BSLD SERIES

Scissor Dock Leveler

OWNER / INSTALLATION MANUAL

Model Number: _____
Serial Number: _____
In Service Date: _____

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GETTING STARTED

PLEASE READ THE INSTALLATION INSTRUCTIONS CAREFULLY BEFORE INSTALLING, USING OR SERVICING THE SCISSOR DOCK LEVELER. The safety of all persons installing, using or servicing the DOCK is of utmost importance to Beacon Industries, Inc. ("Beacon"). The LEVELER is capable of supporting heavy loads and is capable of causing **SEVERE PERSONAL INJURY** if used improperly or certain safety precautions are not taken. When properly used and maintained, the Scissor Dock Leveler will provide many years of safe, trouble free service. If you have any questions about any of the instructions in this manual or about the use of this product, PLEASE contact your DEALER or Beacon.

BSLD is the model designation for the Hydraulic Loading Dock Series. Throughout this service manual the BSLD may be referred to as the "loading dock", the "dock lift", the "lift" or the "Scissor Dock Leveler". BSLD is the model designation for the SuperLift Loading Dock Series.

INSPECTION

IMMEDIATELY upon receipt of the Scissor Dock Leveler, remove all packing and strapping material and visually inspect the unit for damage. Any damage to the loading dock MUST BE NOTED on the delivery receipt. After the preliminary inspection is conducted, the loading dock should be thoroughly inspected for any concealed damage that was not readily apparent during the preliminary inspection. Any concealed damage found that was not noted on the delivery receipt should be IMMEDIATELY reported in writing TO THE DELIVERING CARRIER.

SAFETY DEFINITIONS

Beacon uses the following system to identify the degree of risk associated with hazards and unsafe practices.

DANGER - Immediate hazard which will result in **SEVERE PERSONAL INJURY** or **DEATH.**

WARNING - Hazard or unsafe practice which could result in **SEVERE PERSONAL INJURY** or **DEATH** and **PROPERTY DAMAGE.**

CAUTION - Hazard or unsafe practice which could result in **MINOR PERSONAL INJURY** and **PROPERTY DAMAGE.**

SAFETY INSTRUCTIONS

DANGER!

1. **READ THIS MANUAL COMPLETELY BEFORE USING AND THOROUGHLY UNDERSTAND AND FOLLOW ALL SAFETY INSTRUCTIONS.**
2. A falling dock lift can cause **SEVERE PERSONAL INJURY** or **DEATH**. **NEVER** go under the lift platform until the load is removed and the scissor mechanism is blocked with the maintenance bars.
3. The maintenance bars have been designed for use only when the lift is **UNLOADED**. **NEVER** place any load on the lift platform with the maintenance bars engaged. **SEVERE PERSONAL INJURY** or **DEATH** and **PROPERTY DAMAGE** could result.
4. **DO NOT** attempt to remove or loosen the platform or base frame hinge pins. Loosening or removing these pins could cause the lift to suddenly collapse, **EVEN IF THE MAINTENANCE BARS ARE ENGAGED**. **SEVERE PERSONAL INJURY** or **DEATH** and **PROPERTY DAMAGE** could result.

5. The lifts electrical circuits use voltages which can cause **SEVERE PERSONAL INJURY or DEATH**. **DO NOT** work with the electrical components unless you are a **QUALIFIED ELECTRICAN**.
6. The lift's electrical components can create sparks. **DO NOT** install the lift, the power unit or the controls in an area where potentially explosive dusts, gases, or vapors may be present. Failure to comply may result in an explosion and cause **SEVERE PERSONAL INJURY** or **DEATH**.

WARNING!

1. The Scissor Dock Leveler is designed for use with stable, uniformly distributed loads on a solid level floor. **DO NOT** concentrate the load at one point on the pallet or platform. **ALWAYS** uniformly distribute the load over the supporting surface. **DO NOT** use the Scissor Dock Leveler for any purpose other than its intended use.
2. **SHEARING HAZARD. ALWAYS** keep hands and feet clear of the scissor mechanism and all moving components. **DO NOT** put hands or feet under the lift platform when in use. **SEVERE PERSONAL INJURY** could result.
3. **CRUSHING HAZARD. ALWAYS** keep hands and feet clear of all moving components. **DO NOT** put feet in the pit or on the base frame when in use. **SEVERE PERSONAL INJURY** could result.
4. **PINCH POINT HAZARD. ALWAYS** keep hands and feet clear of the underside of the lift platform and bridge plate. **SEVERE PERSONAL INJURY** could result.
5. **ALWAYS** ensure the handrails and safety chains are in place and secure **BEFORE** lifting personnel. **ALWAYS** use a handrail to maintain balance while raising or lowering the lift. **SEVERE PERSONAL INJURY** could result.
6. **NEVER** leave the loaded dock lift unattended unless the lift platform is in the fully lowered position.
7. **ALL** lift servicing must be performed by qualified personnel. Unauthorized modifications to this dock lift may compromise the performance and safety of the system. **UNDER NO CIRCUMSTANCES** should you attempt any repair or service that is not covered in the service manual or authorized by Beacon.
8. **ALWAYS** ensure all safety warning labels are in place and legible. If not, remove the dock lift from service and replace the required labels.
9. **ALWAYS** securely anchor the base frame to the floor to ensure maximum stability and the proper operation of the lift

CAUTION!

1. **DO NOT** continue to operate the hydraulic pump if a squealing noise is heard coming from the pump. The pressure relief valve is operating. Continued operation of the pump with the relief valve operating will cause permanent damage to the pump.
2. **DO NOT** change the relief valve setting. The relief valve is installed to protect the operator and the lift.

RESPONSIBILITIES OF OWNERS/USERS

It is the responsibility of the Owners/Users to:

1. Advise the DEALER or Beacon when deflection or creep is critical to the lift application and of any unique application information.

2. Ensure the dock lift is properly installed and used in accordance with the guidelines provided in this manual.

3. Ensure the dock lift is inspected and maintained in proper working order in accordance with the operation/maintenance instructions provided in this manual.

4. Ensure any lift not in safe operating condition such as, but not limited to excessive hydraulic leakage, missing rollers, pins or fasteners, bent or cracked structural members, cut or frayed hydraulic lines, damaged or malfunctioning controls or safety devices, etc. shall be removed from service until it is repaired to Beacon's standards.

5. Ensure all repairs are made by qualified personnel in conformance with the instructions provided by Beacon.

6. Ensure only trained and authorized personnel are permitted to operate the dock lift and that all operators understand the operating instructions, safety rules and hazards associated with this lift.

7. Ensure modifications or alterations of any dock lift are made only with the written permission of Beacon.

8. Ensure that the power unit is wired correctly for the available power supply, according to the enclosed Manufacturer’s instruction sheet.

RECOMMENDED PIT LAYOUT

A general layout for a typical pit mounted Scissor Dock Leveler is shown in Figure 1. Figure 2 shows some typical layouts for the Scissor Dock Leveler. The 8" diameter bumper posts, shown in various details, are strongly recommended. They prevent damage to the Scissor Dock Leveler by preventing a truck from accidentally backing into a raised or partially raised lift. Lift specifications are detailed in Figure 3 and various pit layouts are shown in Figure 4.

General Notes
Supplied by Owner or Contractor

1. Provide 3" dia. conduit with 12" minimum radius bends from Power Unit location to lift pit. As shown in Figure 4, the conduit entry should be to the clevis (end opposite to cylinders) end of the lift installation.

2. Provide hydraulic hose or ASA steel tubing and fittings (*minimum bursting pressure 9000 PSI*) from the power unit location into the hinge end of the lift pit. For proper connection to the power unit and lift, the hose must have a # 8 SAE 37˚ Flare female fitting on both ends. Size and construction of the hose should be as follows:

   (a) For hose lengths up to 50 feet, use 3/8" ID hydraulic hose
   (b) For hose lengths greater than 50 feet, use ½" ID hydraulic hose

3. Provide ¼" OD polypropylene or nylon tubing from power unit location to lift pit (if required).

4. The standard up limit switch: provide a #16 AWG 2-wire conductor (*type SO*) from the control box to the limit switch located within the lift base frame.

5. Ensure the concrete is reinforced to suit local soil conditions. All pit construction including the bumper posts, curb angles, conduit, hydraulic oil, hydraulic connections and electrical hook-up are the responsibility of the owner or the pit contractor.

6. Pit drains are to be installed to suit local code and weather conditions.

7. Install the bumper posts (*provided by others*) on all pits, as detailed in Figures 4A, 4B and 4D.

8. Service wiring and/or relocation of the power unit controls are the responsibility of the contractor and/or the owner.

It must be clearly noted that the sole purpose of the drawings (Figures 4A through 4D) is to document the configuration of the equipment built by Beacon and any specific installation data pertinent to the satisfactory operation thereof. It is not the Intent of Beacon to provide installation details such as concrete thickness and reinforcing, routing of electrical and hydraulic lines, component location and orientation, position of adjacent structures, etc., but rather, to make final construction drawings for the specific job requirement.

Pit details and dimensions are for recommendation and reference only. Actual pit design, dimensions, and specifications, are the responsibility of the owner and/or pit contractor. Beacon Industries, Inc., assumes no responsibility, liability, or warranty considerations, for incorrect, faulty, or defective pit construction.

