

**FC SERIES**  
**HYDRAULIC DOCK LEVELER**

**Dock Leveler for Shipping Containers**

**OWNERS MANUAL**

**INSTALLATION • OPERATION**  
**SERVICE • REPAIR PARTS**

BEACON INDUSTRIES, INC.

DOCK LEVELER FOR SHIPPING CONTAINERS

MODEL NUMBER FC 612  
20,000 LB. CAPACITY  
SERIAL NUMBER \_\_\_\_\_

OWNER'S MANUAL

INSTALLATION \* OPERATION  
SERVICE \* REPAIR PARTS

Important: Read and understand contents of this manual prior to installation or operation of this dock leveler.

---

For best results, have this unit serviced by your authorized Dealer, Representative or the Factory Representative.

BEACON INDUSTRIES, INCORPORATED  
12300 Old Tesson Road  
St. Louis, Missouri 63128-2247

Ph: (314) 487-7600 Fax: (314) 487-0100

---

## TABLE OF CONTENTS

Introduction	1.1
General Information	2.1
Installation Instructions	3.1
Electrical Diagram	4.1
Operating Instructions	5.1
Maintenance Information	6.1
Service Troubleshooting Information	7.1
Hydraulic Diagram	8.1
Parts Lists	9.1
Warranty	10.1

---

## 1.1 INTRODUCTION

1.11 Read this entire manual before installing any Beacon Dock Leveler.

1.12 This leveler is designed to accommodate docks with high volumes of traffic, serving most 'over the road' trucks. This leveler is designed to extend out toward the truck. It has four adjustable movements; Up, Down, Forward and Reverse. The unit is usually operated from inside the building, near the dock by an operator using the push-button control station.

1.13 Questions can be answered by the local Beacon Dealer, Representative or Beacon Industries, Inc. (Phone 314- 487-7600). Always have the model and serial numbers of the unit in question ready when contacting your authorized representative

**THINK SAFETY FIRST**

## 2.1 GENERAL INFORMATION

2.11 Introduction  
This Beacon hydraulic dock leveler is built to give you years of quality service in normal operation. Safety is of prime concern at Beacon and our dock levelers are built with the safety of your operators and maintenance personnel in mind.

2.12 The rated capacity of this unit indicates a gross load of fork truck, load and operator.

### **WARNING**

Under no circumstances should the gross loading exceed the rated capacity of the unit. This would result in abuse of the leveler and void any or all warranties. It also might result in damage to the leveler and loss of life.

2.13 This equipment is designed to safely bridge between your dock floor and the cargo carrier. Never attempt to operate the leveler when it has a load on it. Beacon levelers are not designed or built to lift or move loads.

2.14 This unit has the model and serial numbers stamped on a metal plate located near the right hand lift cylinder.

2.15 The operating characteristics of this leveler is that of smooth hydraulic movements.

The hydraulic system is a self contained, compact power unit made up of standard hydraulic and electrical components.

The unit is powered only during the Up, Forward and Reverse movements. When the deck is lowering only the control valve is activated. This allows the deck to float with the movement of the carrier during the loading or unloading.

2.16 This unit is equipped with a velocity fuse. It is designed to stop the deck from falling should a carrier separate from the dock while a load is on the leveler.

### **IMPORTANT**

If this should happen, a complete and thorough inspection of all structural and hydraulic components should be made by an authorized Beacon representative before the leveler is returned to service.

### 3.1 INSTALLATION INSTRUCTIONS

#### 3.11 Introduction:

All Beacon levelers are tested and operated at the factory before shipment and will be received as packaged units. The performance of this unit depends upon its proper installation.

It requires only ordinary equipment installation skills using good workmanship and quality materials.

3.12 Depending upon the contract specifications, this unit will be installed in a pit that has been made per the provided pit drawing or an existing pit. If it is a free standing frame leveler, it will be installed in front of the dock. There should be a 1-1/4" hard electrical conduit running into the pit or to the free standing leveler to accommodate electrical wires for the leveler.

3.13 The push button station should be mounted on the wall or a column member in such a location as to easily observe the movements of the leveler.

3.14 The magnetic starter, transformer and disconnect switch, should be mounted where the owner believes suitable.

3.21 Material Inspection  
Open, uncrate and inspect all materials.

Immediately report any damage or material shortage. Study component assemblies and determine their proper locations.

3.31 Pit Installation  
Use a fork truck, overhead crane or similar type equipment to install this unit.

3.32 Carefully pick up the unit using the front and/or rear rectangular tubes.

#### **WARNING**

Do not lift this unit from the side or anywhere else other than the tubes as this might result in damage to the unit.

3.33 Place the leveler into the pit with the Beacon name plate facing the driveway.

3.41 Temporary Wiring  
For the ease of installation temporary electrical leads have been supplied so that the deck can be moved forward under power. Wire the unit as the tags instruct.

#### **CAUTION**

Make certain that the shaft rotation on the pump is the same as that indicated on the pump body.

3.42 Power the slide deck forward.

3.43 Align the leveler with the pit so the leveler can be positioned into the pit. The rear of the leveler will enter into the pit first. Fork Lift or Over-head crane can be used for leveler installation.

**WARNING**

Alert personnel in the area to the fact that this unit is being installed and is not ready for operation.

3.51 Position the Unit in the Pit:  
Raise and shim the unit so that the rear angle of the frame is even with the pit curb angle and the joint of the lip and deck is level with the dock floor. Be sure that when the unit is level the cross traffic legs are resting on the leveler's front cylinder pads. Shim under the frame at the four anchor holes.

