



# LXL Series Hydraulic Slide Gate Operators

## INSTALLATION AND OPERATIONS MANUAL



Model No.: \_\_\_\_\_

Serial No.: \_\_\_\_\_

### B&B ARMR

**Corporate/Tech Support:**

**B&B ARMR**

2009 Chenault Drive Suite 114

Carrollton, TX 75006 USA

Telephone: (972) 385-7899

Toll Free: (800) 367-0387

Fax: (972) 385-9887

**Field Support Office:**

**B&B ARMR**

8451 Hilltop Suite L

Fairfax, VA 22030

(703) 663-8711

(703) 225-3333

E-mail: [info@bb-armr.com](mailto:info@bb-armr.com)

[techsupport@bb-armr.com](mailto:techsupport@bb-armr.com)

**MADE IN THE USA**



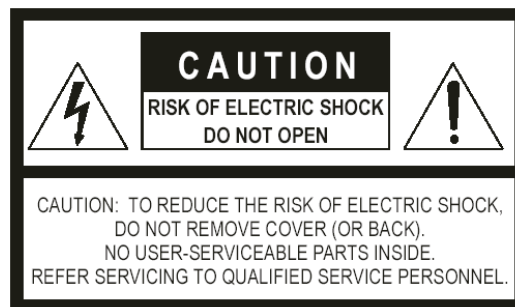
Your safety is extremely important to us. If you have any questions or are in doubt about any aspect of the equipment, please contact us.

## Introduction

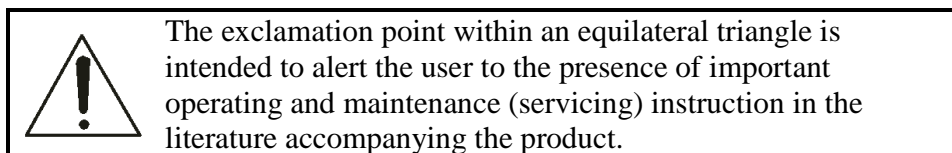
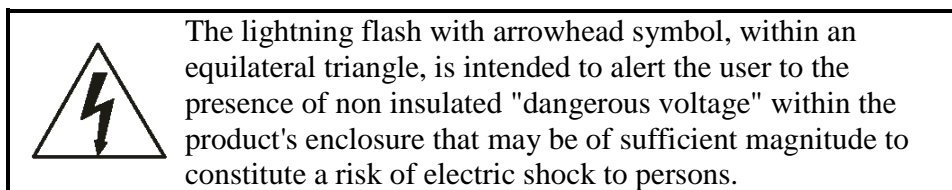
Welcome!

Congratulations on your purchase of a B&B ARMR gate operator. In addition to providing detailed operating instructions, this manual describes how to install, maintain, and troubleshoot your operator. If you require additional assistance with any aspect of installation or operation, please contact us.

## Safety



### SYMBOL MEANING:



# Important Safety Information

## **TO REDUCE THE RISK OF SERIOUS INJURY OR DEATH, READ AND FOLLOW ALL INSTRUCTIONS PROVIDED IN THIS MANUAL.**

1. Hydraulic slide gate operators are intended for vehicular use only. Pedestrians should use a separate walkthrough entrance designed for on-foot traffic.
2. Keep children away from gate movement area and off the gate operator. Never let children operate or play with gate controls.
3. Install all warning signs provided with the gate operator so that they are clearly visible from both sides of the gate.
4. It is the responsibility of the specifier, designer, purchaser, installer and end-user to ensure the gate system is properly configured for its intended application.
5. Use the emergency manual release only when the gate is not in motion.
6. Test gate operator and all related safety devices monthly. The gate must reverse or stop when a safety device is tripped. The gate must stop upon sensing a second sequential safety violation before reaching a limit switch. If the gate utilizes a transmitting device on a safety edge, check the battery on a regular basis to ensure proper operation. Failure to adjust and re-test the gate operator properly can increase the risk of injury.
7. This gate operator utilizes a pumping system which contains hydraulic fluid. Consult local EPA (Environmental Protection Agency) regulations for damming requirements (if any) around the base of the gate operator.
8. Service and maintenance of the gate operator should be performed on a routine basis by a qualified technician. Attempts to service the gate equipment by non-qualified personnel could result in serious injury and will void all applicable warranties.

### **SAVE THESE INSTRUCTIONS.**

**THIS MANUAL SHOULD BE LEFT WITH A RESPONSIBLE INDIVIDUAL AT THE INSTALLATION SITE AND KEPT IN A DESIGNATED LOCATION FOR MAINTENANCE OR TROUBLESHOOTING OPERATIONS**

## How to Contact Us

If you have any questions or experience any problems with your vehicle barrier—or if we can help you with any other facility security issues—please contact us directly at:

**Corporate/Tech Support:**

**B&B ARMR**

2009 Chenault Drive Suite 114

Carrollton, TX 75006 USA

Telephone: (972) 385-7899

Toll Free: (800) 367-0387

Fax: (972) 385-9887

**Field Support Office:**

**B&B ARMR**

8451 Hilltop Suite L

Fairfax, VA 22030

(703) 663-8711

**E-mail:** [info@bb-armr.com](mailto:info@bb-armr.com)

[techsupport@bb-armr.com](mailto:techsupport@bb-armr.com)

## System Installation Record

To assist in documenting the products installed in your system, please take a minute to record the following reference information. This information can be located on the blue B&B ARMR model number plate located on the product.

Additional columns are added for your convenience in documenting other components in the system.

Site:			
Job #:			
Date:			
Serial Number:			
Model Number:			
Voltage:			
Phase:			

## Table of Contents

<b>Introduction .....</b>	<b>2</b>
<b>Safety .....</b>	<b>2</b>
<b>How to Contact Us .....</b>	<b>4</b>
<b>System Installation Record.....</b>	<b>4</b>
<b>1. UL 325 And Gate Operators.....</b>	<b>7</b>
1.1 What Is UL? .....	7
1.2 Development Of UL-325.....	7
1.3 Overview Of UL-325 And Gates.....	7
1.4 Gate Operator Classifications.....	8
<b>2. Effect On Installation .....</b>	<b>10</b>
2.1 Factors Related To Gate Construction And Installation.....	10
2.2 Device-Specific Installation Instructions.....	10
2.3 Statements In Manufacturer's Instructions Concerning Installation .....	11
2.4 Gate And Fence Dealer Documentation Suggestions.....	11
<b>3. LXL Operator Models And Features .....</b>	<b>12</b>
3.1 General Description.....	12
3.2 LXL Operator Features .....	12
3.3 Models Available.....	13
<b>4. Installing and Programming the LXL Operator .....</b>	<b>14</b>
4.1 Prepare Concrete Pad.....	14
4.2 Anchor Gate Operator To Pad.....	14
4.3 Mount Drive Rail.....	15
4.4 Install Limit Switch Trip Plates.....	15
4.5 Connect Primary Power.....	16
4.6 Install Limit Switches .....	16
4.7 Connect Primary / Battery Power D/C Units Only .....	17
4.8 Connect Converter To Operator.....	17
4.9 Install Vent Cap.....	17
4.10 Set Operator Handing (Inside Looking Out).....	18
4.10.1 HCMSGOFF Parameter.....	18
4.11 Setting The Date And Time (optional, not required) .....	19
4.12 Setting The Max Run Timer.....	19