FIGURE 1: GENERAL LAYOUT

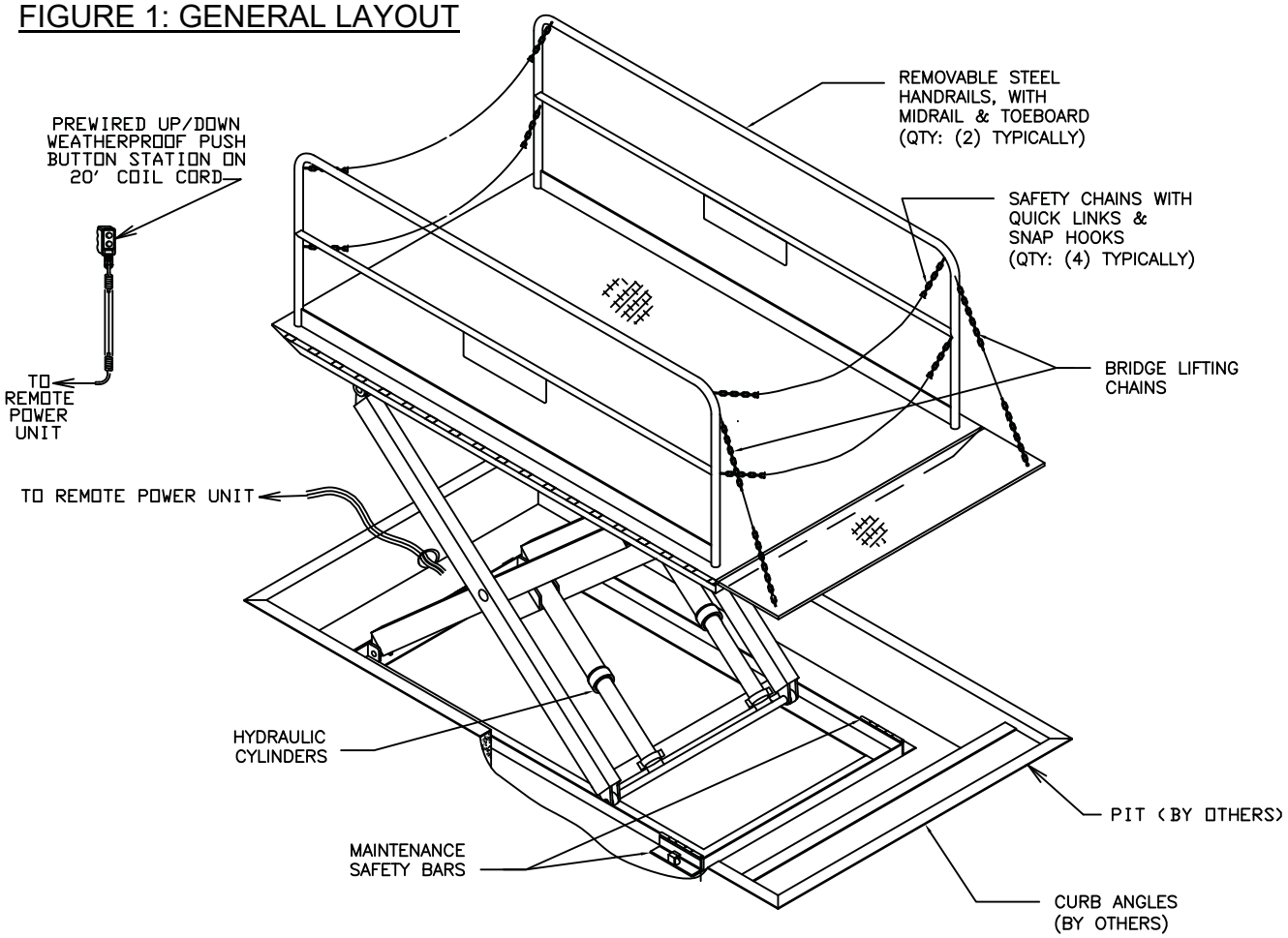


FIGURE 2: TYPICAL LAYOUTS

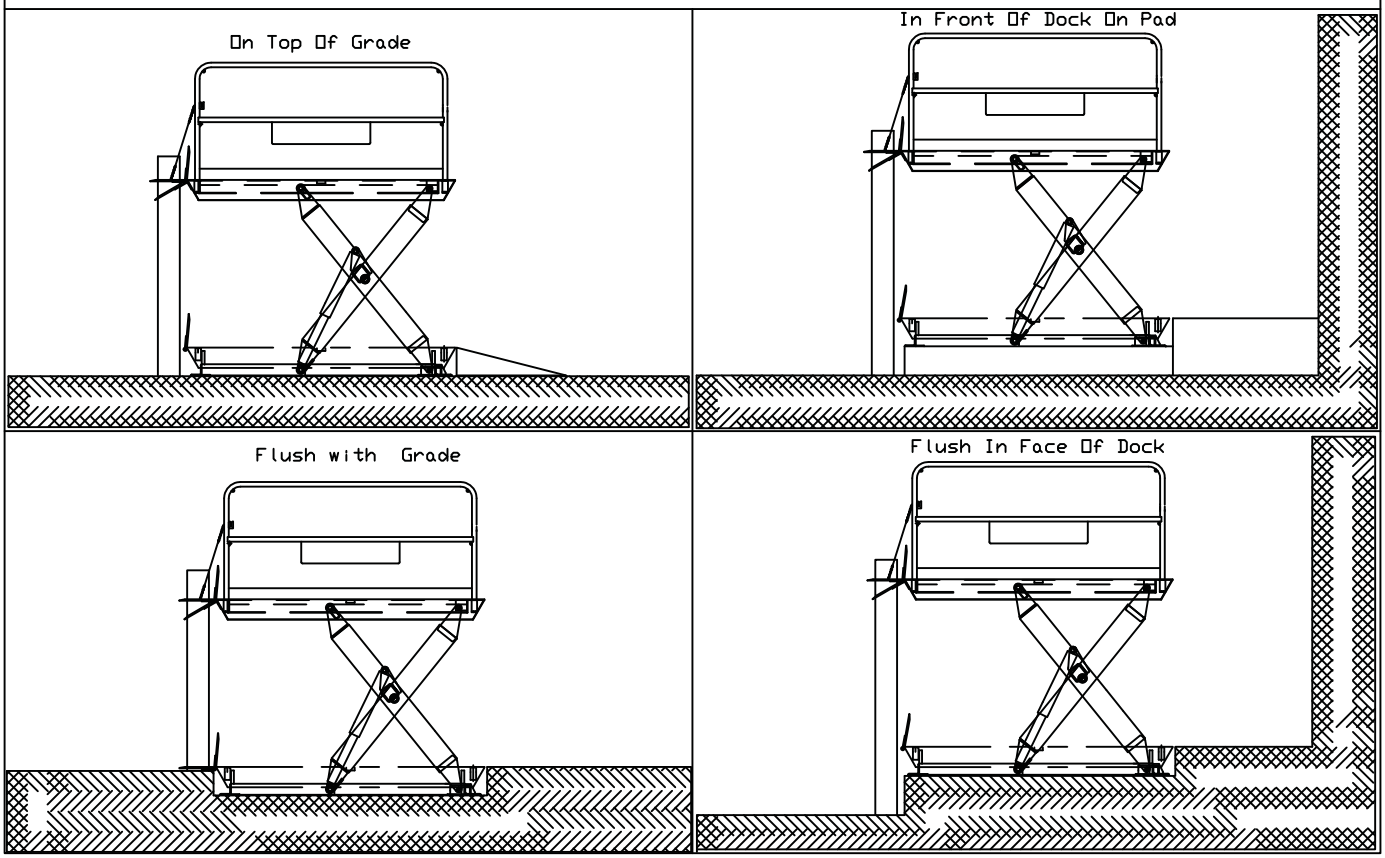
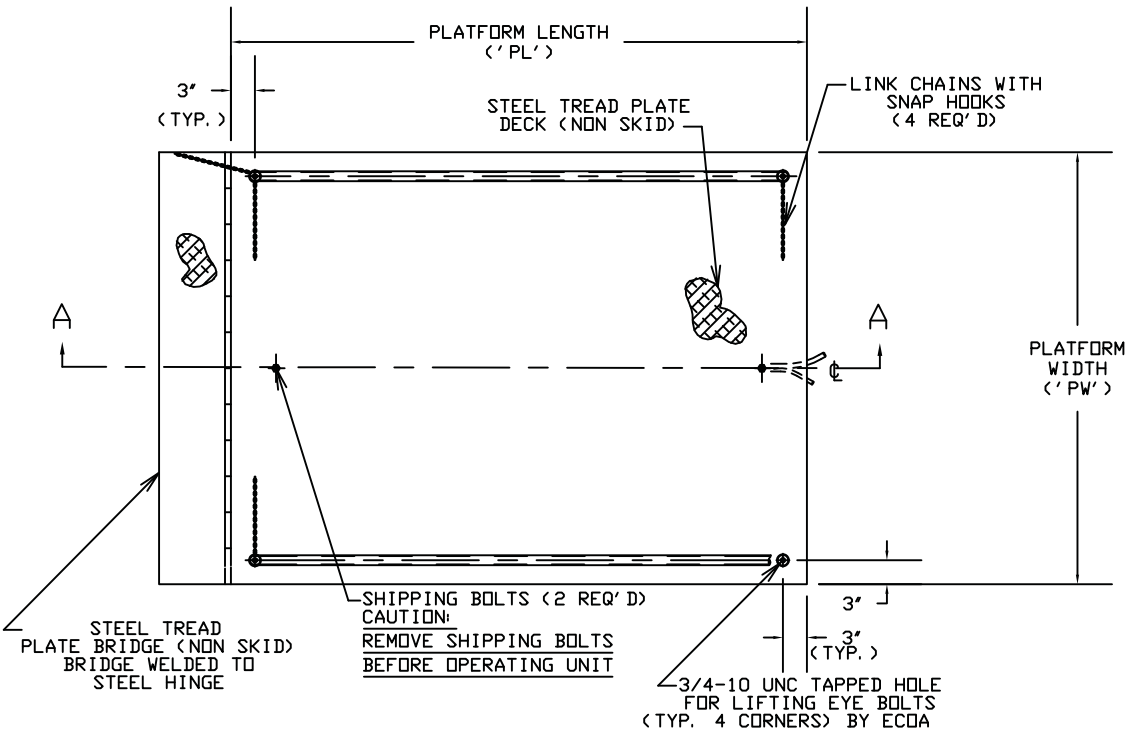
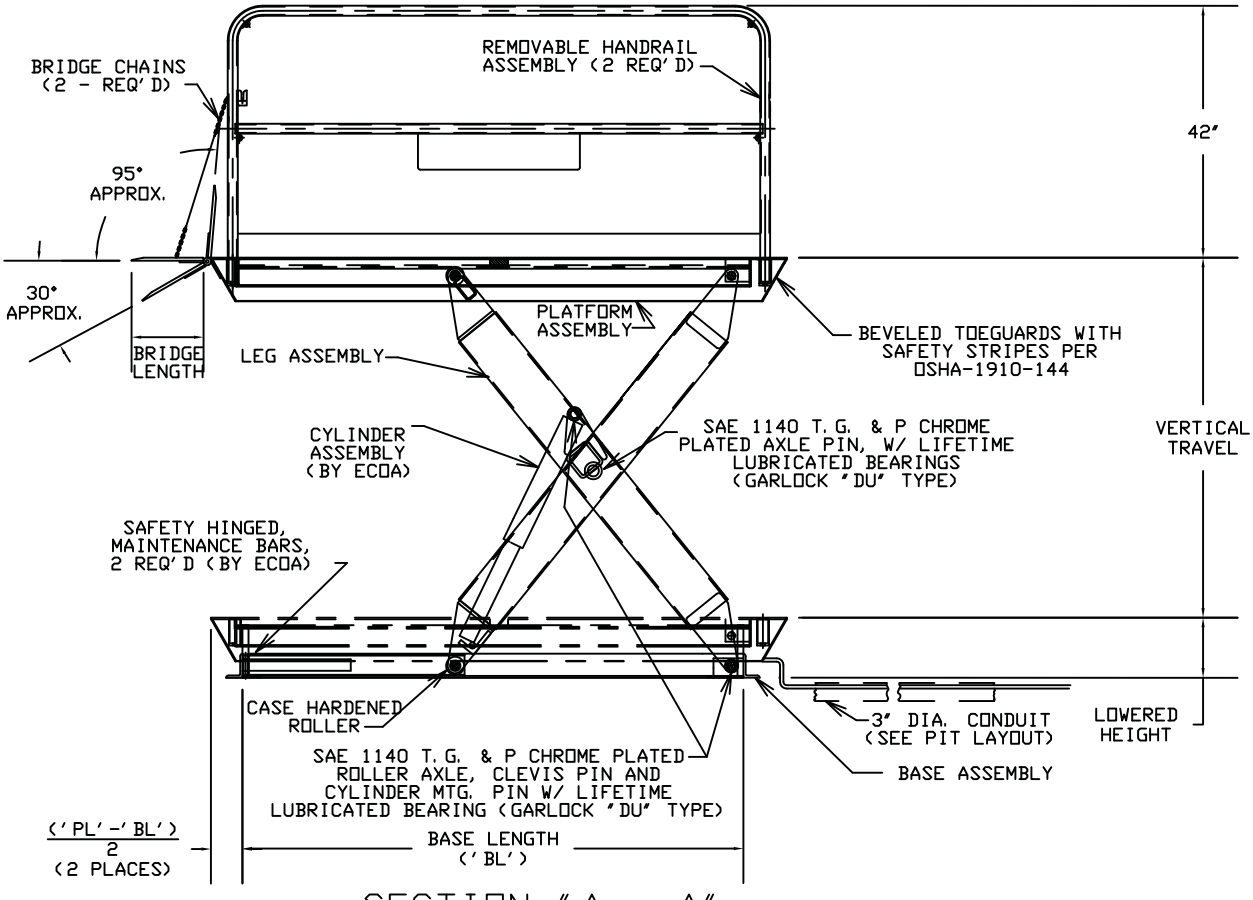


FIGURE 3: GENERAL SPECIFICATIONS





SECTION "A - A"

FIGURE 4: COMMON PIT LAYOUTS

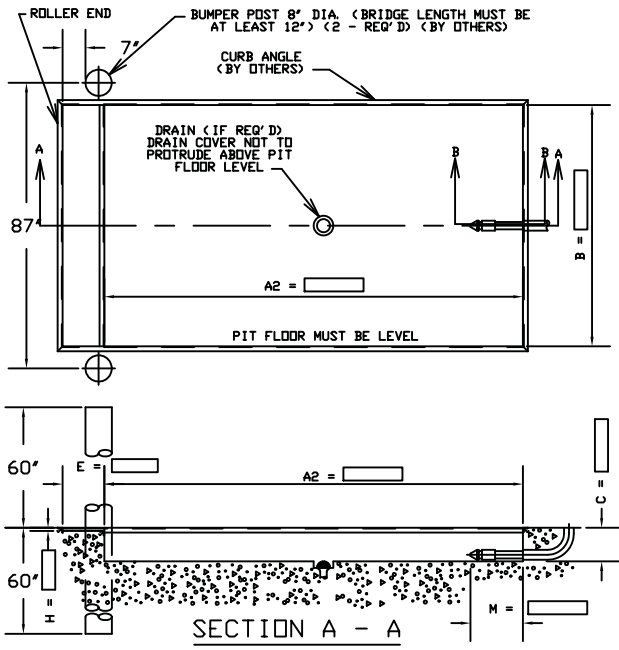


Figure 4A
Typical Pit Layout
with Full Width Bridges

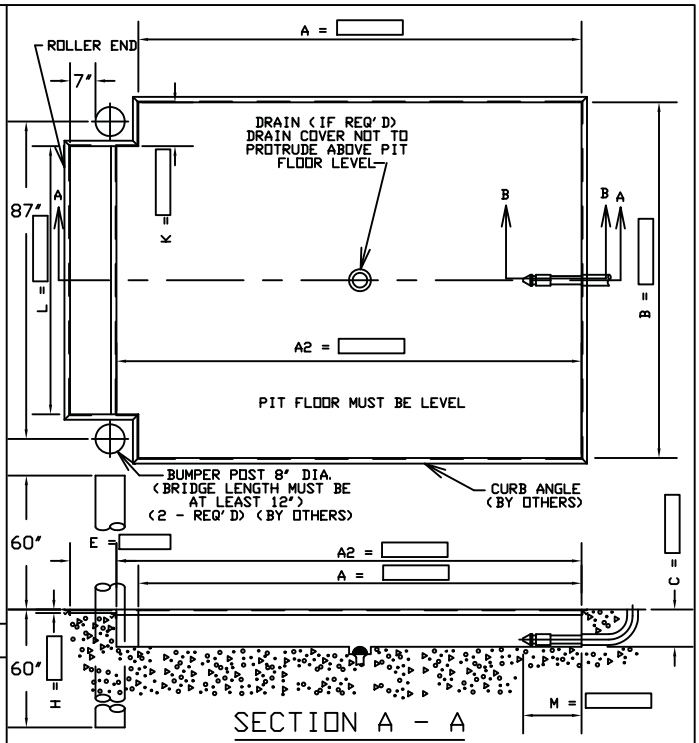


Figure 4B
Typical Pit Layout
with Short Width Bridges

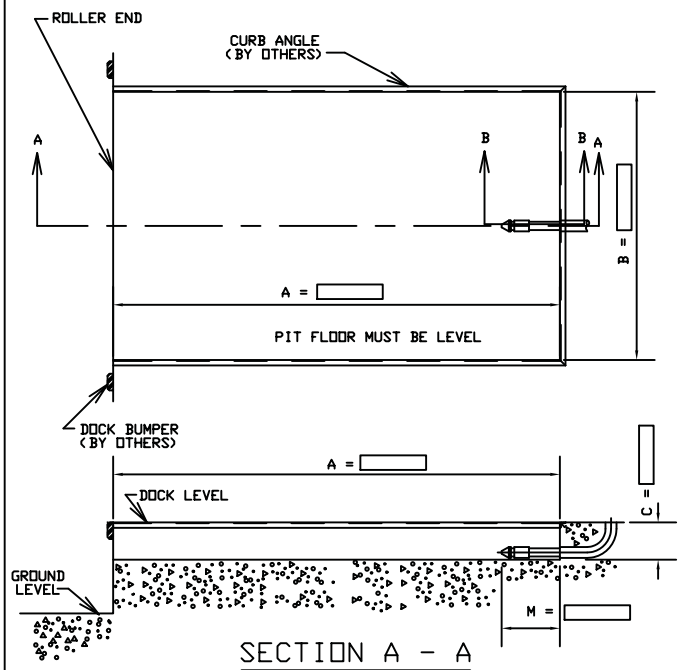


Figure 4C
Typical Pit Layout for Units
Mounted Flush in Face of Dock

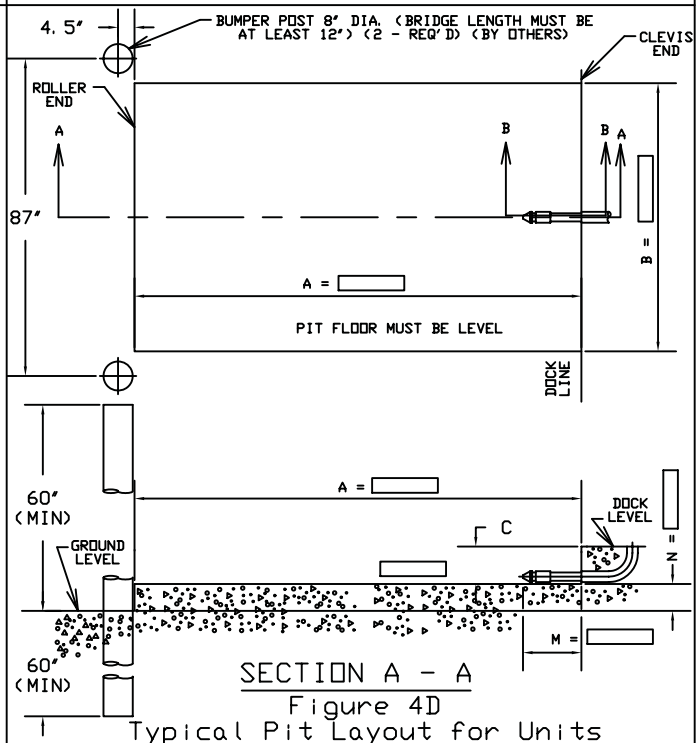
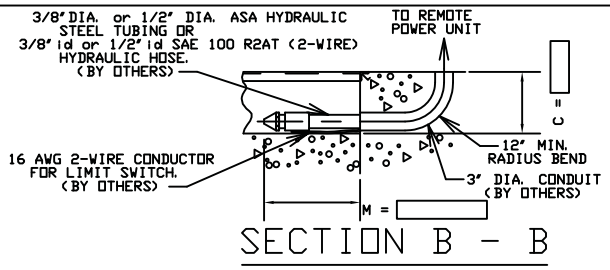


Figure 4D
Typical Pit Layout for Units
Mounted in Front of Dock, on Pad



A = PIT LENGTH = PLATFORM LENGTH + 1.5″
A2 = PIT LENGTH = PLATFORM LENGTH + 7.5″
B = PIT WIDTH = PLATFORM WIDTH + 1.5″
C = PIT DEPTH = LOWERED HEIGHT (+ 1/4″, -0″)
E = BRIDGE RECESS LENGTH = BRIDGE LENGTH - 5.25″
H = BRIDGE RECESS DEPTH = 1/2″ (HLD); 3/4″ (SLD)
L = BRIDGE RECESS WIDTH = BRIDGE WIDTH + 1.5″
M = DIMENSION BY OTHERS
N = DIMENSION BY OTHERS

NOTE:
PIT DETAILS ARE FOR RECOMMENDATION AND REFERENCE ONLY.
ACTUAL PIT DESIGN AND DIMENSIONS ARE
THE RESPONSIBILITY OF THE OWNER, AND/OR PIT CONTRACTOR.

FUNCTIONAL DESCRIPTION

The Scissor Dock Leveler series of lifts have been primarily designed for loading dock applications. The most important advantage of the Scissor Dock Leveler is that it is finitely adjustable in height. The installation of this lift provides full flexibility, allowing you to load and unload at any truck bed elevation within the lift's travel range. The general specifications for the Scissor Dock Leveler Series Dock Lifts are as shown in Figure 3, Page 8.