3.52 Center the unit in the pit to allow approximately 3/4" on both sides of the side skirts.

3.61 Free Standing Frame Installation:  
Use a fork truck, over-head crane or similar type equipment to install this unit.

3.62 Carefully pick up the unit using the front and/or rear rectangular tubes.

**WARNING**

Do not lift this unit from the side or anywhere else other than the tubes as this might result in damage to the unit.

3.63 Place the leveler in the desired location with the Beacon name plate facing the driveway.

3.71 Anchoring the Frame.  
Drill into the concrete through four anchor holes in the frame. Drill at least the minimum depth for 3/4" diameter 'wedge type stud bolt anchors' 6" long.

3.72 Install four anchor bolts (not provided with the unit) and tighten to bring frame snug with the shims.

3.73 Fill the space under the frame pads with a non-shrinking grout.

3.81 Welding:  
Weld the frame to the rear curb angle of the pit or to the front angle of the dock face.

3.82 Use welding rods or wire suitable for the A-36 structural steel angle. A good strong weld is required to hold the leveler to the concrete.

3.83 The welds should be cleaned and repainted to reduce future rusting.

### 3.91 Wiring:

Once the leveler is anchored, the wiring can be completed as per the electrical diagram found in section 4.1.

3.92 Run the wire into the pit or out to the free standing leveler for operating the electric motor and the valve solenoids.

3.93 Install the wires to the push button station.

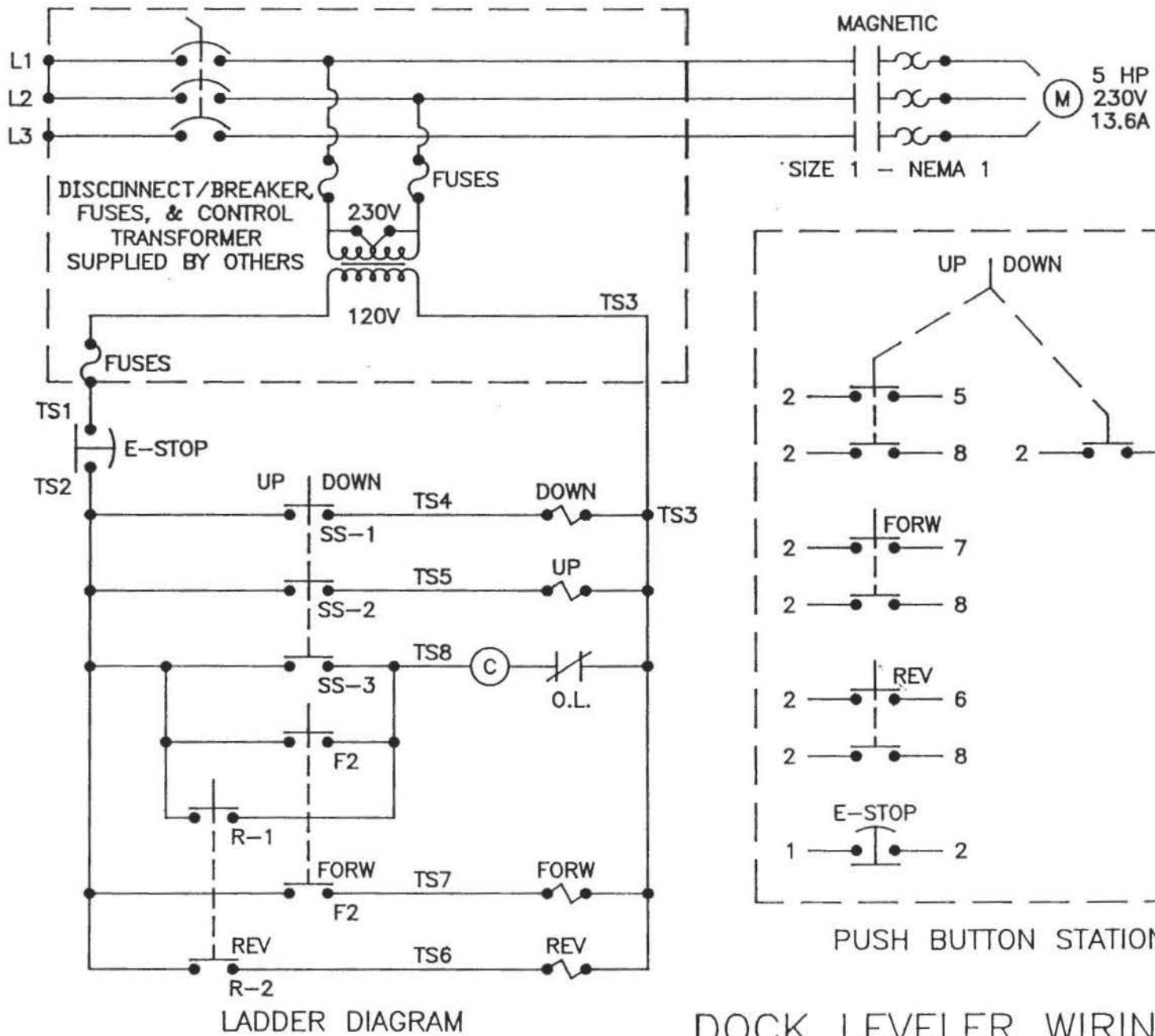
### 3.101 Finishing the Installation:

Your new Beacon Leveler should now be ready for full operation. If installed properly, the movements of the leveler will respond accordingly to the electric controls.