4.13	<i>Turning ON / OFF The Timer To Close</i> .....	20
4.14	<i>Setting The Timer To Close</i> .....	20
4.15	<i>Setting The Inherent Safety</i> .....	21
4.16	<i>Setting the Gate Locking Device</i> .....	21
4.16.1	<i>Self Latching Lock Parameter</i> .....	21
4.16.2	<i>Maglock Parameter</i> .....	22
4.16.3	<i>Maglock Delay Parameter</i> .....	22
4.17	<i>Maintain Input Parameters</i> .....	22
4.17.1	<i>MAINOPEN Parameter</i> .....	23
<b>6.</b>	<b>The LXL Interface Board</b> .....	<b>24</b>
<b>7.</b>	<b>Secondary Safety Devices</b> .....	<b>25</b>
<b>8.</b>	<b>Master Slave Connections</b> .....	<b>26</b>
<b>9.</b>	<b>Other Device Connections</b> .....	<b>27</b>
<b>10.</b>	<b>Maintenance</b> .....	<b>28</b>
2.1	<i>Hardware / Drive Wheels</i> .....	28
2.2	<i>Hydraulic System</i> .....	28
2.3	<i>Electronic Components</i> .....	28
<b>11.</b>	<b>Appendix</b> .....	<b>30</b>
2.4	<i>General Parts Breakdown</i> .....	31
2.5	<i>Battery Backup Schematic</i> .....	33
<b>12.</b>	<b>Troubleshooting</b> .....	<b>41</b>
2.6	<i>Alarm Definitions –</i> .....	41
2.7	<i>PLC Input/Output Definitions –</i> .....	41
2.8	.....	44
<b>13.</b>	<b>Warranty Information</b> .....	<b>45</b>

# 1. UL 325 And Gate Operators

## 1.1 What Is UL?

Underwriters Laboratories, Inc., a non-profit organization established in 1894, is self-described as “the leading third-party certification organization in the United States and the largest in North America.” UL’s primary stated mission is “to evaluate products in the interest of public safety.” Note that while UL declares it is the “leading” third-party certification, it is not the only one. There are other testing laboratories and certification organizations in the United States.

## 1.2 Development Of UL-325

The first edition of UL-325 was released in 1973. That edition was primarily focused on the electric operation of garage doors and did not contain provisions for gates. After federal laws were enacted in the early 1990’s, citing the provisions of UL-325 as applicable to garage door operation, DASMA members of the gate operator industry initiated the inclusion of electric gate operator provisions in UL-325. Some government agencies and other interested groups have monitored the standard’s progress and have provided input on the final format of the provisions of the standard that relate to gate operators.

## 1.3 Overview Of UL-325 And Gates

Highlights of UL-325 include the following:

- A glossary which defines each type of operator
- Different “classes” of gate operators
- Entrapment<sup>1</sup> protection criteria for each “class” of operator
- Entrapment alarm criteria
- Requirements for gate construction and installation
- Instructional requirements placing increased responsibility on installers

A key part of the UL-325 standard is a table that summarizes the entrapment device options for different classes of operators of the various types of gates included in the standard. The table, labeled “Table 31.1”, is reproduced here from the 5th edition of the *Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems, UL-325*. It is reprinted with the permission of Underwriters Laboratories, Inc. Refer to the table as you read about the provisions that are described in the following sections.

1. In this document, “entrapment” is defined as “the condition when an object is caught or held in a position that increases the risk of injury.”

<b>PROTECTION AGAINST ENTRAPMENT</b>				
<b>VEHICULAR USAGE CLASS</b>	<b>GATE OPERATOR CATEGORY</b>			
	<b>Horizontal Slide VERTICAL LIFT VERTICAL PIVOT</b>		<b>SWING GATE VERTICAL BARRIER (ARM)</b>	
	<b>PRIMARY TYPE</b>	<b>SECONDARY TYPE</b>	<b>PRIMARY TYPE</b>	<b>SECONDARY TYPE</b>
<b>Class I &amp; II</b>	<b>A</b>	<b>B1,B2 or D</b>	<b>A or C</b>	<b>A,B1,B2,C or D</b>
<b>Class III</b>	<b>A,B1 or B2</b>	<b>A,B1,B2,D or E</b>	<b>A,B1,B2 or C</b>	<b>A,B1,B2,C,D or E</b>
<b>Class IV</b>	<b>A,B1,B2 or D</b>	<b>A,B1,B2,D or E</b>	<b>A,B1,B2,C or D</b>	<b>A,B1,B2,C,D or E</b>

NOTE: The same type of device shall not be utilized for both the primary and secondary entrapment protection means. Use of a single device to cover both the openings and closing directions is in accordance with this requirement; however, a single device is not required to cover both directions. A combination of one Type B1 for one direction and one Type B2 for the other direction is the equivalent of one device for the purpose of complying with the requirements of either the primary or secondary entrapment protection means. Entrapment protection types:  
**Type A** - Inherent entrapment sensing system. See 31.1.5  
**TypeB1** - Provision for connection of, or supplied with, a non-contact sensor (photoelectric sensor or the equivalent). See 31.1.6-31.1.9.  
**Type B2** - Provision for connection of, or supplied with, a contact sensor (edge device or equivalent). See 31.1.7 and 31.1.10 - 31.1.12.  
**Type C** - Inherent adjustable clutch or pressure relief device. See 31.1.13.  
**Type D** - Provision for connection of, or supplied with, an actuating device requiring continuous pressure to maintain opening or closing motion of the gate. See 31.1.14 and 31.1.15.  
**Type E** - An inherent audio alarm. See 31.1.16, 31.1.17 and 31.1.18.

*This table is re-created from the 5th edition of the Standard for Safety for door, drapery, gate, louver, and Window Operators and Systems, UL-325, and is reprinted with permission of Underwriters Laboratories, Inc.*

### 1.4 Gate Operator Classifications

Four distinct types of classifications have been established:

- Class I: Residential usage, covering one to four single-family dwellings.
- Class II: Commercial usage where general public access is expected; a common application would be a public parking lot or gated community.
- Class III: Industrial usage where limited access is expected; one example is a ware- house property entrance not intended to serve the general public.
- Class IV: Restricted access; this includes applications such as a prison entrance that is monitored either in person or via closed circuit television.

*Gate speed shall be no greater than 1 foot per second in Class I and II applications.*

