFY APPROPRIATE AUTHORITIES OF SPILL. CONTAIN SPILL IMMEDIATELY. DO NOT ALLOW SPILL TO ENTER SEWERS OR WATERCOURSES. REMOVE ALL SOURCES OF IGNITION. ABSORB WITH APPROPRIATE INERT MATERIAL SUCH AS SAND, CLAY, ETC. LARGE SPILLS MAY BE PICKED UP USING VACUUM PUMPS, SHOVELS, BUCKETS, OR OTHER MEANS AND PLACED IN DRUMS OR OTHER SUITABLE CONTAINERS.

WASTE DISPOSAL METHOD: ALL DISPOSALS MUST COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS. THE MATERIAL, IF SPILLED OR DISCARDED, MAY BE A REGULATED WASTE. REFER TO STATE AND LOCAL REGULATIONS. CAUTION! IF REGULATED SOLVENTS ARE USED TO CLEAN UP SPILLED MATERIAL, THE RESULTING WASTE MIXTURE MAY BE REGULATED. DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS MAY APPLY FOR TRANSPORTING THIS MATERIAL WHEN SPILLED. WASTE MATERIAL MAY BE LANDFILLED OR INCINERATED AT AN APPROVED FACILITY. MATERIALS SHOULD BE RECYCLED IF POSSIBLE.

9. MISCELLANEOUS

HANDLING AND STORAGE REQUIREMENTS: DO NOT TRANSFER TO UNMARKED CONTAINERS. STORE IN CLOSED CONTAINERS AWAY FROM HEAT, SPARKS, OPEN FLAME, OR OXIDIZING MATERIALS. THIS PRODUCT IS NOT CLASSIFIED AS HAZARDOUS UNDER DOT REGULATIONS. FIRE EXTINGUISHERS SHOULD BE KEPT READILY AVAILABLE. SEE NFPA 30 AND OSHA 1910.106—FLAMMABLE AND COMBUSTIBLE LIQUIDS. THIS PRODUCT IS NOT A CONTROLLED SUBSTANCE UNDER THE CANADIAN WHMIS REGULATIONS.

ADDITIONAL INFORMATION: THIS MIXTURE MAY BE FORMULATED IN PART WITH COMPONENTS PURCHASE FROM OTHER COMPANIES. IN MANY INSTANCES, ESPECIALLY WHEN PROPRIETARY OR TRADE SECRET MATERIAL ARE USED, PENNZOIL COMPANY MUST RELY UPON THE HAZARD EVALUATION OF SUCH COMPONENTS SUBMITTED TO PENNZOIL BY THAT PRODUCT'S MANUFACTURE OR IMPORTER.

THIS PRODUCT IS NOT KNOWN TO CONTAIN ANY SARA TITLE III, SECTION 313 REPORTABLE CHEMICALS AT OR GREATER THAN 1.0% (0.1% FOR CARCINOGENS).

ALL INGREDIENTS OF THIS PRODUCT ARE LISTED ON THE TOXIC SUBSTANCES CONTROL ACT (TSCA) INVENTORY.

10. PHYSICAL PROPERTIES

BOILING POINT:	NO DATA	PERCENT VOLATILE:	NO DATA
MELTING POINT:	NO DATA	VAPOR DENSITY	
		(AIR=1):	NO DATA
APPEARANCE:	RED, CLEAR AND BRIGHT	EVAPORATION RATE	
		(EE=1):	NO DATA
ODOR:	PETROLEUM ODOR	SPECIFIC GRAVITY:	.8761
VAPOR PRESSURE:	NO DATA	MOLECULAR WEIGHT:	VARIES
SOLUBILITY:	SOLUBLE IN HYDROCARBONS		

DISCLAIMER OF WARRANTY:

THE INFORMATION CONTAINED HEREIN IS BASED UPON DATA AVAILABLE TO US, AND REFLECTS OUR BEST PROFESSIONAL JUDGMENT. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY USE, OR ANY OTHER WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF SUCH DATA, THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, OR THAT ANY SUCH USE DOES NOT INFRINGE ANY PATENT. SINCE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS OF USE BEYOND OUR CONTROL AND WITH WHICH WE MAY BE UNFAMILIAR, WE DO NOT ASSUME ANY RESPONSIBILITY FOR THE RESULTS OF SUCH APPLICATION. THIS INFORMATION IS FURNISHED UPON THE CONDITION THAT THE PERSON RECEIVING IT SHALL MAKE HIS OWN DETERMINATION OF THE SUITABILITY OF THE MATERIAL FOR HIS PARTICULAR PURPOSE.