SCISSOR BLOCKING INSTRUCTIONS

To Engage the Maintenance Bars; **BSLD**:

1. REMOVE ALL LOADS from the platform and depress the "up" button to raise the Scissor Dock Leveler to its fully raised position.
2. Rotate each maintenance bar until it hits the inside of the roller channel. Ensure both maintenance bars are properly positioned against the roller channel.
3. Lower the Scissor Dock Leveler by pressing the "DOWN" button until the rollers stop against the maintenance bars and the lift ceases to come down any further.

To Engage the Maintenance Bars; **BSLD:**

4. REMOVE ALL LOADS from the platform and depress the "up" button to raise the Scissor Dock Leveler to its fully raised position.
5. Position each removable maintenance bar so that it hits the inside of the roller channel, and the inside of the base end angle. Ensure that the safety tabs on the maintenance bars are engaged over the side and base angles.
6. Lower the Scissor Dock Leveler by pressing the "DOWN" button until the rollers stop against the maintenance bars and the lift ceases to come down any further.

To Disengage the Maintenance Bars; BSLD,:

1. Raise the Scissor Dock Leveler by pressing the 'up" button until the rollers are well clear of the maintenance bars.
2. Rotate (BSLD), or remove (BSLD), each maintenance bar back to its original position.

INSTALLATION INSTRUCTIONS

1- Check pit for conformity to installation drawing provided.

2- Locate the power unit, install and check oil level. It will require approximately 5-20 gallons, depending on model. (See oil specification for type of oil required.)
Note: It is suggested that power unit be installed prior to the installation of the lift. This allows the electrical work to be completed ahead of time. Also, it permits flushing of the hydraulic lines with the power unit prior to connecting the lift.

3- All underground hydraulic lines must be flushed with clean oil.

4- Remove the skid and all steel strapping. The unit comes with four (4)-lifting tabs fitted on the platform. These are to be used for lifting the unit with a crane or a fork truck. At this point DO NOT remove the two (2) shipping bolts.

5- With the help of a crane or fork truck, lift the Scissor Dock Leveler unit and position it in the pit. Note that the hydraulic cylinder end is opposite to the end of the oil line recess in the pit.

6- Remove the two (2) shipping bolts. Lift the Scissor Dock Leveler with the help of a fork truck. Make sure that the base frame assembly remains on the ground and that the scissor legs open properly. Engage the maintenance safety bars as explained in “Scissor Blocking Instructions” section. Check to ensure that the maintenance safety bars are securely in place.

7- After flushing the hydraulic lines, proceed as follows:
Connect the 3/8" or 1/2” hydraulic hose coming from the conduit to the # 8 SAE 37˚ Flare bulkhead fitting on the base frame assembly.
Note: The 3/8” or 1/2” I.D. hose is not typically supplied by Beacon. Hose and tubing supplied by others must conform to manufacturer’s specifications.

8- The upper travel limit switch is factory installed to the bracket on the base frame at the scissor leg clevis hinge. Make sure the limit switch wire runs through the conduit to the control box.
Press the “UP” button until the cylinders are filled with oil and the lift rises.

9- Disengage the maintenance safety bars as explained in “Scissor Blocking Instructions” section. Completely lower the platform by pressing the "DOWN" button until the unit is in fully lowered position. (Note: Motor runs only when the Lift is rising. Only the Solenoid operates when the Lift is lowering.)

10- Position the lift so that there are proper clearances around the edges (Refer to Installation drawing on page 9).

11- Raise the lift completely and engage the maintenance bars. Mark the base frame lag down holes; shift the position of the lift to allow room for drilling, then drill. When complete, reposition the lift, shim until level. Install anchors, lagging the lift securely to the floor. (Make sure that base angles are fully supported along their entire length with shims or concrete grout.) Note: Anchoring holes may be drilled through existing holes using the base frame as a template.

12- Disengage the maintenance safety bars and lower the lift to check for proper height. The platform should be flush with the curb angles around the pit.

13- Operate the lift through a few cycles holding the "DOWN" button on for 10-20 seconds after the lift is fully lowered. This procedure will bleed any remaining air that may be in the hydraulic lines.

14- All lifts equipped with an upper travel limit switch, raise the lift again and set the limit switch (normally closed contact) so that the motor shuts off when the platform reaches the desired height from the ground.

15- Note to Installer: In order to ensure a clean, trouble free, hydraulic system and to prevent the suction filter from clogging due to foreign particles in the pipe, the installer must run the lift "UP" and "DOWN" at least 15 times. Lower the lift and turn off the power supply. Remove the solenoid valve from the valve block and clean thoroughly, making sure that the dirt does not enter the valves. This procedure will ensure trouble free operation of the lift.

16- Check the oil level of the reservoir with the lift fully lowered. Add oil if necessary.

17- Clean up spilled oil and debris from the area.
Note to installer; Spilled oil left in the area may be misinterpreted as a leak and may cause a needless "call-back".

OPERATING INSTRUCTIONS

The load capacity rating as stamped on the nameplate of your Scissor Dock Leveler designates the maximum lifting capacity with a uniformly distributed load. This capacity must never be exceeded, as permanent damage may result.

Consult the factory before any modification is performed in the field.

The Scissor Dock Leveler is furnished with constant pressure ("dead-man" type) push button controls. Pressing the "UP" (or RAISE) button, starts the motor, (see wiring diagram) which in turn runs the hydraulic pump. The cylinders begin to extend and the platform starts to rise. The platform will rise as long as the "UP" button is pressed. On releasing the button, the platform ceases to rise and will remain at that particular elevation.

When the lift reaches a preset vertical travel the "up limit switch" (standard) will be actuated. This shuts off the power to the motor. At this point, pressing the "UP" button will have no effect. The platform will remain stationary at the desired elevation.

When pressing the "DOWN" button, the Down Solenoid Valve is energized. The cylinders start retracting as the oil returns to the reservoir and, upon releasing the button, the platform ceases to lower, remaining at that particular elevation.

In the event that the lift is overloaded, the relief valve will open because of excessive pressure build up, and oil will bypass into the reservoir.

Always remember that the motor runs only when the "UP" button is pressed and the Down Solenoid Valve is energized only when the "DOWN" button is pressed.

Some "Tips" to the Operator

1. Always load the lift properly by centering the load on the platform as much as possible.
2. Never use the lift if it is in need of repairs, or in the case of a malfunction.
3. Notify your maintenance personnel if you notice anything out of the ordinary, such as binding, odd pump noises, etc.
4. Do not continue to press the "UP" button if the lift is not rising. You can permanently damage the motor or pump by doing so.
5. Ensure that handrails and chains are in place before operating the lift.

ROUTINE MAINTENANCE

Raise the lift and engage the maintenance safety bars before beginning any inspection or work on the unit.

(A) Monthly Inspections
1. Check the oil level of the reservoir with the lift in fully lowered position. Add oil as required. (See oil specifications.)
2. Check for oil leaks. See Trouble Shooting Section and correct as necessary.
3. Check roller bushings, axle pin, clevis and pivot points for wear.
4. Check for worn or damaged hydraulic hoses or electrical cords. Repair as necessary.
5. Check rollers for looseness and wear, See Trouble Shooting.
6. Check retaining rings at all axles, pivot points and clevis.
7. Never grease rollers or axles.
8. Check for unusual noise. See Trouble Shooting.

(B)Yearly Inspection
Oil in reservoir should be changed at least once a year or sooner if the oil darkens or becomes gritty. Presence of water is indicated if the oil turns milky.

(C)Winter/Summer Maintenance
Change the oil as per 'Oil Viscosity Recommendations' depending on the ambient temperatures prevailing in your area.

Oil Viscosity Recommendations
Best performance can be obtained by utilizing ISO-Vg grade 32, 46 oil with a viscosity range between 150-250 SUS at 100^0F (32-54 cSt at 40^0C). Minimum viscosity at operating temperature is 60 SUS (10 cSt). Maximum start-up viscosity at minimum ambient temperature is 4000 SUS (880 cSt). Maximum recommended operating temperature of hydraulic oil is 150^0F (650C).
Oil should be non-corrosive, have maximum anti-wear properties, rust and oxidation (treatment) and be non-foaming.
Recommended list of oils for an ambient temperature range of -10^0F to 100^0F (-23^0C to 38^0C) are as follows:

1. Amoco Oil Co.	Rycon Oil No.32, 46 Amoco AW 32, 46
2. Cities Service Oil Co.	Citgo AW Hyd. Oil 32, 46 Citgo All Temp. Hyd. Oil
3. Chevron USA	Chevron EP Hyd. Oil 32, 46
4. Fina Oil Co.	Fina AW 32, 46 Fina Automatic Transmission Fluid Dextron II
5. Gulf Oil Corporation	Gulf Harmony 32 AW, 46 AW
6. Mobil Oil Corporation	DTE 15, 24, 25, Mobil Fluid #300 Transmission Fluid
7. Sentinel Lubricants Corp.	Sentinel SH-10 Hydraulic Oil
8. Shell Oil Co.	Tellus Hyd. Oil 32, 46 Tellus "1" Hyd. Oil 32, 46
9. Texaco Inc.	Rando Oil Hd-32, 46
10. Union 76	XCeI AW 46 (200)

Note:
1. Do not use brake fluid.
2. All Lifts requiring oil by Beacon will be supplied with AW-46(200) Hydraulic oil.

LIMIT SWITCH ADJUSTMENTS

At times it is necessary to change the vertical travel so that the platform top levels with a surrounding structure. Adjusting the Limit Switch arm position will vary the vertical travel, from between 40 to 60 inches, in height.
The limit switch arm position is adjusted by utilizing a 3mm Allen wrench.
Loosen the screw on the arm, using the 3 mm Allen wrench, while maintaining the arm in a fixed position. DO NOT allow the arm to turn while loosening the screw. Loosen the screw sufficiently so that the roller arm may be adjusted, maintaining the rotator screw in a fixed position.
DO NOT allow the arm to turn while adjusting the screw, or re-tightening the screw.
The roller arm effective length may also be adjusted by utilizing the same 3mm Allen wrench. At this point, be sure the Limit Switch arm (head-arm) is aligned with the activator welded on the leg of your BSLD.
The Limit Switch Assembly is shown in Figure 5, Page 15.

HYDRAULIC SECTION

When the operator wants to raise the platform, he or she presses the “UP” button. This starts the electric motor, which runs the hydraulic pump. Oil from the reservoir is sucked in through the suction filter and into the pump. The pump delivers the pressurized oil into the valve block. The oil flows through the check valve before entering the cylinders. The function of the check valve is to allow the oil to flow in one direction i.e. towards the cylinders. It also prevents the flow of oil back into the pump circuit when the pump stops running. This holds the oil in the cylinders and maintains the desired elevation.
If the load is excessive, and the "UP" button is still pressed, pressure will build up in the circuit between the pump and the cylinders. This forces the "ball" or "poppet" in the relief valve to unseat and the pump output returns into the reservoir through the return pipe.

When the operator desires to lower the lift, he or she presses the “DOWN” button. This energizes the down solenoid valve. The poppet in the solenoid valve is unseated and oil now returns from the cylinders through the flow control valve, the solenoid valve, the pressure-compensated spool valve, to the oil return pipe, and into the reservoir. The flow control valve controls the down speed of the lift. The pressure-compensated spool valve ensures that lowering speeds are nearly constant, regardless of load.

Releasing the “DOWN” button will de-energize the solenoid, closing the valve poppet. This prevents the oil from returning to the reservoir and the cylinders will stop retracting. The lift is now maintained at that particular elevation.

A flow limiter is installed at the base of each cylinder. In the event of a hydraulic hose failure, the platform lowers at a fast rate. As soon as the descent speed exceeds the preset speed, the flow limiter will shut off the oil flow and the platform will come down at a very slow speed until pressure is reapplied. This safety feature reduces the possibility of accidental personal injury or damage to the lift.

A complete Hydraulic Schematic is shown in Figure 6a & Figure 6b, Page 16 shows a sectional view of a typical hydraulic cylinder used on a Scissor Dock Leveler series lift.

The standard Hose Layout and Hydraulic Assemblies are shown in Figure 21, Page 31.

FIGURE 5: TYPICAL LIMIT SWITCH ARRANGEMENT

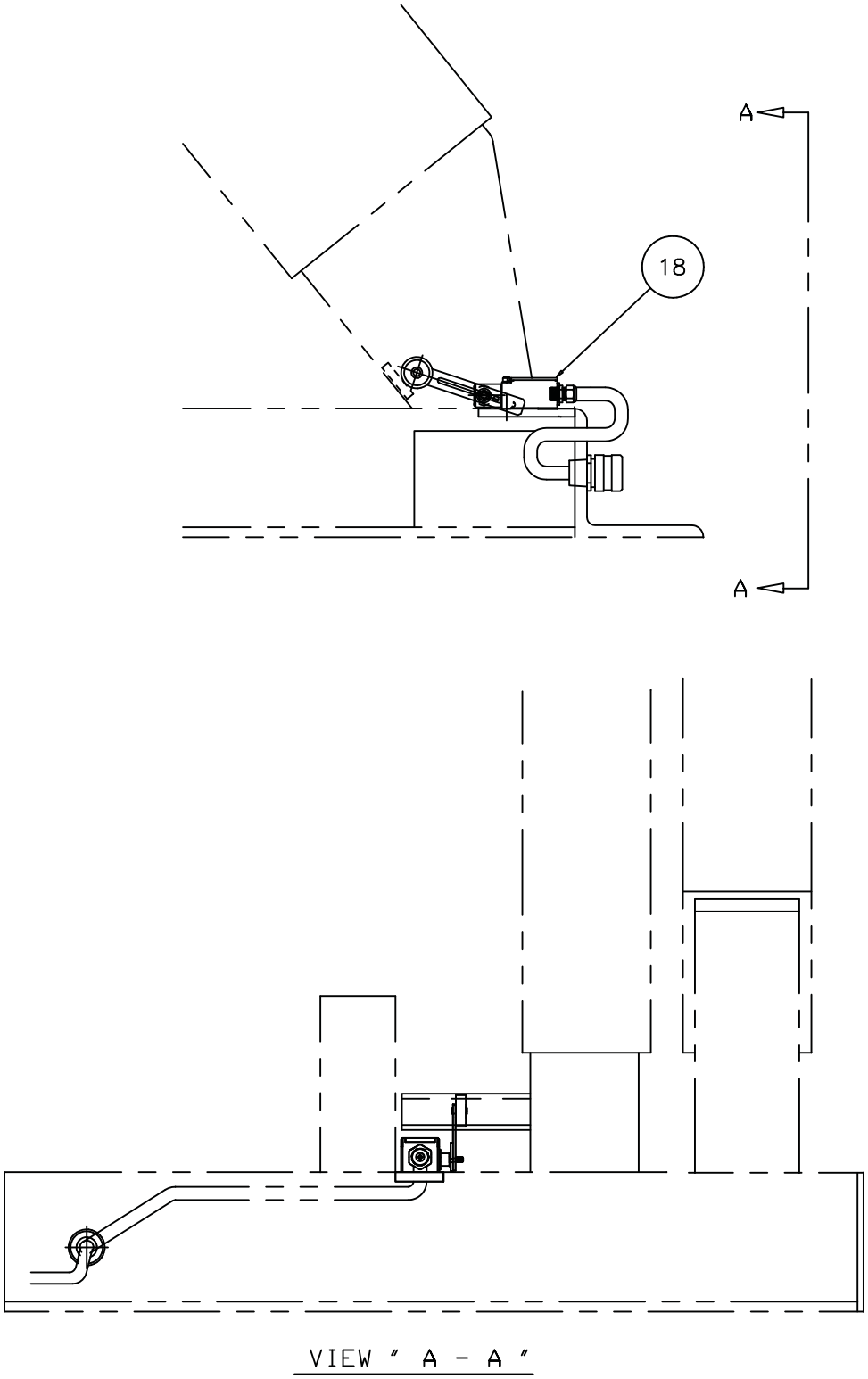
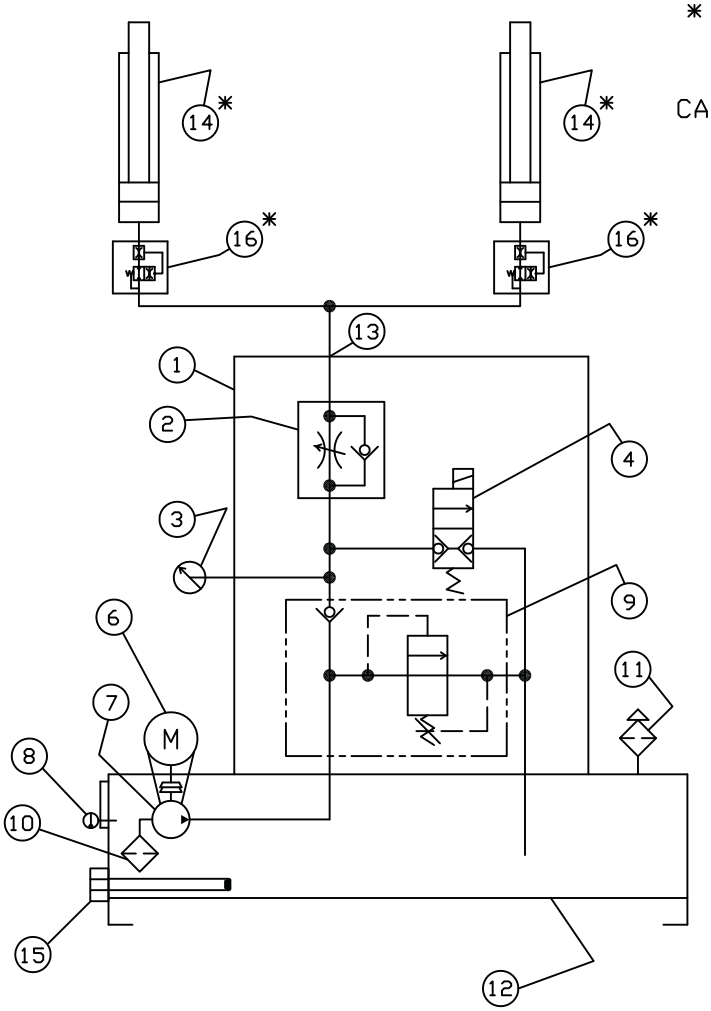


FIGURE 6A: HYDRAULIC CIRCUIT STANDARD SCISSOR DOCK LEVELER



* QUANTITY MAY BE 1 THROUGH 4, DEPENDING ON CAPACITY AND MODEL.

