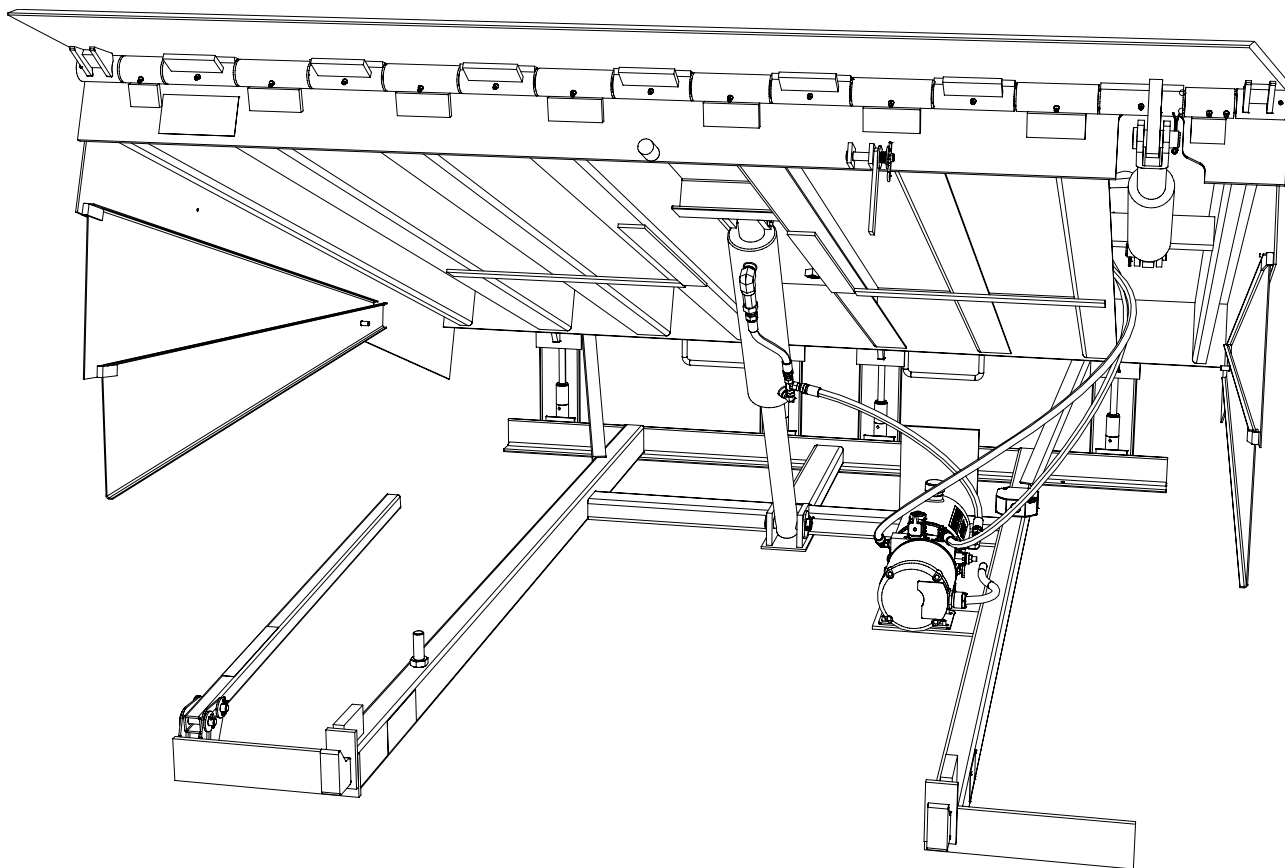




Hydraulic Dock Levelers

HL, HLR, HLQ and HFC Series



This manual applies to HL, HLR, HLQ and HFC Series dock levelers manufactured beginning October 2013 with the serial numbers 6352884 and higher.

▲ WARNING

Do not install, operate or service this product unless you have read and understand the Safety Practices, Warnings, and Installation and Operating Instructions contained in this User's Manual. Failure to do so could result in death or serious injury.

User's Manual

Installation, Operations, Maintenance and Parts

Part No. 6004755J

TABLE OF CONTENTS

Introduction.....	2	Planned Maintenance.....	23
Safety Signal Words.....	2	Troubleshooting Guide.....	26
Safety Practices.....	3	Hydraulic Power Unit Adjustment.....	28
Owner's Responsibilities.....	4	Hydraulic Schematic.....	30
Ramp and Lip Grades.....	5	Hydraulic Manifold Layout.....	31
Installation.....	6	Electrical Schematics.....	32
Service Tools.....	13	A.R.T.D. – Operations.....	35
Components and Specifications.....	15	A.R.T.D. Proximity with Adjustments.....	36
Hydraulic System Operation.....	16	Parts List.....	37
Operations		Warranty.....	51
Introduction.....	17		
Above Dock Level.....	18		
Below Dock Level, End Loading.....	19		

INTRODUCTION

Welcome and thank you for choosing this dock leveler from Serco®. It is equipped with the patented HYDRA MAX® Lip Extension. This dock leveler may be equipped with the optional ENERGY GUARD® dock leveler sealing system.

This User's Manual contains information that you need to safely install, operate and maintain the dock leveler. It also contains a complete parts list and information about ordering replacement parts. Please keep and read this User's Manual before using your new dock leveler.

SAFETY SIGNAL WORDS

You may find safety signal words such as DANGER, WARNING, or CAUTION throughout this User's Manual. Their use is explained below:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

▲ DANGER

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

▲ WARNING

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

▲ CAUTION

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

NOTICE

Notice is used to address practices not related to personal injury.

SAFETY PRACTICES

⚠ WARNING

Read these Safety Practices before installing, operating or servicing the dock leveler. Failure to follow the safety practices could result in death or serious injury.

If you do not understand the instructions, ask your supervisor to explain them to you or contact your local authorized distributor.

OPERATION

Use restricted to trained operators.

Follow procedures on placard posted near dock leveler.

Do not use this unit to service vehicles outside its intended working range which is 12 inches above (18 inches above for 10 foot long dock leveler only) and 12 inches below dock.

Do not operate the dock leveler with equipment, material or people on the ramp or lip.

Do not operate the dock leveler when anyone is in front of it unless they are securing the maintenance strut.

Stay clear of the dock leveler when it is moving.

KEEP HANDS CLEAR OF HINGES AT ALL TIMES. Do not use hands to position dock leveler ramp or lip in vehicle or to store dock leveler.

Stay clear of leveler unless lip supported by the vehicle platform or the ramp is supported by both lip keepers; unsupported leveler can lower unexpectedly.

Do not use the dock leveler if it looks broken or does not seem to work right. Tell your supervisor it needs repair right away.

Do not stand in the driveway between the dock leveler and a backing vehicle.

Before chocking wheels or engaging vehicle restraint, dump air from air ride suspensions and set parking brakes.

Chock vehicle wheels or lock vehicle in place with a vehicle restraining device and set brakes before loading or unloading.

Ensure lip avoids contact with vehicle sides and cargo. If lip does not lower to vehicle platform, reposition vehicle.

OPERATION (continued)

Do not use a fork truck or other material handling equipment to lower the ramp.

Move all equipment, material or people off dock leveler and store dock leveler at dock level before allowing the vehicle to pull out.

Store dock leveler to dock level with lip in both lip keepers after use.

INSTALLATION, MAINTENANCE AND SERVICE

If the dock leveler does not operate properly using the procedures in this manual, call your local distributor for service.

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

Do not operate the dock leveler when anyone is in front of it unless they are securing the maintenance strut.

Do not enter pit or do any maintenance or repair under dock leveler unless leveler is securely supported by maintenance strut.

Disconnect the power and properly tag or lock out before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler.

All electrical troubleshooting or repair must be done by a qualified technician and must meet applicable codes.

Disconnect the power and properly tag or lock out before doing any electrical work.

If it is necessary to make troubleshooting checks inside the control box with the power on, **USE EXTREME CAUTION!**

Do not place fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, death or serious injury.

OWNER'S RESPONSIBILITIES

The owner's responsibilities include the following:

The owner should recognize the inherent danger of the interface between dock and transport vehicle. The owner should, therefore, train and instruct operators in the safe use of dock leveling devices.

When a transport vehicle is positioned as closely as practicable to a dock leveling device, there shall be at least 4" of overlap between the front edge of the lip and the edge of the floor or sill of the transport vehicle.

Nameplates, cautions, instructions and posted warnings shall not be obscured from the view of operating or maintenance personnel for whom such warnings are intended.

Manufacturer's recommended periodic maintenance and inspection procedures in effect at date of shipment shall be followed, and written records of the performance of these procedures should be kept.

Dock leveling devices that are structurally damaged or have experienced a sudden loss of support while under load, such as might occur when a transport vehicle is pulled out from under the dock leveling device, shall be removed from service, inspected by the manufacturer's authorized representative, and repaired as needed before being placed back in service.

The owner shall see that all nameplates, caution and instruction markings or labels are in place and legible and that the appropriate operating and maintenance manuals are provided to users.

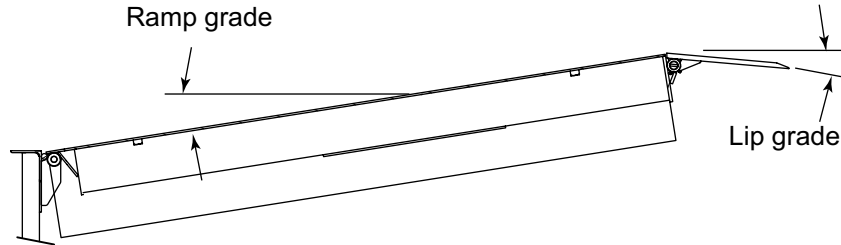
Modifications or alterations of dock leveling devices shall be made only with written permission of the original manufacturer.

When industrial vehicles are driven on and off transport vehicles during the loading and unloading operation, the brakes on the transport vehicle shall be applied and wheel chocks or positive restraints that provide the equivalent protection of wheel chocks engaged.

The dock leveler should never be used outside its vertical working range or vertical lifting range or outside the manufacturer's labeled rated capacity. It must also be compatible with the loading equipment and other conditions relating to the dock.

RAMP AND LIP GRADES

Fig. 1



Vehicle bed position from dock, (in.)		Ramp and lip grades, % for each dock leveler length					
		6' Leveler		8' Leveler		10' Leveler	
		Ramp	Lip	Ramp	Lip	Ramp	Lip
Above dock	18.0	---	---	---	---	16.5	10.1
	16.0	---	---	---	---	14.8	8.4
	15.0	---	---	---	---	13.0	6.7
	12.0	19.1	12.6	14.2	7.9	11.4	5.0
	10.0	16.2	9.8	12.1	5.8	9.7	3.4
	8.0	13.3	7.0	10.0	3.7	8.0	1.7
	6.0	10.5	4.2	7.9	1.6	6.3	-0.0
	4.0	7.8	1.5	5.8	-0.5	4.7	-1.6
	2.0	5.0	-1.3	3.8	-2.5	3.0	3.3
	0.0	2.2	-4.0	-4.6	-4.6	1.3	-4.9
Below dock	-2.0	-0.5	-6.8	-6.7	-17.2	-0.3	-6.6
	-4.0	-3.3	-9.6	-8.8	-20.4	-2.0	-8.3
	-6.0	-6.0	-12.4	-10.8	-18.6	-3.6	-9.9
	-8.0	-8.8	-15.2	-12.9	-16.8	-5.3	-11.6
	-10.0	-11.6	-18.0	-15.1	-15.0	-7.0	-13.3
	-12.0	-14.4	-20.9	-17.2	-13.3	-8.6	-15.0

Ramp and lip grade, 4° lip bend, 16" lip.

Vehicle bed position from dock, (in.)		Ramp and lip grades, % for each dock leveler length					
		6' Leveler		8' Leveler		10' Leveler	
		Ramp	Lip	Ramp	Lip	Ramp	Lip
Above dock	18.0	---	---	---	---	17.3	4.6
	16.0	---	---	---	---	15.6	2.9
	15.0	---	---	---	---	13.9	1.2
	12.0	20.5	7.7	15.3	2.6	12.2	-0.4
	10.0	17.6	4.9	13.2	0.5	10.5	-2.1
	8.0	14.8	2.1	11.1	-1.6	8.8	-3.8
	6.0	11.9	-0.7	9.0	-3.6	7.2	-5.4
	4.0	9.2	-3.4	6.9	-5.7	5.5	-7.1
	2.0	6.4	-6.2	4.8	-7.8	3.8	-8.8
	0.0	3.6	-9.0	2.7	-9.9	2.2	-10.4
Below dock	-2.0	0.9	-11.8	0.6	-12.0	0.5	-12.1
	-4.0	-2.1	-14.6	-1.4	-14.1	-1.1	-13.8
	-6.0	-4.7	-17.4	-3.5	-16.2	-2.8	-15.5
	-8.0	-7.4	-20.3	-5.6	-18.3	-4.5	-17.2
	-10.0	-10.2	-23.2	-7.7	-20.5	-6.1	-18.9
	-12.0	-13.0	-26.1	-9.8	-22.7	-7.8	-20.6

Ramp and lip grade, 7° lip bend, 16" lip.

INSTALLATION

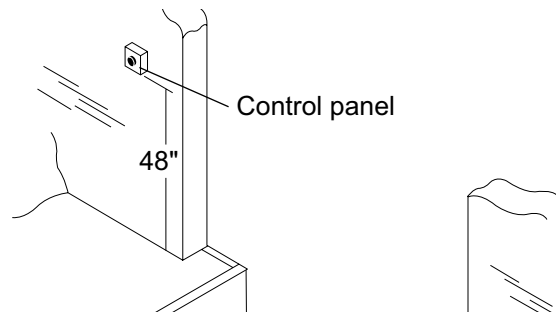
PIT CHECK

1. Inspect the pit and remove all loose trash and construction debris. Prepare the rear of the pit for the leveler mounting feet. Using a chisel, remove any high spots visible within 6" of the rear wall below the rear curb angle. Verify that the pit matches the pit details for your leveler. (Reference publication 826-001). See the Installation Troubleshooting section if the pit varies from the specification.

LEVELER CHECK PRIOR TO INSTALLATION

1. Visually check that all rear hinge pins, cotter pins, and kliprings are in place.
2. Visually check that the lip pin retainers are in place on both ends of the lip rod.
3. Visually check that both the lip maintenance bar and maintenance strut are undamaged and pins securely attached.
4. Visually check that the foot assemblies at the rear of the leveler are in place and undamaged.

Fig. 2



INSTALLATION OF DOCK LEVELER

▲ WARNING

Place barricades around pit on dock floor and drive while installing, maintaining or repairing dock leveler.

For AC applications, power to control box must be from fused disconnect supplied by others. Fuse size for a dual element motor protected time delay type fuse can be no greater than 225% of motor FLA. Before doing any electrical work, make certain the power is disconnected and properly tagged or locked out. All electrical work must be done by a qualified technician and must meet all applicable codes. If it is necessary to make troubleshooting checks inside the control panel with the power on, USE EXTREME CAUTION. Do not place fingers or uninsulated tools inside the control panel. Touching wires or other parts inside the control panel could cause electrical shock, death or serious injury.

▲ WARNING

Before installing the dock leveler, read and follow the Safety Practices on Page 3. Failure to follow the safety practices could result in death or serious injury.

INSTALLATION, continued

1. Mount and wire control box. See Fig. 2. See wiring diagram located on the inside cover of the control or wiring diagrams in this manual.

NOTE:

No shims are required for the back frame in standard applications. However, shims are required for the front support pads.

2. Hold the leveler closed with the bolt through the lip plate and/or shipping banding securing the lip plate to the frame. Install two load centering eye bolts into the front and rear of the top plate and hoist the leveler into the pit. The dock leveler should not be lifted in any other manner when placed into the pit. See Fig. 3.
3. Place the dock leveler into the pit. Leave room between the rear of the dock leveler frame and the rear of the pit so that electrical wires can be connected to frame mounted junction box.

▲ WARNING

Inadequate lifting equipment or practices can cause a load to fall unexpectedly. Make sure the lifting chain or other lifting devices are in good condition and have a rated capacity of at least 3500 lbs for the lifting angle used. Never allow anyone to stand on or near the dock leveler when it is lifted or placed into the pit. Stand clear of the dock leveler when it is placed into the pit. Failure to follow this warning can allow the dock leveler to fall, tip, or swing into people, causing death or serious injury.

4. Connect wires to frame mounted junction box. Do not remove straps from lip yet. See Fig. 4.
5. Position the dock leveler in the pit so that the gaps along both sides of the leveler are equal ($\pm 1/8$ "") and the rear of the leveler frame touches the rear pit curb angle.

Fig. 3

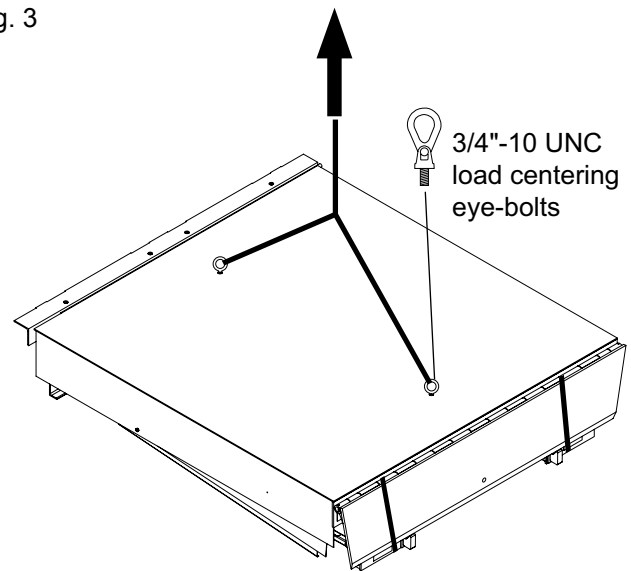
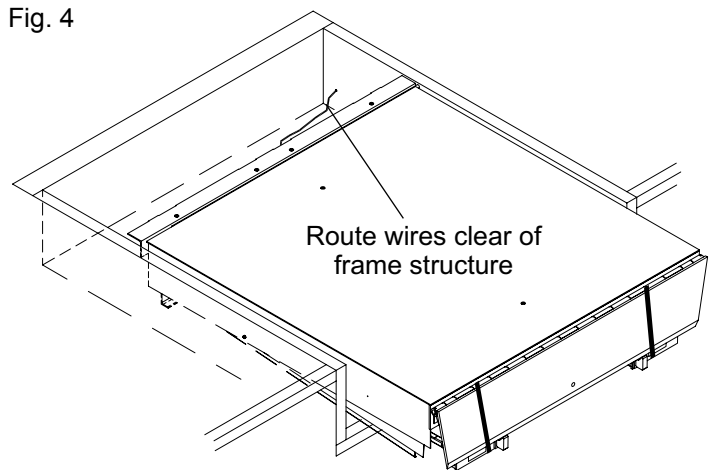


Fig. 4



Confirm wire route is clear of frame and possible damage

INSTALLATION, continued

NOTE:

The rear frame angle should be about 3/4" lower than the pit curb angle. This is normal. See Fig. 6.

- To level the rear frame, use a 1/2" square drive (1/2" ratchet). Work from one side to the other. Turn each of the leveling screws on the rear angle, counter clockwise until the top surface of the rear angle is level with the rear pit curb angle. Repeat on each screw until all feet are in contact with the pit floor and the top frame angle is flush with the rear curb angle. See Fig. 7.

NOTICE

Welding with the dock leveler's power connected can damage electrical components. If the dock leveler has previously been electrically connected, turn off power to control box and unplug all dock leveler electrical cords from receptacles in the rear pit wall before welding. Ground welder to dock leveler frame. Failure to do so can result in product damage.

- Verify placement of the leveler in the pit is such that the rear frame angle is touching the rear pit curb angle and the gaps along both sides of the leveler are equal ($\pm 1/8"$).

▲ WARNING

The rear edge of the dock leveler should be level or slightly ($1/16"$ max.) below dock level.

NOTE:

If the pit is out-of-square, the resulting gap between the rear frame and the rear curb angle should be shimmed as necessary. Use steel shim(s) and weld in place. See Installation Troubleshooting on page 12.