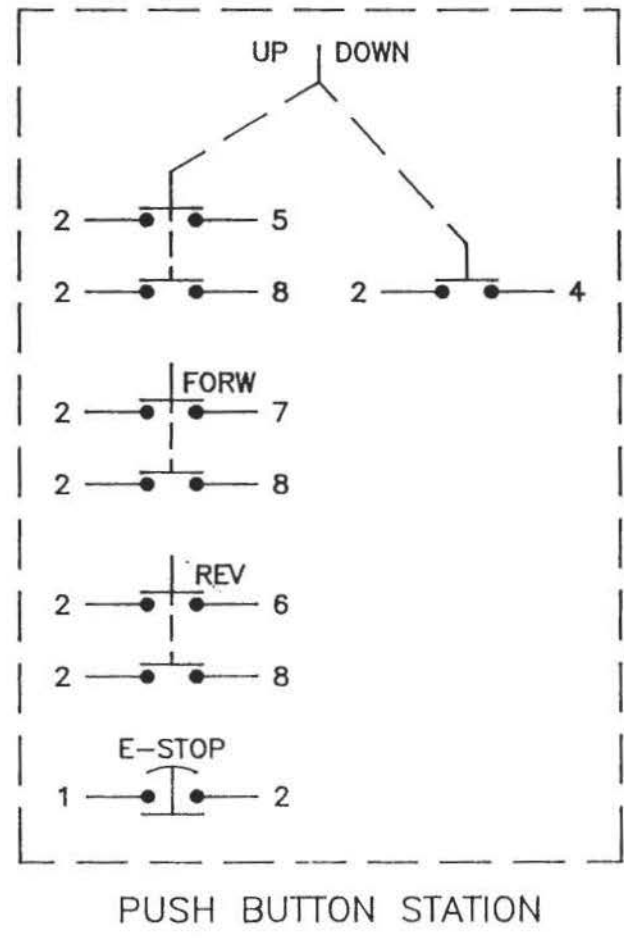
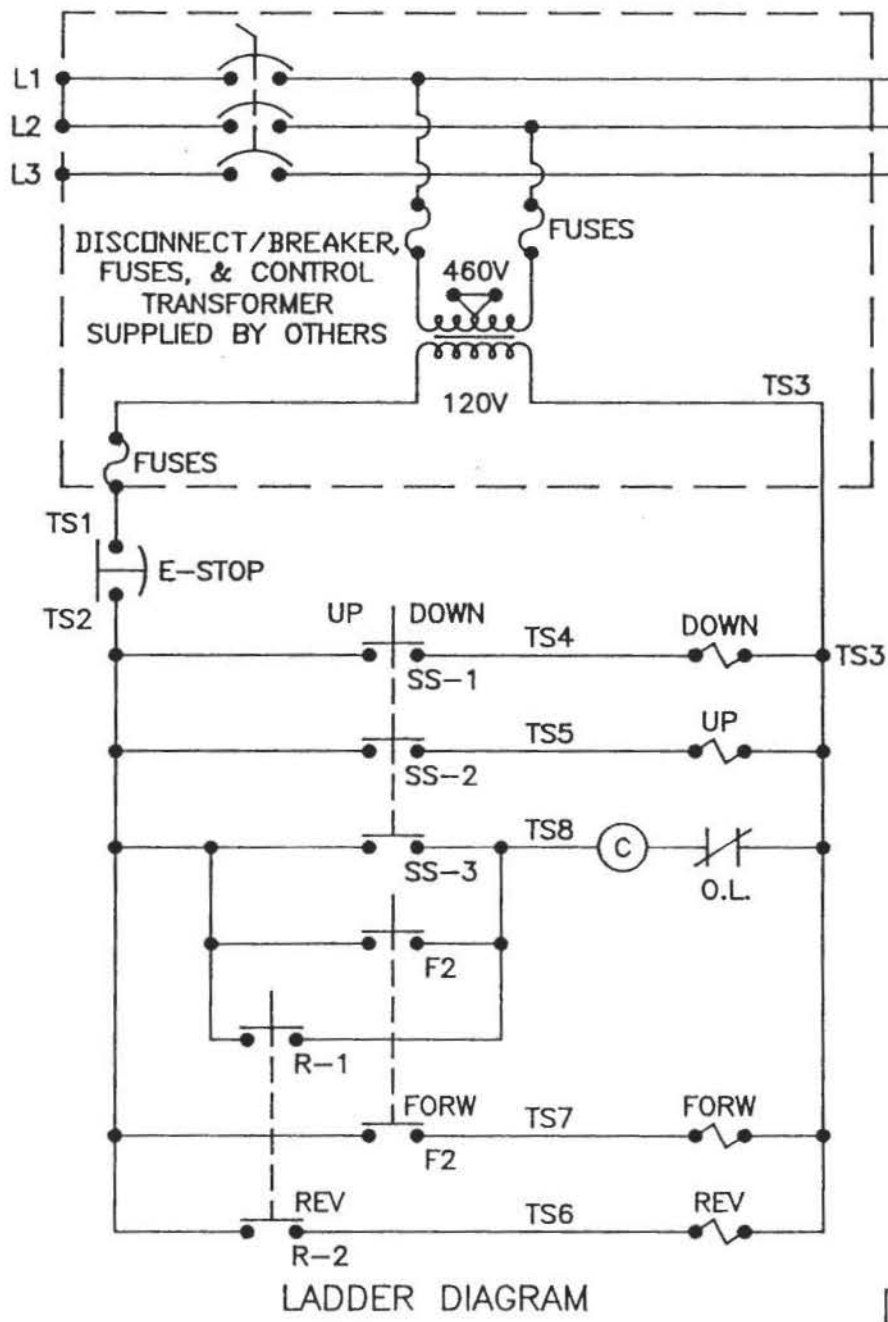
If the leveler does not operate correctly, recheck all wiring and/or consult the operating instructions in section 5.1. Look also for possible damage to the unit that might have occurred during the shipping or installation.