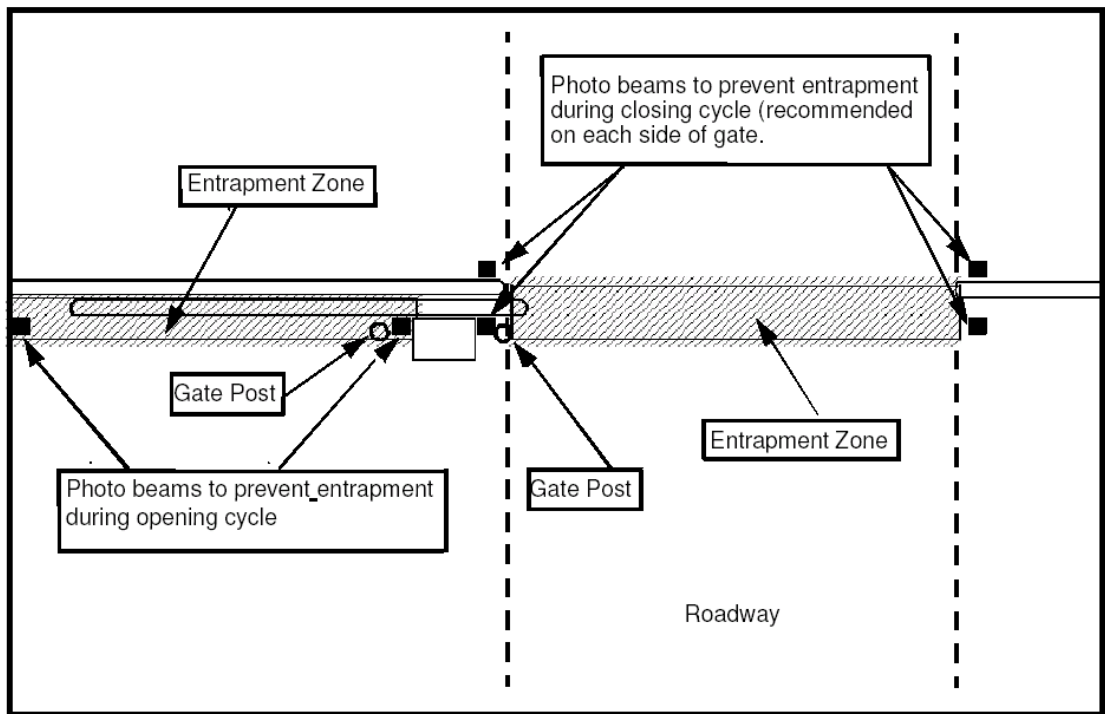


Figure 1 Non-Contact Sensor Detail

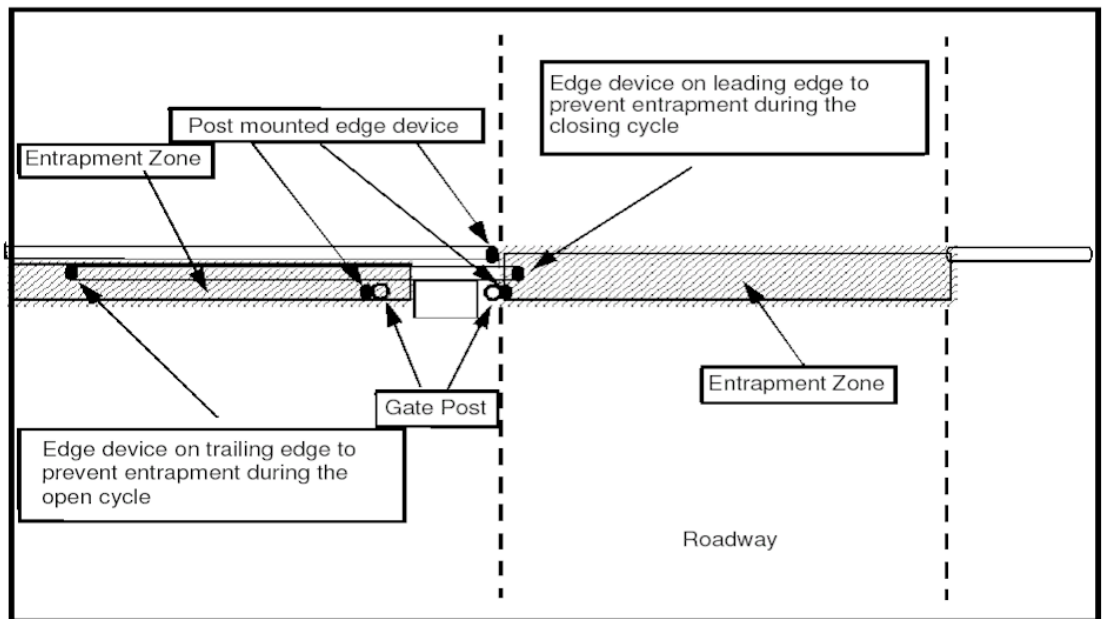


Figure 2 Contact Sensor Detail

## 2. Effect On Installation

These provisions will have several effects on gate and fence dealers:

- Gate and fence dealers should look for an indication of the Class of each operator, which will be specified by the gate operator manufacturer.
- Fence dealer sales personnel must match the site application with the Class of operator. The gate operator manufacturer should be contacted if there is any question about the site application.
- Both primary and secondary safety devices must be provided and matched to both the operator and site conditions. Although the gate operator manufacturer may provide or specify these devices, the gate/fence dealer should insure that they are installed and correctly matched. Any questions again should be directed to the gate operator manufacturer.
- Warning signs must be permanently affixed to the gate panel. UL-325 includes specific requirements on the format, content, and placement of these signs.

### 2.1 Factors Related To Gate Construction And Installation

- Vehicular gate operators should ONLY be used on vehicular gates and never pedestrian gates.
- A sliding gate should work smoothly with easy rolling/movement in both directions, with all exposed pinch points eliminated or guarded, prior to the installation of the operator.
- Controls should be as far away from the gate as possible to prevent “reach-through” occurrences.
- All openings of the horizontal slide gate must be guarded and screened from the bottom of the gate to a minimum of 4’ above the ground to prevent a 2 1/4” diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position.
- A minimum of 2 warning signs and placards must be installed and be visible in the area of the gate.
- All high and low voltage wire runs must comply with local electrical codes.

### 2.2 Device-Specific Installation Instructions

There are also specific installation requirements for certain types of entrapment protection devices. These specific requirements emphasize the care and attention that each device must be given prior to and during installation.

For gate operators utilizing non-contact sensor devices (Type B1), instructions should be consulted for placement for each application, care should be exercised to reduce the risk of nuisance tripping, and one or more of these devices must be installed where the risk of entrapment or obstruction exists.

For gate operators utilizing contact sensor devices (Type B2), several requirements are spelled out in UL-325. One or more contact sensors shall be located:

- at the leading edge, the trailing edge, and also post-mounted both inside and outside of, a vehicular horizontal slide gate;
- at the bottom edge of a vehicular vertical slide gate; and
- at the entrapment point of a vehicular vertical pivot gate.

A wired contact sensor shall be located, and its wiring arranged, so that communication between sensor and gate operator is not subjected to mechanical damage. A wireless contact sensor shall be located where the transmission of the signals is not obstructed or impeded by building structures, natural landscaping, or similar obstructions, and shall function under the intended end use conditions.

For operators utilizing continuous pressure activating device (type D), controls must be placed so that the user has full view of the gate area when the gate is moving. A placard must be placed adjacent to the controls and no other activation devices shall be connected. Most importantly, an automatic closing device shall not be employed.

### **2.3 Statements In Manufacturer's Instructions Concerning Installation**

Gate and fence dealers can expect to see in gate operator instructions the following statements:

1. The operator must be appropriate for the construction of the gate and the usage class of the gate. The appropriate primary and secondary safety devices to be used are a major consideration to support this requirement.
2. All openings of a horizontal slide gate, and the portion of the fence where the slide gate passes, must be guarded or screened. These specific requirements in UL-325 that govern this provision were developed to address "reach-through" occurrences. For example, slide gates must have a protective cover 48 inches in height extending from the bottom of the gate/fence panel.
3. All exposed entrapment points must be eliminated or guarded. It is up to the individual gate and fence dealers to identify these points on a product-by-product basis, or on a job-by-job basis.
4. Guarding must be supplied for exposed rollers. Exposed rollers are regarded as potential pinch points.

### **2.4 Gate And Fence Dealer Documentation Suggestions**

In dealing with the effects of the new provisions, here are some suggestions gate and fence dealers may consider to expand their documentation of gate projects. One possibility is to visually document, either via photography or videotape, the complete gate installation including applicable signs and labels, and the owner receiving the instruction manual from the installer. Other options could include the development and use of an installation checklist, a consumer sign-off form, and a service/preventative maintenance contract.

## 3. LXL Operator Models And Features

### 3.1 General Description

B&B ARMR's model LXL hydraulic sliding gate operator is designed to reliably operate many styles of sliding gates, including overhead track, ground track, and cantilever style gates. Our LXL series of operators are designed to operate in all four UL-325 classes of operators. The operator is unobtrusive in appearance, yet durable under heavy use. The design of the LXL Series incorporates numerous features intended to improve safety, maintain security, increase reliability and reduce maintenance.

The operator actuates the gate by two rotating wheels (the LXL uses an idler wheel and pinion gear). A drive rail bolted to the gate is drawn between the two drive wheels. The wheels are spring loaded against the drive rail to produce a positive friction feed in both directions. Spring loading the wheels also serves to correct for wheel wear. The drive wheels are rotated by series-connected hydraulic motors to minimize uneven rotation between the wheels.

Rotation direction is determined by the hydraulic valve system, not by the rotational direction of the electric motor. Independence from the electric motor rotation has the advantage that the direction of gate travel can be instantly reversed without the use of brakes. Also, the hydraulic valve, when not energized, rests in the neutral position. This effectively locks the hydraulic system, drive wheels, and the gate in the stopped position. Controls operate on safe and reliable 24VDC regulated voltage.