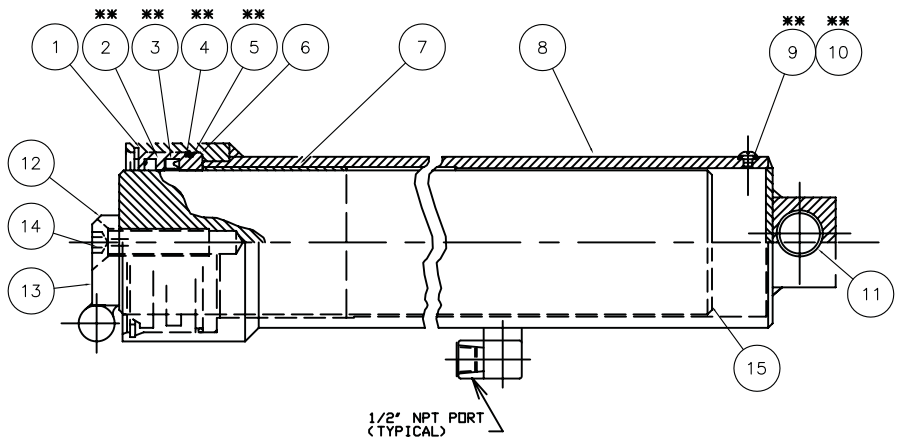
KEY:

1- VALVE BLOCK
2- DOWN FLOW CONTROL
3- PRESSURE GAUGE
4- SOLENOID VALVE
5- NOT USED
6- ELECTRIC MOTOR
7- HYDRAULIC PUMP
8- SIDE GLASS WITH THERMOMETER
9- RELIEF VALVE
10- SUCTION STRAINER
11- FILLER BREATHER
12- HYDRAULIC TANK
13- OUTLET PORT
14- HYDRAULIC CYLINDER (S)
15- DRAIN PLUG 1/2" (STANDARD)
OIL INMERSION HEATER (OPTIONAL)
16- FLOW LIMITER VALVE (S)

FIGURE 6b: SECTIONAL VIEW OF HYDRAULIC CYLINDER

KEY :

1) INT. RETAINING RING
2) ROD WIPER
3) ROD SEAL
4) BACK UP RING
5) "O" RING
6) GLAND
7) BEARING
8) BARREL ASSEMBLY
9) DYNA SEAL
10) HEX SOC. BUTTON HEAD MACHINE SCREW 1/4"-20 UNC X 3/8" LG.
11) BEARING
12) THRUST SHOE WELDMENT
13) SPRING PIN
14) SOC. FLAT HEAD MACH. SCREW (GRADE 8) 3/4"-10 UNC X 2 1/2" LG.
15) PISTON ROD
16) REPAIR KIT



NOTE:
** CYLINDER REPAIR KIT CONSIST OF ITEMS MARKED WITH AN ASTERISK (*)

ELECTRICAL SECTION

The standard power unit is pre-wired according to customer request. For supplied power other than the original configuration, the power unit MUST be re-wired according to the Manufacturer's instruction sheet (see Figure 15-16, Page 22). Service and Field wiring is the sole responsibility of the end user. Beacon assumes no responsibility for incorrect installation or service wiring. The wiring diagrams for the standard, and the more common options, are shown in Figures 7 – 14, Pages 18 – 21.

Install the power lines to conform to National Electrical Code (NEC) 480-22 and applicable local codes.

NOTES:

1- The standard **5 HP** power unit is usable at **208VAC/3PH/60Hz**.

2- Figure 15-16, Page 22 shows the correct motor wiring diagrams for the standard 5 HP electric motors, including information on reversing the rotation of 3PH motor.

Given below are the various electrical components used on the Lift. A brief description of each is also given.

1. Standard Control Box for 5 HP & 7 ½ HP Power Units:

Specifications:
Magnetic Starter - 24VAC Coil, size 1
Thermal overload -3 pole
Transformer - 50KVA
Primary: 240V/480V/60Hz
Secondary: 24VAC
Fuse in Secondary Circuit – 2.5 A.
Reset - Automatic or Manual
Enclosure - NEMA 12 with 5 knockouts (Motor, Solenoid, Limit Switch, Power and Push Button Control).
Overall Box Dimensions: 12 in. x 10 in. x 6 in.

2. Standard 5 & 7 ½ HP Electric Motor Specifications:

ITEM	PART NUMBER	DESCRIPTION	FULL LOAD CURRENT (Amperes) (VOLTAGE/PHASE)
1	ELC-126-40	5HP, 230V/1PH/60Hz, 1725 RPM	25 (230/1)
2	ELC-126-39	5 HP, 230V/460V/3PH/60Hz, 1725 RPM	13.2 (230/3) 6.6 (460/3)
3	ELC-126-15	7 ½ HP, 230V/460V/3PH/60Hz, 1725 RPM	20 (230/3) 10 (460/3)

3. Standard Pendant Push Button Control Station:

The standard Control Station supplied with a Scissor Dock Leveler series lift is a NEMA 4 weather proof pendant type, with "UP" and "DN" momentary contact, "dead-man" type operation. The pendant station is also mechanically interlocked, so that operation of one button locks-out operation of the other.