### 3.111 **CAUTION**

If this unit is not installed and operated properly without prior approval from the factory, the factory maintains the right to void any or all leveler warranties.







DOCK LEVELER WIRING 460V

## 5.1 OPERATING INSTRUCTIONS

### CAUTION

The dock leveler should always be in the stored position with the "Up/Down" switch in the middle "Off" position when not in use. If the leveler is left in another position it could be damaged by a truck backing into it or it could present a hazard to the working place.

#### 5.21 Four Movement

##### Leveler Controls:

There are four controllable movements for the dock leveler. These movements are controlled by means of the control switches which are mounted near the dock leveler in the control station box. There are four switches as follows:

#### 5.22 "Up/Down" Lever Switch:

This is a three position rotary switch. It is spring centered from "Up" on the left, to "Off", in the middle. It is "Down", on the right. The deck will power up when this switch is turned to the left and held there. The deck will stop its upward travel when the handle is released. It will move downward (not under power) only when the lever is turned to the right or "DOWN". Leave this switch in the "DOWN" position during loading-unloading operation so that the deck will 'float' with the truck bed.

### CAUTION

While this switch is in the down position do not use the "FORWARD" or the "REVERSE" push buttons. This could result in damage to the leveler.

#### 5.23 "FORWARD"

##### Push button Switch:

This is a constant pressure push button. Contact is made when the button is pushed in and held. The slide deck will power forward when this button is used. The deck will stop and remain there when the button is released.

#### 5.24 "REVERSE"

##### Push button Switch:

This is also a constant pressure push button like the "FORWARD" button. The slide deck will power in reverse when this button is pushed and held. The deck will stop and remain there when this button is released.

#### 5.25 "EMERG. STOP"

##### Push button Switch:

This is a push-pull type push button. When the button is pushed in, all power to the leveler is cut off and the deck will stop in any travel mode.

Only when the button is pulled out will the unit operate normally.

### **WARNING**

Do not use this button to cut power to the leveler during maintenance work.

It would be too easy to mistakenly pull out the button causing the deck to fall downwards while a worker was under the deck. If this were to happen, bodily injury or loss of life could result. Use the main power switch to the unit and tag it indicating work is being done on the equipment.

5.51 Four Movement Leveler Operation Procedures:  
Abbreviated operating instructions are found on the push button station panel. More detailed instructions are found below.

### **IMPORTANT**

Read and understand all instructions before operating this dock leveler. Its performance can depend upon your knowledge of the operating procedures.

### **WARNING**

Always secure the carrier to keep it from separating from the dock and leveler while moving cargo. This can be done with wheel chocks or a vehicle restraint device such as the Bear Claw or both.

5.52 After the truck has backed into position and its doors opened the

operation is as detailed below.

5.53 Above Dock  
Loading and Unloading:  
The bed of the truck or trailer is above the dock floor.

5.54 Raise the deck up about two inches above the bed of the carrier.

5.55 Extend the deck forward until the read edge of the truck is overlapped by three or four inches of the deck lip.

5.56 Lower the deck down until the lip rests on the bed of the carrier. Leave the "Up/Down" lever in the "DOWN" position to allow the deck to 'float' with the carrier while cargo is moving in or out.

5.57 When the loading-unloading operation is complete, raise the deck to clear the carrier bed.

5.58 Retract the deck completely.

5.59 Lower the deck until it is in the stored position. Turn the "Up-Down" switch to the middle "Off" position to complete the operation.

5.510 Below Dock  
Loading or Unloading:  
The bed of the truck or trailer is below the dock floor.

5.511 Extend the deck forward about four inches or until the rear edge of the truck is overlapped by three or four inches of the deck lip.

5.512 Lower the deck down until the lip rests on the bed of the carrier. Leave the "Up-Down" lever in the "DOWN" position to allow the deck to 'float' with the carrier while cargo is moving in or out.

5.513 When the loading or unloading operation is complete, raise the deck about two inches above the dock floor.

5.514 Retract the deck completely.

5.515 Lower the deck until it is in the stored position. Turn the "Up-Down" switch to the middle "Off" position to complete the operation.

5.516 End Loading or Unloading:  
The bed of the truck or trailer is loaded so that the leveler's lip cannot be placed on the carrier bed.

5.517 If the carrier bed is above the dock floor use the deck in the stored position. Extend the deck out and/or up only if necessary and follow instructions as in Section 5.53 except do not place the lip on the carrier bed.

Turn the "Up-Down" switch to the middle "off" position for loading or unloading.

5.518 If the carrier bed is below the dock floor follow the instructions as in Section 5.510 except do not place the lip on the carrier bed. Turn the "Up/Down" switch to the middle "off" position for loading or unloading.

#### **CAUTION**

This procedure should be used only when the cargo is cleared from or placed on the edge of the carrier bed. After the end cargo is cleared place lip of dock leveler on carrier bed to complete load cycle. Do not load or unload or enter truck or trailer in the end loading position.