- Tack weld the rear angle in place in 4 places min. 3/8", at or near each leveling screw. See Fig. 8.

NOTE:

Do not drag leveler out of pit with legs extended. Do not do any more than tack weld the rear angle until after shimming

Fig. 5

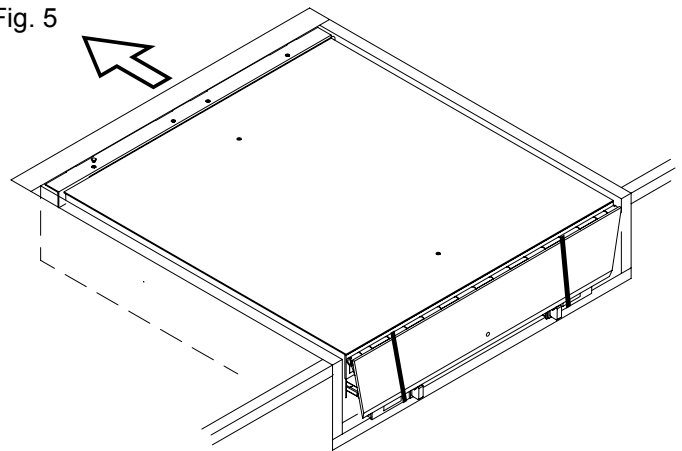


Fig. 6

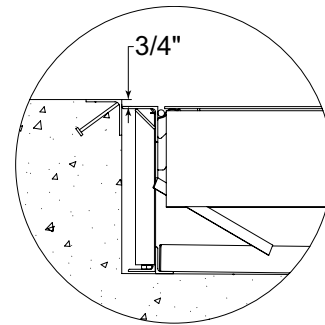


Fig. 7

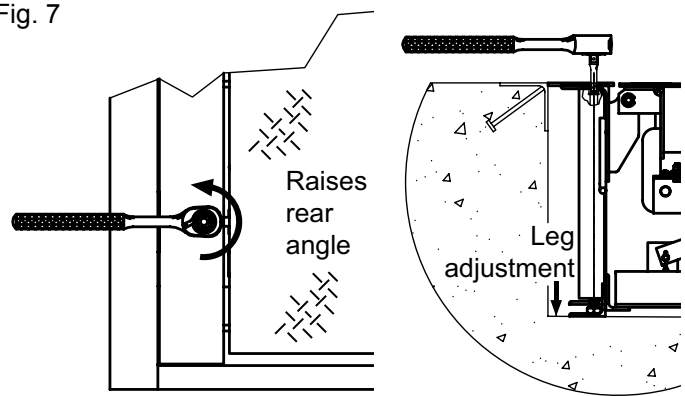
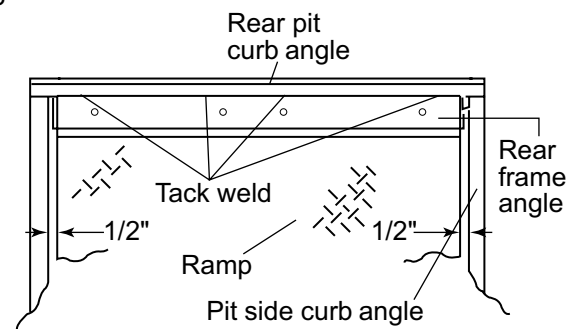


Fig. 8



INSTALLATION, continued

the front lip keepers.

NOTE:

The top surface of the dock leveler should be level and a smooth transition with the dock floor curb angle. The front end should be level and parallel with the rear frame angle for proper operation. Unequal shimming of the front supports may be required to obtain a level front edge.

- Remove and discard the shipping tie down straps located at the front hinged lip assembly. See Fig. 5.

NOTICE

Before welding the rear frame, cover the weather seals with a sheet of steel to prevent setting fire to the weather seals. Failure to do so may result in property damage.

NOTICE

Welding with the dock leveler's power connected can damage electrical components. If the dock leveler has previously been electrically connected, turn off power to control box and unplug all dock leveler electrical cords from receptacles in the rear pit wall before welding. Ground welder to dock leveler frame. Failure to do so can result in product damage.

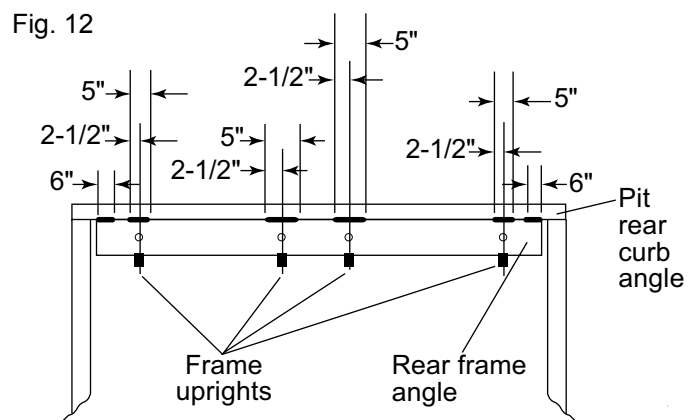
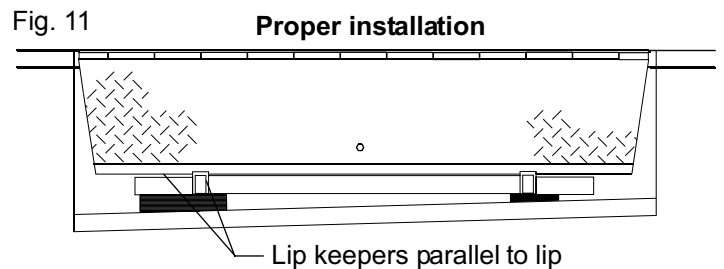
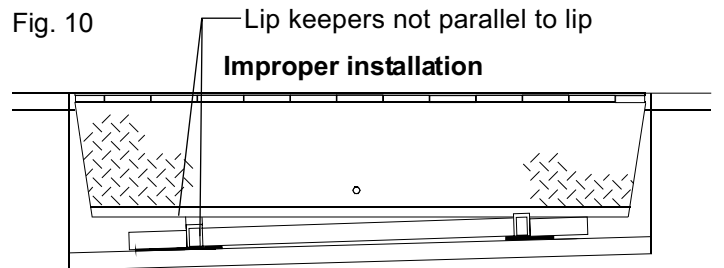
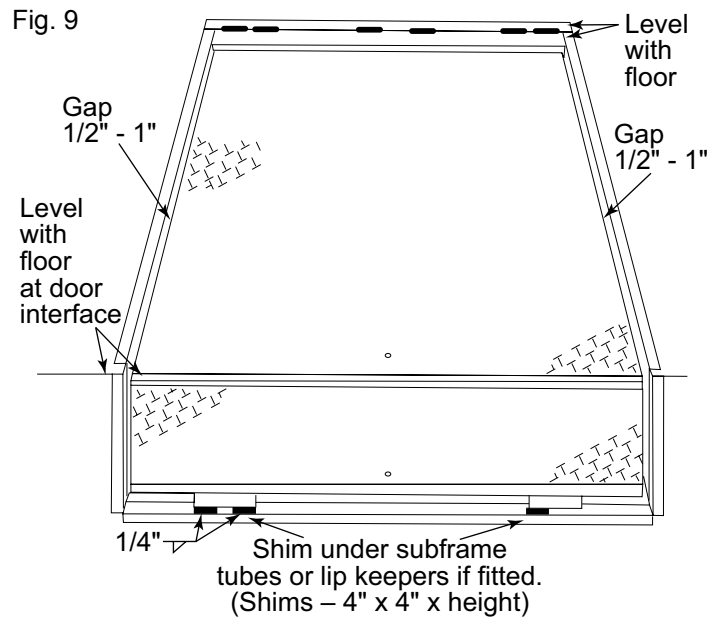
If front and rear pit curb angles are not parallel do not attempt to shim dock leveler supports to match pit angles. The lip keepers and lip plate must be parallel for proper operation of the dock leveler. Add or subtract shims as required.

NOTE:

Shims must be placed under the maintenance strut bracket, and on 18" and 20" lips, shims must also be welded in between the lip keepers and the vertical face of the curb angle.

- Position the dock leveler level with the dock floor (area where door strikes floor). Use 4" x 4" shims to shim under the subframe tubes behind both lip keepers and under the maintenance strut bracket. See Fig. 9, 10 and 11. These shims should be flush with the front of the leveler frame below or behind the lip keepers. Ensure the leveler is level with the finished floor.

- Tack weld the front level supports and shims to the front curb angle as shown in Fig. 9, 10 and 11.



INSTALLATION, continued

- Place leveler securely on the maintenance strut. If electrical power is available, use the electrical controls to raise the ramp and lip to their full above dock position. See operating instructions in this manual. If electrical power is not available, use a chain or other suitable lifting device. Refer to page 13-14 for proper procedure for using the maintenance strut.

▲ DANGER

Hydraulic pressure or mechanical support must be maintained on the ramp to hold it in the raised position until the maintenance strut is in place. DO NOT WORK UNDER THE DOCK LEVELER RAMP OR LIP UNLESS THE MAINTENANCE STRUT IS SECURELY SUPPORTING THE LEVELER (See page 13).

NOTE:

If the pit width conforms to the certified pit drawing, there be a 1/8" gap between the ends of the dock leveler's rear frame angle and the pit side curb angles. If this is not the case, the ends of the rear frame angle may require trimming to allow the gaps along both sides of the leveler to be equal ($\pm 1/8"$).

- Weld 4" x 4" shims under the maintenance strut bracket. For 18" or 20" lips, also weld shims between the lip keepers and the vertical face of the front curb angle with 1/4" fillet welds.
- Weld front lip keepers to shims, and shims to front curb angle with 3" lg x 1/4" fillet welds on the front and sides. See Fig. 14.
- Weld the rear frame angle to the rear curb angle using 1/4" "V" joint in the grooves provided. Follow weld size and location noted in Fig. 12. Do NOT weld the ends of the rear frame angle to the side curb angles.
- After the rear frame angle is welded, check that all leveling feet are in contact with the floor of the pit. Once all feet are in contact with the floor, tighten (torque) each leg leveling screw counter-clockwise to 25-40 ft-lbs. See Fig. 7.

Fig. 13

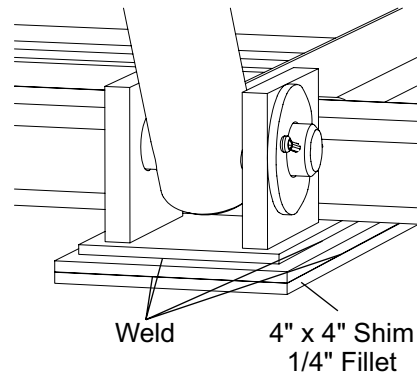
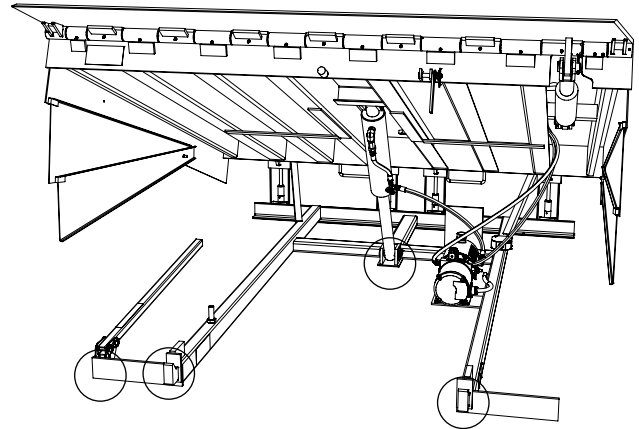


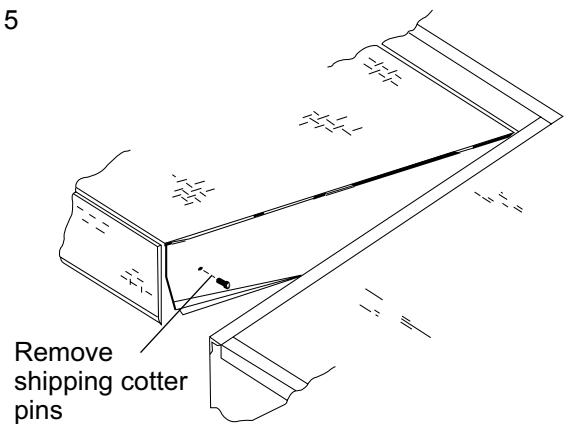
Fig. 14



INSTALLATION, continued

17. Shim under ramp hydraulic cylinder mounting pad using 4" x 4" x required thickness. Weld shims together and to lower cylinder mounting pad. See Fig. 13.
18. Finish welding the shims to dock level supports and shims to front curb angle with 3" min. long welds in the three places shown. See Fig. 14.
19. Remove shipping cotter pins from telescopic toe guards (if equipped). See Fig. 15.
20. Mount dock bumpers to face of dock. See Fig. 16.

Fig. 15



NOTE:

See TSB2008-1020G for anchor bolt installation good practices.

21. Read Safety Practices on page 3 and Operating Instructions on pages 17-22. With electrical power available, use the controls to operate the dock leveler through the complete cycle to check operation. Ensure leveler operates properly.
22. Permanently mount the laminated dock leveler safety placard on the wall near the dock leveler controls. See Fig. 17. Make sure the customer gets the user's manual and is properly trained.

⚠ WARNING

Keep hands, fingers and head away from the lip when the raise button is released. The lip and dock leveler are free to move downward when hydraulic pressure is removed from cylinders.

23. Operate the dock leveler four more times through the complete cycle to check operation.

Fig. 16

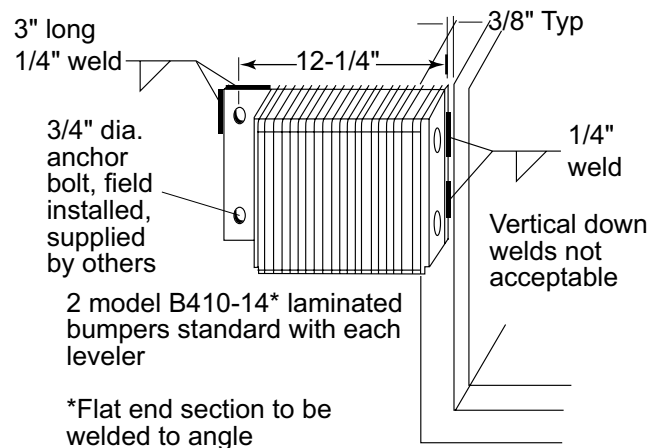
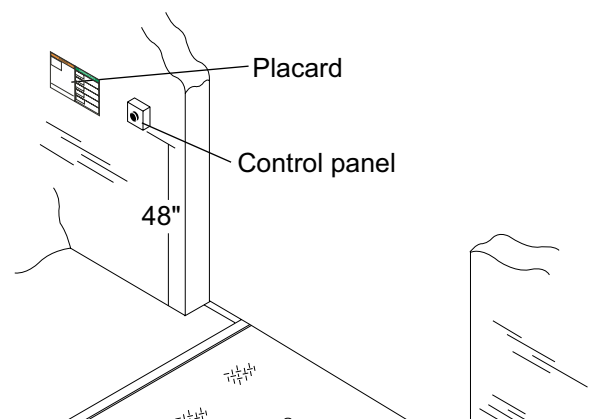


Fig. 17



INSTALLATION, continued

INSTALLATION TROUBLESHOOTING

The following procedures apply after the leveler is level in the pit.

PROBLEM	POSSIBLE CAUSE	SOLUTION
1) Leveler will not fit properly in pit.	<p>a) Pit is out of square with the sides.</p> <p>b) One side and rear angle is out of square.</p> <p>c) Pit floor irregular in rear.</p> <p>d) Pit is too deep.</p>	<p>a) Align the sides of the leveler so that both sides are equal ($\pm 1/8"$). With the leveler's rear frame angle touching the rear curb angle, any gaps between the frame and the rear curb angle must be filled with steel shims of appropriate thickness and length equal to the frame's beveled weld locations. See Fig. 19.</p> <p>b) If the gap between the leveler and the side of the pit is less than $1/2"$ at any point, the performance of the leveler may be impaired, especially if weatherseal is attached to the leveler. Please consult 4Front Technical Services should this be the case.</p> <p>c) If large deformations exist in the concrete work, attempt to flatten out the rough surface using a chisel or grinder to take out the large obstructions. The rear leveling legs can be installed on out of plane surfaces up to $1/8"$ at each leg. See Fig. 21.</p> <p>d) Weld $4" \times 4"$ shims to the bottom of the adjustable legs as shown in Fig. 21.</p>

Fig. 19

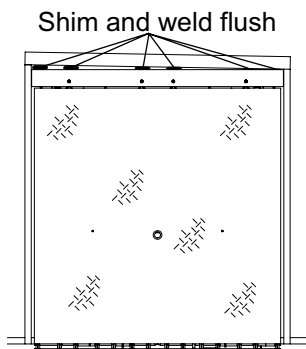


Fig. 20

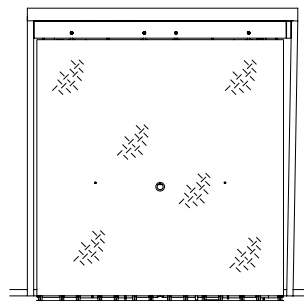
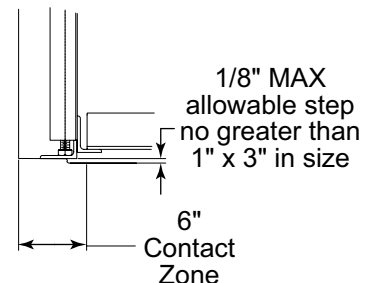


Fig. 21



SERVICE TOOLS

▲ DANGER

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the operation section of this manual.

Be certain before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler, that:

- 1) THE MAINTENANCE STRUT IS SECURELY SUPPORTING THE LEVELER (See page 13-14).
- 2) The power is disconnected and properly tagged or locked out.

MAINTENANCE STRUT AND LIP MAINTENANCE BAR

1. To raise the maintenance strut, two people are needed:
 - a. Push and hold the **RAISE** button on the control panel so leveler is fully raised.
 - b. Second person raise the strut to vertical position.
 - c. Release the maintenance strut, ensure it has dropped into the locked position.
 - d. Rotate lip maintenance bar to raised position. See Fig. 23.
 - e. Release the **RAISE** button.
3. Before lowering the maintenance strut, disengage the lip maintenance bar:
 - a. Press and hold the **RAISE** button.
 - b. When the lip is fully extended, rotate the lip maintenance bar down to the release position. See Fig. 23.
 - c. Release the **RAISE** button.