FIGURE 7: ELECTRICAL CIRCUT

230 V /460 V 3 PH / 60 Hz
STANDARD SCISSOR DOCK LEVELER

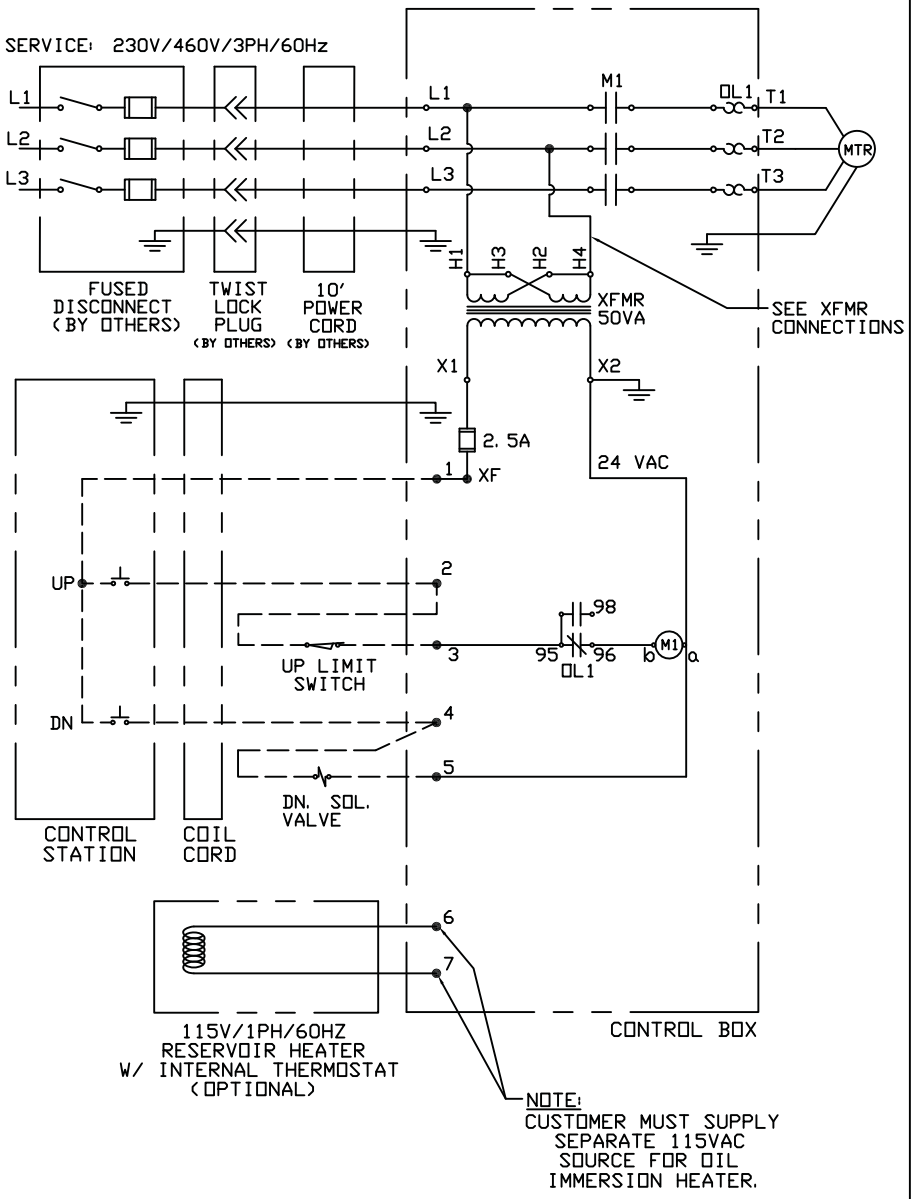


FIGURE 8: ELECTRICAL CIRCUT

230 V / 1 PH / 60 Hz
STANDARD SCISSOR DOCK LEVELER

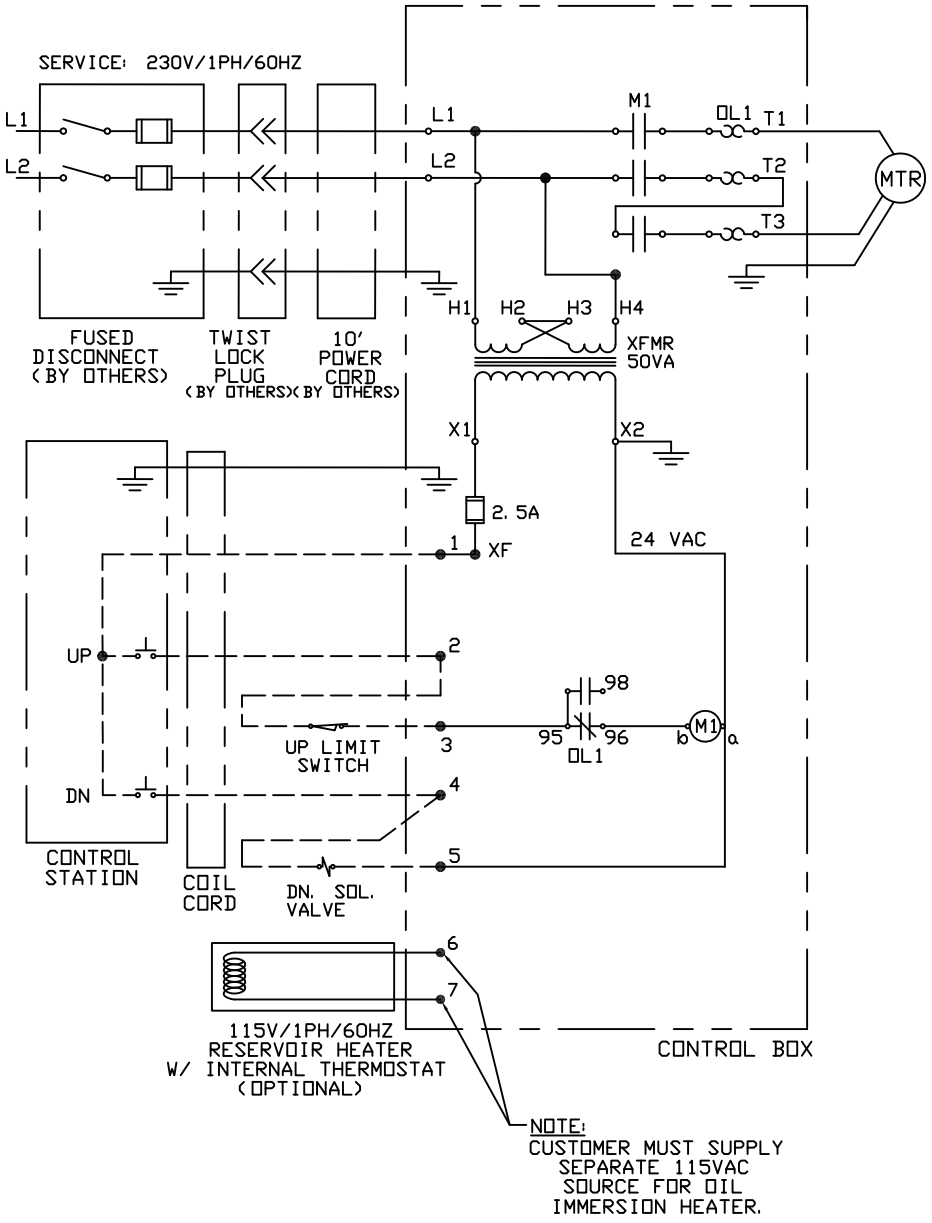


FIGURE 9: ELECTRICAL CIRCUIT

230V / 3 PH / 60Hz WITH OPTIONAL
IMMERSION HEATER

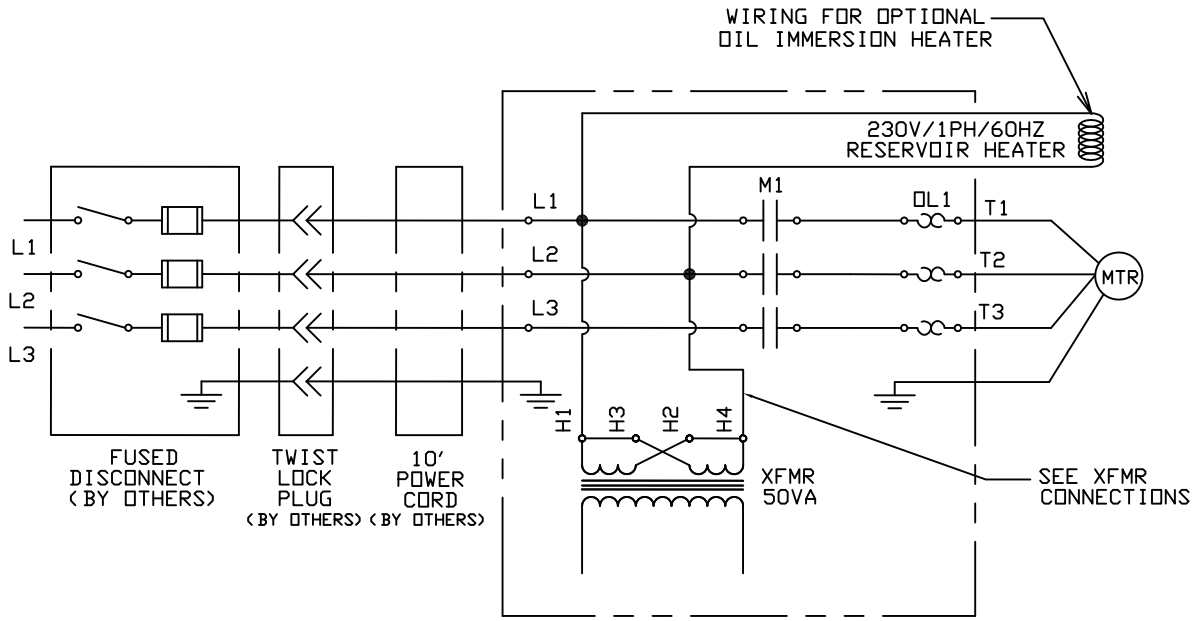


FIGURE 10: ELECTRICAL CIRCUIT

460V / 3 PH / 60 Hz WITH OPTIONAL
IMMERSION HEATER

OPTIONAL HEATER FOR: 460V/3PH/60Hz

NOTE: CUSTOMER MUST SUPPLY SEPARATE NEUTRAL CONDUCTOR

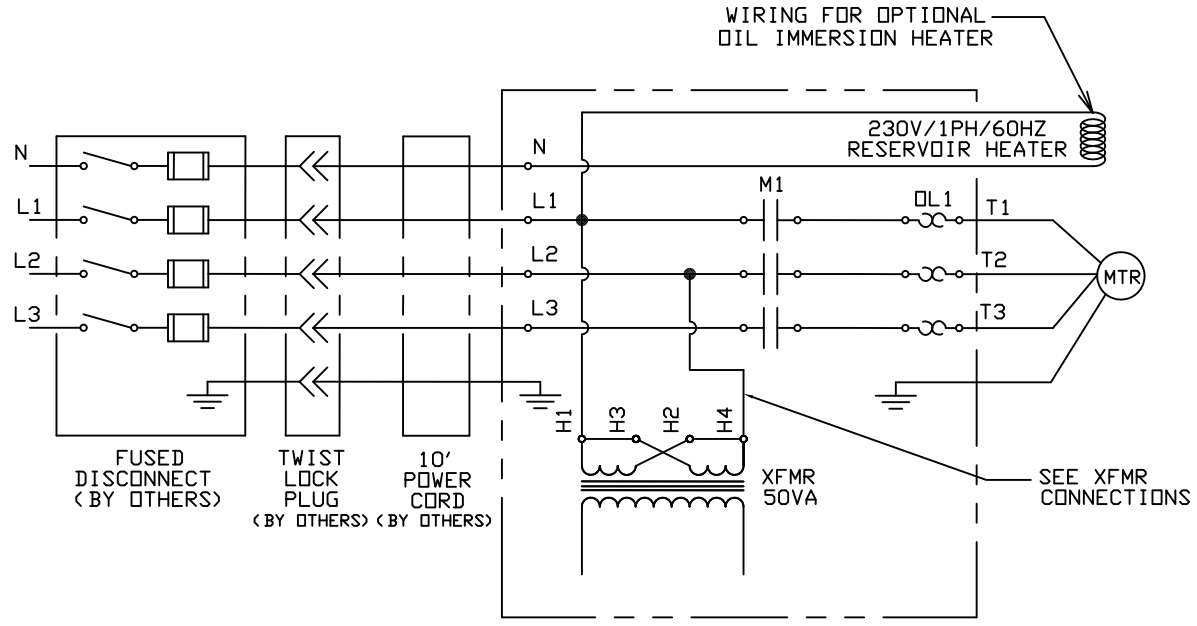


FIGURE 11: ELECTRICAL CIRCUIT

230V / 460V / 3 PH / 60 Hz

STANDARD SCISSOR DOCK LEVELER

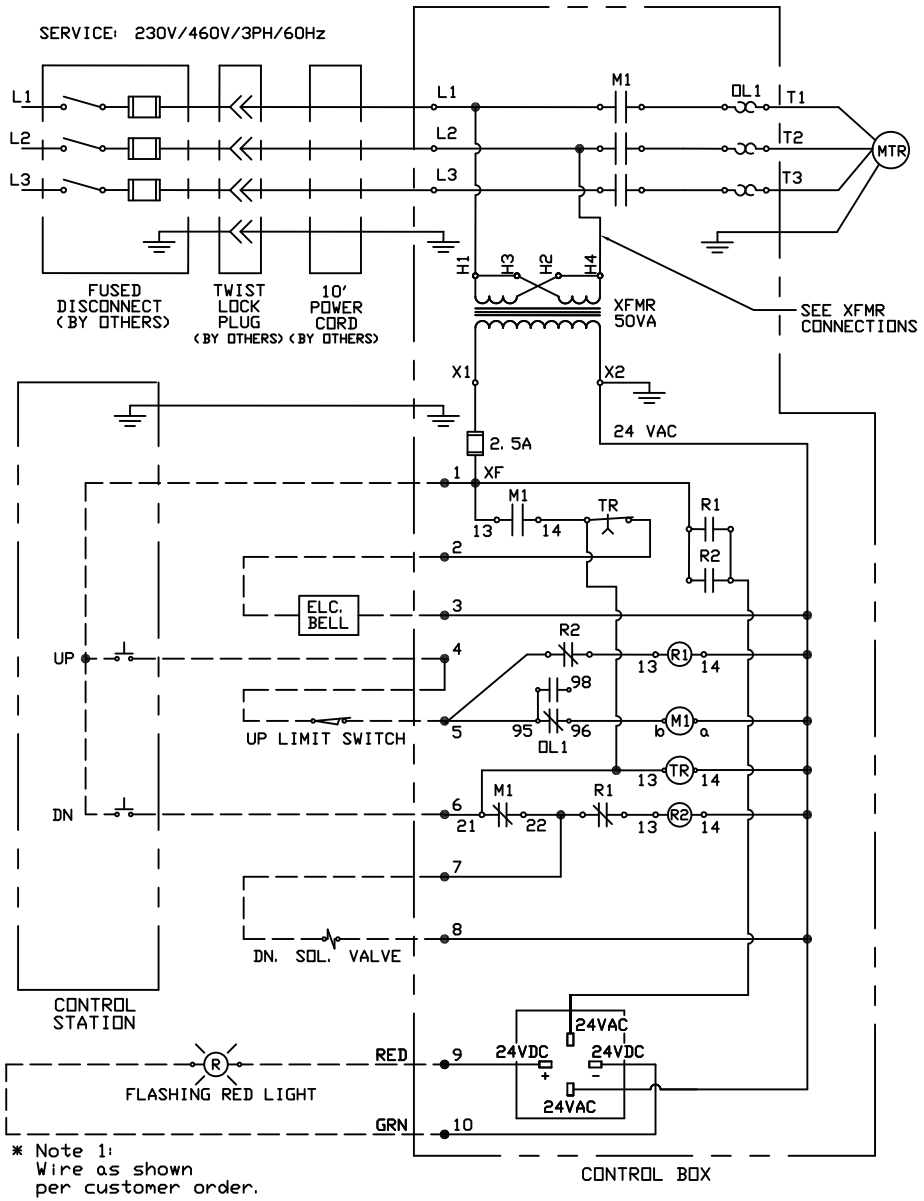


FIGURE 12: ELECTRICAL CIRCUIT

230V / 1PH / 60 Hz

STANDARD SCISSOR DOCK LEVELER

WITH POSTAL OPTIONS

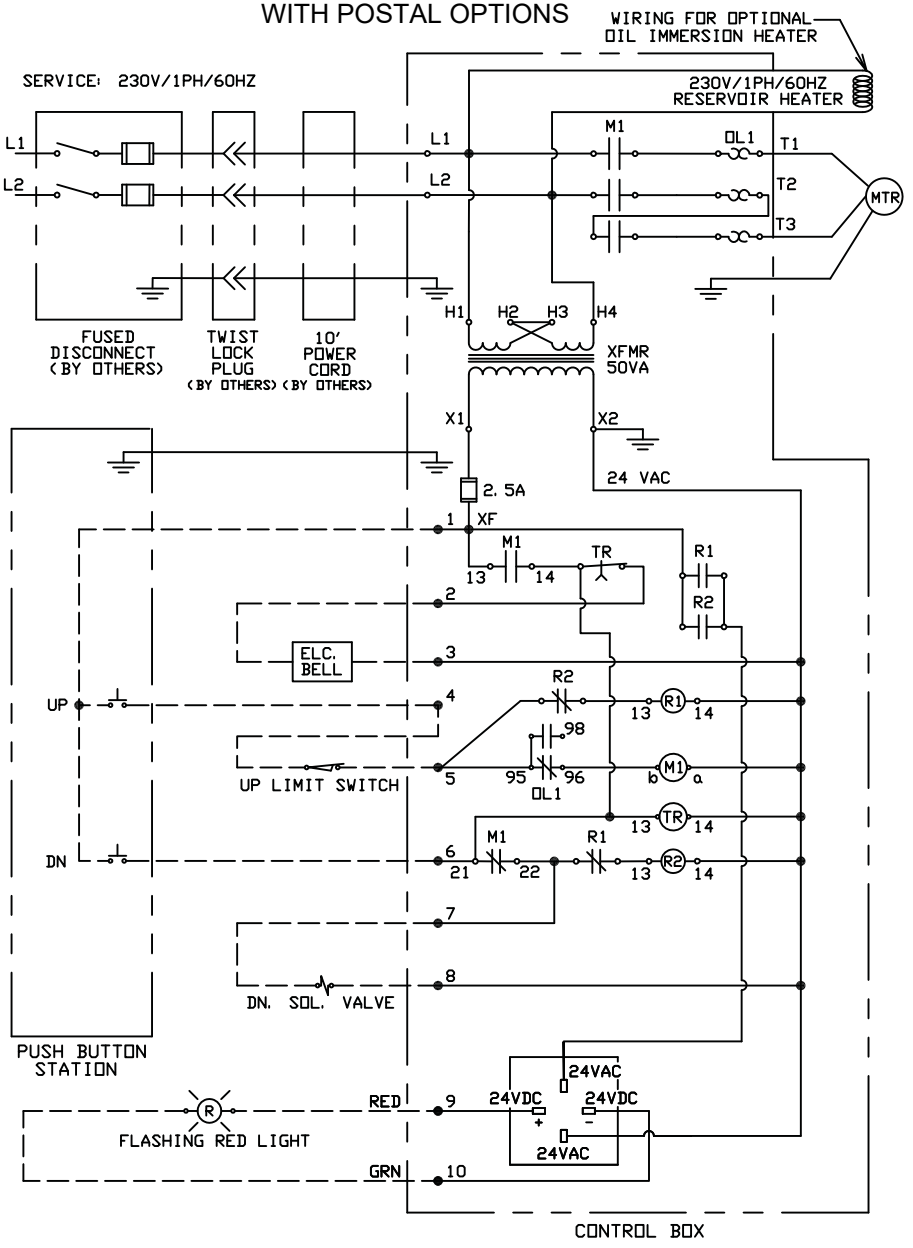


FIGURE 13: ELECTRICAL CIRCUIT

230V / 460V / 3PH / 60 Hz
STANDARD SCISSOR DOCK LEVELER
WITH TAPE SWITCHES

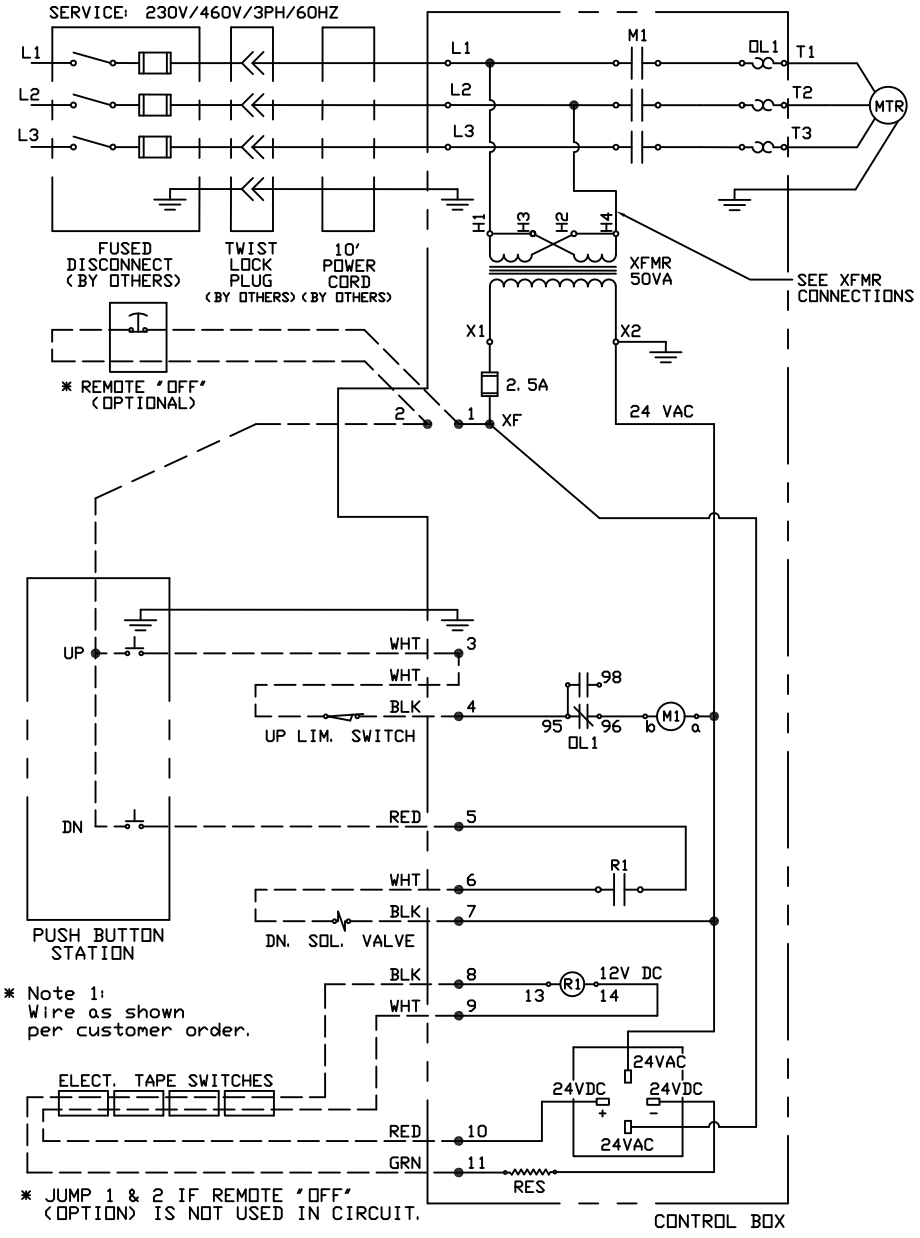


FIGURE 14: ELECTRICAL CIRCUIT

230V / 1PH / 60 Hz
STANDARD SCISSOR DOCK LEVELER
WITH TAPE SWITCHES

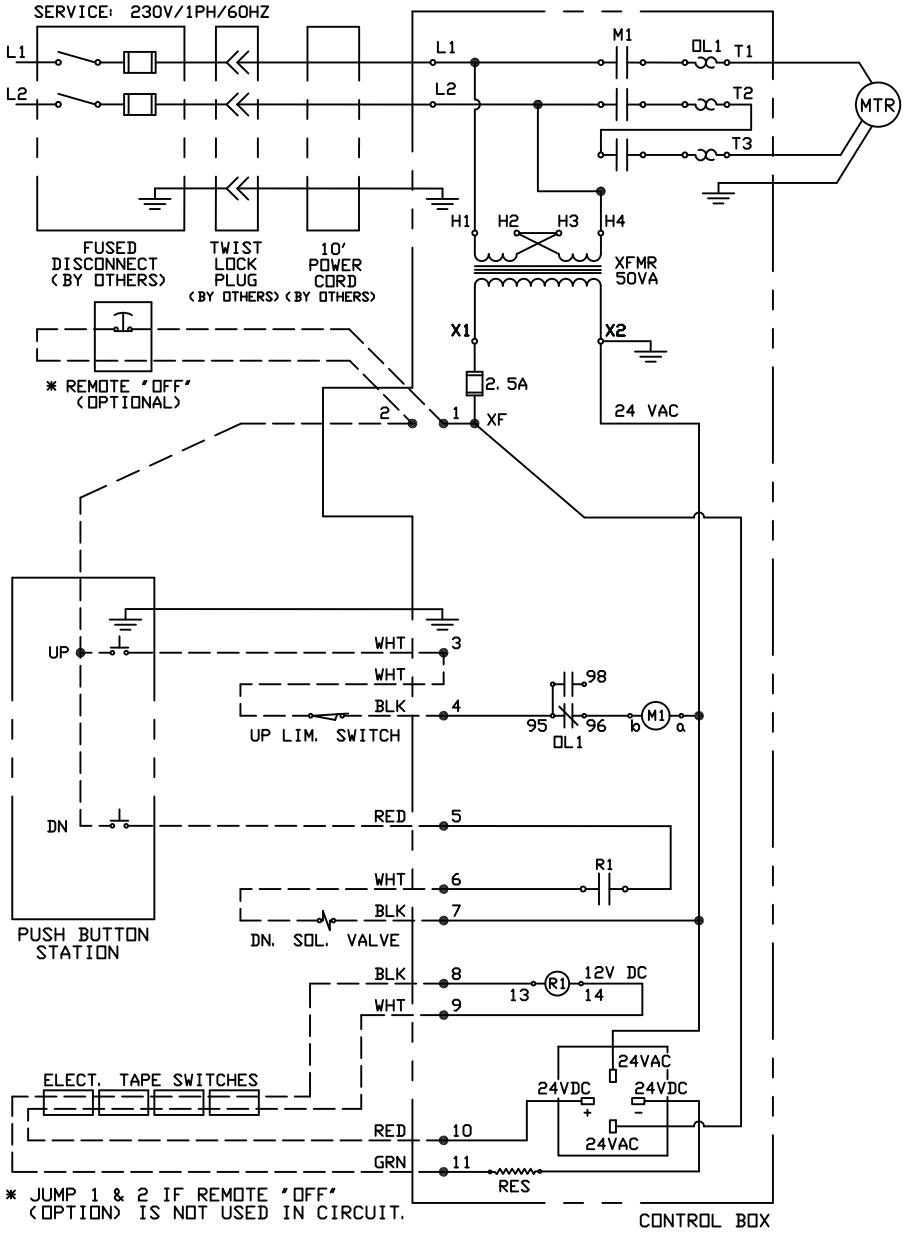
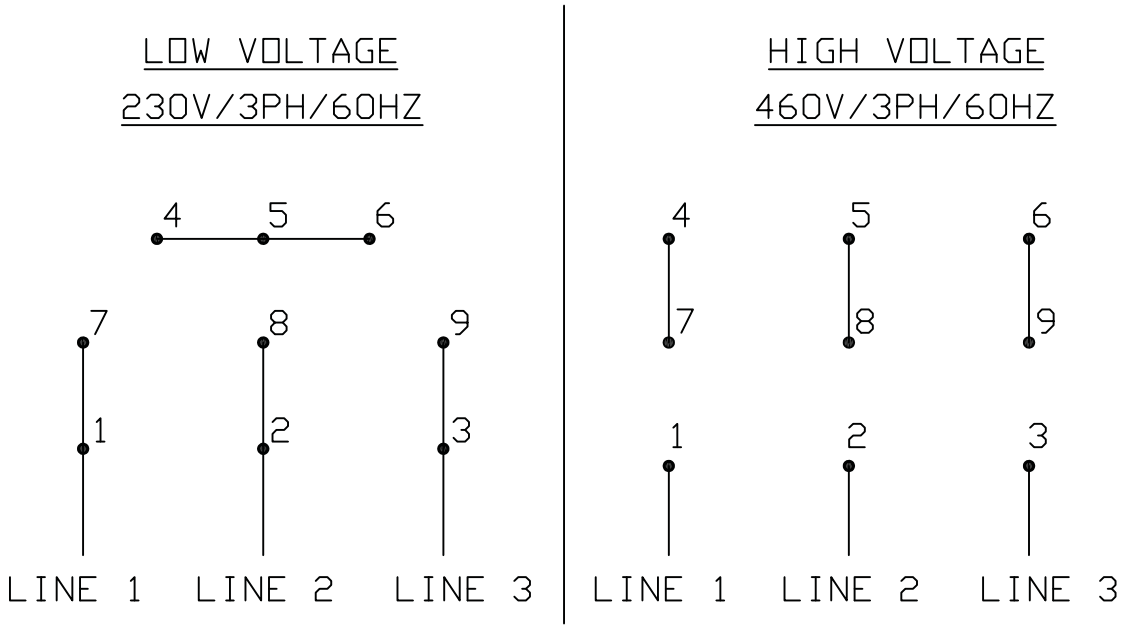


FIGURE 15: MOTOR WIRING DIAGRAMS

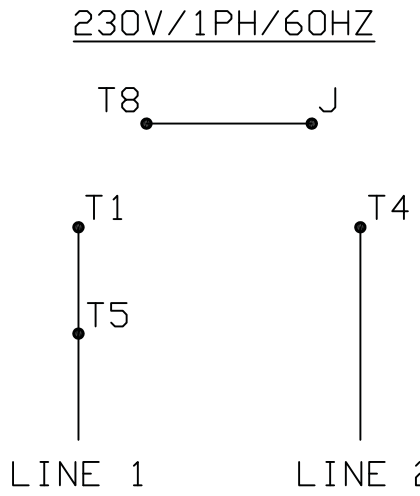
5 HP 230-460V / 3 PH / 60 Hz



NOTE: INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.

FIGURE 16: MOTOR WIRING DIAGRAM

5 HP 230V / 1PH / 60 Hz



NOTE: TO REVERSE ROTATION, SEE WIRING DIAGRAM ON MOTOR.

FIGURE 17: TYPICAL SCISSOR DOCK LEVELER EXPLODED VIEW

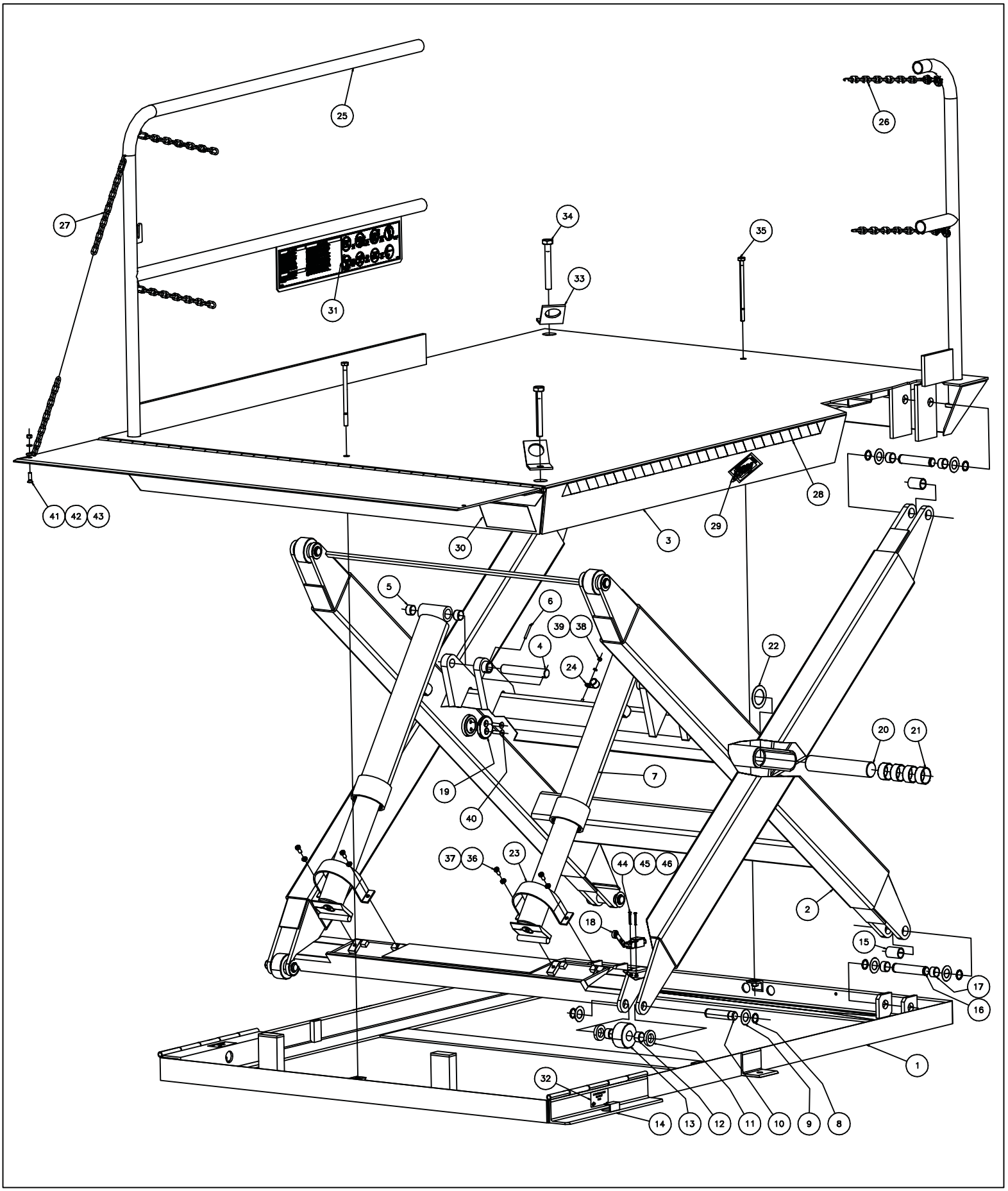


TABLE 1: Scissor Dock Leveler PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QUANTITY REQUIRED				NOTES
			5-8000#	10-12000#	15-25000#	25-30000#	