### 3.2 LXL Operator Features

The LXL hydraulic slide gate operator incorporates the following features and options:

- Designed to meet UL-325 Class I-IV.
- Inherent entrapment sensing on all units
- Simple user interface utilizes a 12x4 character LCD display
- User-Programmable right-hand to left-hand conversion; no hose swapping required
- Delay on reverse standard
- 24VAC and 24VDC auxiliary control power
- Low maintenance - No sprockets, chains, or pulleys to adjust
- Built-in, fully adjustable maximum run and auto close timers
- Soft start / soft stop (option)
- Plug-in loop detectors (option)
- Hand-operated, quick release drive system for manual operation
- Master/slave capability
- Interlocking capability
- Proximity limit switches eliminate false tripping due to misaligned drive rail

### 3.3 Models Available

NOTE: To order any of the LXL models, substitute the required input voltage for the "v" and the required input phase for "p".

Typical Available Models	Travel Speed	Gate Size	Pull Force	UL Class
LXL-15vp-SS Standard Speed	1.0 ft/s	2,000 lbs	400 lbs	I-IV
LXL-15vp-HS High Speed	2.0 ft/s	1,000 lbs	300 lbs	III & IV
LXL-20vp-HD Heavy Duty	1.0 ft/s	3,000 lbs	600 lbs	I-IV
LXLR-15vp-SS Rack & Pinion	1.0 ft/s	3,000 lbs	350 lbs	I-IV
LXLR-20vp-HD Rack & Pinion	1.0 ft/s	4,700 lbs	450 lbs	I-IV
LXLB-13vp-SS Battery Back-up	1.0 ft/s	2,000 lbs	350 lbs	I-IV
LXLB-13vp-HS Battery Back-up High Speed	1.0 ft/s	1,000 lbs	350 lbs	III & IV
LXLD-20vp-SS Extra Heavy Duty	0.8 ft/s	20,000 lbs	1,700 lbs	I-IV
LXLT-30vp-SS Extreme Heavy Duty	0.8ft/s	25,000 lbs	1,800 lbs	III-IV

a. Travel speed on all operators limited to 1 foot per second in Class I and II applications.

Other models for extra heavy-duty operation are available for extremely long and heavy gates. Contact your local distributor or the factory for more information.

## 4. Installing and Programming the LXL Operator

Installation and programming of the LXL series gate operators can be accomplished in a few easy steps. The following illustrations will guide you through the process of mounting the operator and drive rail, connecting power and programming the LXL controller functions.

**NOTE:** Installation of the gate operator requires connection of high voltage power, which should only be performed by a licensed electrician.

### 4.1 Prepare Concrete Pad

	<ol style="list-style-type: none"> <li>1. Pour concrete pad 24"W x 36"L and at least 6" below frost line.</li> <li>2. Conduit needs to be installed so that the conduit stubs up in the operators supplied conduit entrance.</li> <li>3. Allow concrete to cure before attempting to anchor gate operator to the pad.</li> </ol>
--	--

### 4.2 Anchor Gate Operator To Pad

	<ol style="list-style-type: none"> <li>1. Double-check 3" measurement from face of gate to center of drive wheels and ensure operator is parallel with the gate panel.</li> <li>2. Drill 4 anchor bolt holes (1/2"x6"). It is not necessary to move the operator.</li> <li>3. Drive anchor bolts into holes, being careful not to damage bolt threads.</li> <li>4. Tighten nuts.</li> </ol>
--	---

### 4.3 Mount Drive Rail

<p>3.00</p> <p>DRIVE RAIL</p> <p>WHEELS</p> <p>GATE</p> <p>TOP VIEW SHOWING DRIVE RAIL MOUNTING AND SPLICING</p> <p>END VIEW SHOWING SPLICE PLATE MOUNTING</p>	<ol style="list-style-type: none"> <li>1. Place gate operator on the pad and measure 3” from the face of a vertical gate member to center of the wheels.</li> <li>2. With the drive wheels disengaged, slide the drive rail between the wheels, to the closed position.</li> <li>3. Align the drive rail with a clearance of 12.375 inches from the base of the operator to the center of the drive rail. Attach drive rail to the vertical member closest to the operator. Slide gate open and repeat for each vertical member.</li> <li>4. Close the gate. With the drive wheels disengaged, slide the drive rail between the open and closed limit and verify that the drive rail is level. Also verify that the drive rail is equidistant from the drive wheels.</li> </ol>
--	---

### 4.4 Install Limit Switch Trip Plates

<p>GATE PANEL</p> <p>DRIVE RAIL</p> <p>LIMIT PLATE</p> <p>PROXIMITY SWITCH</p> <p>.875</p> <p>.250</p>	<ol style="list-style-type: none"> <li>1. Slide the gate to the full open position.</li> <li>2. On the top of the drive rail, place a trip plate so that the last 2” is in front of the proximity switch.</li> <li>3. Mark and drill holes. Mount limit switch as shown under drive rail.</li> <li>4. Repeat for the close position</li> </ol> <p><b>Note:</b> Maintain a distance of 1/4” between proximity switch and limit plate. Adjust switch away from operator if necessary.</p>
--	---

## 4.5 Connect Primary Power

Connecting the Primary Power should be performed by a license electrician. The primary power must have a circuit breaker in-line from power source in accordance to NEC.

	<p>A\C UNITS ONLY FOR D\C UNITS, GO TO STEP 4.7-4.8</p> <ol style="list-style-type: none"> <li>1. Connect the primary power as shown in the illustration.</li> <li>2. Earth ground the operator. <b>THIS IS NOT AN OPTION!</b></li> <li>3. Drive a solid copper rod at least 36" into the ground.</li> <li>4. Using a #10 solid copper wire, connect ground wire from the rod to the ground lug located in the main power disconnect box.</li> </ol>
--	--

## 4.6 Install Limit Switches

	<ol style="list-style-type: none"> <li>1. Insert the limit wired into the A limit on the board into the whole marked LIMIT A.</li> <li>2. Adjust the limit so that it is approximately 1/4" away from the trip plate and leave a little room to adjust.</li> <li>3. Disengage the drive wheels. Turn on the operator and move the gate trip plate in front of the limit and adjust the limit in or out until the limit senses the trip plate.</li> <li>4. Tighten the limit in place.</li> <li>5. Repeat for the B limit.</li> <li>6. CONTINUE TO STEP 4.9</li> </ol> <p><b>Note:</b> on the supplied limits, a red light will light up on the back of the limit when it senses the trip plate.</p>
--	---

### 4.7 Connect Primary / Battery Power D/C Units Only

	<ol style="list-style-type: none"> <li>1. Connect the primary power to switch S1B and the batteries to switch S1A in the converter enclosure.</li> <li>2. Earth ground the enclosure. <b>THIS IS NOT AN OPTION!</b></li> <li>3. Drive a solid copper rod at least 36” into the ground.</li> <li>4. Using a #10 solid copper wire, connect ground wire from the rod to the ground lug located in the control cubicle.</li> </ol>
--	---

### 4.8 Connect Converter To Operator

	<ol style="list-style-type: none"> <li>1. Connect the converter enclosure to switch S4 in the gate operator using #6 AWG wire.</li> <li>2. Earth ground the operator. <b>THIS IS NOT AN OPTION!</b></li> <li>3. Drive a solid copper rod at least 36” into the ground.</li> <li>4. Using a #10 solid copper wire, connect ground wire from the rod to the ground lug located in the operator.</li> </ol>
--	--

### 4.9 Install Vent Cap

	<ol style="list-style-type: none"> <li>1. Locate the red plug on the hydraulic reservoir.</li> <li>2. Remove the red plug and replace with the supplied vent cap.</li> <li>3. Keep the red plug should removal of the vent cap be necessary.</li> </ol>
--	---