5.519 Storage Procedures Procedures are the same as in Sections 5.53 or 5.510

#### **WARNING**

Never attempt to operate controls when a load is on the leveler. This dock leveler is not designed or built to convey materials.

## 6.1 MAINTENANCE INFORMATION

### CAUTION:

The maintenance strut should be used whenever work or inspection is done under the slide deck.

#### 6.11 DAILY

1. Observe the unit for erratic movements.
2. Listen for unusual noises.
3. Use the unit in the correct operating manner.
4. Replace damaged or missing parts as required.

#### 6.12 EVERY THREE MONTHS

1. Look for signs of hydraulic oil leaks on the hoses and fittings.
2. Check the oil level in the reservoir. It should be approximately 3/4 full on the sight gauge.

3. Grease should be spread on the top and bottom wear bars of the slide beams if the bars are dry. Be sure to wipe any dirt from the bars before applying the Prolong grease.

#### 6.31 EVERY YEAR:

Tighten all hose fittings, nuts and bolts on the dock leveler that may have loosened due to vibration.

6.41 Recommended Hydraulic Oil:  
Mobil Oil DTE 24/25

6.51 Recommended Grease  
Lithium based: Molybdenum Disulfide grease such as: Sunoco Prestige, Moly 2 EP, or Gulf EX Moly.

## 7.1 SERVICE TROUBLESHOOTING INFORMATION

### 7.11 Safety Rules:

To prevent personal injury use extreme care when working with this unit. Always obey safety rules:

1. Block deck up when working.
2. Disconnect power if you are going to be working underneath the leveler.
3. Keep body away from moving parts.

### 7.21 TROUBLESHOOTING CHECK LIST:

7.31 If deck moves in a jerky manner:

7.32 Check the level of the hydraulic oil. Fill to 3/4 full on the sight gauge if required.

7.33 Check the slide beams for dirt or dryness. Grease wear bars if required.

7.41 If the unit sounds unusual:

7.42 Check the level of the hydraulic oil. Fill to 3/4 full on the sight gauge if required.

7.43 Check the directional control valve or the wiring to the valve. If the valve is faulty, repair or replace it. Tighten wiring connections or rewire if necessary.

7.44 Check the motor/pump coupling. Reposition and tighten or replace it if required.

7.51 If there are oil leaks found near the hydraulic hose and/or fittings:

7.52 Check for loose hose fittings. Tighten fittings. Replace teflon tape on fittings if required.

7.53 Check for damaged hoses or fittings. Replace as required.

7.61 If there is oil leaking from the hydraulic cylinder.

7.62 Block deck up and removed hydraulic cylinder. Remove the retaining ring at the top of the cylinder body. Remove the faulty seals and replace with new seals.

7.71 If pump will not run:

7.72 Check the electric circuit breaker, heater coils or fuses. Reset or replace if required.

7.73 Check push button station for faulty push buttons, faulty contact blocks or loose wires. If any of the push buttons or the contact blocks are faulty, replace them. Tighten wiring connections or rewire if necessary.

7.74 Check electric motor for loose wires or if it is defective. Rewire or tighten wiring connection if required. Replace the motor or have the motor repaired if necessary.

7.81 If the motor runs, but the deck will not move under power; Up, Forward or Reverse:

7.82 Check the level of the hydraulic oil. Fill to 3/4 full on the sight gauge if required.

7.83 Check the directional control valve or the wiring to the valve. If the valve is faulty, repair or replace it. Tighten wiring connections or rewire if necessary.

7.84 Check the motor/pump coupling. Reposition and tighten or replace it if required.

7.85 Check the pressure relief valve and clean any debris from the ports and openings. If the seals are damaged replace them. Replace the valve if it is defective.

7.86 Check the output pressure of the pump. While the power is off remove the male plug from the end of the manifold.

Screw a hydraulic pressure gauge into the port and run the motor. If the gauge shows pressure lower than 200 psi then adjust the pressure relief valve by screwing in the adjustment screw to increase the pressure.

Note: The pressure relief valve should be set at 800 psi. If this does not help then replace the hydraulic pump.

#### **WARNING**

Observe pressure gauge from outside the operating range of all moving parts.

7.91 If the deck is stuck at the top of its travel:

7.92 Jog the Down lever until the deck begins to float down.

7.93 Notify the factory of the problem.

7.101 If the deck stops while floating down:

7.102 Be sure the lever is in the "Down" position.

7.103 Be sure the motor does not run when the lever is in the "Down" position. If it does notify the factory of the problem.

7.104 Check to see if anything is obstructing the deck's travel. Remove foreign objects if necessary.

7.105 Follow the corrective action 7.91 above.

7.106 Check the directional control valve or the wiring to the valve. If the valve is faulty, repair or replace it. Tighten wiring connections or rewire if necessary.