1	BY MODEL	BASE WELDMENT	1	1	1	1	
2	BY MODEL	SCISSOR LEG ASSEMBLY	1	1	1	1	
3	BY MODEL	PLATFORM WELDMENT	1	1	1	1	
4	BSLD-924	CYLINDER MOUNTING PIN	2*	2	2	3	*3 REQ'D ON 8000# MODELS
5	BB7-1816	BEARING, CYLINDER SLEEVE	4*	4	-	-	*6 REQ'D ON 8000# MODELS
	BB7-2416	BEARING, CYLINDER SLEEVE	-	-	4	6	
6	MS16562-60	PIN, SLOTTED SPRING	2*	2	2	3	*3 REQ'D ON 8000# MODELS
7	CYL-A5210-1875	CYLINDER ASS'Y	2*	-	-	-	*3 REQ'D ON 8000# MODELS
	CYL-A6401-1575	CYLINDER ASS'Y, 88"L BASE	-	2	-	-	
	CYL-A6401-2000	CYLINDER ASS'Y, 112"L BASE	-	2	-	-	
	CYL-A8002-2000	CYLINDER ASS'Y	-	-	2	3	
8	BHLT-972	RETAINING RING, 1 1/8" I.D.	16	16	-	-	
	BHLT-973	RETAINING RING, 1 1/2" I.D.	-	-	16	16	
9	BHLT-970	WASHER, THRUST, 1 1/8" I.D.	16	16	-	-	
	BHLT-972	WASHER, THRUST, 1 1/2" I.D.	-	-	16	16	
10	BSLD-913	PIN, UPPER ROLLER	2	2	-	-	
	BSLD-920	PIN, LOWER ROLLER	2	2	-	-	
	BSLD-9002	PIN, UPPER ROLLER	-	-	2	2	
	BSLD-9003	PIN, LOWER ROLLER	-	-	2	2	
11	BSLD-996	SPACER, LEG ROLLER	8	-	-	-	
	BHLD-997	SPACER, LEG ROLLER	8*	-	-	-	USED ON 8000# MODEL
12	BB7-1816	BEARING, ROLLER	8	8	-	-	
	BB7-2416	BEARING, ROLLER	-	-	8	8	
13	BHLD-932	ROLLER	4	4	-	-	
	BSLD-9101	ROLLER	-	-	4	4	
14	BHLD-279	MAINTENANCE BAR, HINGED	2	2	-	-	
	BSLD-2501	MAINTENANCE BAR, CHAINED	-	-	2	2	
15	BHLD-984, BHLD-989	SPACER, CLEVIS	4*	4*	-	-	*BHLD-989 USED ON 8-12000#
	BSLD-9504	SPACER, CLEVIS	-	-	4	4	
16	BHLD-910	PIN, CLEVIS	4	4	-	-	
	BSLD-9004	PIN, CLEVIS	-	-	4	4	
17	BB7-1812	BEARING, CLEVIS	8	8	-	-	
	BB7-2416	BEARING, CLEVIS	-	-	8	8	
18	ELC-109-09	LIMIT SWITCH	1	1	1	1	
19	BHLD-2158	END CAP	2	2	-	-	
	BSLD-3555	END CAP	-	-	2	2	
20	BHLD-923	CENTER AXLE PIN	2	2	-	-	
	BSLD-3558	CENTER AXLE PIN	-	-	2	2	
21	BB7-3216	BEARING, AXLE	8	8	-	-	
	BB7-4832	BEARING, AXLE	-	-	8	8	