Fig. 22

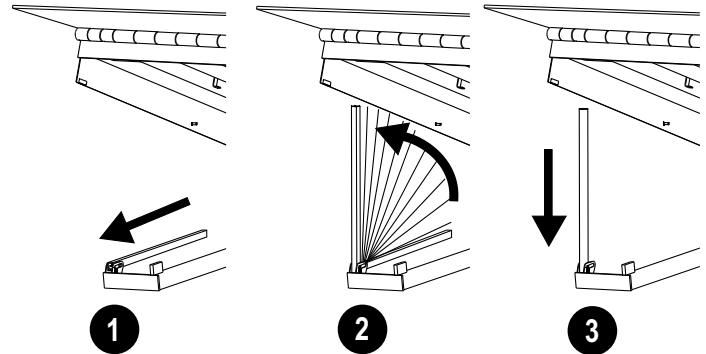
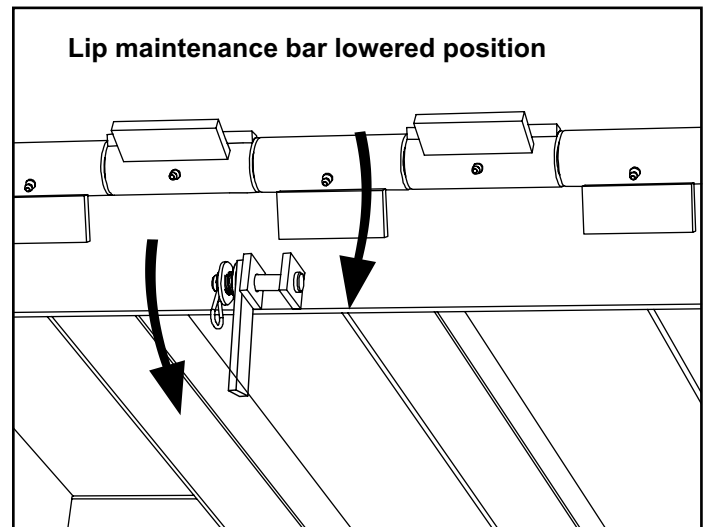
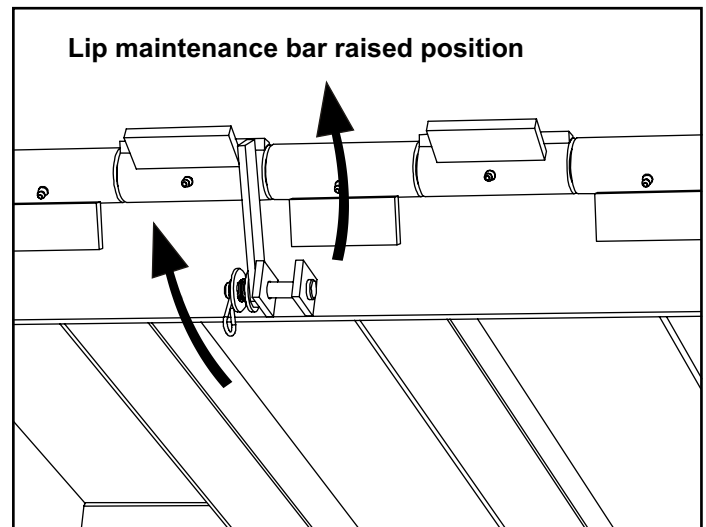


Fig. 23



SERVICE TOOLS, continued

4. To disengage the maintenance strut from its locked upright position two people are needed:
 - a. Push and hold the **RAISE** button on the control panel.
 - b. Second person lift the maintenance strut up to release from locked position.
 - c. Push back to lower the maintenance strut.
 - d. Release the **RAISE** button.

▲ DANGER

It is important to always engage the lip maintenance bar mechanism when ever working under the leveler with the lip extended. Any upward force on the lip could release the lip maintenance bar allowing the lip to fall.

COMPONENTS AND SPECIFICATIONS

The main components of the dock leveler are shown below. See the Parts List for specific part numbers.

Fig. 24

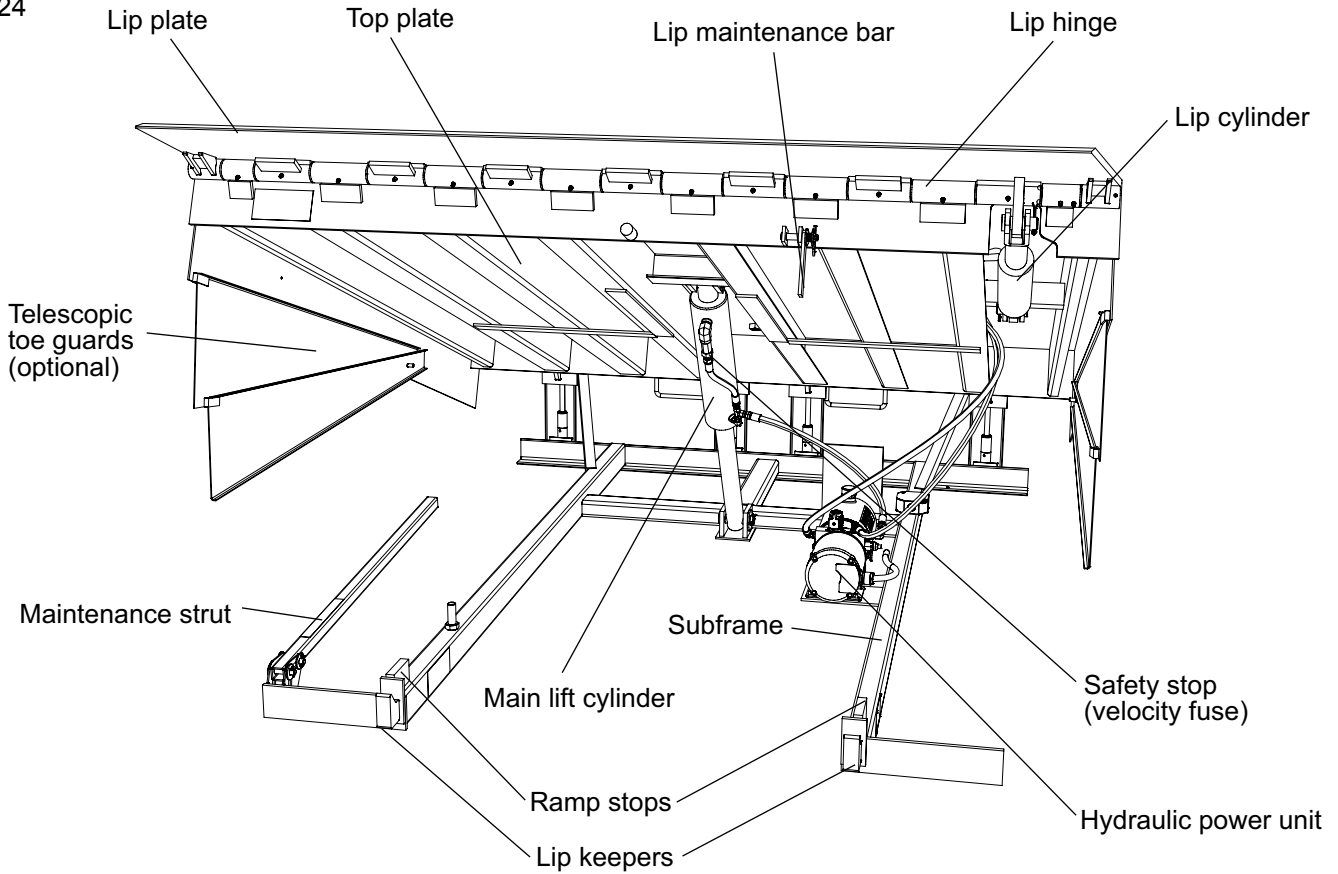
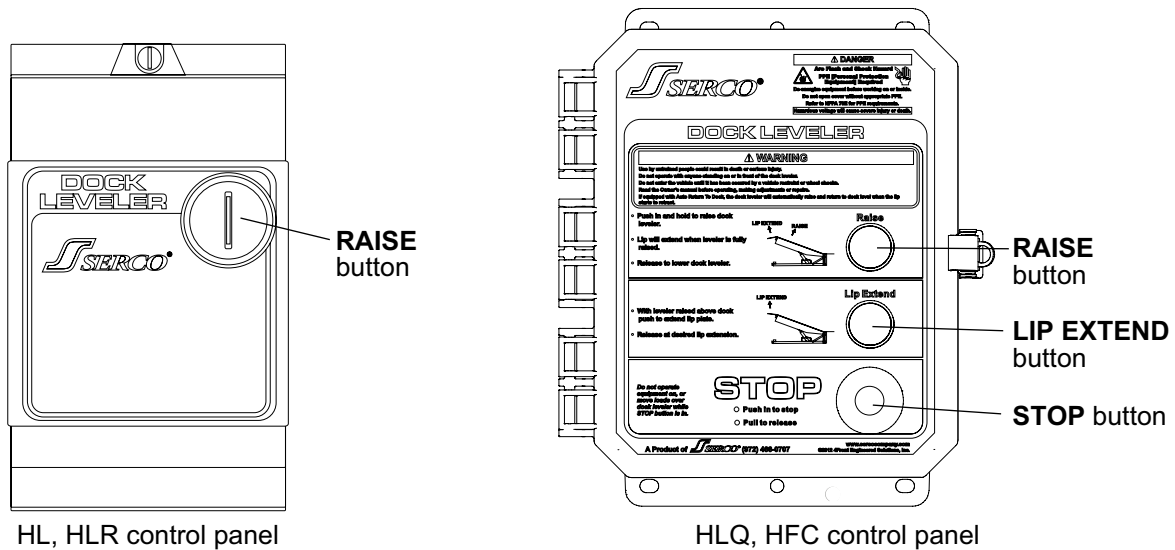


Fig. 25



COMPONENTS AND SPECIFICATIONS, continued

Control Panel - NEMA 4 (plastic enclosure), NEMA 12 (steel enclosure), automatic motor starter, thermal overload, 2 amp resettable control circuit breaker. UL or cUL approved.

Auto Return to Dock Proximity Switch - NEMA 6P, normally open, with LED pilot light.

Motor - NEMA Standard T.E.N.V. / 48YZ frame, 1 h.p., single or three phase or 24V DC.

Pump - Fixed displacement gear pump, 1 gpm, primary relief valve factory set at 2000 psi.

Reservoir Capacity - 0.7 U.S. gal., (2.7 lit.) level.

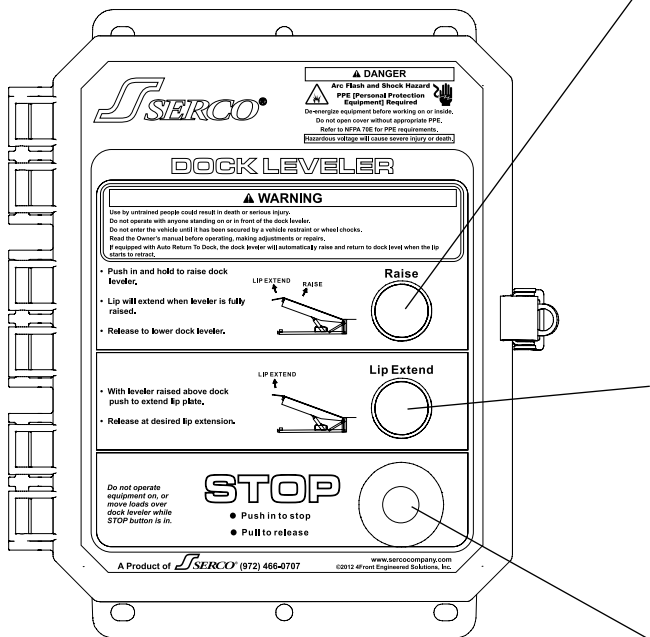
Hydraulic Fluid - An all weather hydraulic fluid with a viscosity of 15 CSt at 40°C (100°F), such as:

- Shell Tellus T 15
- Mobil Aero HFA (49011)
- Exxon Univis: HV13, N15, J13
- Texaco Aircraft Oil #1554
- U.S. Oil Co., Inc #ZFI-5606 (Low Temp.)

HYDRAULIC SYSTEM OPERATION

HLQ, HFC Models

Fig. 26



RAISE

- Pump starts
- Main lift cylinder extends and lip cylinder retracts

Fully Raised

- Pressure increases
- Sequence valve shifts
- Lip cylinder extends

Stop Raise

- Sequence valve resets
- Deck floats down forcing fluid to reservoir
- Float speed controlled by flow control needle valve

LIP EXTEND

- With leveler above dock height, pump starts as above
- Solenoid valve shifts locking main cylinder in partial raised position
- Pressure increases, sequence valve shifts and lip extends

STOP

- Solenoid valve shifts, locking main cylinder and lip cylinder
- Power cut off from motor control circuit

⚠ WARNING

Before operating the dock leveler, read and follow the Safety Practices on page 3.

Use of dock leveler restricted to trained operators.

Follow procedures on placard posted near dock leveler.

DO NOT USE THE DOCK LEVELER IF IT LOOKS BROKEN, OR DOES NOT SEEM TO WORK RIGHT. Tell your supervisor it needs repair right away, or contact your local Serco distributor.

Before pressing button, ensure lip avoids contact with vehicle platform sides and cargo. If lip does not lower to vehicle platform, reposition vehicle platform.

Stay clear of leveler unless lip is supported by vehicle platform or the leveler is stored at dock level. Visually check that the lip is supported by the vehicle platform or the ramp is supported by both lip keepers or safety legs before driving or walking on the ramp. Unsupported dock levelers can lower unexpectedly.

Before chocking wheels or engaging vehicle restraint, dump air from air ride suspensions and set parking brakes.

Always be certain that the vehicle wheels are chocked, or that the vehicle is locked in place by a vehicle restraining device and the brakes are set before loading or unloading. Vehicles pulling away from the dock unexpectedly can cause uncontrolled drop of the dock leveler which can result in death or serious injury.

Visually check that the lip is supported by the vehicle platform or the ramp is supported by both front lip keepers before driving or walking on the ramp.

The maximum uncontrolled drop of a dock leveler under load is 4" from the vehicle platform height from which the dock leveler was positioned.

Always return the dock leveler to its dock level (stored) position before allowing the vehicle to leave the dock. If the vehicle pulls away from the dock before the dock leveler is stored, the lip will fall to its pendant position and the ramp will drop. In addition, failure to properly store the leveler may leave the leveler in a position below the level of the dock floor. This condition may result in unexpected drop of personnel or material handling equipment and result in death or serious injury.

Failure to follow these instructions could result in death or serious injury to operators and/or bystanders.

INTRODUCTION

The dock leveler is designed to span and compensate for space and height differences between a loading dock and freight carrier to allow safe, efficient freight transfers.

The dock leveler uses a push-button control to position the ramp. Pushing and holding the **RAISE** button operates a hydraulic cylinder to raise the ramp. Releasing the **RAISE** button allows the ramp to lower.

When the dock leveler reaches its full raised position, a second hydraulic cylinder extends the dock leveler lip. The dock leveler with its lip extended settles onto the vehicle platform forming a bridge.

After loading pressing and holding the **RAISE** button allows the ramp to raise. The lip will retract as the leveler is raised. Releasing the **RAISE** button lowers the ramp into its level, stored position.

With the dock leveler in its stored position, lip keepers support the dock leveler ramp at a position level with the dock floor.

For below dock loads fully raise the leveler so that the lip moves outward a few inches and let go of the **RAISE** button. The leveler will float down and the lip will clear the lip keepers allowing the dock leveler to go below dock floor level.

OPERATING INSTRUCTIONS

HL, HLR Models

⚠ WARNING

Always secure the vehicle with a vehicle restraint or wheel chocks before operating the dock leveler.

Do not operate dock leveler with anyone standing on or in front of it.

Do not drive on dock leveler or lip until it is fully extended and supported by the vehicle bed.

Always keep hands and feet clear of all moving parts.

Always restore the leveler to its safe dock level position after servicing the vehicle.

If equipped with Auto Return to Dock the dock leveler will automatically raise and return to dock level when the lip starts to retract.

RAISING LEVELER

Ensure a vehicle restraining device is engaged or wheel chocks in place before operating the dock leveler.

1. Press the button on control panel to raise leveler.
2. Continue to press the button. The lip will automatically extend when the leveler is fully raised.

⚠ WARNING

Do not drive on dock leveler or lip until it is fully extended and supported by the vehicle bed.

Never use a fork truck or other material handling equipment to lower the ramp and lip sections.

Fig. 27

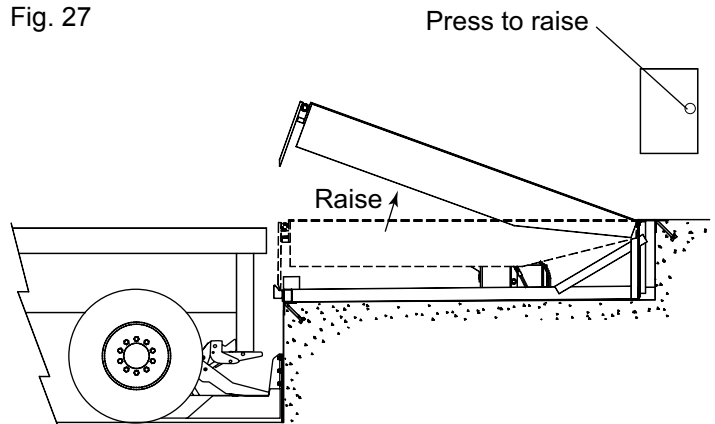
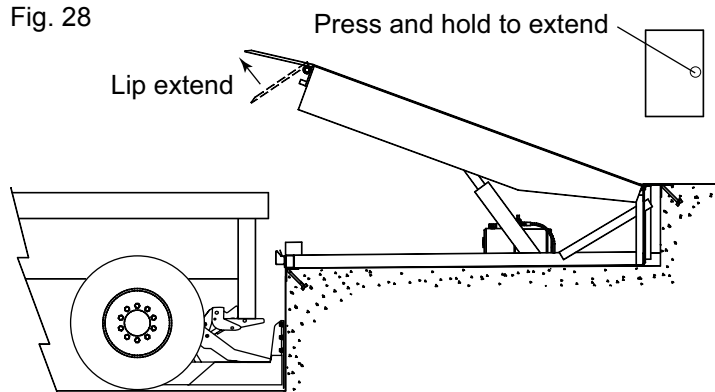


Fig. 28



OPERATING INSTRUCTIONS, continued

HL, HLR Models

- When lip is fully extended release the **RAISE** button. The leveler will slowly float down to the vehicle bed.

NOTE:

If an obstruction prevents the lip from deploying properly, press the button to raise and retract the lip. Restore the leveler to the safe dock level position with the lip in both lip keepers for end loading.

⚠ WARNING

Before allowing vehicle to leave always return the dock leveler to its dock level (stored) position with the lip stored in both lip keepers. See Fig. 30. Failure to do so may leave the dock leveler in a position below the level of the dock floor. This condition may result in unexpected drop of personnel or material handling equipment and could result in death or serious injury.

If equipped with Auto Return to Dock the dock leveler will automatically raise and return to dock level when the lip starts to retract.

STORING LEVELER

- To return the leveler to the stored position, press the button. As the leveler raises the lip will retract. When the lip is fully retracted, release the button. The leveler will float down to the stored position.

BELOW DOCK END LOADING

- Press the button until leveler is fully raised and the lip starts to extend. When the lip has extended 2 to 3 inches to clear the front of the keepers, release the button. Leveler will float down for end loading. See Fig. 31.

Fig. 29

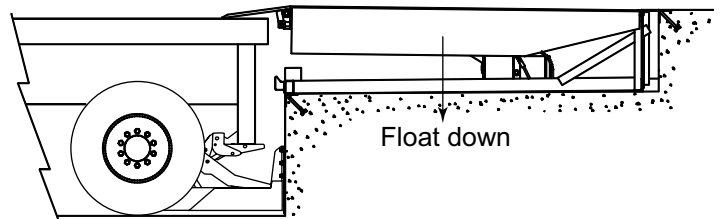
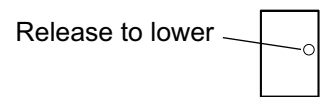


Fig. 30

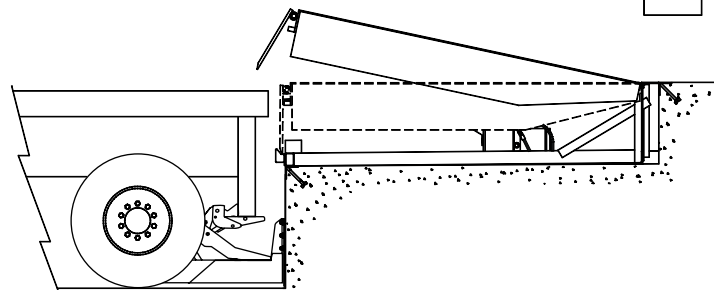
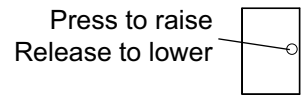
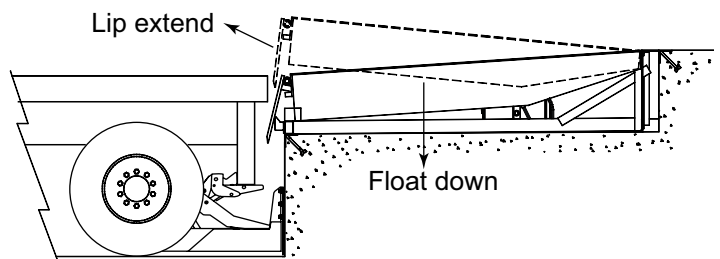
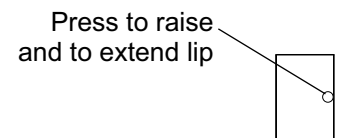


Fig. 31



OPERATING INSTRUCTIONS

HLQ, HFC Models

▲ WARNING

Always secure the vehicle with a vehicle restraint or wheel chocks before operating the dock leveler.