**7.111 IMPORTANT**

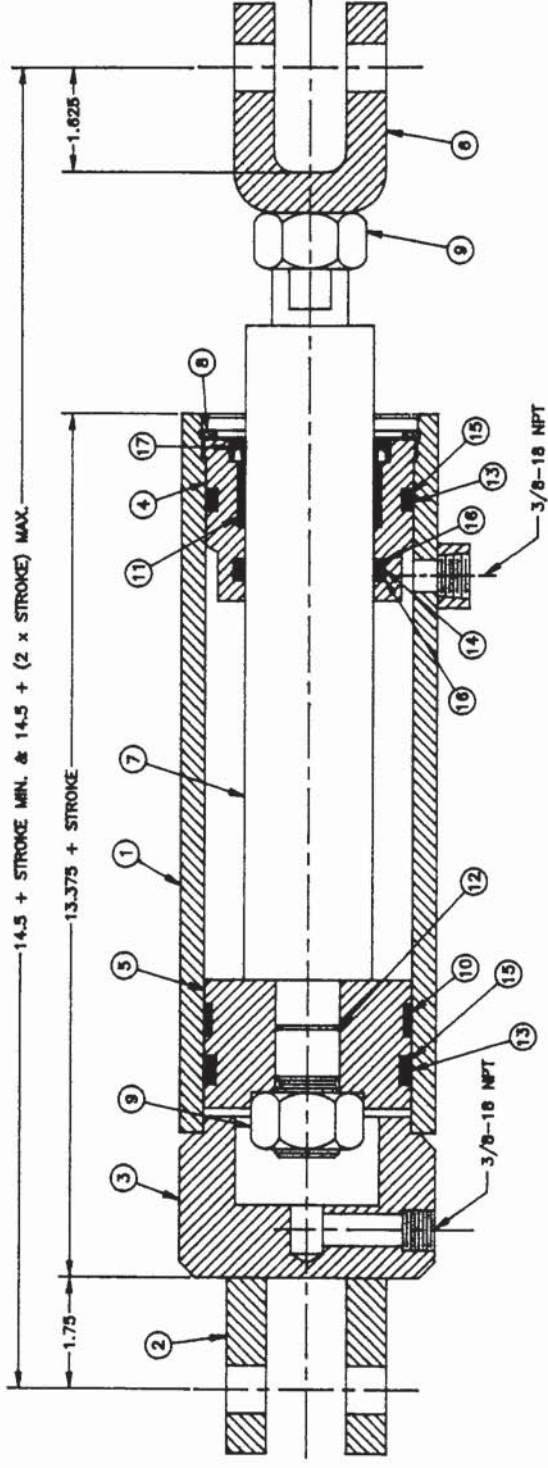
It is best to replace parts with factory originals as the manufacturer has chosen these parts to work together efficiently.

**7.121 CAUTION**

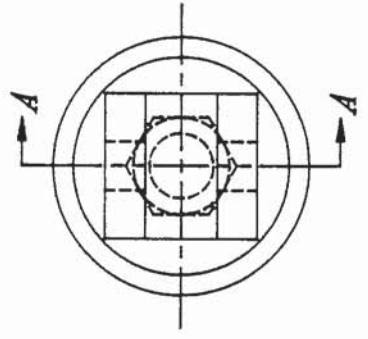
If parts are replaced DURING THE WARRANTY PERIOD, THE FACTORY MUST BE NOTIFIED.

IF A PART IS REPLACED WITHOUT PRIOR APPROVAL FROM THE FACTORY, THE FACTORY HAS THE RIGHT TO VOID ANY OR ALL LEVELER WARRANTIES.