TABLE 1, cont'd: Scissor Dock Leveler PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QUANTITY REQUIRED				NOTES
			5-8000#	10-12000#	15-25000#	25-30000#	
22	BHLD-990	WASHER, AXLE	2	2	-	-	
	BSLD-9502	WASHER, AXLE	-	-	2	2	
23	BHLD-2115	CYLINDER ROD STRAP	2*	-	-	-	*3 REQ'D ON 8000# MODELS
	BHLD-2117	CYLINDER ROD STRAP	-	2	-	-	
	BSLD-3550	CYLINDER ROD BAR	-	-	2	3	
24	BHLD-988	HOSE CLIP	1	1	1	1	
25	BHLD-450-XX	HANDRAIL ASS'Y (XX = FT.)	2	2	2	2	*4 REQ'D (PLATFORM >12'L)
26	BHLD-499-X	CHAIN ASSEMBLY (X = FT.)	4	4	4	4	
27	CHN-192-ZZZZ	BRIDGE PLATE CHAIN ASS'Y	2	2	2	2	ZZZZ = LENGTH IN FEET/10
28	BHLD-ST-2	SAFETY STRIPE	AR	AR	AR	AR	AS REQUIRED
29	L-42	Beacon LOGO	2	2	2	2	
30	L-72	SERIAL # NAMEPLATE	1	1	1	1	
31	L-282	DECAL, GENERAL WARNING	2	2	2	2	
	L-97	DECAL, LOAD CAPACITY	2	2	2	2	
32	L-121	DECAL, "MAINTENANCE BAR"	4	4	4	4	
33	BHLD-994	LIFTING TAB	4	4	-	-	FOR SHIPPING ONLY
	BSLD-9505	LIFTING TAB	-	-	4	4	
34	MS35291-201	BOLT, LIFTING TAB	4	4	4	4	3/4"-10x5", SHIPPING ONLY
35	MS35291-129	SHIPPING BOLT, 8" L.H. MODELS	2*	-	-	-	1/2"-13x6", *BY MODEL
	HDW-P7-0816	SHIPPING BOLT, 10" L.H. MODELS	2*	2*	-	-	1/2"-13x8", *BY MODEL
	HDW-P7-0820	SHIPPING BOLT, 12" L.H. MODELS	2*	2*	-	-	1/2"-13x10", *BY MODEL
	HDW-P7-0824	SHIPPING BOLT, 14" L.H. MODELS	-	2*	-	-	1/2"-13x12", *BY MODEL
	HDW-P7-0828	SHIPPING BOLT, 16" L.H. MODELS	-	2*	-	-	1/2"-13x14", *BY MODEL
	999-5022	FULLY THREADED ROD, 12-20"	-	-	2	2	3/4"-10 UNC
	MS35690-1202	NUT, HEX	-	-	2	2	3/4"-10 UNC
36	MS35291-58	SCREW, HEX HEAD	4*	4	-	-	3/8"-16x3/4" *(8000# = 6)
	MS35291-60	SCREW, HEX HEAD	-	-	4	6	3/8"-16x1"
37	MS35338-46	WASHER, LOCK	4*	4	4	6	3/8" *(8000# = 6)
38	MS35690-402	NUT, HEX	1	1	1	1	1/4"-20
39	MS35338-44	WASHER, LOCK	1	1	1	1	1/4"
40	MS24667-54	SCREW, HEX SOCKET F.H.	4	4	-	-	3/8"-16x1 1/2
	MS24667-76	SCREW, HEX SOCKET F.H.	-	-	4	4	1/2"-13x1 1/2"
41	MS35239-119	SCREW, C'SUNK SLOTTED F.H.	2	2	2	2	3/8"-16x1 1/4"
42	MS27183-13	WASHER, FLAT	2	2	2	2	3/8"
43	MS35690-602	HEX NUT	2	2	2	2	3/8"-16
44	MS35223-53	SCREW, SLOTTED PAN HEAD	2	2	2	2	#8-32x1 1/2"
45	MS35338-42	WASHER, LOCK	2	2	2	2	#8
46	MS35649-282	NUT, HEX	2	2	2	2	#8-32