Do not operate dock leveler with anyone standing on or in front of it.

Do not drive on dock leveler or lip until it is fully extended and supported by the vehicle platform.

Never drive on dock leveler with STOP button pressed in.

Always keep hands and feet clear of all moving parts.

Always restore the leveler to its safe dock level position after servicing the vehicle.

If equipped with Auto Return to Dock the dock leveler will automatically raise and return to dock level when the lip starts to retract.

RAISING LEVELER

Ensure a vehicle restraining device is engaged or wheel chocks in place before operating the dock leveler.

1. Press the **RAISE** button on the control panel to raise the leveler.
2. When the leveler is fully raised, the lip will automatically extend. To extend earlier, press the **LIP EXTEND** button.

▲ WARNING

Do not drive on dock leveler or lip until it is fully extended and supported by the vehicle platform.

Never use a fork truck or other material handling equipment to lower the ramp and lip sections.

Fig. 32

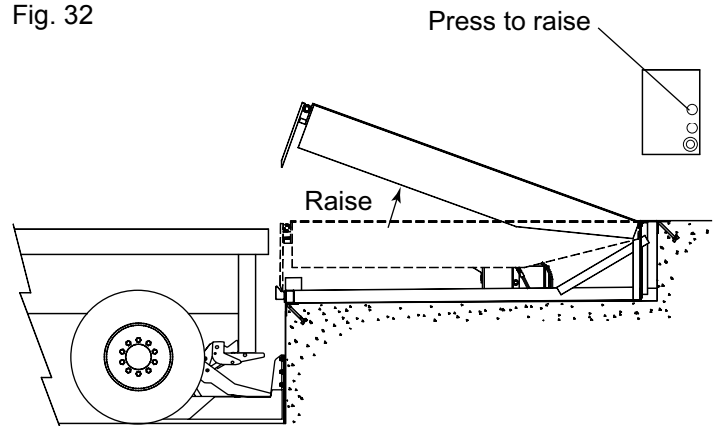
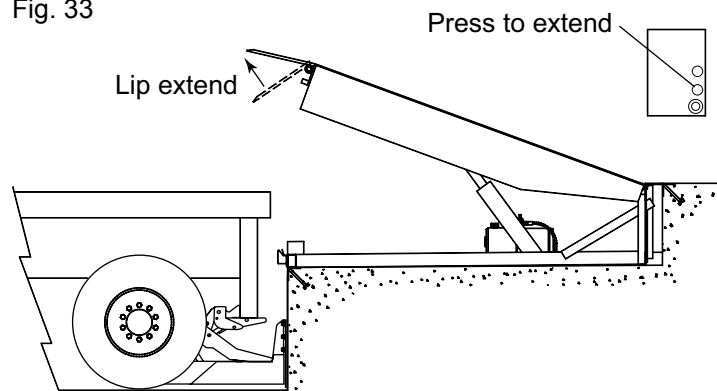


Fig. 33



OPERATING INSTRUCTIONS, continued

HLQ, HFC Models

- When lip is fully extended release the **RAISE** button. The leveler will slowly float down to the vehicle platform. On HLQ and HFC series dock levelers, push the **STOP** button at any time to stop the leveler. Pull the **STOP** button to release.

NOTE:

If an obstruction prevents the lip from deploying properly, push the **STOP** button. Press the **RAISE** button to raise and retract the lip. Restore the leveler to the safe dock level position with the lip in both lip keepers for end loading.

⚠ WARNING

Before allowing vehicle to leave always return the dock leveler to its dock level (stored) position with the lip stored in both lip keepers. See Fig. 35. Failure to do so may leave the dock leveler in a position below the level of the dock floor. This condition may result in unexpected drop of personnel or material handling equipment and could result in death or serious injury.

Never drive on the dock leveler with the STOP button pressed in.

STORING LEVELER

- To return the leveler to the stored position, press the **RAISE** button. As the leveler raises the lip will retract. When the lip is fully retracted, release the button. The leveler will float down to the stored position.

BELOW DOCK END LOADING

- Press the **RAISE** button until leveler is about 6" above dock. Press the **LIP EXTEND** button until the lip has extended 2 to 3 inches to clear the front of the keepers and release the button. Leveler will float down for end loading. See Fig. 36.

Fig. 34

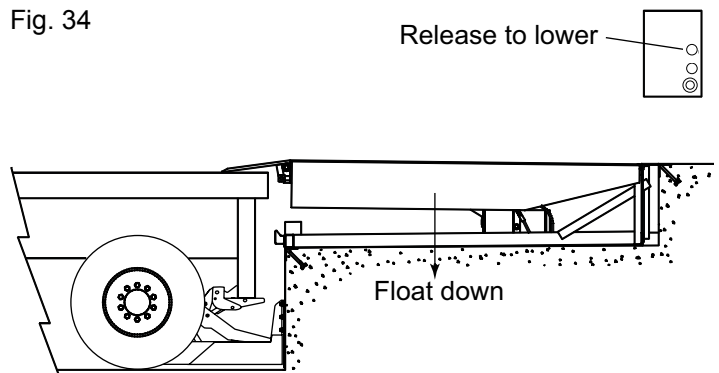


Fig. 35

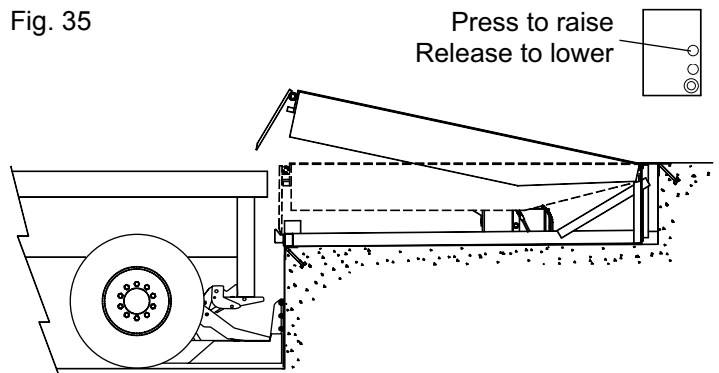
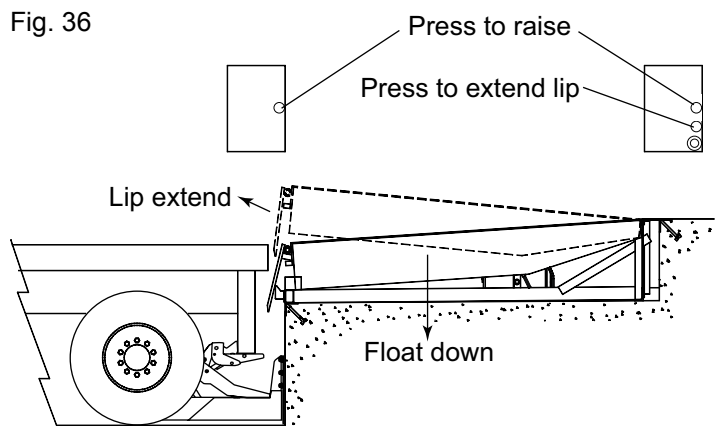


Fig. 36



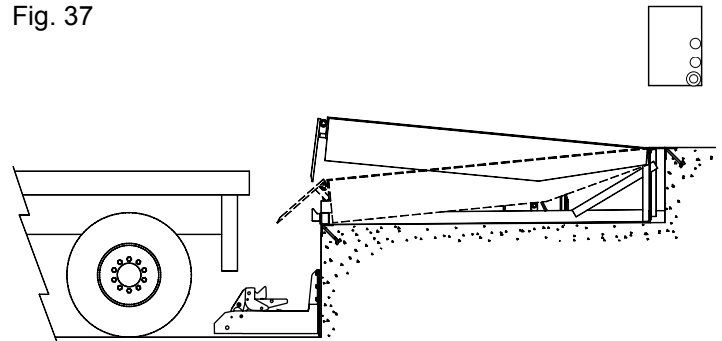
AUTO RETURN TO DOCK (A.R.T.D.) OPERATIONS

Models HLR, HFC only

The A.R.T.D. automatically returns the leveler to the stored position whenever a vehicle just pulls away from the loading dock with the lip resting on the vehicle.

1. If the vehicle pulls away, the leveler will float down to the lowest position and the lip will fall. The leveler will automatically raise, retract the lip, then float down to the stored position.

Fig. 37



PLANNED MAINTENANCE

To ensure the proper operation of your dock leveler, perform the following planned maintenance procedures.

▲ DANGER

Be certain before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler, that:

- 1) THE MAINTENANCE STRUT IS SECURELY SUPPORTING THE LEVELER (See page 13-14).***
- 2) The power is disconnected and properly tagged or locked out.***

▲ WARNING

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the operation section of this manual.

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

WEEKLY

1. Clean the upper portion of the lip plate hinge with a brush and blow away all dirt and debris. This will ensure proper lip plate operation.
2. Inspect for debris in rear hinge area of the leveler and between the sides and curb angles to ensure smooth operation. Clean as required.
3. Check the full operation of the leveler to ensure there is no hesitation in the hydraulic system. Any loss of fluid will affect the safety valve operation.
4. Inspect the operation of the telescopic toe guards to ensure they are not distorted or binding when the leveler is operating.
5. Clean away any debris from the rear hinge area of the leveler and between the sides and curb angles to ensure smooth operation.

QUARTERLY

1. Inspect all warning labels and placards. See page 25. Replace as necessary.
2. Clean out the inside of the pit area. If washing out, take care not to spray any electrical parts.
3. Inspect and lubricate all mechanical pivot points on the leveler with S.A.E. 30 oil. Cycle the leveler when lubricating.
4. Inspect the hydraulic cylinders and hoses for any fluid loss and check the reservoir level. Add fluid as required. See **Hydraulic Fluid Level** on page 29.
5. Inspect all welds under the leveler for fatigue or failure, particularly the lip plate hinge and top plate beams and front hinge bar. If cracks are discovered, contact your authorized Serco distributor.
6. Check the full operation of the leveler. Make any adjustments required.
7. Lubricate the lip hinge tubes with a molybdenum disulfide NLGI #2 grease. Do not over grease. Stop when grease begins to ooze out of the hinge tube ends. Wipe off excess grease.
8. Inspect dock bumpers. Four inches (4") of bumper protection is required. Worn, torn, loose or missing bumpers must be replaced.

PLANNED MAINTENANCE, continued

Hydraulic Fluid - An all weather hydraulic fluid with a viscosity of 15 CSt at 40°C (100°F), such as:

- Shell Tellus T 15
- Mobil Aero HFA (49011)
- Exxon Univis: HV13, N15, J13
- Texaco Aircraft Oil #1554
- U.S. Oil Co., Inc #ZFI-5606 (Low Temp.)





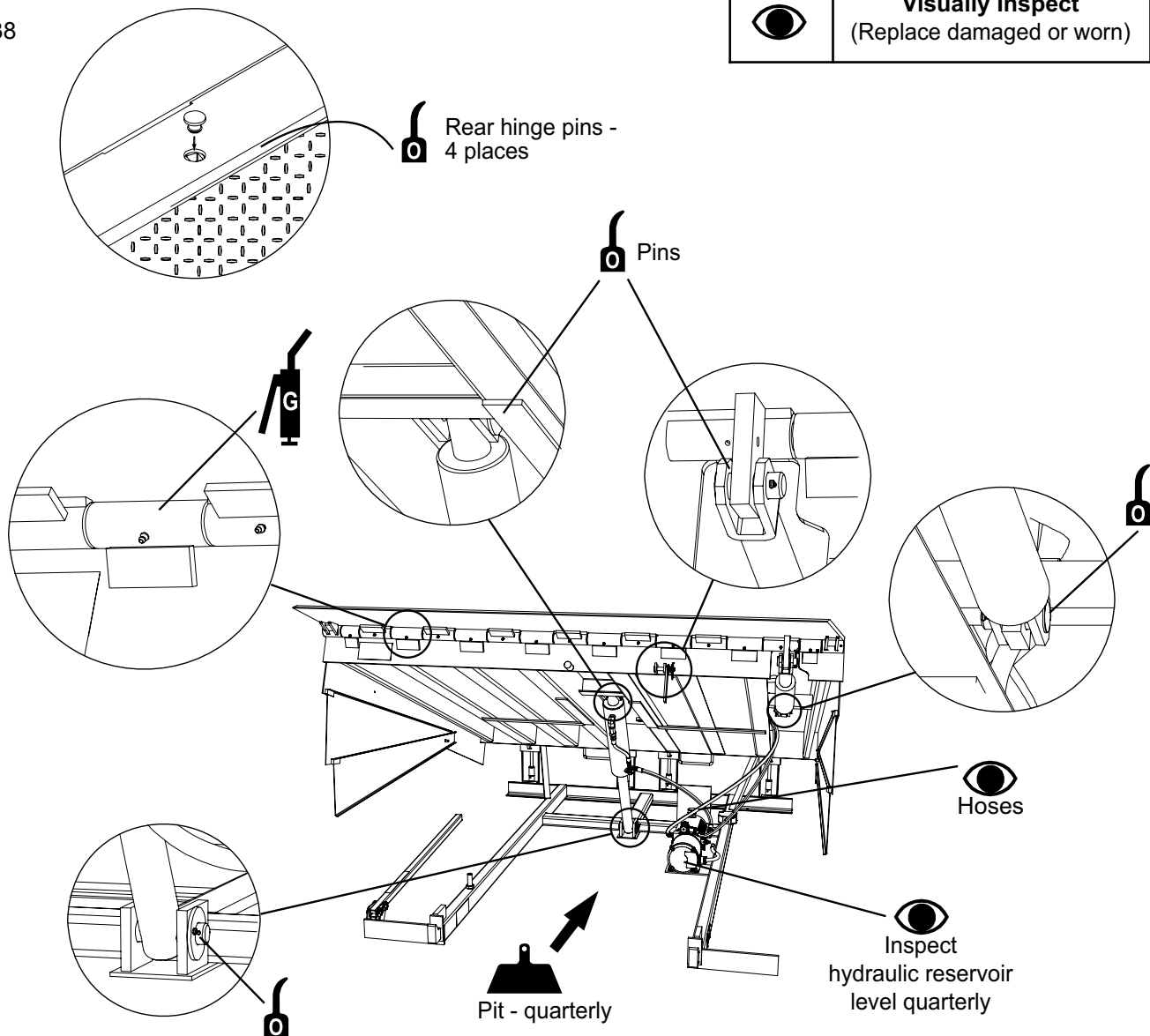
Legend	
Symbol	Description
	Lubricate - Oil Light oil - SAE 30
	Lubricate - Grease Molybdenum disulfide NLGI #2
	Cleaning (Location - frequency)
	Visually Inspect (Replace damaged or worn)

Fig. 38



TROUBLESHOOTING GUIDE

Use the Troubleshooting Guide if ever the leveler fails to perform properly. Find the condition that most closely matches your situation and make the recommended adjustments. Observe all safety warnings before attempting any maintenance procedure.

⚠ WARNING

Before servicing the dock leveler, read and follow the Safety Practices on Page 3 and the Operation section in this manual.

PROBLEM	POSSIBLE CAUSE	SOLUTION
1. Leveler does not raise. Motor is silent.	<ul style="list-style-type: none"> a) No electrical power to control panel. b) Electrical connections incorrect or broken. 	<ul style="list-style-type: none"> a) Check that voltage is present at terminal connections to the control panel. b) Check that wiring matches the wiring diagram.
2. Leveler does not raise; motor starts then stops, motor starter relay chatters.	<ul style="list-style-type: none"> a) Overload relay, main circuit breaker or leveler control circuit breaker tripping out. b) Voltage drop due to long wiring distance from power source. 	<ul style="list-style-type: none"> a) Check overload setting and current draw. b) Check voltage when motor is started. Voltage drop is more often a problem on single phase motors. Acquire conductor specifications from your distributor.
3. Leveler does not raise. Motor hums.	<ul style="list-style-type: none"> a) Voltage drop. b) Loss of 1 phase. (Three phase only.) 	<ul style="list-style-type: none"> a) Check voltage when motor is started. Voltage drop is more often a problem on single phase motors. Acquire conductor specifications from your distributor. b) Check for voltage at all three motor connections (T1, T2, T3) in control panel.
4. Leveler does not raise. Motor runs.	<ul style="list-style-type: none"> a) Low fluid level in reservoir. b) Pump not running or pressure insufficient. c) Pump running in reverse. d) Primary relief valve setting too low. 	<ul style="list-style-type: none"> a) The hydraulic fluid level should be checked when the leveler is resting on the maintenance strut with the lip pendant. Add fluid if required and check for leaks. See page 29, Fig. 41. b) Remove the hose from main lift cylinder and point free end into reservoir opening. If no oil is pumped, replace pump. c) Check motor rotation and change electrical connections if necessary. See motor name plate. d) Set primary relief valve setting to 2000 PSI. See page 28. Note: Requires use of pressure gauge or pump will be severely damaged.

TROUBLESHOOTING GUIDE, continued

⚠ WARNING

Before servicing the dock leveler, read and follow the Safety Practices on Page 3 and the Operation section in this manual.

PROBLEM	POSSIBLE CAUSE	SOLUTION
5. Overload relay tripping.	<ul style="list-style-type: none"> a) Overload relay set too low. b) Loss of one phase. (Three phase only.) 	<ul style="list-style-type: none"> a) Check motor full load amperage and overload relay setting. b) Check for voltage at all three motor connections (T1,T2,T3) in control panel.
6. Leveler will not lower.	<ul style="list-style-type: none"> a) Automatic safety stop (velocity fuse) is locked. 	<ul style="list-style-type: none"> a) If a load was on the leveler, remove the load and jog the RAISE button to unlock the leveler. If no load was on the leveler, adjust the needle valve to reduce drop speed. See page 28.
7. Leveler floats down too slowly.	<ul style="list-style-type: none"> a) Flow control requires adjustment. 	<ul style="list-style-type: none"> a) Adjust flow needle valve for faster flow. Turn counterclockwise to increase speed. See page 28.
8. Lip plate will not extend, or extends too slowly.	<ul style="list-style-type: none"> a) Low fluid level in reservoir. b) Sequence valve set too high. c) Lip hinge binding. d) Primary relief valve set too low. 	<ul style="list-style-type: none"> a) Check fluid level. Add fluid if required and check for leaks. See page 29, Fig. 41. b) Decrease sequence valve setting. See page 28. c) Inspect hinge area for damage or trapped debris. Lubricate hinge. d) Set primary relief valve to 2000 PSI. See page 28. Note: Requires use of pressure gauge or pump will be severely damaged.
9. Lip plate extends too soon.	<ul style="list-style-type: none"> a) Sequence valve set too low. 	<ul style="list-style-type: none"> a) Turn clockwise to increase pressure so that the lip plate does not extend until the deck is fully raised.

TROUBLESHOOTING GUIDE, continued

⚠ WARNING

Before servicing the dock leveler, read and follow the Safety Practices on Page 3 and the Operation section in this manual.

PROBLEM	POSSIBLE CAUSE	SOLUTION
10. Lip plate will not stay out / falls as leveler is lowering.	a) Pilot operated check valve / valve not closing. b) Lip cylinder damaged.	a) Remove and inspect for foreign matter. Clean as required. b) Replace lip cylinder piston seal, or replace cylinder.
11. Optional Auto Return To Dock not operating properly.	a) Proximity switch faulty or faulty electrical connection. b) Proximity switch or lip target arm not properly adjusted.	a) Check for 110V at terminal 2 in control panel. b) Check adjustment of proximity switch and lip target arm. Refer to adjustment procedure on page 51.