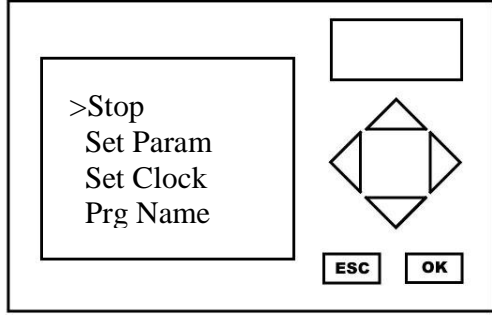
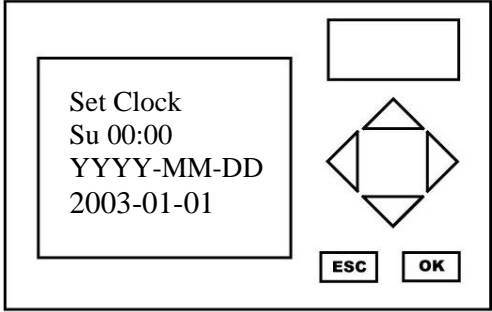
### 4.10 Set Operator Handing (Inside Looking Out)

<p style="text-align: center;"><b>3 BUTTON CONTROL STATION</b></p> <p><b>RIGHT HAND OPERATION</b></p> <p>OUTSIDE INSIDE</p> <p>OPERATOR</p> <p><b>LEFT HAND OPERATION</b></p> <p>OUTSIDE INSIDE</p> <p>OPERATOR</p> <p>OPEN</p> <p>CLOSE</p> <p>STOP</p>	<ol style="list-style-type: none"> <li>1. With power off, move the gate to the close position with the limit plate in front of the close limit switch.</li> <li>2. While holding down STOP and CLOSE buttons on supplied 3 button station, turn operator power on.</li> <li>3. Wait for the alarm to sound (date and time will flash on first power up), then release the STOP and CLOSE buttons. Handing is now set.</li> </ol>
--	--

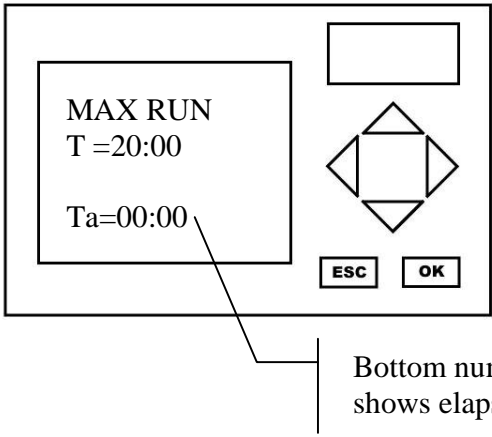
#### 4.10.1 HCMSGOFF Parameter

<p>HCMSGOFF</p> <p>Switch-Off</p> <p>ESC OK</p>	<p>The LXL operator now has the ability to display a message if the Handing has been changed. To enable this setting;</p> <ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>1. Press the UP grey arrow key and scroll through the options to HCMSGOFF</li> <li>2. Press OK.</li> <li>3. The S on Switch will start flashing</li> <li>4. Use the arrow keys to Off to On</li> <li>5. Press OK to save</li> </ol>
---	--

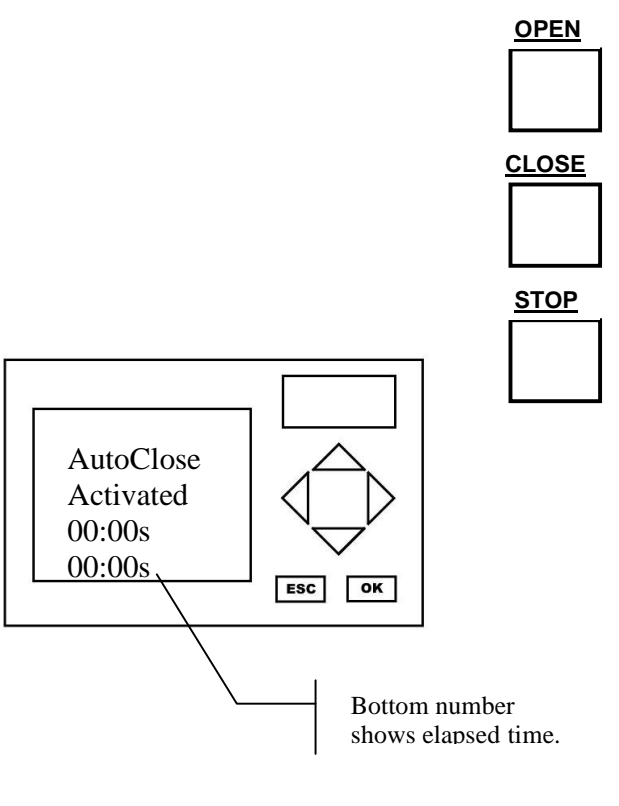
### 4.11 Setting The Date And Time (optional, not required)

	<ol style="list-style-type: none"> <li>1. Turn power on. Date and time will be flashing. Press the ESC key.</li> <li>2. This is the main menu. Use the UP and DOWN arrow keys to select 'Set Clock', and press the OK button.</li> <li>3. Press OK again. A cursor flashes under the parameter to be changed.</li> <li>4. Use the UP and DOWN arrow keys to change the value. Use the LEFT and RIGHT arrow keys to move between lines.</li> <li>5. Press OK when finished.</li> </ol> <p>NOTE: *Time format is military time only.</p>
	

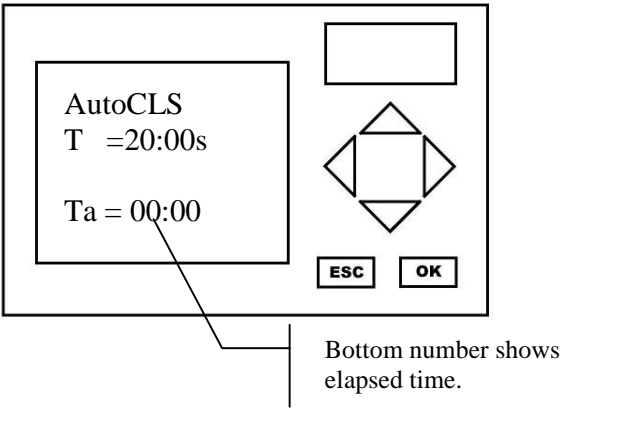
### 4.12 Setting The Max Run Timer

 <p>Bottom number shows elapsed time.</p>	<ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>2. Use the UP arrow to scroll to the MAX RUN screen and press OK.</li> <li>3. Press OK again to activate cursor.</li> <li>4. Use the arrow keys to set the desired time.</li> <li>5. Press OK to save</li> </ol> <p>Note: Max run time = gate length ÷ gate speed * 2 + 5 seconds</p>
--	--

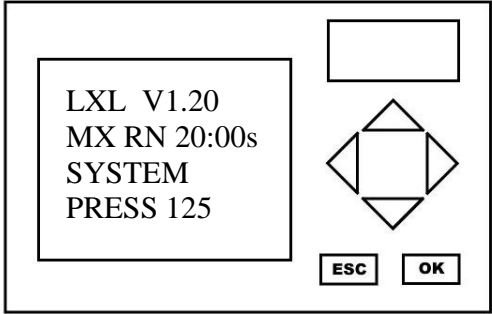
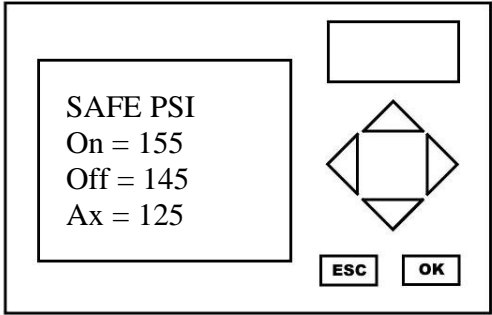
### 4.13 Turning ON / OFF The Timer To Close