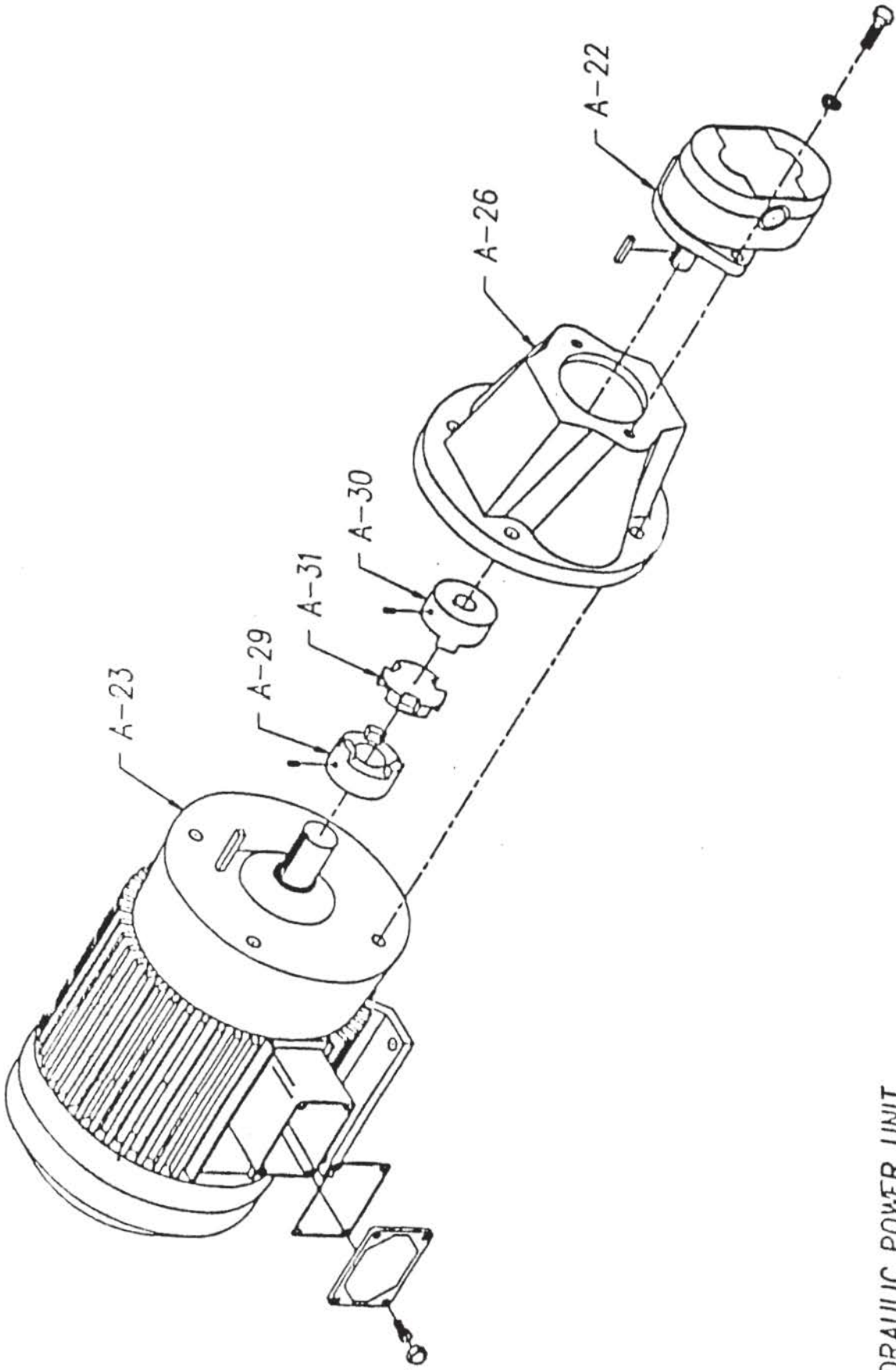
SECTION A-A



ITEM	QTY	PART NO.	DESCRIPTION
17	1		METAL CLAD WIPER
16	2		BACK-UP RING
15	3		BACK-UP RING
14	1		O RING
13	2		O RING
12	1		O RING
11	1		NYLON ROD BEARING
10	1		SPLIT NYLON WEAR RING
9	2		1-14 UNF HEX NUT
8	1		RETAINING RING
7	1		CYLINDER SHAFT
6	1		ROD CYLINDER CLEVIS
5	1		PISTON
4	1		END GLAND
3	1		CYLINDER BASE
2	2		BOTTOM CLEVIS
1	1		CYLINDER TUBE

TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES ±.010 ±1/32 ±1/2	BEACON INDUSTRIES, INC. MADE BY G. A. MARRIAGE DRAWING BY CYLINDER ASSEMBLY #3.25 BORE & #2 ROD 88-12-84 GM-0004-CO 1 OF 2
--	---