HYDRAULIC POWER UNIT ADJUSTMENT

⚠ DANGER

Be certain before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler, that:

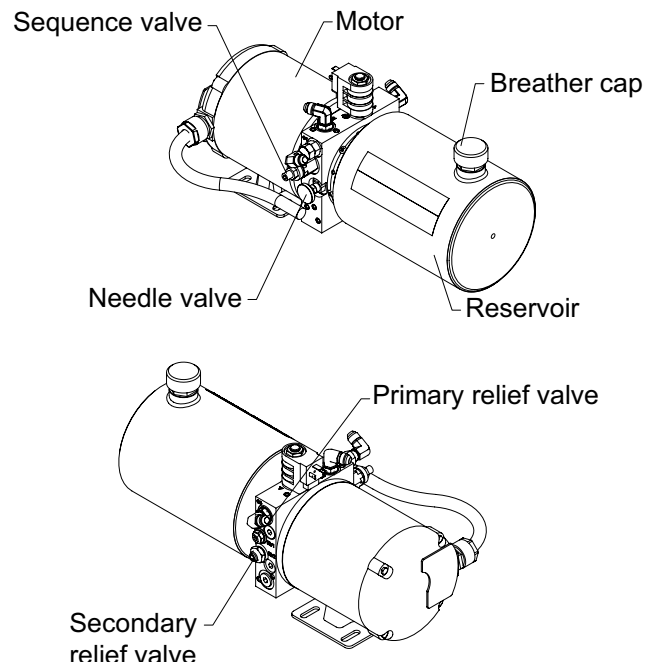
- 1) THE MAINTENANCE STRUT IS SECURELY SUPPORTING THE LEVELER (See page 13-14).
- 2) The power is disconnected and properly tagged or locked out.

⚠ WARNING

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the Operation section in this manual.

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

Fig. 40



HYDRAULIC POWER UNIT ADJUSTMENT, continued

Description	Purpose	Adjustment
Primary Relief Valve (RV1)	Controls maximum pressure in the hydraulic system and protects the other components from excessive force.	Loosen threaded nut. Using 3/16" allen wrench, turn screw clockwise to increase relief pressure. Relief pressure will be factory set at 2000 PSI and should not require adjustment. Note: a suitable hydraulic pressure gauge MUST BE USED when adjusting. Ensure threaded nut is securely fastened to prevent screw from turning when complete. Reference TSB2009-0722G for primary relief adjustment procedure.
Flow Control Needle Valve	Controls the lowering speed of the ramp plate and directs fluid to the cylinders when the pump is running.	Loosen locknut. Turn the knob clockwise to decrease lowering speed. Adjust the lowering speed to approximately equal the ramp raise speed.
Sequence Valve	Controls lip plate retraction and extension.	Loosen threaded nut. Using 3/16" allen wrench, turn screw to adjust lip speed. If the lip extends before the ramp is fully raised, the valve should be turned clockwise. Tightening the valve too far will cause very slow lip extension, or no extension at all. Ensure threaded nut is securely fastened to prevent screw from turning when complete.
Solenoid Valve	Stops the fall of the top plate when either the LIP EXTEND or LEVELER STOP button is pushed.	No adjustment required.
Secondary Relief Valve (RV2)	Controls the force and speed of lip retraction when the power unit is running. (Does not affect speed of lip closing when power unit is not running.)	Loosen threaded nut. Using 1/4" allen wrench, turn screw to adjust lip retraction speed. If the lip is not closing fully when the lip is above the keepers, turn the adjusting screw counterclockwise. Ensure threaded nut is securely fastened to prevent screw from turning when complete. If the lip is closing too forcefully, turn the adjusting screw clockwise.

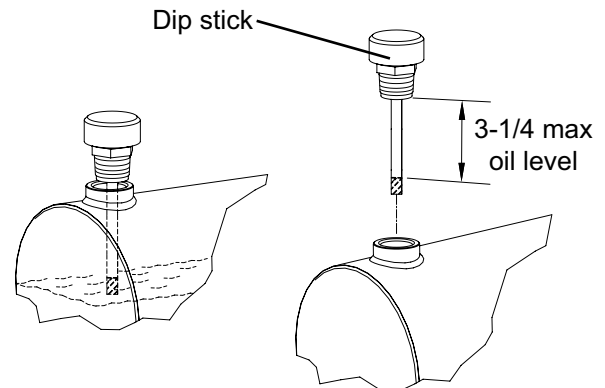
Hydraulic Fluid Level

The hydraulic fluid level should be checked when the leveler is resting on the maintenance strut with the lip pendant. Measure the oil level with the bottom of the breather cap touching the top of the fill hole. **DO NOT SCREW CAP IN** to check oil.

If the leveler is equipped with A.R.T.D., allow the deck to descend to the maintenance strut and the lip to fall pendant, then push the **LEVELER STOP** button after the A.R.T.D initiates and the leveler comes to rest on the maintenance strut.

The fluid level in reservoir should register below the **MAX** oil limit within the hatched markings near centerline of the tank. See Fig. 41. If the level is low or not visible on the dipstick, add fluid to the desired level using an approved oil from the list on page 16.

Fig. 41



HYDRAULIC MANIFOLD LAYOUT

HL, HLR Series

Fig. 44 — HL, HLR Series

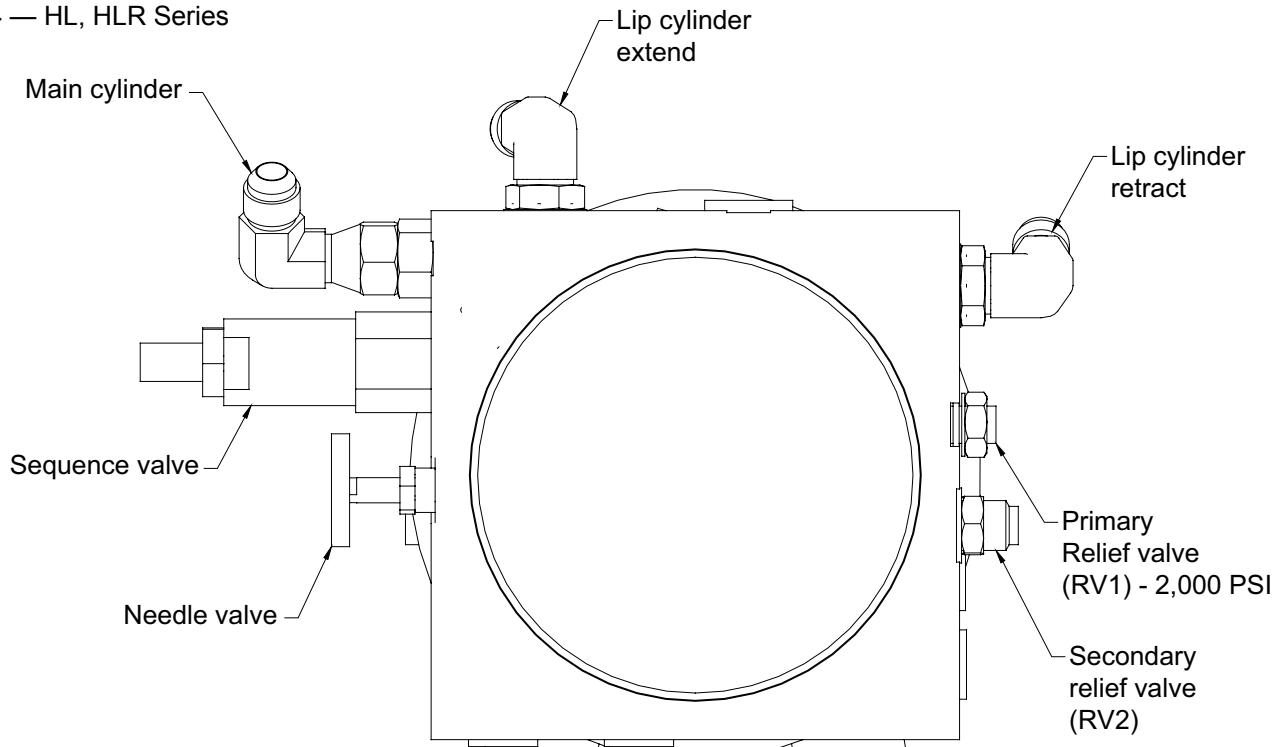
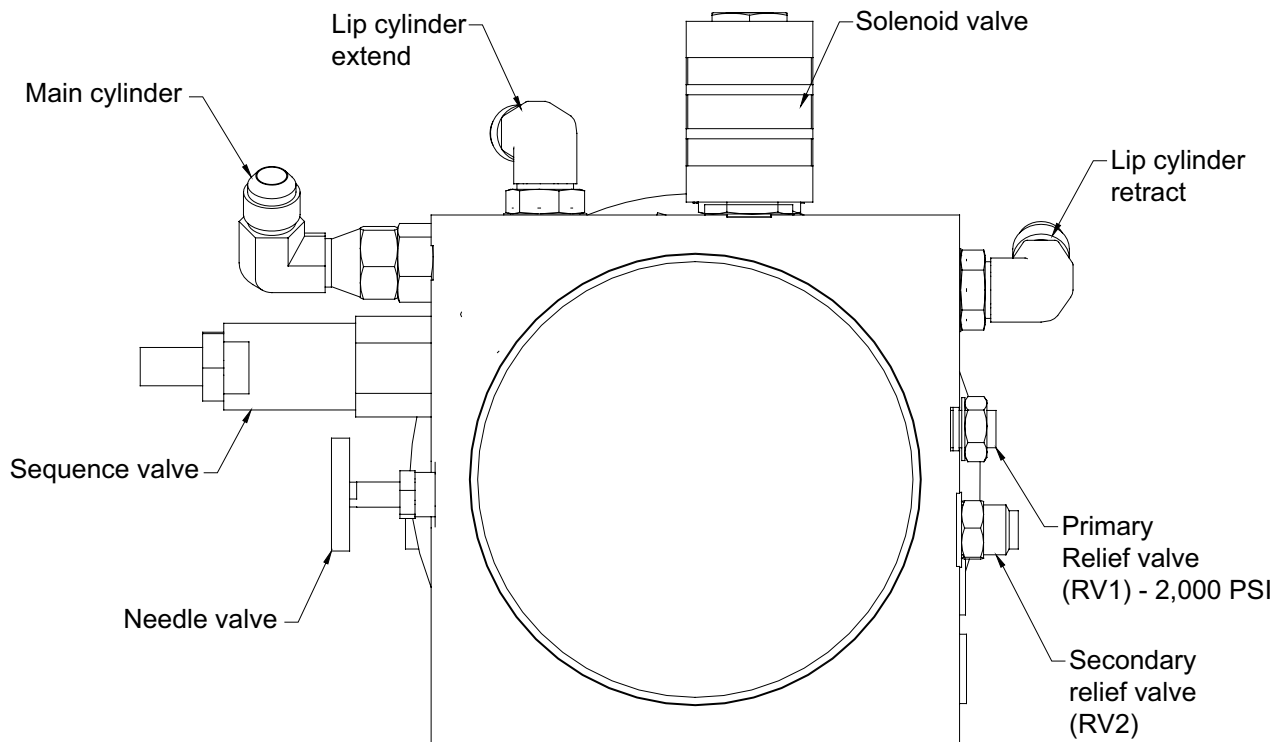


Fig. 45 — HLQ, HFC Series



ELECTRICAL SCHEMATIC

One Button Units

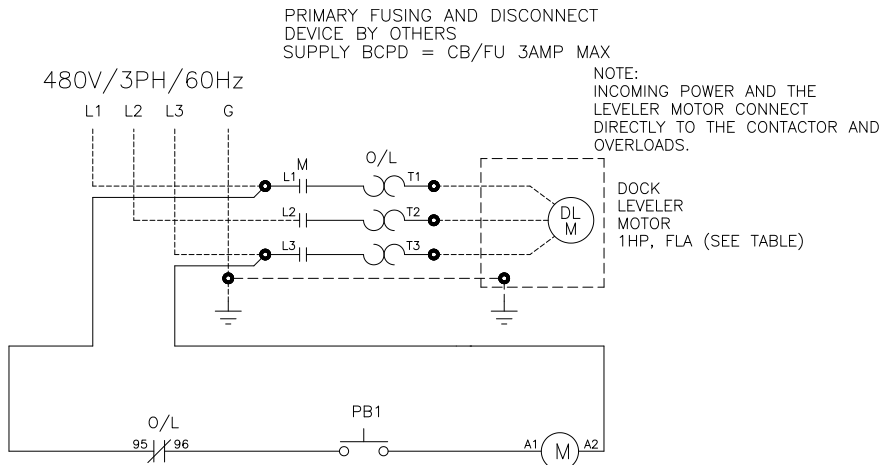
▲ DANGER

Before doing any electrical work, make certain the power is disconnected and properly tagged or locked off. All electrical work must be done by a qualified technician and meet all applicable codes. If it is necessary to make troubleshooting checks inside the control box with the power on, USE EXTREME CAUTION. Do not place your fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, death or serious injury.

NOTE:

For 24V incoming power consult factory.

Fig. 46



NOTE:

480V/3PH shown. For other voltages, reference schematic located inside control panel or consult factory

LEGEND

- M DOCK LEVELER CONTACTOR
- PB1 LEVELER RAISE
- DIRECT DEVICE CONNECTION

LEGEND:
EXTERNAL CONNECTIONS -----
INTERNAL WIRING _____

CONTROL PANEL	VOLTAGE	PHASE	HZ	MOTOR F.L.A	PANEL F.L.A	O/L SETTING	CB/FU MAX
6006420	120	1	60	16A	16.3A	16.1A	30A
6006421	208	1	60	7.0A	7.5A	7.2A	15A
6006422	240	1	60	8.0A	8.2A	8.0A	15A
6006423	208	3	60	3.4A	3.7A	3.5A	10A
6006424	240	3	60	3.6A	4.0A	3.7A	10A
6006425	480	3	60	2.1A	2.5A	2.2A	5A
6006426	575	3	60	1.7A	2.0A	1.8A	5A

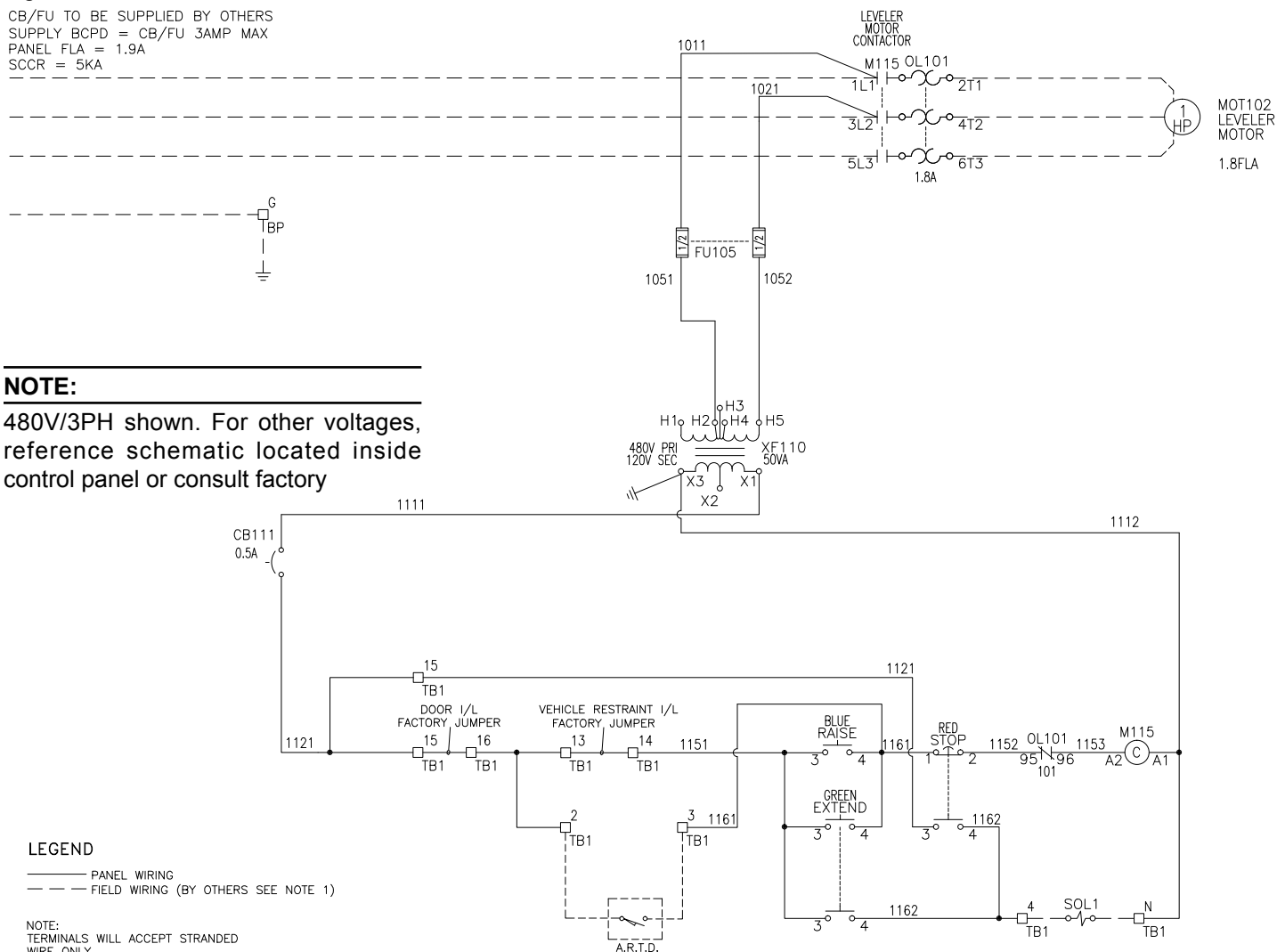
Use class CC time delay fuses

ELECTRICAL SCHEMATIC

3 Button Units with Optional A.R.T.D.

Fig. 47

CB/FU TO BE SUPPLIED BY OTHERS
 SUPPLY BCPD = CB/FU 3AMP MAX
 PANEL FLA = 1.9A
 SCCR = 5KA



NOTE:

480V/3PH shown. For other voltages, reference schematic located inside control panel or consult factory

LEGEND

— PANEL WIRING
 - - - FIELD WIRING (BY OTHERS SEE NOTE 1)

NOTE: TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)

(unless otherwise specified)
 208-600VAC: #14, BLK
 120VAC: #16, RED
 24VAC: #16, RED/BLK
 NEUTRAL: #16, WHT
 GROUND: GRN
 24VDC: #18, BLU
 24V COM (OVDC): #18, BLU/WHT
 12VAC/VDC, #18, VIO
 12V COM: #18, VIO/WHT
 DRY (UNPOWERED): #18, YLW

NOTES:

1. FIELD TERMINAL WIRING: 90 DEGREE WIRE, MIN 16AWG FOR SIGNAL WIRING, MIN 14AWG FOR INCOMING POWER, SEE CHART IN PANEL FOR TORQUE REQUIREMENTS
2. DOOR INTERLOCK: LEVELER WILL NOT OPERATE UNLESS DOOR IS FULLY RAISED. DOOR SWITCH SUPPLIED BY OTHERS.
3. VEHICLE RESTRAINT INTERLOCK: LEVELER WILL NOT OPERATE UNLESS RESTRAINT IS RAISED OR SWITCHED TO OVERRIDE.
4. A.R.T.D SWITCH (625-040) SUPPLIED ON HLR LEVELERS LOCATED ON LIP EXTENSION BAR ON LIP CYLINDER
5. SOLENOID VALVE (313-546) IS LOCATED ON TOP OF PUMP HOUSING AND IS WIRED INTO FRAME MOUNTED JUNCTION BOX.