	<p>With the unit powered down and the gate in the closed position, locate the supplied 3 button control station and do the following (in order):</p> <ol style="list-style-type: none"> <li>1. Press and hold the STOP button</li> <li>2. While holding the STOP button, press and hold the CLOSE button.</li> <li>3. While holding the STOP and CLOSE buttons, press and release the OPEN button.</li> <li>4. Release the CLOSE button, then the STOP button.</li> <li>5. Trigger the open limit switch. If the timer is on, you will see the screen to the left.</li> <li>6. Repeat step 1 to toggle the timer off</li> </ol> <p><i>NOTE: The AutoClose screen will not be visible if the timer is turned off</i></p> <p><i>There is a 3 minute window with which to turn the timer to close on or off each time the operator power is turned on.</i></p>
--	---

### 4.14 Setting The Timer To Close

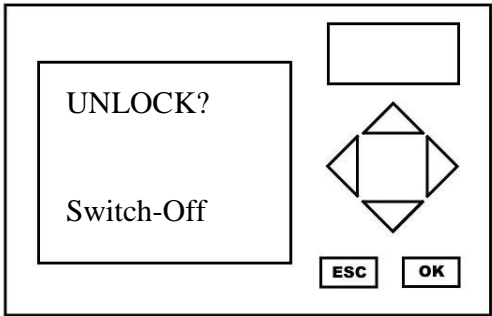
	<ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>2. Use the UP arrow to scroll to the AUTO CLS screen and press OK.</li> <li>3. Press OK again to activate cursor. Use the arrow keys to set the desired time.</li> <li>4. Press OK to save</li> </ol> <p>Note: s = seconds, m = minutes, h = hours</p>
---	---

## 4.15 Setting The Inherent Safety

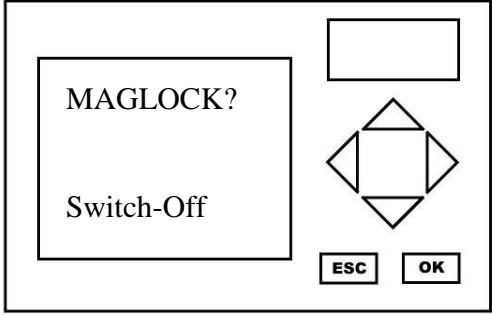
	<ol style="list-style-type: none"> <li>1. Press the ESC button to return to the main menu.</li> <li>2. Engage the drive wheels on the drive rail. Open and Close the operator using the 3 button control station. The screen on the left will appear.</li> <li>3. While the gate is running, pay attention to the SYSTEM PRESS value. This is the amount of pressure required to move the gate.</li> <li>4. Stop the gate operator and press the ESC button to enter the main menu.</li> <li>5. Select 'Set Param' and use the UP arrow key to scroll to SAFE PSI.</li> <li>6. Press OK to activate the cursor. Enter the On value (SYSTEM PRESS+30), then the Off value (On-10).</li> <li>7. Press OK to save and return to the main menu.</li> </ol>
	

## 4.16 Setting the Gate Locking Device

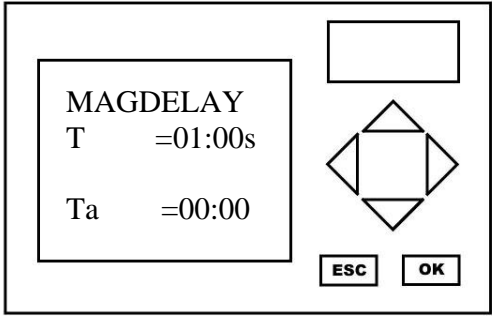
### 4.16.1 Self Latching Lock Parameter

	<ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>2. UNLOCK will be the first user parameter, press OK.</li> <li>3. The S on Switch will start flashing</li> <li>4. Use the UP grey arrow key to change Off to On</li> <li>5. Press OK to save</li> </ol> <p>Now you will need to wire in the self latching lock as shown on page 40</p>
---	---

#### 4.16.2 Maglock Parameter

	<ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>2. Press the UP grey arrow key and scroll through the options to MAGLOCK?</li> <li>3. Press OK.</li> <li>4. The S on Switch will start flashing</li> <li>5. Use the arrow keys to Off to On</li> <li>6. Press OK to save</li> </ol>
<p>Now you will need to wire in the maglock as shown on page 40</p>	

#### 4.16.3 Maglock Delay Parameter

	<p>When using a Maglock you have an option to change a delay from when the close limit is made and the voltage being applied to the maglock. Default is 1 second. To change this setting;</p>
<ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>1. Press the UP grey arrow key and scroll through the options to MAGDELAY</li> <li>2. Press OK.</li> <li>3. The 0 on the T line will start flashing</li> <li>4. Use the UP grey arrow keys toggle value.</li> <li>5. Use the RIGHT or LEFT grey arrow keys to move with the time frame</li> <li>6. Once desired time is entered</li> <li>7. Press OK to save</li> </ol>	
<p>Note: s = seconds, m = minutes, h = hours</p>	

### 4.17 Maintain Input Parameters

The inputs that cause the gate to open or close has a feature where you can enable or disable a maintain command. These inputs are Open, Close, Open/Close, and Int Open. Meaning that you can change the command from a pulsed input to a hold until complete command or set a time which has to be maintain before input is recognized as a valid input.