FIGURE 18: TYPICAL VALVE MANIFOLD ASSEMBLY

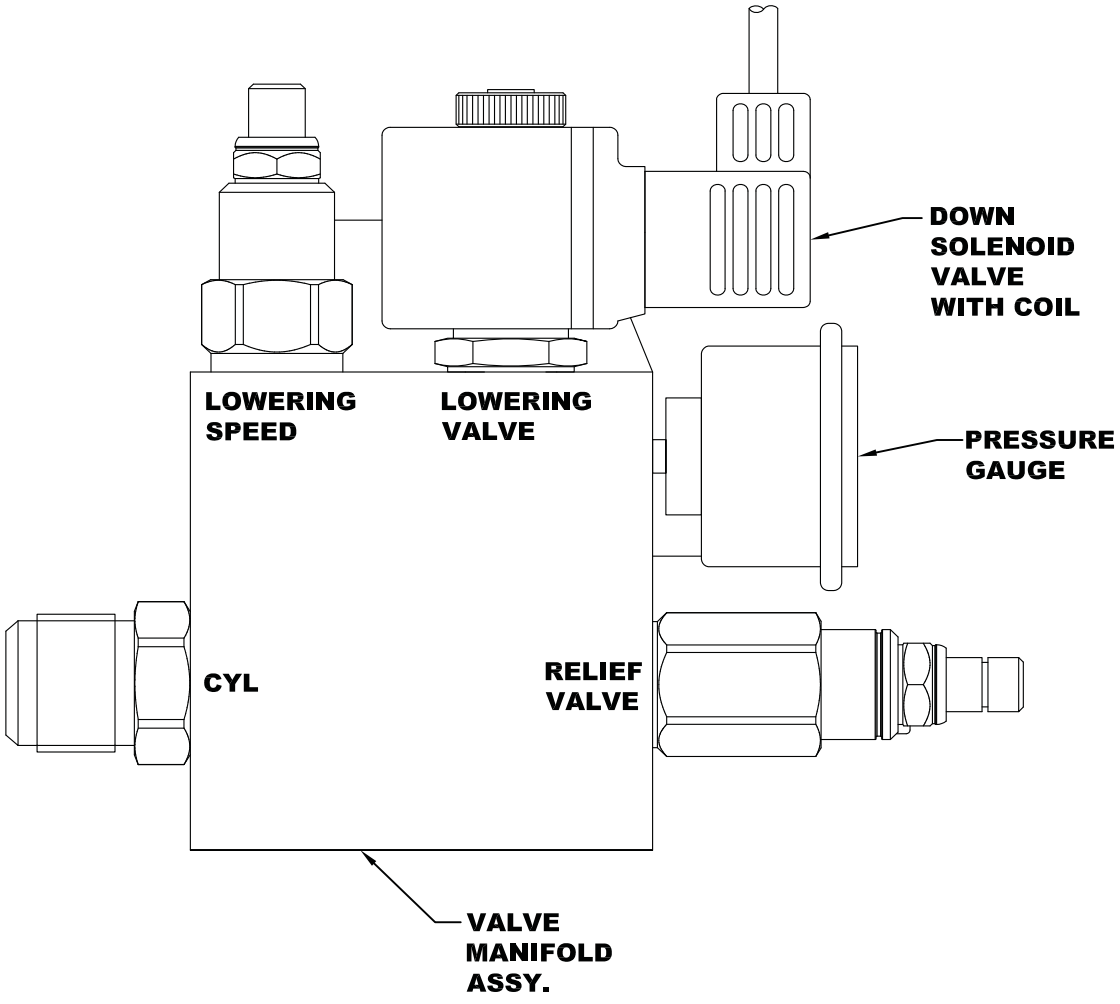


FIGURE 19a: TYPICAL REMOTE POWER UNIT

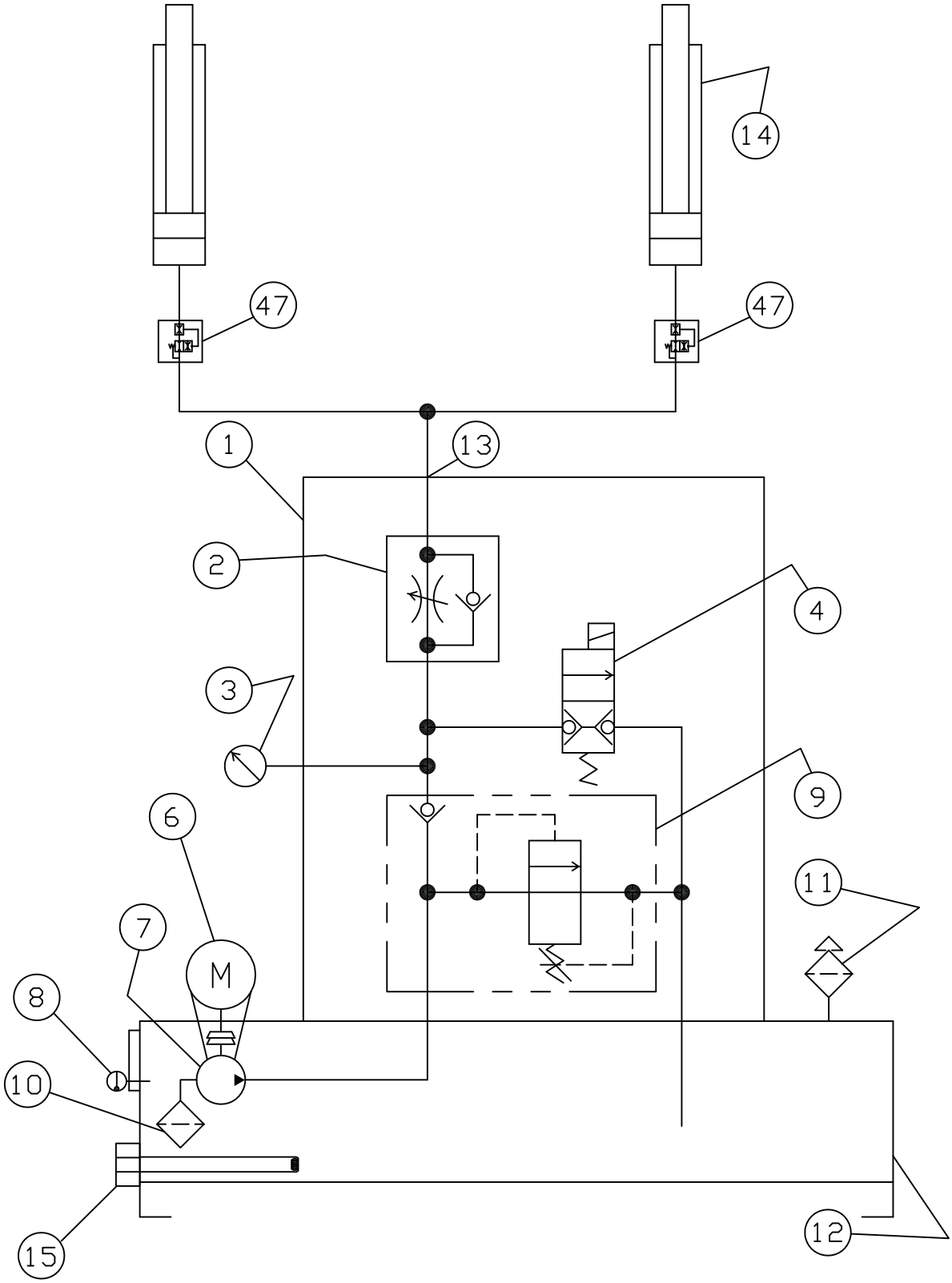


FIGURE 19b: TYPICAL REMOTE POWER UNIT

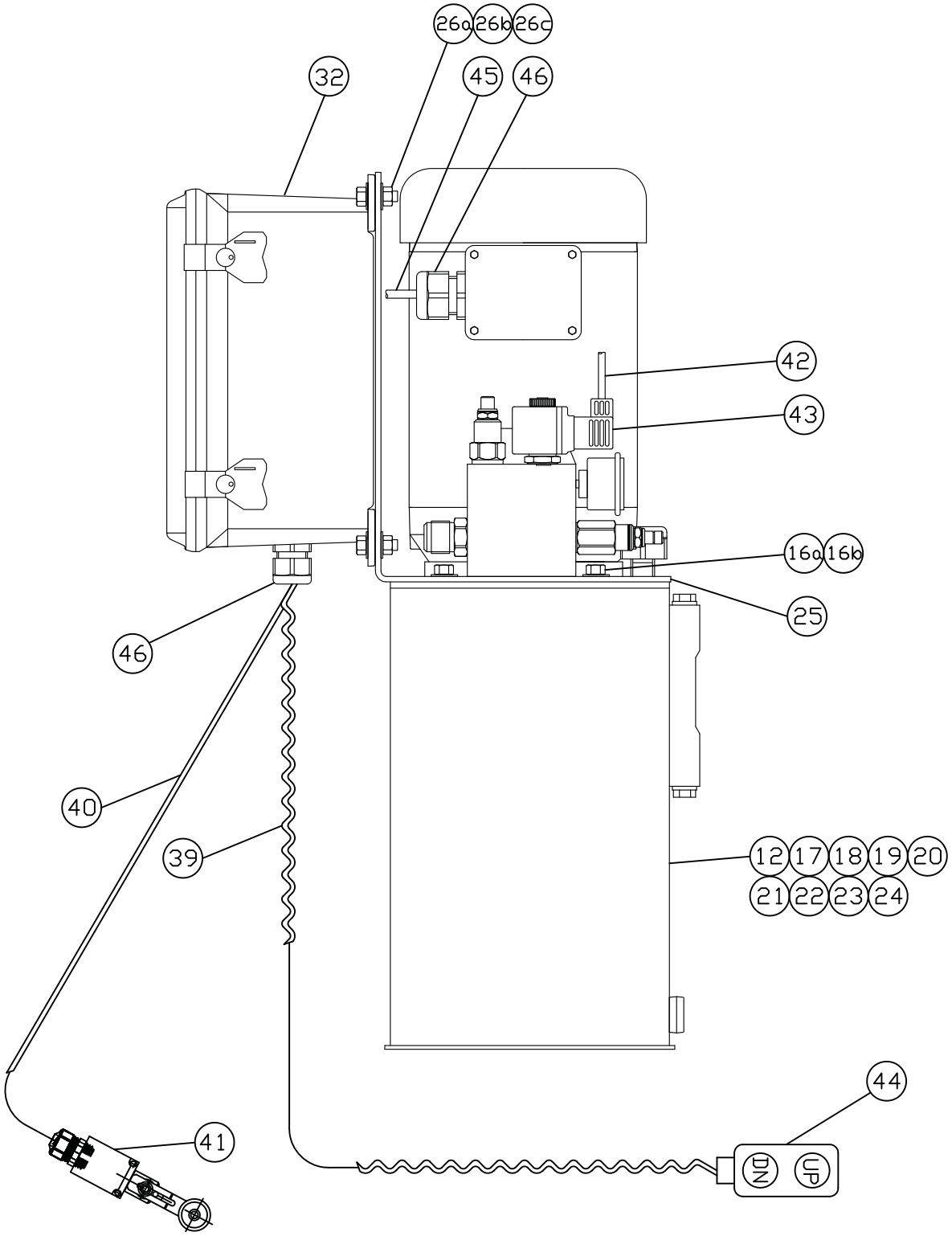


FIGURE 20: TYPICAL REMOTE POWER UNIT
CONTRL BOX ASSEMBLY

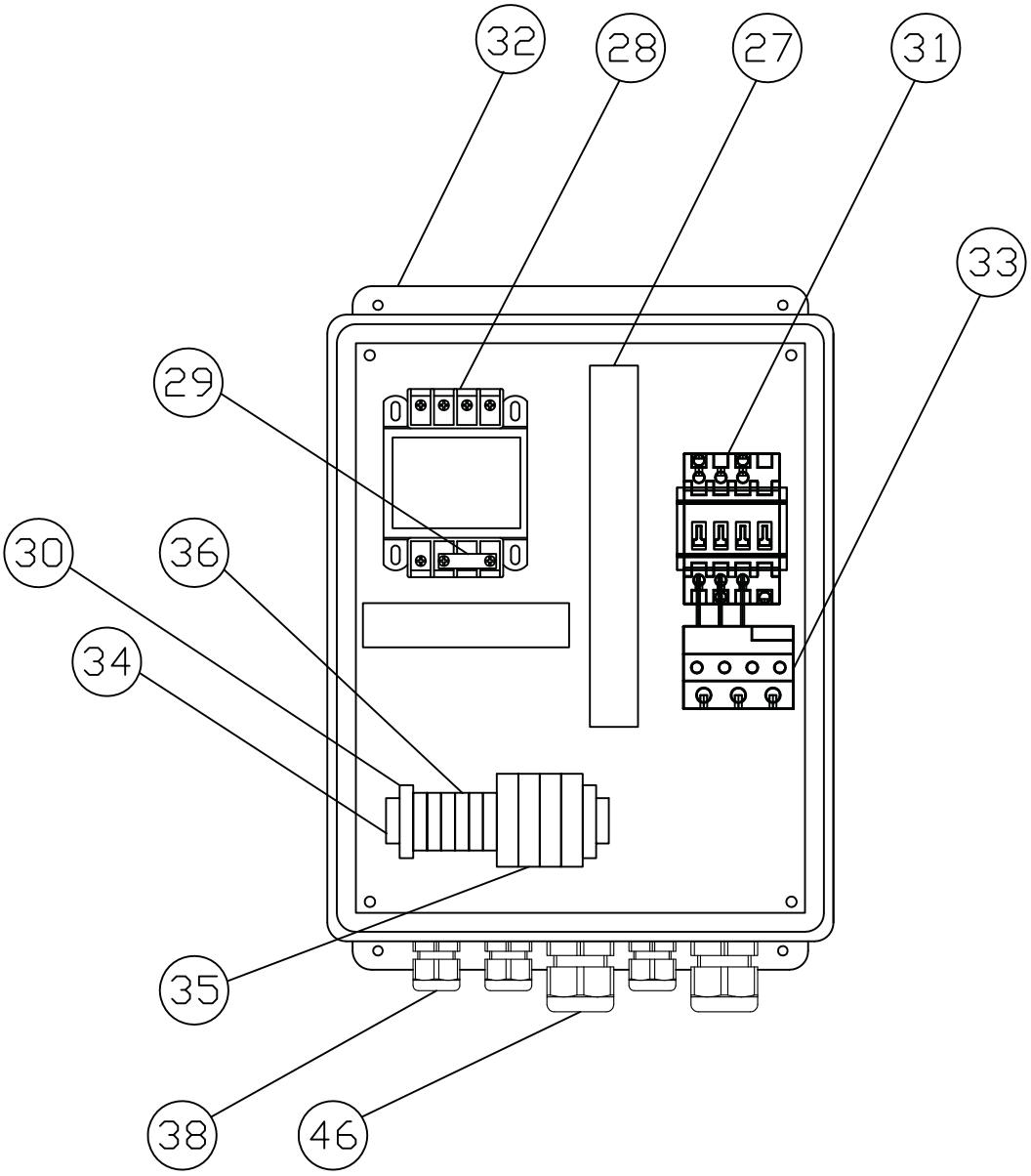


TABLE 2: STANDARD POWER UNIT PARTS LIST

ITEM	BEACON PART NUMBER	DESCRIPTION	QTY.
1	HYD-0603	VALVE BLOCK	1
2	HYD-0110	DOWN FLOW CONTROL	1
3	HYD-0059	PRESSURE GAUGE	1
4	HYD-0060	SOLENOID VALVE	1
5	*	NOT USED	*
6	ELC-126-39	ELECTRIC MOTOR - 5 H.P. / 3 PH.	1
	ELC-126-40	ELECTRIC MOTOR - 5 H.P. / 1 PH.	
7	HYD-0708	HYDRAULIC PUMP	1
8	HYD-0048	SIDE GLASS WITH THERMOMETER	1
9	HYD-0062	RELIEF VALVE	1
10	HYD-0051	SUCTION STRAINER	1
11	HYD-0046	FILLER BREATHER	1
12	HYD-0058	HYDRAULIC TANK	1
13	*	OUTLET PORT	1
14	BY MODEL	HYDRAULIC CYLINDER (S)	*
15	HDS-435-04	DRAIN PLUG 1/2" (STANDARD)	1
	ELC-133-04	OIL INMERSION HEATER (OPTIONAL)	
16a	MS35291-60	BOLT 3/8-16 x 1 HHCS	4
16b	MS27183-13	3/8 WASHER	4
17	HYD-0047	PUMP-MOTOR ADAPTER	1
18	HYD-0049	SUCTION ELBOW	1
19	HYD-0050	SUCTION PIPE	1
20	HYD-0052	SUCTION FITTING	1
21	HYD-0053	PRESSURE FITTING	1
22	HYD-0054	PUMP COUPLING 5/8" x 5/32"	1
23	HYD-0055	RUBBER SPIDER	1
24	HYD-0056	MOTOR COUPLING 7/6" x 3/16"	1
25	HYD-0057	CUSTOM COVER PLATE	1
26a	MS35291-33	BOLT 5/16-18 x 7/8	4
26b	MS35338-45	LOCK WASHER 5/16 dia.	4
26c	MS35690-502	5/16-18 HEX NUT	4
27	ELC-131-03	1 X 1 12 WIRING DUCT	3
28	ELC-116-14	XFMR 50VA 240V/480V PRI. / 24V SEC.	1
29	ELC-122-10	SHAWMUT 2-1/2 AMP MIDGET FUSE	1
30	ELC-119-08	TERM BLOCK END STOP	1
31	ELC-117-02	24VAC CONTACTOR	1
32	ELC-103-23	NEMA 12 ENCLOSURE	1
33	ELC-116-01	OVERLOAD 12-18 FLA (230V/3PH)	1
	ELC-118-02	OVERLOAD 7-11 FLA (460V/3PH)	
	ELC-116-06	OVERLOAD 24-34 FLA (230V/1PH)	
34	ELC-119-09	DIN RAIL	1
35	ELC-119-10	CDN TERMINAL BLOCK 22-12GA	3
36	ELC-119-11	CDN TERMINAL BLOCK 22-14AWG	6
37	ELC-119-12	GROUND TERMINAL 22-8 GA	1
38	ELC-105-14	PG13.5 ST RELIEF 3-9MM GRAY	4
39	ELC-112-03	COIL CORD SJO 18/3 - 20' FT	1
40	999-6004-240	CORD SJO 18/2 - 20' FT.	1
41	ELC-109-11	LIMIT SWITCH	1
42	999-6004-31	CORD SJO 18/2 - 31 IN	1
43	ELC-123-05	DIN CONNECTOR / RECTIFIER 24 VDC	1
44	ELC-107-02	PENDANT CONTROL STATION	1
45	999-6003-21	CORD SJO 10/3 - 21 IN.	1
46	ELC-105-10	NPT 3/4" ST RELIEF 7-16MM GRAY	3
47	BY MODEL	FLOW LIMITER VALVE	*

FIGURE 21: TYPICAL SCISSOR DOCK LEVELER HOSE LAYOUT

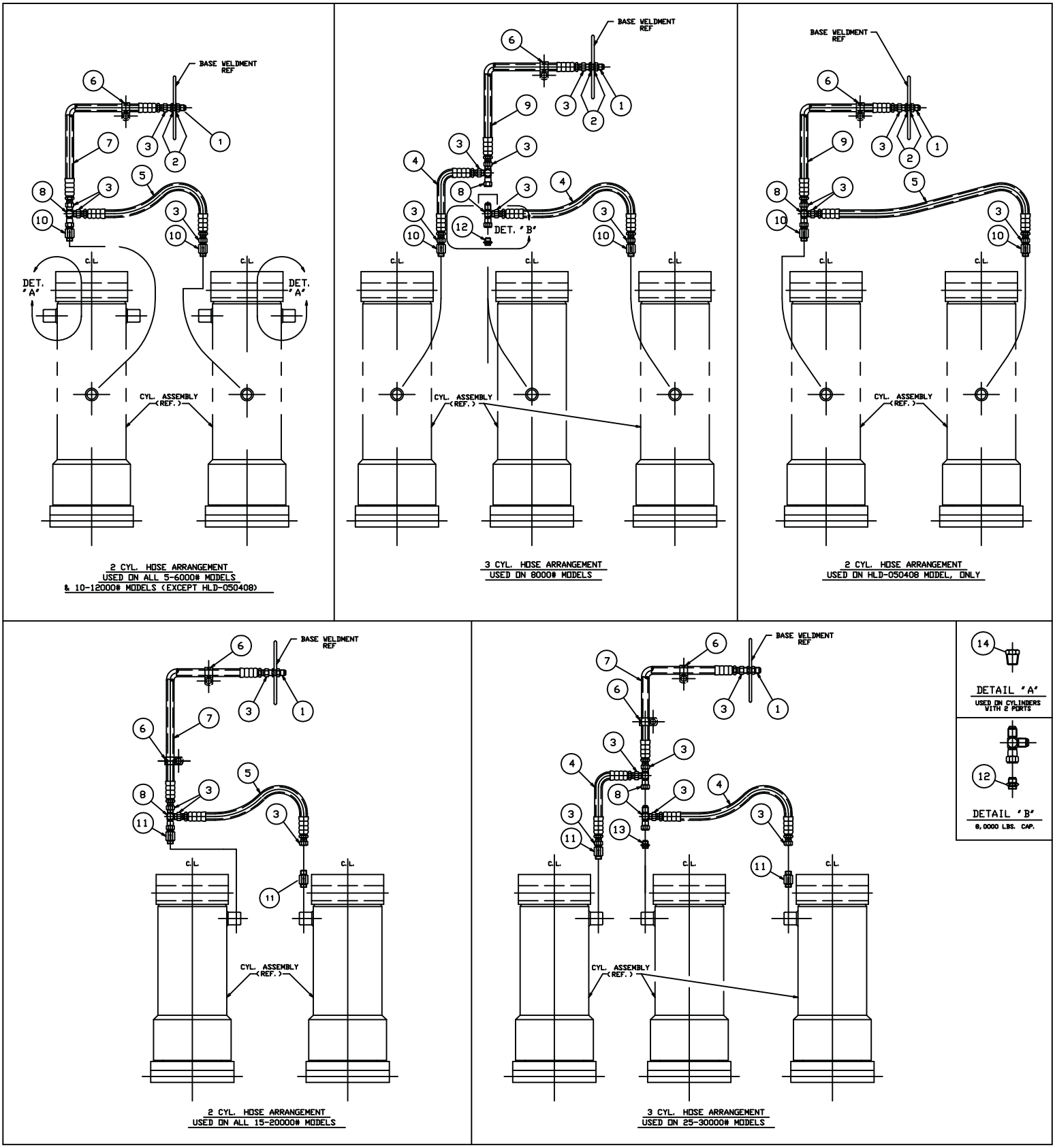


TABLE 3: HYDRAULIC ASSEMBLY PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QUANTITY REQUIRED				NOTES
			5-8000#	10-12000#	15-25000#	25-30000#	
1	HOS-466-08	BULKHEAD FITTING SAE #8-SAE #8	1	1	1	1	
2	MS27183-22	WASHER (FLAT) 11/16 I.D.	2	2	2	2	
3	HOS-312-06-08	#8 FEM SWIVEL - #6 HOSE	4*	4	4	6	*6 REQ'D ON 8000# MODELS
4	HOS-25106-XXXX	3/8 HOSE x XXXX LG.	2*	-	-	2	*8000# MODELS ONLY
5	HOS-25106-XXXX	3/8 HOSE x XXXX LG.	1*	1	1	-	*NOT USED ON 8000# MODELS
6	BSLD-988	HOSE CLAMP	1	1	2	2	
7	HOS-25106-XXXX	3/8 HOSE x XXXX LG.	1	1	1	1	
8	HOS-465-08	TEE, #8	1*	1	1	2	*2 REQ'D ON 8000# MODELS
9	HOS-25106-0650	3/8 HOSE x 65" LG.	1*	-	-	-	*BHLD-050-408 ONLY
10	BHLD-721-M	FLOW LIMITER VALVE 5.0 GPM	2	2	-	-	
11	HYD-101-08-10	FLOW LIMITER VALVE, 10.0 GPM	-	-	2	2	
12	HOS-405-15	ADAPTER 1/2-14 NPT/#8 SAE J514	1*	-	-	-	* 8000# MODELS ONLY
13	HOS-P413-10	#8 SAE "O" RING BOSS/#8 SAE J514	-	-	-	1	
14	HOS-435-04	PLUG, 1/2-14 NPT	2*	2*	-	-	*2-PORT CYL'S. ONLY

TROUBLE SHOOTING

Observation	Possible Cause	Remedy
1. Lift does not raise but pump is running	a. Motor rotation maybe reversed. or humming	a. Change motor rotation per notes in Electrical Section. If Lift has been running properly for some time, then it is possible that plant wiring has been changed and the motor is now running reversed.
	b. Motor may be single phasing, (humming).	b. Check wiring and overloads, fuses, etc., to ascertain that all 3 phase lines are present at the motor.
	c. Voltage at motor terminals may be too low to run pump at existing load.	c. Measure voltage at motor terminals, or as near as possible, while pump is running under load. If voltage is sufficient, check for inadequate or incorrect wiring as this can starve the motor. Correct as necessary.
	d. Hose or hydraulic line is leaking.	d. Correct as necessary.
	e. Oil level in reservoir is low.	e. Add oil.
	f. Load exceeds capacity requirements. Relief Valve is bypassing the oil back into tank.	f. Do not change Relief Valve setting. Instead, reduce the load to rated capacity.
	g. Suction filter is clogged, starving pump.	g. Remove and clean.
	h. Suction line may be leaking air, due to loose fittings.	h. Check fittings.
	i. Filler/Breather capon tank may be clogged.	i. Remove and clean.
	j. Down Valve may be energized by faulty wiring, or stuck open.	j. Remove Solenoid Valve, check and clean. (See Hydraulic Section.)
	k. Hydraulic pump may be inoperative.	k. Disconnect hydraulic line at power unit. Put hose end in a large container and run pump again. It no output, check motor rotation as per 1(a) above. If pump is worn, replace with a new pump.
2. Lift rises too slowly.	a. Foreign material stuck in Down Solenoid, causing some oil to bypass back into tank.	a. Lower the Lift. Remove the Solenoid Valve and clean it. (See Hydraulic Section)
	b. Foreign material clogging suction filter, breather cap, pressure line filter, or a pinched hose.	b. Correct as necessary. (See also 1(g), (i).)
	c. Low Motor voltage.	c. See 1(c).
	d. Lift overloaded.	d. See 1(f).
	e. Oil is too thick for proper operation.	e. Refer to "Oil Viscosity Recommendations"
	f. Lift operates with a shuddering vibration.	f. Cylinder may be binding. Check with factory.
	g. Pump is inoperative	g . See 1(k).
3. Motor labors or heats excessively.	a. Voltage may be low.	**a.** See 1(c).
	b. Incorrect wiring	b. Check that one leg of the motor lines is not connected to ground.
	c. Oil starvation causes pump to bind. High internal heat is developed if this occurs, pump may be permanently damaged.	c. See 1(e). (g). (h). (i). (k).
	d. Binding cylinders.	d. See 2(f).
	e. Oil may be too thick.	e. See "Oil Viscosity Recommendations"

4. "Spongy" or "Jerky" Lift operation. Do not confuse spongy operation with small surges caused by foreign material on Lift wheel roller plate.	a. Air trapped in cylinders.	a. Bleed cylinders by lowering Lift fully and hold "DOWN" button for 20-30 seconds more Raise Lift and repeat procedure several times. Bleed cylinders also, by loosening bleeder screws (item #10) until a steady stream of oil comes out.
	b. Oil starvation.	b. See 1(e). (g). (h). (i).
5. Lift lowers too slowly when loaded.	a. Down Valve filter clogged.	a. Remove Solenoid Valve and clean it.
	b. Pinched tube or hose.	b. Correct as necessary. (In case of pipe, check for obstruction inline.)
	c. Oil too thick.	c. See "Oil Viscosity Recommendations"
	d. Foreign material in Flow Limiter.	d. Remove and clean.
	e. Binding cylinders.	e. See 2(f).
6. Lift lowers too quickly.	a. Leaking hoses. Cracked fittings	a. Correct as necessary. Check underground conduit for evidence of fluid.
	b. Check valve stuck open. (The combination of a stuck Check Valve and open Solenoid Valve will cause excessive speeds.	b. Remove Check Valve and clean it. (See Hydraulic Section)
7. Lift rises then lowers slowly.	a, Down Solenoid Valve may be incorrectly wired or is stuck open due to dirt.	a. See 2(a).
	b. Check Valve may be stuck open.	b. Remove and clean. (See Hydraulic Section.)
	c. Check for leaking hoses, fittings, pipes.	c. Correct as necessary.
	d. Cylinder seals may be worn or damaged.	d. Replace seals. (See Cylinder Repair procedure.)
8. Lift has risen, but does not lower.	a. Blown electrical fuse.	a. Check and replace.
	b. Incorrect Down Solenoid Valve wiring.	b. Correct as necessary. (See Wiring Diagram.)
	c. Down Solenoid Valve is stuck.	c. Lightly tap down the Solenoid Coil body to seat it properly. Do not hit hard as it will permanently damage the internal stem. Do not remove the Solenoid Valve from the Block as the unit will come down at a dangerous speed.
	d. Faulty Down Solenoid Coil.	d. Remove and replace.
	e. Maintenance safety bar, or some other object blocking down travel.	e. Raise Lift and remove the safety bar, or whatever object is blocking the down travel, then press the down button.
	f. Binding cylinders.	f. See 2(f).