CONTROL PANEL	VOLTAGE	PHASE	HZ	FUSE	MOTOR F.L.A	PANEL F.L.A	O/L SETTING	CB/FU MAX
6012859	120	1	60	1/2A	11.2A	11.3A	11.2 AMPS	20A
6012860	208	1	60	1/2A	7.0A	7.1A	7.0 AMPS	10A
6012861	240	1	60	1/2A	6.6A	6.9A	6.7 AMPS	10A
6012865	208	3	60	1/2A	4.0A	4.1A	4.0 AMPS	6A
6012866	240	3	60	1/2A	3.6A	3.7A	3.6 AMPS	6A
6012867	480	3	60	1/2A	1.8A	1.9A	1.8 AMPS	3A
6012868	575	3	60	1/4A	1.6A	1.7A	1.6 AMPS	3A

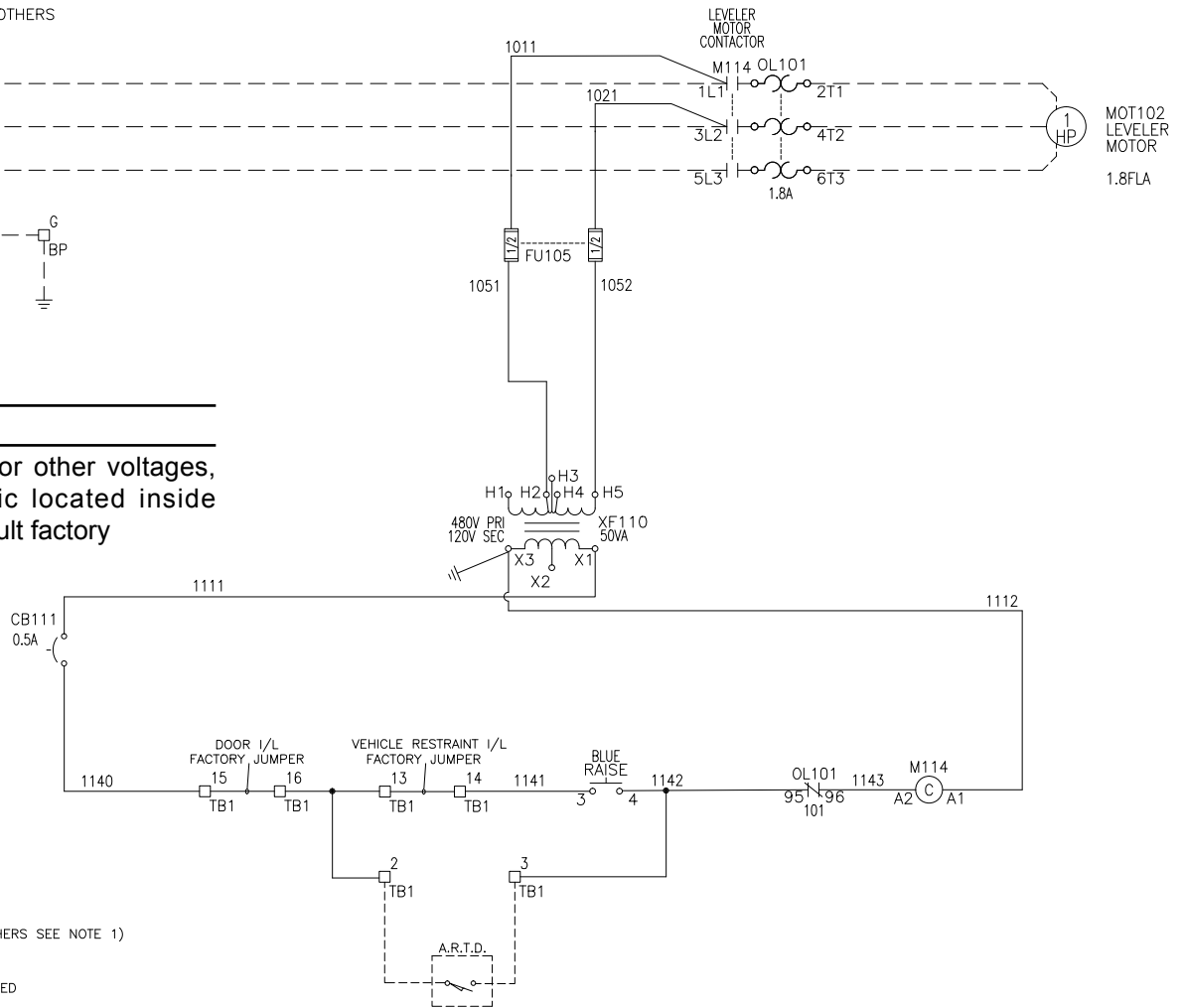
Use class CC time delay fuses

ELECTRICAL SCHEMATIC

One Button Units with Optional Interlock and A.R.T.D.

Fig. 48

CB/FU TO BE SUPPLIED BY OTHERS
 BCPD = CB/FU 3AMP MAX
 PANEL FLA = 1.9A
 SCCR = 5KA



NOTE:

480V/3PH shown. For other voltages, reference schematic located inside control panel or consult factory

LEGEND

— PANEL WIRING
 - - - FIELD WIRING (BY OTHERS SEE NOTE 1)

NOTE:
 TERMINALS WILL ACCEPT STRANDED WIRE ONLY

WIRE COLOR/GAUGE (NFPA)

(unless otherwise specified)
 208-600VAC: #14, BLK
 120VAC: #16, RED
 24VAC: #16, RED/BLK
 NEUTRAL: #16, WHT
 GROUND: GRN
 24VDC: #18, BLU
 24V COM (OVDC): #18, BLU/WHT
 12VAC/VDC, #18, VIO
 12V COM: #18, VIO/WHT
 DRY (UNPOWERED): #18, YLW

NOTES:

1. FIELD TERMINAL WIRING: 90 DEGREE WIRE, MIN 16AWG FOR SIGNAL WIRING, MIN 14AWG FOR INCOMING POWER, SEE CHART IN PANEL FOR TORQUE REQUIREMENTS
2. DOOR INTERLOCK: LEVELER WILL NOT OPERATE UNLESS DOOR IS FULLY RAISED. DOOR SWITCH SUPPLIED BY OTHERS.
3. VEHICLE RESTRAINT INTERLOCK: LEVELER WILL NOT OPERATE UNLESS RESTRAINT IS RAISED OR SWITCHED TO OVERRIDE.
4. A.R.T.D SWITCH (625-040) SUPPLIED ON HLR LEVELERS LOCATED ON LIP EXTENSION BAR ON LIP CYLINDER

CONTROL PANEL	VOLTAGE	PHASE	HZ	FUSE	MOTOR F.L.A	PANEL F.L.A	O/L SETTING	CB/FU MAX
6012848	120	1	60	1/2A	11.2A	11.3A	11.2 AMPS	20A
6012853	208	1	60	1/2A	7.0A	7.1A	7.0 AMPS	10A
6012854	240	1	60	1/2A	6.6A	6.9A	6.7 AMPS	10A
6012855	208	3	60	1/2A	4.0A	4.1A	4.0 AMPS	6A
6012856	240	3	60	1/2A	3.6A	3.7A	3.6 AMPS	6A
6012857	480	3	60	1/2A	1.8A	1.9A	1.8 AMPS	3A
6012858	575	3	60	1/4A	1.6A	1.7A	1.6 AMPS	3A

Use class CC time delay fuses

AUTO RETURN TO DOCK (A.R.T.D.)

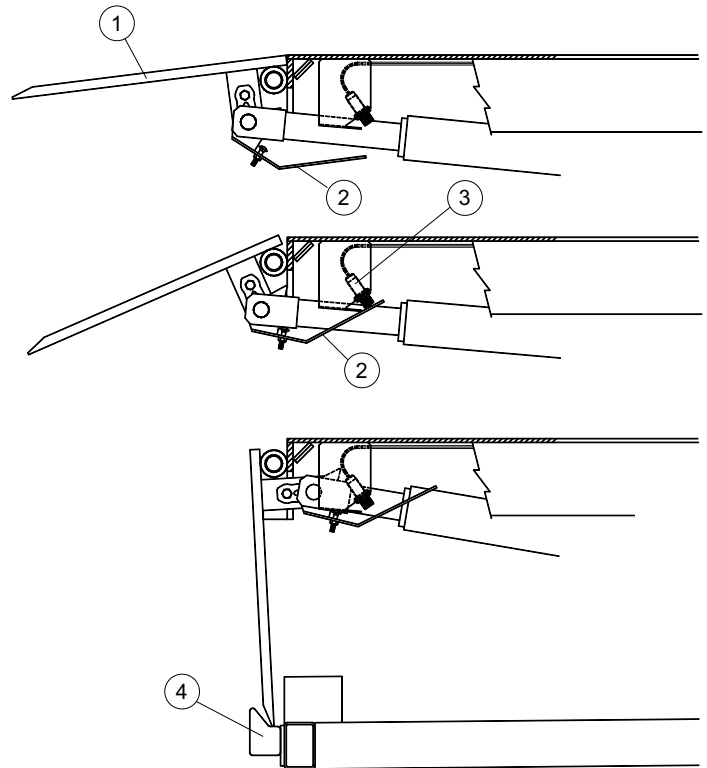
Standard on HLR and HFC

OPERATIONS

Use information in this Section for those levelers equipped with the A.R.T.D. (Auto Return To Dock) feature.

1. When the lip (1) is extended the target bracket (2) rotates to the position shown.
2. When the leveler floats down to the frame, the lip will fall and cause the target bracket (2) on the lip arm to activate the proximity switch (3) on the deck. The motor will start and the leveler will raise.
3. When raised above the lip keepers (4), the lip will fully retract and the target bracket will be forced away from the proximity switch. The motor will stop and the leveler will float down until the lip rests in the keepers.

Fig. 49



A.R.T.D. PROXIMITY SWITCH ADJUSTMENT, continued

▲ DANGER

Be certain before climbing into the dock leveler pit or doing any maintenance or repair under the dock leveler, that:

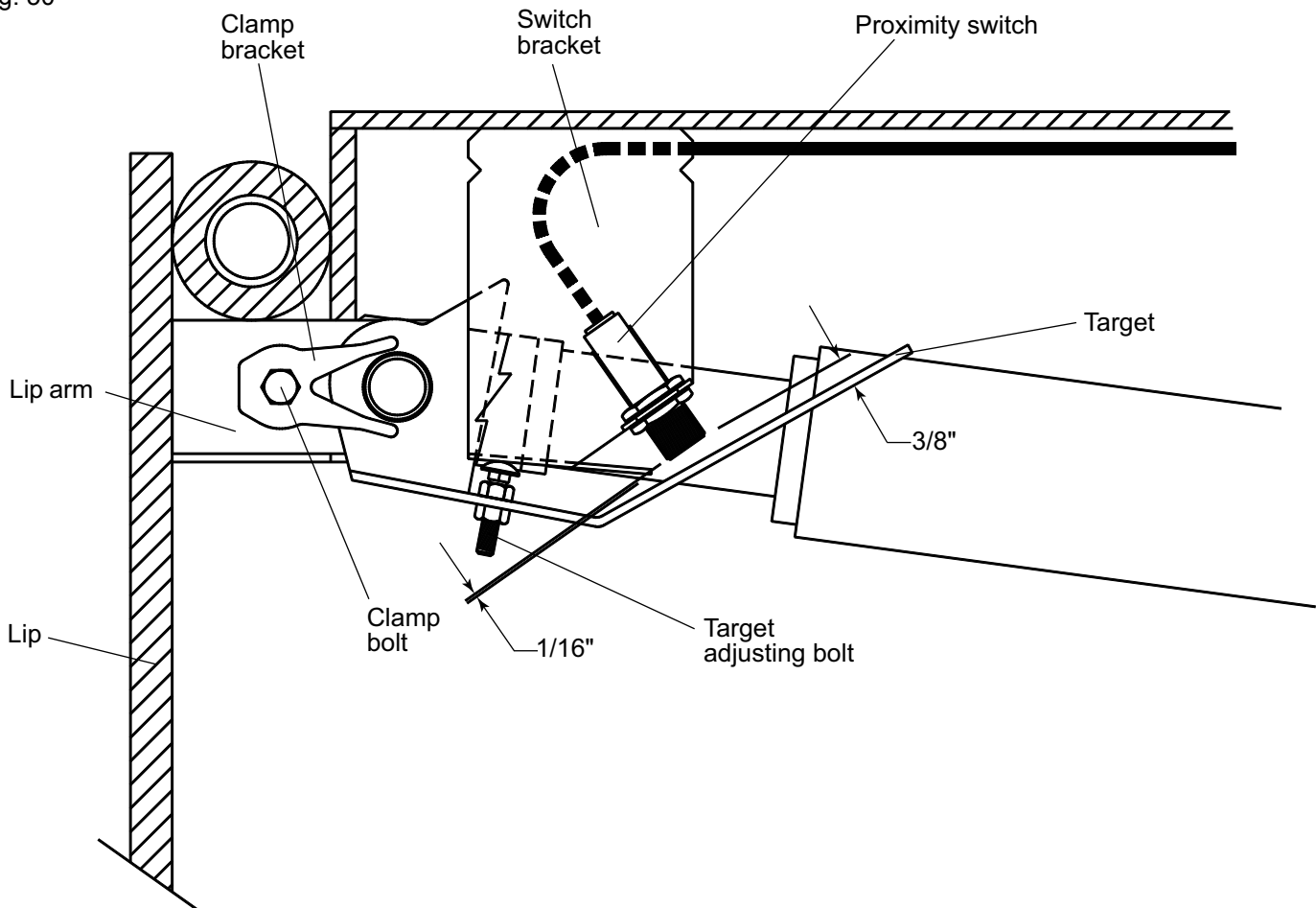
- 1) THE MAINTENANCE STRUT IS SECURELY SUPPORTING THE LEVELER (See page 13-14).
- 2) The power is disconnected and properly tagged or locked out.

▲ WARNING

Before servicing the dock leveler, read and follow the Safety Practices on page 3 and the Operation section in this manual.

Place barricades on the dock floor around the dock leveler pit and in the driveway in front of the pit while installing, maintaining or repairing the dock leveler.

Fig. 50



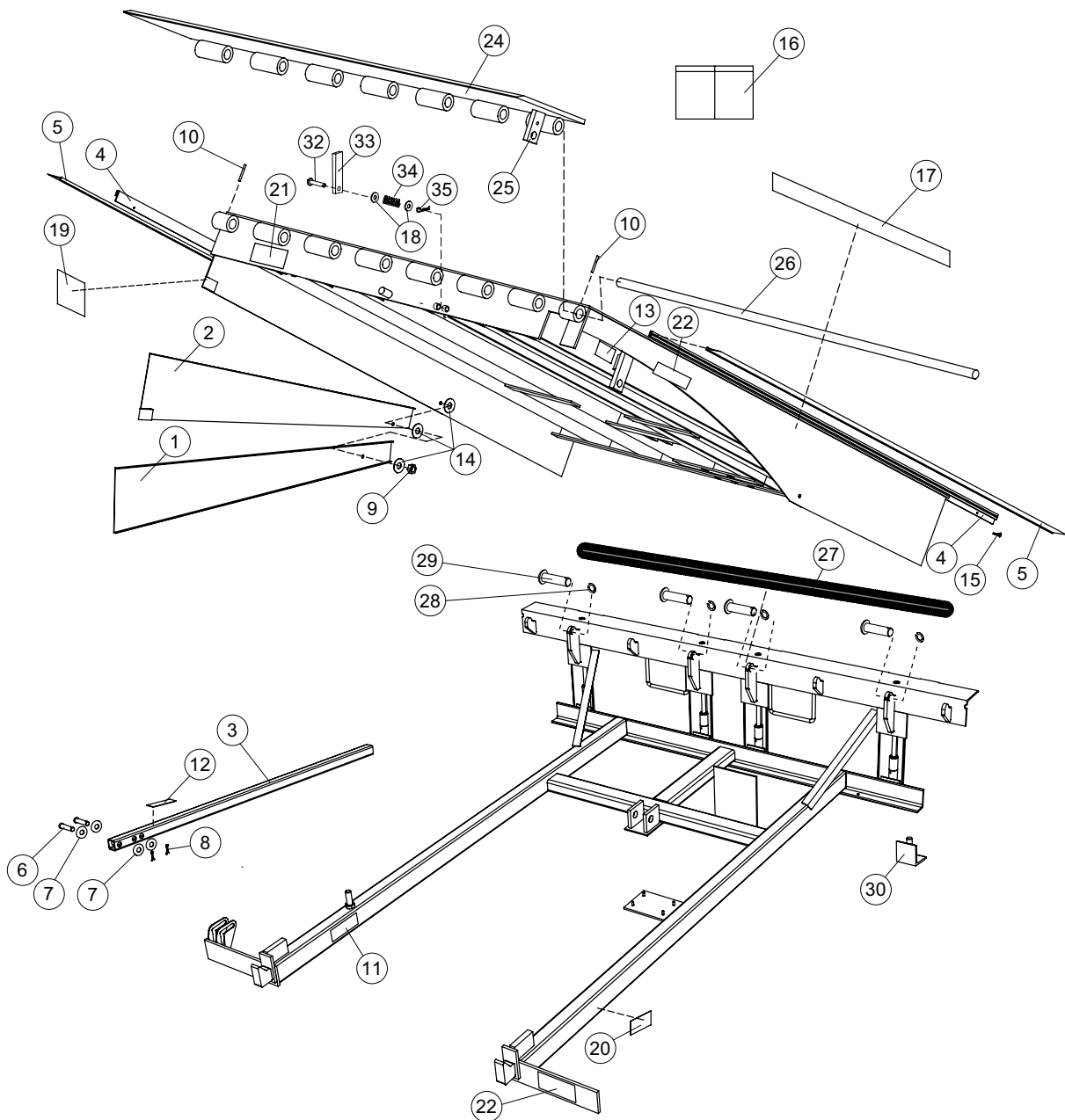
1. The end of the proximity switch should be 1/16" (1.5 mm) above the end of the guard bracket as shown. To adjust the proximity switch, turn the nuts and secure when the desired position is achieved.
2. The target bracket should rotate easily by hand yet must be held firmly to the lip arm by the clamp bracket. Adjust the clamp bolt as required. Proper clamping should be achieved by turning the nut 1/2 turn more than required to prevent the bolt from being loose.
3. With the leveler raised and the lip fully retracted, the clearance between the proximity switch and the target bracket should be approximately 3/8" (10mm). To adjust the target clearance, loosen the two locking nuts and turn the adjusting bolt. Secure the nuts when the desired position is achieved.
4. Restore the electrical power and operate the dock leveler. If the lip does not close fully and store properly in the lip keepers, adjust the bolt to decrease the target clearance. If the motor does not stop when the lip is fully closed, adjust the bolt to increase the target clearance.

PARTS LIST — DOCK LEVELER

⚠ WARNING

To ensure proper function, durability and safety of the product, only replacement parts that do not interfere with the safe, normal operation of the product must be used. Incorporation of replacement parts or modifications that weaken the structural integrity of the product, or in any way alter the product from its normal working condition at the time of purchase from 4Front Engineered Solutions, Inc. could result in product malfunction, breakdown, premature wear, death or serious injury.