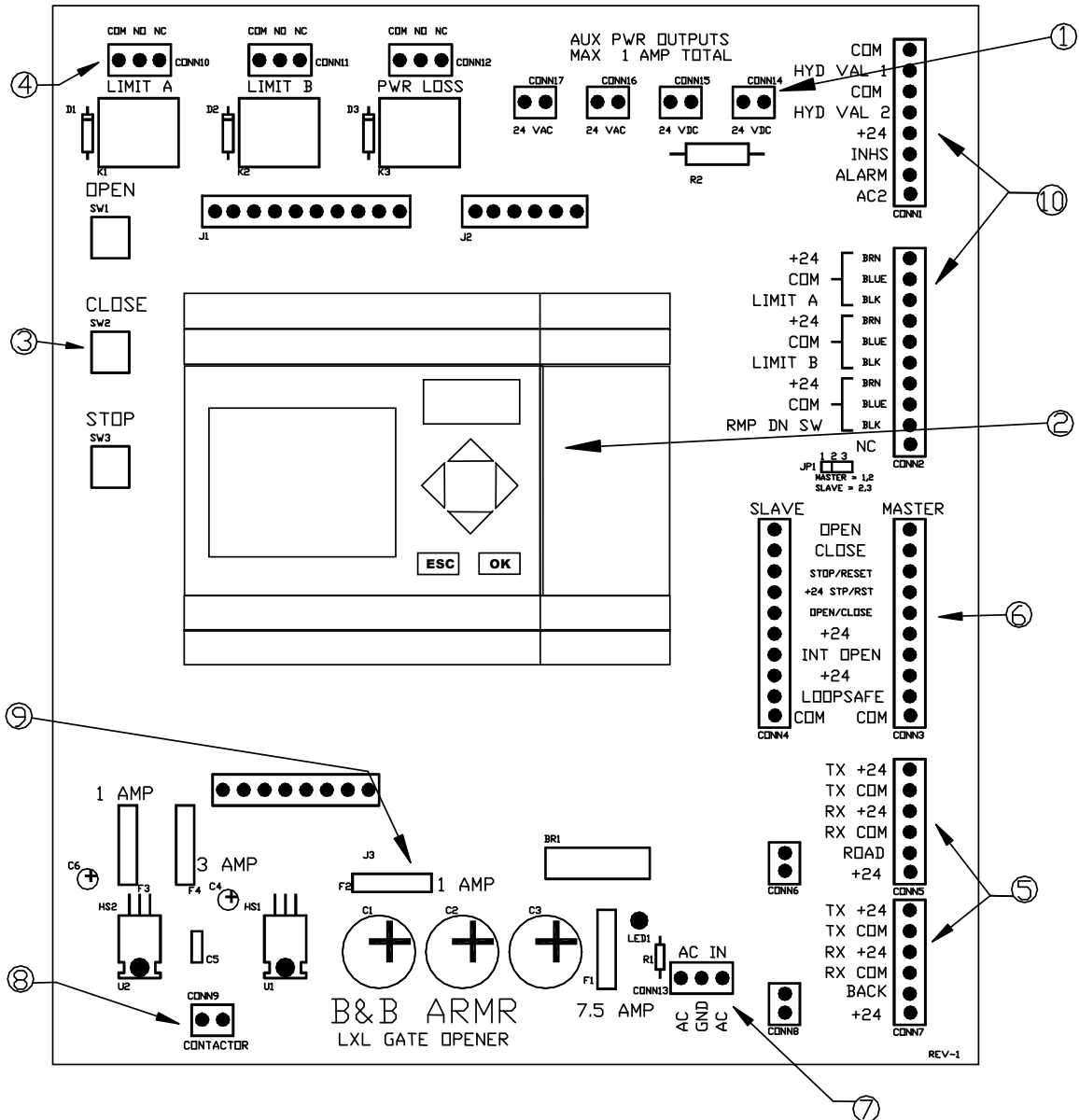
**4.17.1 MAINOPEN Parameter**

	<ol style="list-style-type: none"> <li>5. From the main menu, select 'Set Param'.</li> <li>2. Press the UP grey arrow key and scroll through the options to MAINOPEN</li> <li>3. Press OK.</li> <li>4. The S on Switch will start flashing</li> <li>5. Use the arrow keys to Off to On</li> <li>6. Press OK to save</li> <li>7. You can now set the maintain time</li> </ol>
<p>Changing the Switch to On enables the Maintain Open command</p>	

	<ol style="list-style-type: none"> <li>1. From the main menu, select 'Set Param'.</li> <li>8. Press the UP grey arrow key and scroll through the options to MANCLOSE</li> <li>9. Press OK.</li> <li>10. The S on Switch will start flashing</li> <li>11. Use the arrow keys to Off to On</li> <li>12. Press OK to save</li> </ol>
<p>Changing the Switch to On enables the Maintain Close command</p>	

	<ol style="list-style-type: none"> <li>2. From the main menu, select 'Set Param'.</li> <li>13. Press the UP grey arrow key and scroll through the options to MAINOPEN</li> <li>14. Press OK.</li> <li>15. The S on Switch will start flashing</li> <li>16. Use the arrow keys to Off to On</li> <li>17. Press OK to save</li> </ol>
<p>Changing the Switch to On enables the Maintain Open command</p>	

# 6. The LXL Interface Board

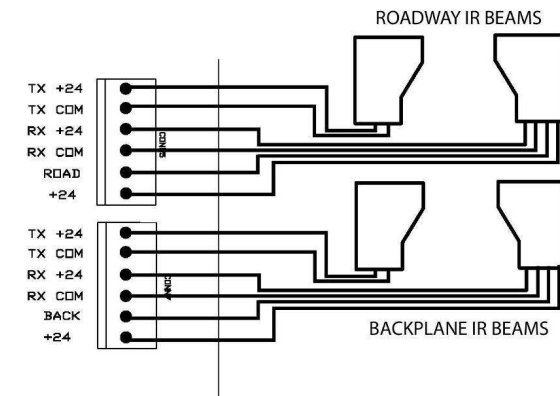


- 1 24VAC/24VDC auxiliary power
- 2 Processor/Controller
- 3 Built-in 3 button station
- 4 Position indication and power loss relays
- 5 Secondary safety device connections
- 6 Control inputs (open devices, safety loops, etc.)
- 7 Input power for control board
- 8 Contactor output
- 9 1 amp fuse (processor protection)
- 10 Factory connections

# 7. Secondary Safety Devices

Connecting safety devices to the secondary safety connectors will stop the gate on the detection of the safety and proceed in the event of clearing the safety. To reverse the gate on the event of a safety, you must connect the safety device to the loopsafe terminal on connector 3.

## INFRARED BEAMS

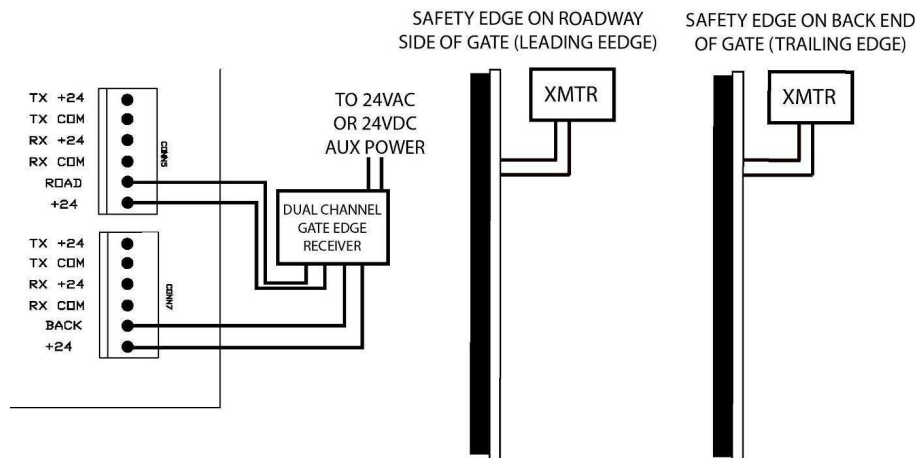


### IMPORTANT NOTE:

UL 325 approved secondary safety devices **MUST** be used for the gate installation to comply with the requirements of UL 325.

Refer to the UL approved manufacturer's documentation for proper installation of secondary safety devices.

## SAFETY EDGES



\*Note: The ROAD and BACK connections are normally open connections

UL Approved Secondary Safety Devices:

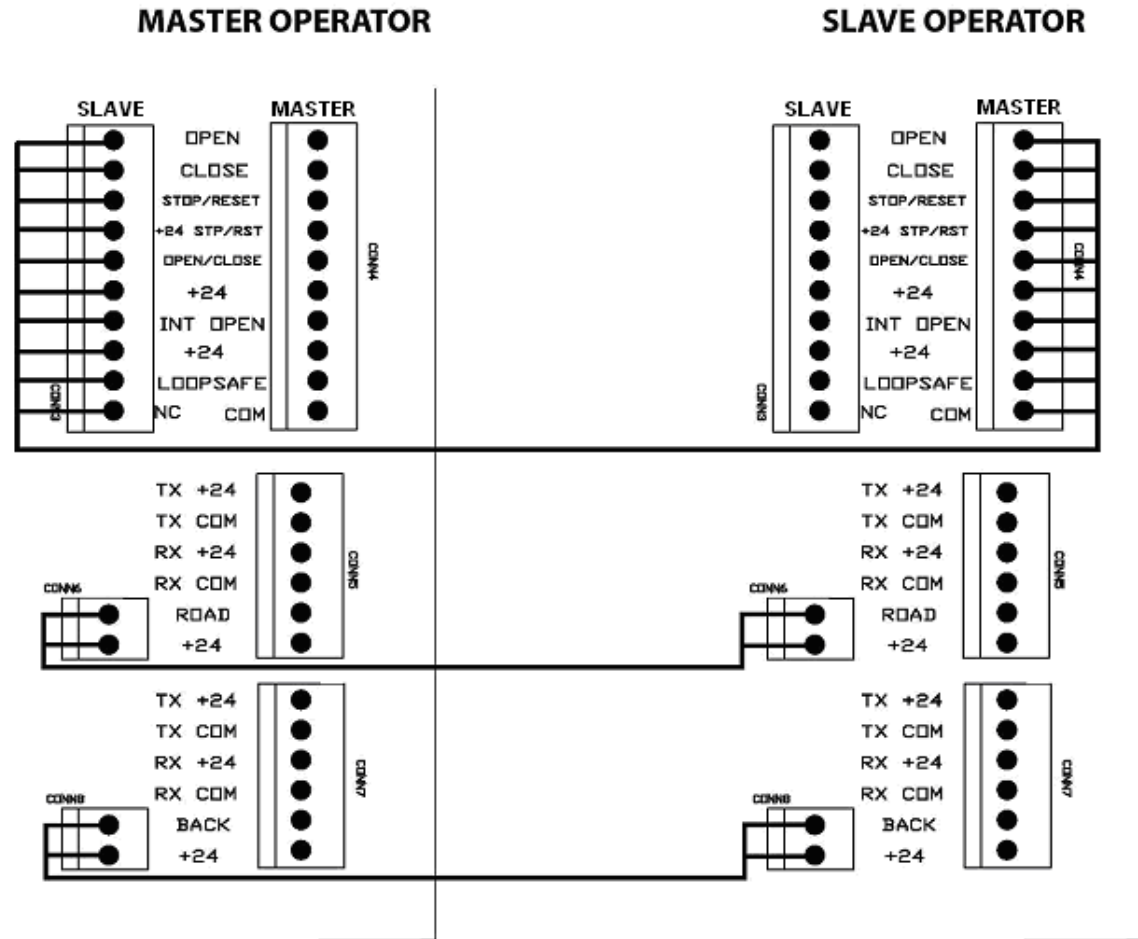
**Miller Edge** - manufacturer of contact sensors for all types of gates (800-220-EDGE).