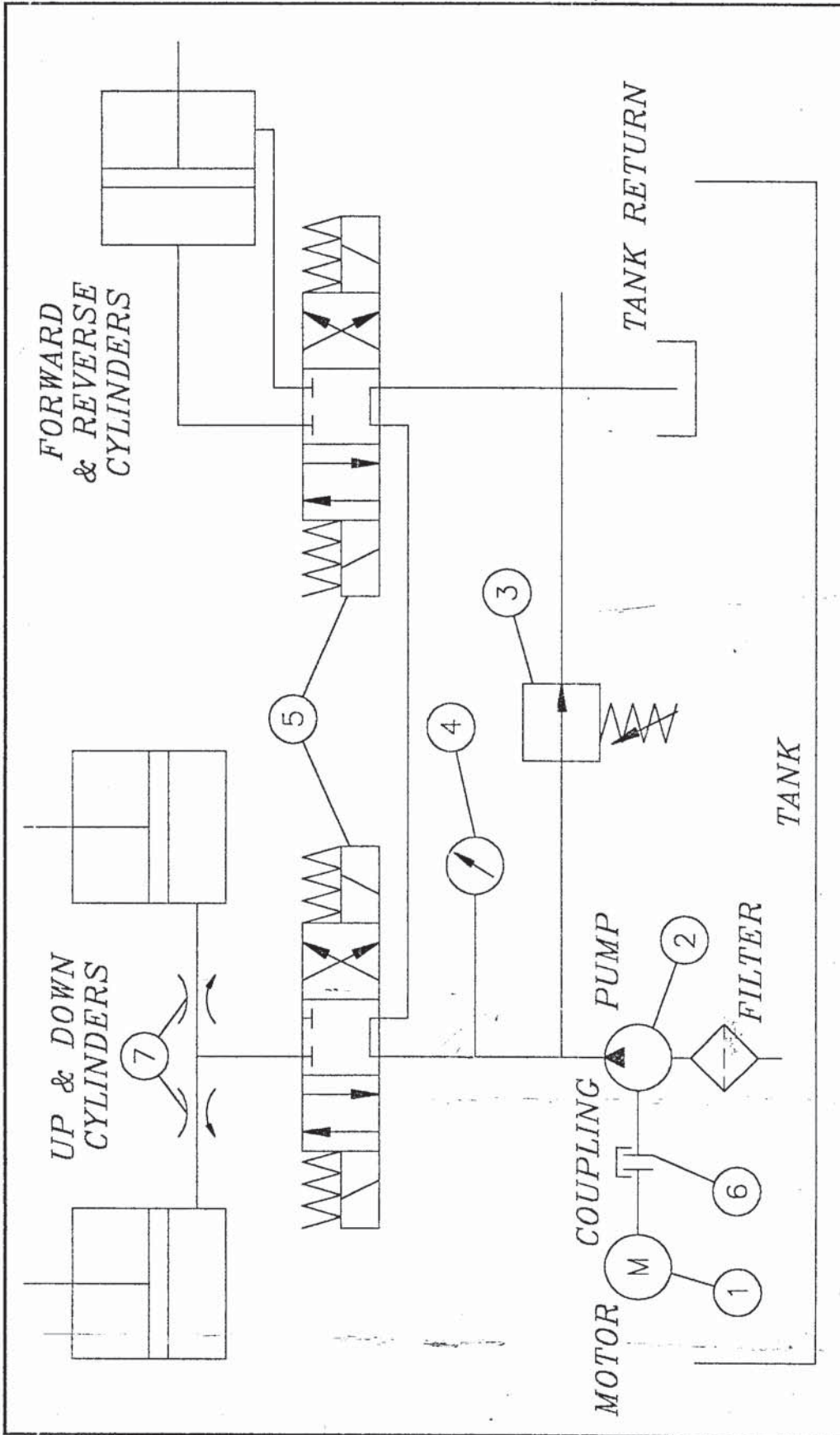
HYDRAULIC POWER UNIT

PART NO. 87038-02

5 HP, 5.8 GPM

87051

**BEACON**



ITEM	QTY	DESCRIPTION	PART NUMBER
7	1	FLOW CONTROL	
6	1	FLG COUPLING	
5	3	DBL SOLENOID	
4	1	GUAGE	
3	2	RELEIF VALVE	
2	2	PUMP	
1	4	MOTOR	

BEACON INDUSTRIES, INC.  
FC612 MODEL

9.131 Hydraulic Power Unit  
Part No. 87038-02  
5 HP, 5.8 GPM  
Dwg. No. 87051

Part Number	Req'd. Unit	Description
A-17	2	Solenoid Operated Hydraulic Directional Control Valve
A-20	1	Two Station Manifold
A-21	1	Pressure Relief Valve
A-22	1	Hydraulic Pump
A-23	1	Face Mount Electric Motor
A-26	1	Motor/Pump Adapter
A-29	1	Motor Coupling Body
A-30	1	Pump Coupling Body
A-31	1	Coupling Spider
87053	1	Manifold Mounting Bracket

9.181 Hydraulic Power Unit  
Part No. 87054  
Dwg. No. 87052

Part Number	Req'd. Unit	Description
E-1	4	Push button/Lever Contact Block
E-2	1	Push button Station Enclosure
E-3	1	Four Movement Control Station Instruction Panel
E-4	2	Push button Operator
E-5	1	Emergency Stop Push button Operator and Contact Block
E-7	1	Emergency Stop Lens
E-8	1	Up/Down Three Position

### **10.1 Beacon Industries, Inc. Limited Warranty**

Beacon Industries, Inc. warrants that this FC Series Dock Leveler will be free from defects in design, materials and workmanship on all structural parts for a period of exactly five (5) years from date of shipment. All claims for breach of this warranty must be made within thirty (30) days after the defect is or can, with reasonable care, be detected and in no event more than five (5) years after shipment. This warranty is extended to the original purchaser of this product and is non transferable.

Beacon warrants that this FC Series Dock Leveler will be free from defects in design, materials and workmanship on all hydraulic parts for a period of exactly three (3) years from date of shipment. All claims for breach of this warranty must be made within thirty (30) days after the defect is or can, with reasonable care, be detected and in no event more than three (3) years after shipment.

Beacon warrants that this FC Series Dock Leveler will be free from defects in design, materials and workmanship on all electrical parts for a period of exactly one (1) year from date of shipment. All claims for breach of this warranty must be made within thirty (30) days after the defect is or can, with reasonable care, be detected and in no event more than one (1) year after shipment.

In order to be entitled to the benefits of this warranty, the unit must have been properly installed, maintained, operated within its capacity, and not otherwise abused. Ninety (90) day periodic maintenance and adjustment is the sole responsibility of the owner.

This warranty is Beacon's exclusive expressed warranty.

**Beacon expressly disclaims all implied warranties including the implied warranties of merchantability and fitness.**

In the event of any defects covered by this warranty, Beacon will remedy such defects by repairing or replacing any defective equipment or parts, bearing all of the costs for parts, from Beacon to site. This shall be the exclusive remedy for all claims whether based on contract, negligence, or strict liability. **Beacon shall not, in any event, be liable for any loss of the use of any equipment or incidental or consequential damages of any kind.**

**10.1 Beacon Industries, Inc. Limited Warranty  
Cont'd.**

Maintenance and validation by original purchaser is required to keep Warranty in effect. In order to keep this Warranty in effect, the original purchaser must do two things:

First: The original purchaser must have the FC Series Dock Leveler maintained and serviced as prescribed in the Owner's Manual.

Second: The original purchaser must present the seller with a maintenance schedule to show that the FC Series Dock Leveler has been maintained and serviced in accordance with the Beacon's Owner's Manual. The validated maintenance schedule must be submitted whenever a claim is made under this Warranty.

Items not covered by Warranty. The seller does not cover:

(i) Defects, damage or deterioration due to normal use, wear and tear or exposure; (ii) normal maintenance services; (iii) the replacement of service items, i.e., fluid; (iv) damage or defects due to misuse, water damage, electrical power supply surges, improper installation, alteration, negligence or accident; and (v) damage or defects due to the repair of the FC Series Dock Leveler by someone other than an authorized dealer or the installation of parts other than genuine Beacon part.

No other warranties made. This Warranty is in lieu of all other express or implied warranties of The Beacon FC Series Dock Leveler, the manufacturer and the selling dealer, including any implied warranty of merchantability or fitness for any particular purpose. Neither Beacon Industries, Inc. assumes, or authorizes any person to assume, on its behalf, any other obligation or liability.

Some states do not allow the exclusion on limitation of implied warranties or liability for incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Warranty and, any and all claims that may arise shall be construed according to the laws of the State of Missouri, USA.