Fig. 51



PARTS LIST — DOCK LEVELER, continued

Item	Qty.	Part Description	Model and Part Number		
			600	800	1000
1	1	Toe Guard, 2nd stage, left	586-1659	586-0440	586-1045
	1	Toe Guard, 2nd stage, right	586-1660	586-0441	586-1044
2	1	Toe Guard, 1st stage, left	586-1657	586-0438	586-1043
	1	Toe Guard, 1st stage, right	586-1658	586-0439	586-1042
3	1	Maintenance Strut 600 - CP	586-2966	586-2966	586-2966
4	2	Weather Seal Mounting Strip	328-897	328-898	328-899
5	2	Weather Seal - Narrow Projection - Rubber	152-324(5ft)	152-324(7ft)	152-324(9ft)
	2	Weather Seal - Wide Projection - Rubber	152-325(5ft)	152-325(7ft)	152-325(9ft)
	2	Weather Seal - Narrow Projection - Brush	328-886	328-887	328-888
	2	Weather Seal - Wide Projection - Brush	328-907	328-908	328-909
6	2	Clevis Pin 1/2" DIA x 2-1/4 lg	231-506	231-506	231-506
7	4	Plain Washer - 9/16" I.D.	234-121	234-121	234-121
8	2	Cotter Pin - 1/8 x 3/4	231-341	231-341	231-341
9	3	Hex Nut - 3/8" Nylock	214-538	214-538	214-538
10	2	Spring Pin	231-123	231-123	231-123
11	1	Danger Label (Entering Pit)	921-070	921-070	921-070
12	1	Danger Label	921-074	921-074	921-074
13	1	Warning Label (A.R.T.D.)	921-075	921-075	921-075
14	6	PW 3/8" Bolt Size - 7/16" Hole	234-101	234-101	234-101
15		Screw - Self-tapping, #12-14 x 3/4 TEKS	215-702 (6)	215-702 (8)	215-702 (8)
16	1	HL, HLR Placard	6004905	6004905	6004905
	1	HLQ, HFC Placard	6004906	6004906	6004906
17	2	Trip Warning Label	138-837	138-837	138-837
18	2	Plain Washer 9/16" ID	234-121	234-121	234-121
19	2	Warning Leveler Info Label	6008485	6008485	6008485
20	1	Serial Tag	6009761	6009761	6009761
21	1	Safety Label	921-217	921-217	921-217
22	2	Serco Name Plate	824-002	824-002	824-002

PARTS LIST — DOCK LEVELER, continued

Capacity and Part Number

Item	Qty	Part Description	30,000	35,000	40,000	45,000	50,000
*24	1	Lip Assembly 6 ft x 16 in	3-0845	3-0848	3-0851	3-0854	3-0857
	1	Lip Assembly 6 ft x 18 in	3-0846	3-0849	3-0852	3-0855	3-0858
	1	Lip Assembly 6 ft x 20 in	3-0847	3-0850	3-0853	3-0856	3-0859
	1	Lip Assembly 6.5 ft x 16 in	3-0863	3-0866	3-0869	3-0872	3-0875
	1	Lip Assembly 6.5 ft x 18 in	3-0864	3-0867	3-0870	3-0873	3-0876
	1	Lip Assembly 6.5 ft x 20 in	3-0865	3-0868	3-0871	3-0874	3-0877
	1	Lip Assembly 7 ft x 16 in	3-0881	3-0884	3-0887	3-0890	3-0893
	1	Lip Assembly 7 ft x 18 in	3-0882	3-0885	3-0888	3-0891	3-0894
	1	Lip Assembly 7 ft x 20 in	3-0883	3-0886	3-0889	3-0892	3-0895
*24	1	Lip Assembly 6.5 ft x 16 in (3" Taper)	3-3645	3-3648	3-3651	3-3654	3-3657
	1	Lip Assembly 6.5 ft x 18 in (3" Taper)	3-3646	3-3649	3-3652	3-3655	3-3658
	1	Lip Assembly 6.5 ft x 20 in (3" Taper)	3-3647	3-3650	3-3653	3-3656	3-3659
	1	Lip Assembly 7 ft x 16 in (3" Taper)	3-3663	3-3666	3-3669	3-3672	3-3675
	1	Lip Assembly 7 ft x 18 in (3" Taper)	3-3664	3-3667	3-3670	3-3673	3-3676
	1	Lip Assembly 7 ft x 20 in (3" Taper)	3-3665	3-3668	3-3671	3-3674	3-3677
*24	1	Lip Assembly 7 ft x 16 in (Ellipse)	3-3707	3-3710	3-3713	3-3716	3-3719
	1	Lip Assembly 7 ft x 18 in (Ellipse)	3-3708	3-3711	3-3714	3-3717	3-3720
	1	Lip Assembly 7 ft x 20 in (Ellipse)	3-3709	3-3712	3-3715	3-3718	3-3721

* Note: Item 24, Lip Assembly must be ordered with Item 25, (Lip Plate Cyl. Mount: 20-50K, Part No. 586-0383). Low bend lip plates shown, consult factory for high bend lip plate part numbers. DGL Lip Plate assemblies can only be ordered for dock levelers originally equipped with DGL Lip Plates.

PARTS LIST — DOCK LEVELER, continued

Dock Guard Barrier Lip Only

Dock Guard Barrier Lip Only

Capacity and Part Number

Item	Qty	Part Description	30,000	35,000	40,000	45,000	50,000
*24	1	Lip Assembly 6 ft x 16 in (DGL)	—	3-0900	3-0903	3-0906	3-3482
	1	Lip Assembly 6 ft x 18 in (DGL)	—	3-0901	3-0904	3-0907	3-3487
	1	Lip Assembly 6 ft x 20 in (DGL)	—	3-0902	3-0905	3-0908	3-3488
	1	Lip Assembly 6.5 ft x 16 in (DGL)	—	3-0909	3-0912	3-0915	3-3483
	1	Lip Assembly 6.5 ft x 18 in (DGL)	—	3-0910	3-0913	3-0916	3-3489
	1	Lip Assembly 6.5 ft x 20 in (DGL)	—	3-0911	3-0914	3-0917	3-3490
	1	Lip Assembly 7 ft x 16 in (DGL)	—	3-0918	3-0921	3-0924	3-3484
	1	Lip Assembly 7 ft x 18 in (DGL)	—	3-0919	3-0922	3-0925	3-3491
*24	1	Lip Assembly 7 ft x 20 in (DGL)	—	3-0920	3-0923	3-0926	3-3492
	1	Lip Assembly 6.5 ft x 16 in (3" Taper DGL)	—	3-3726	3-3729	3-3732	3-3735
	1	Lip Assembly 6.5 ft x 18 in (3" Taper DGL)	—	3-3727	3-3730	3-3733	3-3736
	1	Lip Assembly 6.5 ft x 20 in (3" Taper DGL)	—	3-3728	3-3731	3-3734	3-3737
	1	Lip Assembly 7 ft x 16 in (3" Taper DGL)	—	3-3738	3-3741	3-3744	3-3747
	1	Lip Assembly 7 ft x 18 in (3" Taper DGL)	—	3-3739	3-3742	3-3745	3-3748
*24	1	Lip Assembly 7 ft x 20 in (3" Taper DGL)	—	3-3740	3-3743	3-3746	3-3749
	1	Lip Assembly 7 ft x 16 in (Ellipse DGL)	—	3-3758	3-3761	3-3764	3-3767
	1	Lip Assembly 7 ft x 18 in (Ellipse DGL)	—	3-3759	3-3762	3-3765	3-3768
	1	Lip Assembly 7 ft x 20 in (Ellipse DGL)	—	3-3760	3-3763	3-3766	3-3769

* Note: Item 24, Lip Assembly must be ordered with Item 25, (Lip Plate Cyl. Mount: 20-50K, Part No. 586-0383). Low bend lip plates shown, consult factory for high bend lip plate part numbers. DGL Lip Plate assemblies can only be ordered for dock levelers originally equipped with DGL Lip Plates.

PARTS LIST — DOCK LEVELER, continued

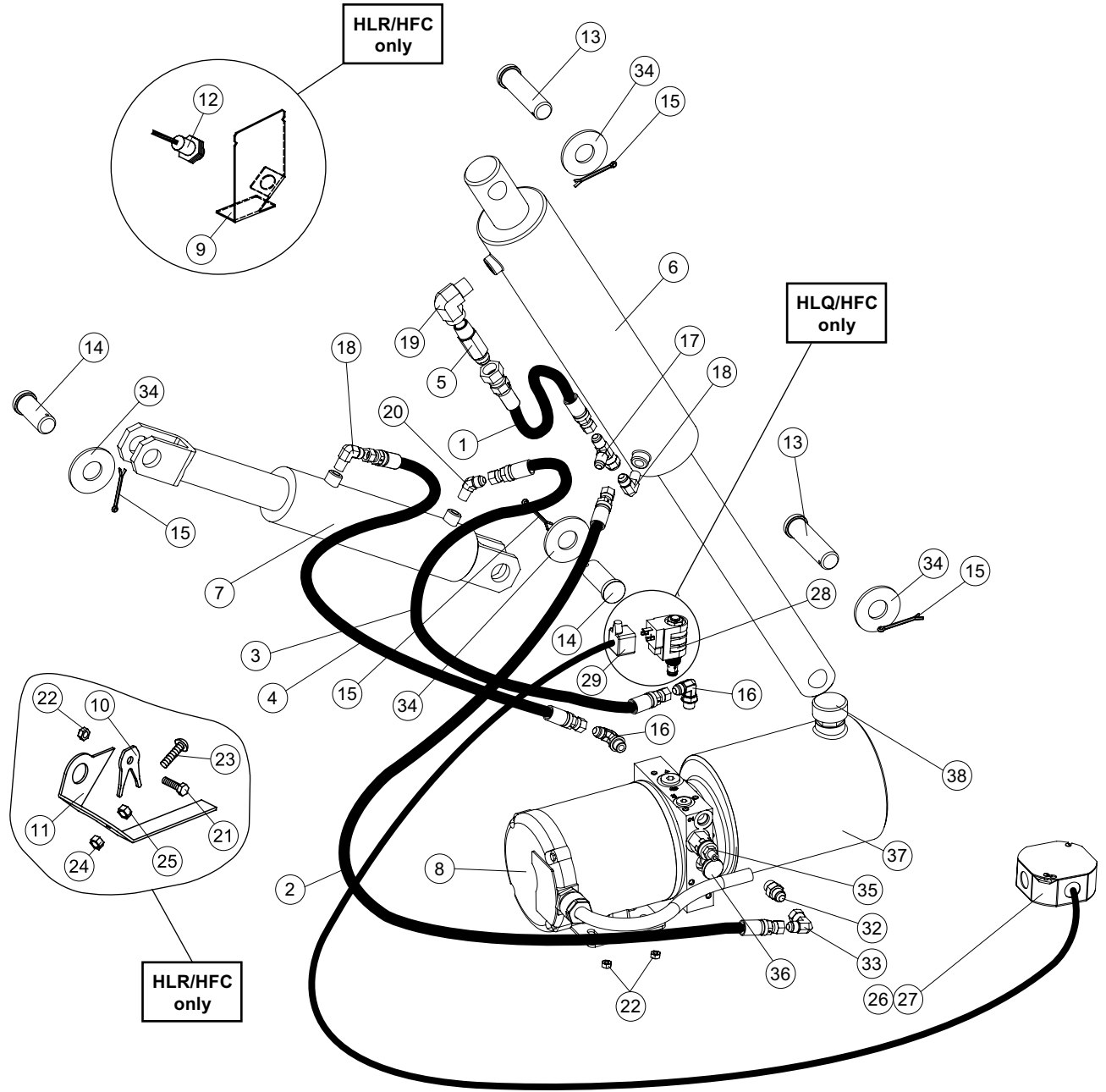
Capacity and Part Number

Item	Qty	Part Description	30,000	35,000	40,000	45,000	50,000
25	1	Lip Plate Cyl. Mnt:25-50K	586-0383	586-0383	586-0383	586-0383	586-0383
26	1	Lip Hinge Pin 6 ft.	586-0017	586-0017	586-0287	586-0287	586-0287
	1	Lip Hinge Pin 6.5 ft.	586-1494	586-1494	586-1495	586-1495	586-1495
	1	Lip Hinge Pin 7 ft.	586-0201	586-0201	586-0392	586-0392	586-0392
27	1	Weather Seal, Rear, 6 Ft - "L"	6015410	6015410	6015410	6015410	6015410
	1	Weather Seal, Rear, 6.5 Ft - "L"	6015411	6015411	6015411	6015411	6015411
	1	Weather Seal, Rear, 7 Ft - "L"	6015594	6015594	6015594	6015594	6015594
28	4	Retaining Ring	236-110	236-110	236-110	236-110	236-110
29	4	Pin -3/4" DIA	586-1467	586-1467	586-1467	586-1467	586-1467
30	4	Foot Assembly	6002915	6002915	6002915	6002915	6002915
31	4	Cap Plug — NS (optional)	6004488	6004488	6004488	6004488	6004488
32	1	Clevis Pin - 1/2" Dia. x 2-3/4" LG	231-502	231-502	231-502	231-502	231-502
33	1	Lip Plate Maintenance Bar	586-2969	586-2969	586-2969	586-2969	586-2969
34	1	Compression Spring	332-069	332-069	332-069	332-069	332-069
35	1	Hitch Pin Clip	231-503	231-503	231-503	231-503	231-503

* Note: Item 24, Lip Assembly must be ordered with Item 25, (Lip Plate Cyl. Mount: 20-50K, Part No. 586-0383). Low bend lip plates shown, consult factory for high bend lip plate part numbers. DGL Lip Plate assemblies can only be ordered for dock levelers originally equipped with DGL Lip Plates.

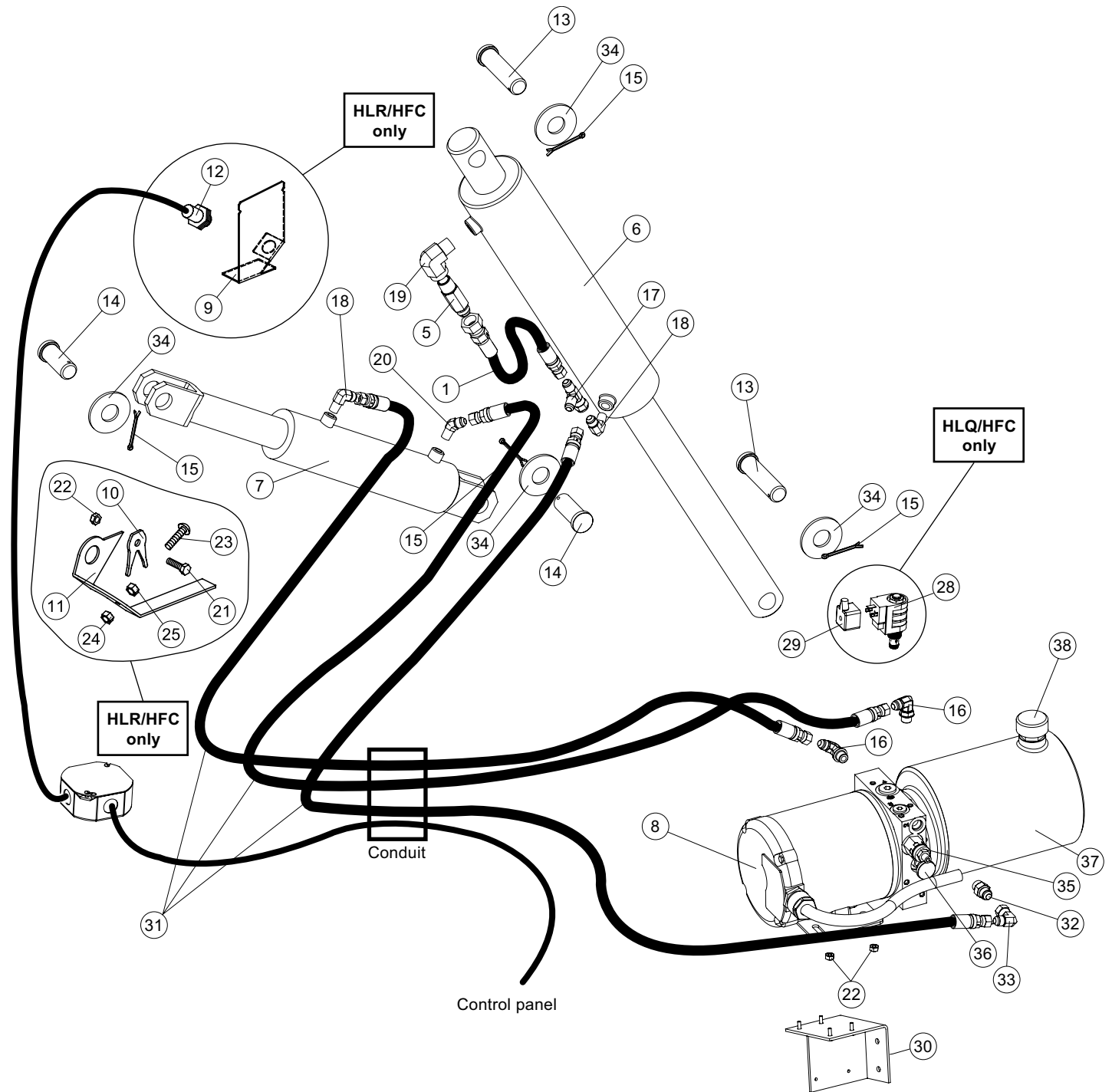
PARTS LIST — HYDRAULIC AND ELECTRICAL

Fig. 52 - Pit Mounted Unit. HL, HLR, HLQ and HFC Style.



PARTS LIST — HYDRAULIC AND ELECTRICAL, continued

Fig. 53 - Remote Mounted Unit. HL, HLR, HLQ and HFC Style.



PARTS LIST — HYDRAULIC AND ELECTRICAL, continued

Item	Qty.	Part Description	Model and Part Number		
			600	800	1000
1	1	CYLINDER HOSE ASSY - 30-45K	313-543	313-543	313-545
	1	CYLINDER HOSE ASSY - 50K	313-544	313-544	313-545
2	1	MAIN HOSE ASSY	3-1937	3-1937	3-1937
3	1	LIP CYLINDER HOSE ASSY - EXTEND	3-1958	3-1247	3-3641
4	1	LIP CYLINDER HOSE ASSY - RETRACT	3-1245	3-3637	3-3638
5**	1	VELOCITY FUSE - (30-45K)	313-238	313-238	313-239
	1	VELOCITY FUSE - (50K)	313-239	313-239	313-239
6	1	MAIN LIFT CYL , 30-45K	313-040	313-040	313-042
	1	MAIN LIFT CYL, 50K	313-046	313-046	313-042
7	1	LIP PLATE CYLINDER	313-043	313-043	313-043
8	1	PUMP UNIT 24V	6012589	6012589	6012589
		PUMP UNIT 120/208/240 V SINGLE PHASE (30-45K)	6012590	6012590	6012590
		PUMP UNIT 208/240/480 V THREE PHASE (30-45K)	6012591	6012591	6012591
		PUMP UNIT 575 V THREE PHASE (30-45K)	6012592	6012592	6012592
9*	1	A.R.T.D. BRACKET, 30-35K	328-553	328-553	328-553
	1	A.R.T.D. BRACKET, 40-50K	586-1955	586-1955	586-1955
10*	1	A.R.T.D. CLAMP BRACKET	328-551	328-551	328-551
11*	1	A.R.T.D. TARGET BRACKET	586-1838	586-1838	586-1838
12*	1	PROXIMITY SWITCH	625-040	625-040	625-040
13	2	MAIN CYLINDER PIVOT PIN - 1" DIA.- 3-1/2 GRP	586-1066	586-1066	586-1066
14	2	LIP CYLINDER PIVOT PIN - 1" DIA.- 2-3/16 GRP	586-1063	586-1063	586-1063
15	4	COTTER PIN - 5/32X2 ZINC PLD	6001832	6001832	6001832
16	2	FITTING - O-RING ELBOW	313-214	313-214	313-214
17	1/2	FITTING - RUN TEE	313-105	313-105	313-105
18	2	FITTING - ELBOW	313-106	313-106	313-106
19	1	FITTING - STREET ELBOW	313-102	313-102	313-102
20	1	FITTING - MALE 45 ELBOW	313-219	313-219	313-219

* ARTD only.

** 313-238 7gpm velocity fuse, 313-239 10gpm velocity fuse.

*** Item 31 used 2 times for HL/HLR Remote Mount and 3 times for HLQ/HFC Remote Mount.

PARTS LIST — HYDRAULIC AND ELECTRICAL, continued

Item	Qty.	Part Description	Model and Part Number		
			600	800	1000
20	1	FITTING - MALE 45 ELBOW	313-219	313-219	313-219
21*	1	HEX BOLT 5/16 X 1-1/2	212-065	212-065	212-065
22*	5	NYLOCK 5/16-18	214-522	214-522	214-522
23*	1	CARRIAGE BOLT 1/4 X 1-1/4	213-019	213-019	213-019
24*	1	NYLOCK 1/4	214-502	214-502	214-502
25*	1	HEX NUT 1/4"-20	214-161	214-161	214-161
26	1	JUNCTION BOX 4 X 4 X 2-1/8	521-327	521-327	521-327
27	1	JUNCTION BOX COVER	521-328	521-328	521-328
28	1	SOLENOID VALVE ASSY. (HLQ, HFC SERIES ONLY)	313-546	313-546	313-546
29	1	HIRSCHMANN CORD SET (HLQ, HFC SERIES ONLY)	6001351	6001351	6001351
30	1	BRACKET, WALL MOUNT (REMOTE MOUNT ONLY)	6000703	6000703	6000703
31***	2/3	HOSE ASSY. 1/4 X 20FT (REMOTE MOUNT)	3-1938		
	2/3	HOSE ASSY. 1/4 X 22FT (REMOTE MOUNT)		3-1649	
	2/3	HOSE ASSY. 1/4 X 24FT (REMOTE MOUNT)			3-1650
32	1	FITTING, STRAIGHT, MALE SAE 6	6000717	6000717	6000717
33	1	FITTING, 90 DEGREE ELBOW, SWIVEL, SAE 6	313-595	313-595	313-595
34	4	PW 1-1/16 X 2 X 3/16	234093	234093	234093
35	1	SEQUENCE VALVE	6011698	6011698	6011698
36	1	NEEDLE VALVE	6011699	6011699	6011699
37	1	RESERVOIR KIT	6012632	6012632	6012632
38	1	BREATHER CAP	6012637	6012637	6012637

* ARTD only.

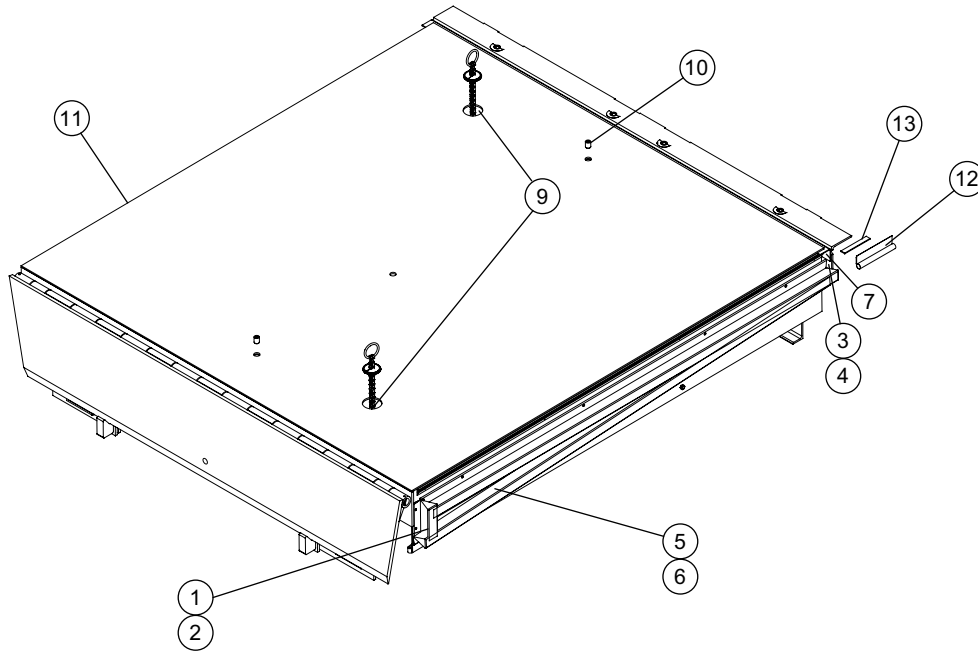
** 313-238 7gpm velocity fuse, 313-239 10gpm velocity fuse.

*** Item 31 used 2 times for HL/HLR Remote Mount and 3 times for HLQ/HFC Remote Mount.

PARTS LIST, continued

OPTIONAL ENERGY GUARD® DOCK LEVELER SEALING SYSTEM

Fig. 54

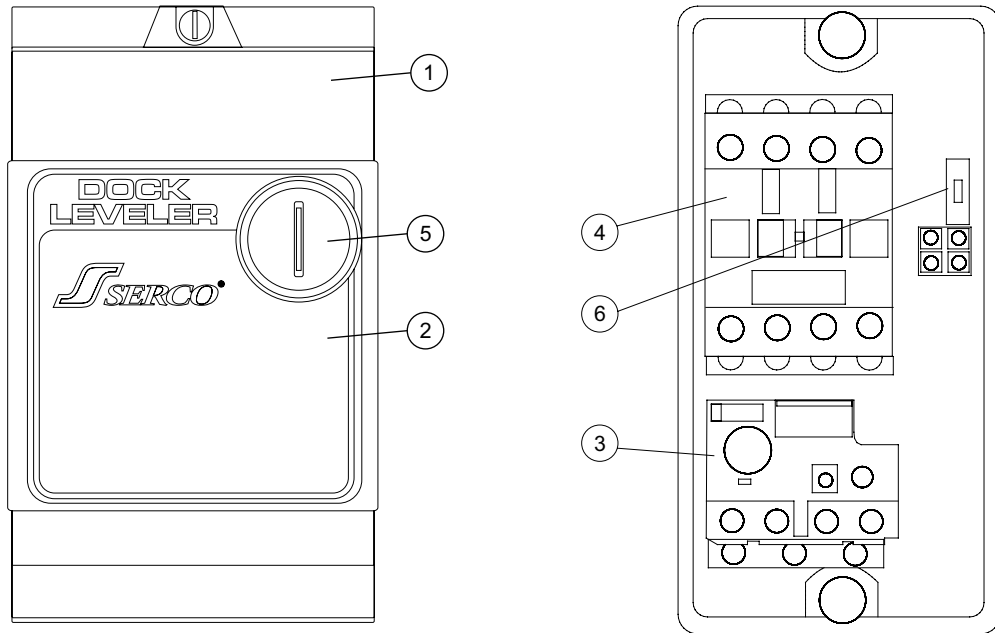


Item	Description	Quantity									Part Number
		6x6 6008228	6.5x6 6008229	6x7 6008230	6x8 6008231	6.5x8 6008232	7x8 6008233	6x10 6008234	6.5x10 6008235	7x10 6008236	
1	5-1/2" Front seal	2	2	2	2	2	2	2	2	2	6008166
2	Vertical seal	2	2	2	2	2	2	2	2	2	6008173
3	6' Upper seal 8' Upper seal 10' Upper seal	2	2	2	2	2	2	2	2	2	6008167 6008169 6008171
4	Aluminum strip 53-1/2" Aluminum strip 77-1/2" Aluminum strip 101-1/2"	2	2	2	2	2	2	2	2	2	6008175 6008177 6008179
5	6' Lower seal 8' Lower seal 10' Lower seal.	2	2	2	2	2	2	2	2	2	6008168 6008170 6008172
6	Aluminum strip 6' upper Aluminum strip 8' upper Aluminum strip 10' upper	2	2	2	2	2	2	2	2	2	6008174 6008176 6008178
7	6' Serco rear seal 6.5' Serco rear seal 7' Serco rear seal	1	1	1	1	1	1	1	1	1	6007674 6007675 6007676
8	Tech screws (not shown)	26	26	26	26	26	26	28	28	28	215702
9	Chain cup seal	2	2	2	2	2	2	2	2	2	0392
10	3/4-10 Set screw	2	2	2	2	2	2	2	2	2	6008249
11	W/seal 600 W brush W/seal 800 W brush W/seal 600 W brush cut	2	2	2	2	2	2	2	2	2	328907 328908 328910
12	Corner bulb seal	2	2	2	2	2	2	2	2	2	6009507
13	Transition angle seal (optional)	2	2	2	2	2	2	2	2	2	6008247

PARTS LIST — CONTROL PANEL

One Button

Fig. 55



Where Used / Qty

Complete Control Panel Assy. No.			Where Used / Qty						
Item	Part Description	Serco® Part #	110/1/60	208/1/60	240/1/60	208/3/60	240/3/60	480/3/60	575/3/60
			6006420	6006421	6006422	6006423	6006424	6006425	6006426
1	Plastic Ctrl Panel	6006437	1	1	1	1	1	1	1
2	Serco® Ctrl Panel Label	6006436	1	1	1	1	1	1	1
3	12-18A Overload Relay	6006435	1						
	5.5-8A Overload Relay	6006434		1	1				
	2.5-4A Overload Relay	6006433				1	1		
	1.6-2.5A Overload Relay	6006432						1	1
4	120VAC Motor Contactor	6006427	1						
	208-240VAC Motor Contactor	6006428		1	1	1	1		
	480VAC Motor Contactor	6006430						1	
	600VAC Motor Contactor	6006431							1
5	Push-button	6006439	1	1	1	1	1	1	1
6	Contact Assy, Plastic Panel	6006438	1	1	1	1	1	1	1

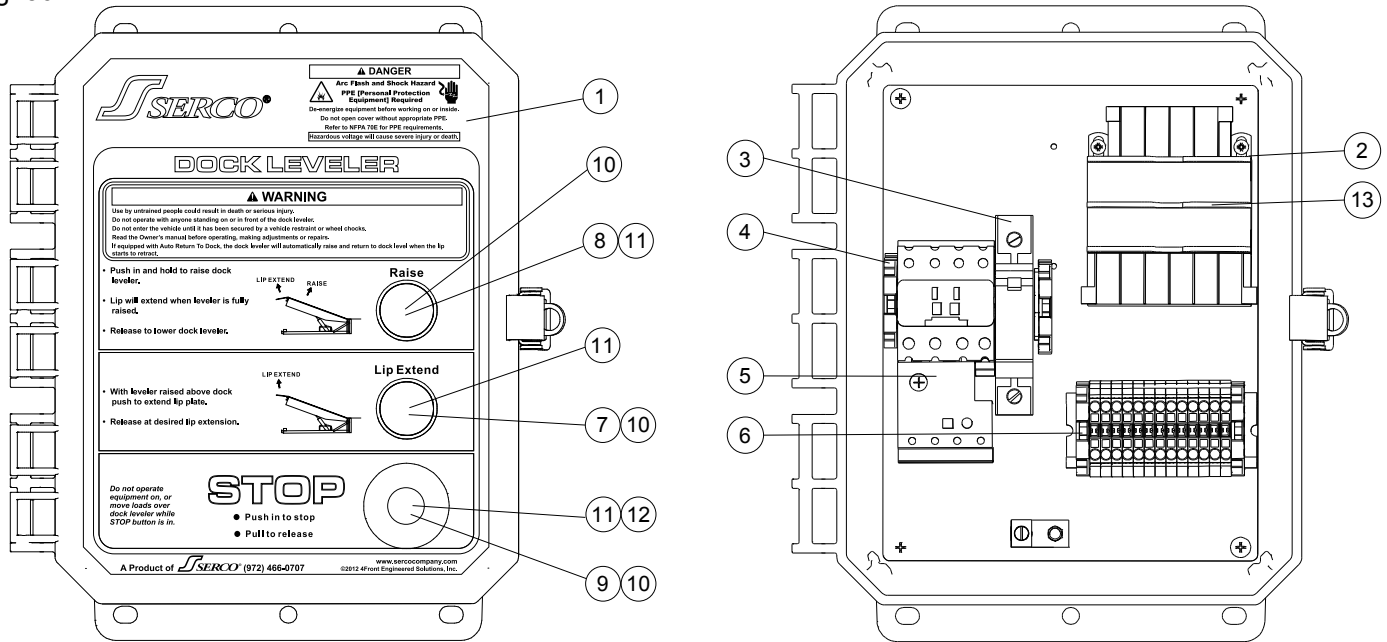
NOTE:

For 24V incoming power consult factory.

PARTS LIST — CONTROL PANEL

Three Button

Fig. 56



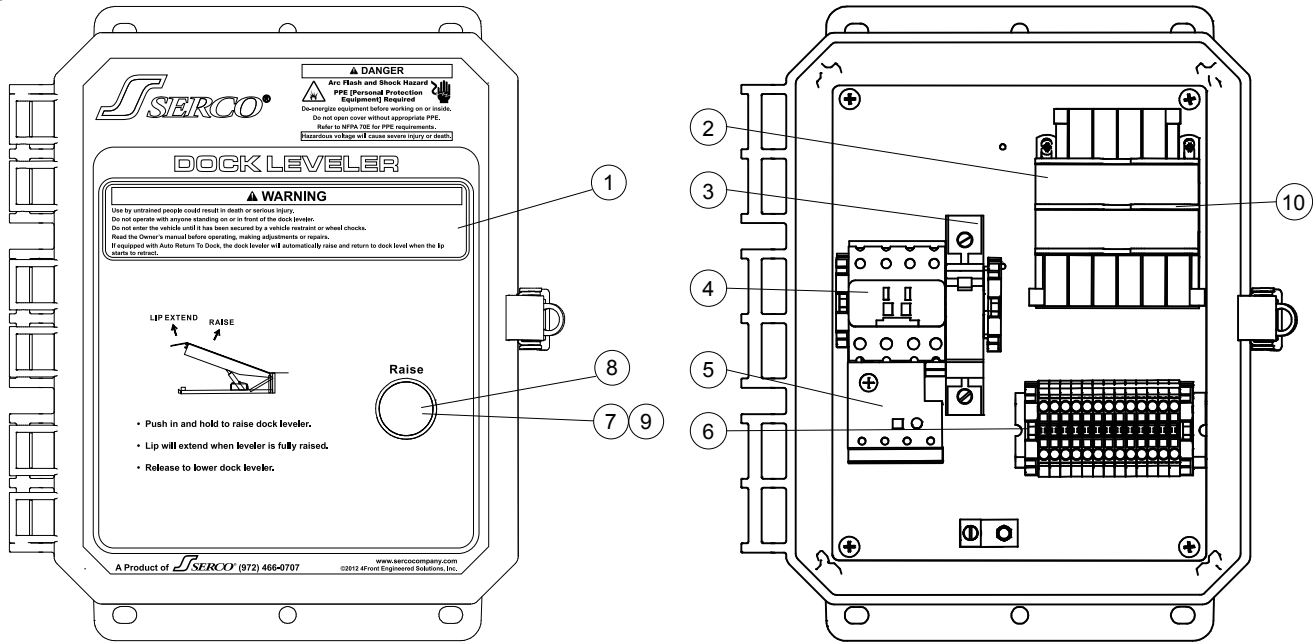
Where Used / Qty

Complete Control Panel Assy. No.			Serco®						
Item	Part Description	Part #	110/1/60 6012859	208/1/60 6012860	240/1/60 6012861	208/3/60 6012865	240/3/60 6012866	480/3/60 6012867	575/3/60 6012868
1	CONTROL PANEL DECAL	6012851	1	1	1	1	1	1	1
2	XFMR 200/600 - 23/110, 50VA	6012567		1	1	1	1	1	1
3	CIRCUIT BREAKER 0.5A	6012021	1	1	1	1	1	1	1
4	CONTACTOR 18A 120V COIL	6012549	1						
	CONTACTOR 9A 1 N/O+1 N/C 120V	6012922		1	1	1	1	1	1
5	OVERLOAD RELAY 9-13A	6012560	1						
	OVERLOAD RELAY 5.5-8A	6012559		1	1				
	OVERLOAD RELAY 2.5-4A	6012558				1	1		
	OVERLOAD RELAY 1.6-2.5A	6012557						1	1
6	TERMINAL 2 POLE	6000542	11	11	11	9	9	9	9
7	PUSH BUTTON GREEN	6013065	1	1	1	1	1	1	1
8	PUSH BUTTON BLUE	6013066	1	1	1	1	1	1	1
9	PUSH BUTTON MUSHROOM RED	6012566	1	1	1	1	1	1	1
10	MOUNTING COLLAR	6012562	3	3	3	3	3	3	3
11	CONTACT BLOCK N/O	6012563	4	4	4	4	4	4	4
12	CONTACT BLOCK N/C	6012564	1	1	1	1	1	1	1
13	FUSE, ATQR 1/2A 600V CC	6011358		2	2	2	2	2	
	FUSE, ATQR 1/4A 600V CC	6011974							2

PARTS LIST — CONTROL PANEL, continued

Optional Interlock — One Button

Fig. 57



Where Used / Qty

Complete Control Panel Assy. No. Serco®			110/1/60	208/1/60	240/1/60	208/3/60	240/3/60	480/3/60	575/3/60
			6012848	6012853	6012854	6012855	6012856	6012857	6012858
Item	Part Description	Part #							
1	SERCO CONTROL PANEL LABEL	6012850	1	1	1	1	1	1	1
2	XFMR 200/600 - 23/110, 50VA	6012567		1	1	1	1	1	1
3	CIRCUIT BREAKER 0.5A	6012021	1	1	1	1	1	1	1
4	CONTACTOR 18A 120V COIL	6012549	1						
	CONTACTOR 9A 1 N/O+1 N/C 120V	6012922		1	1	1	1	1	1
5	OVERLOAD RELAY 9-13A	6012560	1						
	OVERLOAD RELAY 5.5-8A	6012559		1	1				
	OVERLOAD RELAY 2.5-4A	6012558				1	1		
	OVERLOAD RELAY 1.6-2.5A	6012557						1	1
6	TERMINAL 2 POLE	6000542	8	8	8	6	6	6	6
7	PUSH BUTTON BLUE	6013066	1	1	1	1	1	1	1
8	CONTACT BLOCK N/O	6012563	1	1	1	1	1	1	1
9	MOUNTING COLLAR	6012562	1	1	1	1	1	1	1
10	FUSE, ATQR 1/2A 600V CC	6011358		2	2	2	2	2	
	FUSE, ATQR 1/4A 600V CC	6011974							2

LIMITED WARRANTY

4Front Engineered Solutions, Inc. warrants that this DOCK LEVELER will be free from flaws in material and workmanship under normal use for a period of one (1) year from the earlier of 1) 60 days after the date of initial shipment by 4Front Engineered Solutions, Inc., or 2) the date of installation of the DOCK LEVELER by the original purchaser, provided that the owner maintains and operates the DOCK LEVELER in accordance with this User's Manual.

Hydraulic limited warranty — The hydraulic power unit and cylinders for this dock leveler are warranted to cover the cost of replacement costs only for an extended period of four (4) years beyond the base warranty period.

Parts warranty — All spare or replacement parts are warranted to cover the cost of replacement parts and freight only for ninety (90) days from the date of shipment.

In the event that this DOCK LEVELER proves deficient in material or workmanship within the applicable limited warranty period, 4Front Engineered Solutions, Inc. will, at its option:

1. Replace the DOCK LEVELER, or the deficient portion of either, without charge to the owner; or
2. Alter or repair the DOCK LEVELER, on site or elsewhere, without charge to the owner.

The limited warranty stated in the preceding paragraph IS EXCLUSIVE AND IT IS IN LIEU OF ANY OTHER GUARANTEES AND WARRANTIES, EXPRESS OR IMPLIED. The limited warranty does not cover any failure caused by improper installation, abuse, negligence, or failure to maintain and adjust the DOCK LEVELER properly. Parts requiring replacement due to damage resulting from vehicle impact, abuse, or improper operation are not covered by this warranty. 4Front Engineered Solutions, Inc. disclaims any responsibility or liability for any loss or damage (including, without limitation, direct, indirect or consequential damages, or lost profits or production time) that results from the use of unauthorized replacement parts or modification of the DOCK LEVELER. 4Front Engineered Solutions, Inc. sole obligation with regard to a DOCK LEVELER that proves to be deficient in material or workmanship shall be as set forth in its standard warranty above (i.e., 4Front Engineered Solutions, Inc. will, at its option, repair or replace the DOCK LEVELER or portion thereof, without charge to the purchaser).

This limited warranty does not cover any failure caused by improper installation, abuse, negligence, or failure to properly maintain and adjust the DOCK LEVELER. This limited warranty will be void or of no effect if the original purchaser does not notify 4Front Engineered Solutions, Inc.'s warranty department within ninety (90) days after the product deficiency is discovered. Parts requiring replacement due to damage resulting from vehicle impact, abuse, or improper operation are not covered by this warranty. 4Front Engineered Solutions, Inc. disclaims any responsibility or liability for any loss or damage that results from the use of unauthorized replacement parts or modification of the DOCK LEVELER.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, AND THERE IS NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

4Front Engineered Solutions, Inc. warranties extend only to the DOCK LEVELER itself.

4Front Engineered Solutions, Inc. DISCLAIMS all warranties, express or implied, responsibility or liability for loss or damage of any kind associated with the installation or maintenance of the DOCK LEVELER, including any liability for premature product wear, product failure, property damage or bodily injury arising from improper installation or maintenance of the DOCK LEVELER.

Please direct questions about your dock leveler to your local distributor or to 4Front Engineered Solutions, Inc.

Your local Serco® distributor is:

Corporate Head Office:

1612 Hutton Dr. Suite 140
Carrollton, TX. 75006
Tel. (972) 466-0707
Fax (972) 323-2661



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