website: <http://www.milleredge.com>

**EMX Industries** - manufacturer of non-contact sensors for gates (800-426-9912).

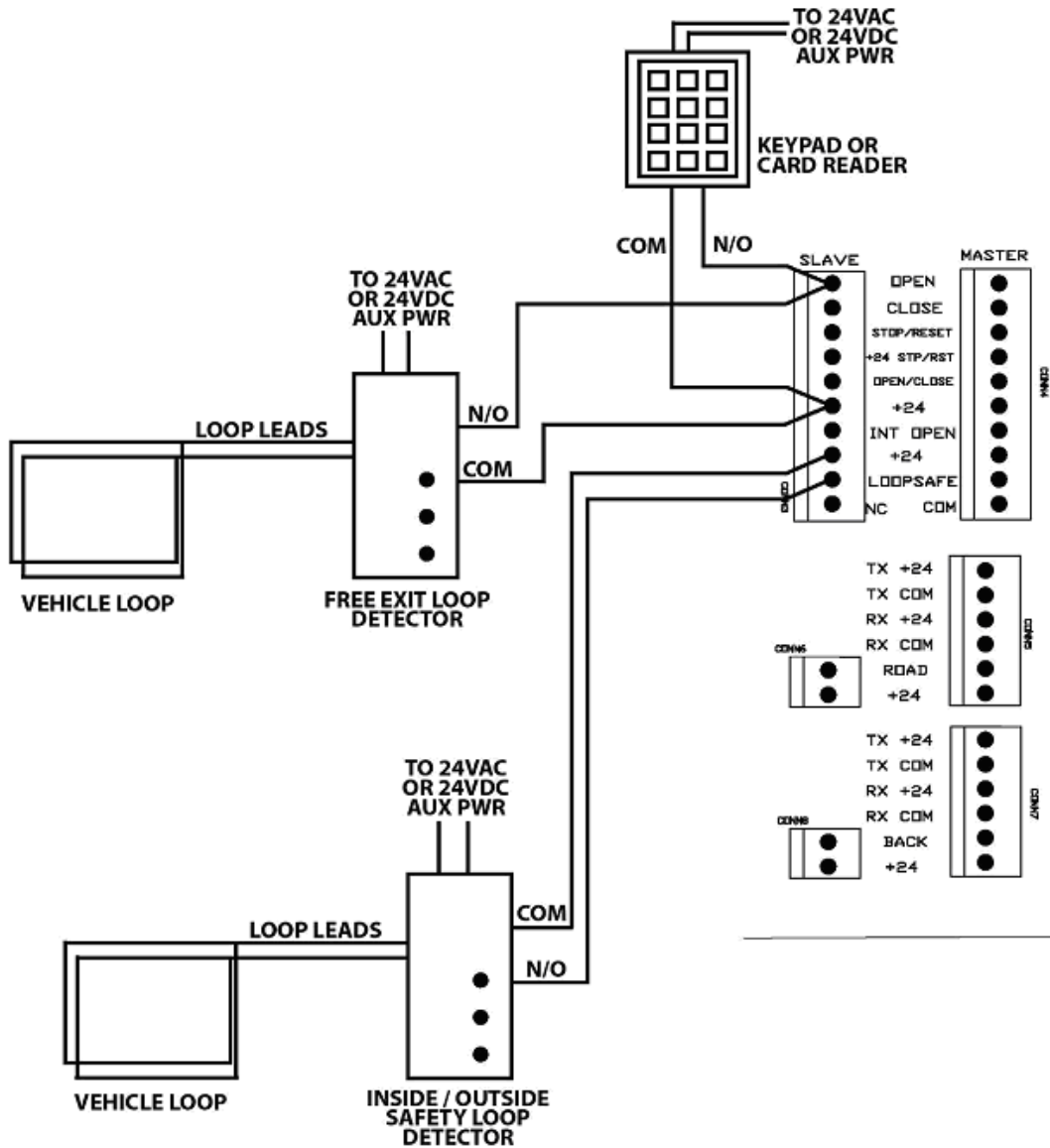
website: <http://www.emxinc.com>

# 8. Master Slave Connections



- 10 conductors required for master / slave connection between operators (16-18 gauge wire), plus 4 for safety devices
- Each operator must be programmed separately
- Secondary safety devices must be connected to their respective operators for proper operation, and to ensure UL 325 compliance

# 9. Other Device Connections



# 10. Maintenance

Here is a list of items that should be checked on a routine basis.

## 2.1 Hardware / Drive Wheels

- ❑ **Check for normal wheel wear** - Look for cracks or pieces of the wheel tread that may have worn or broken off. The drive wheels require periodic replacement under normal service when the wheels become out-of-round or have cracked. Over tightening of the wheel clamping spring will shorten the wheel life.
- ❑ **Check for loose or broken fasteners** - This check should also include the fasteners on the gate panel. A broken fastener on the gate panel could cause undue stress on the operator. Also, inspect the anchor bolts that hold the gate operator in position. While inspecting these bolts, check for signs the operator has “walked” out of its original mounting position
- ❑ **Cycle test the operator** - Run the gate through several cycles to confirm that there is no binding of the gate panel and that the drive rail is properly aligned with the gate operator. Also, monitor the wheels for slippage. If the wheels slip, tighten down on the spring adjustment nut until no slippage occurs during normal gate travel. Tighten the spring only enough to eliminate slippage during normal travel.

## 2.2 Hydraulic System

- ❑ **Remove the vent cap and check the hydraulic fluid level** -The vent cap is located on the reservoir assembly (bottom right of the operator). After removing the vent plug, a visual inspection should show the fluid level no more than 1” below the vent plug. If fluid needs to be added, use Envirollogic EL132 hydraulic fluid. Other available hydraulic fluids are:  
Texaco Aircraft Oil #15  
Mobil DTE 24

**IMPORTANT NOTE:** All B&B ARMR operators ship with Envirollogic EL132 hydraulic fluid. If another hydraulic fluid is substituted; the existing fluid must be drained to avoid mixing. Never mix hydraulic fluids!

- ❑ **Check for leaks in the hydraulic system** - This includes the hydraulic lines, reservoir and fittings. Leakage may occur in the fittings after a period use. If this happens, moderate tightening of the hose fittings should stop the leakage. If the leak persists, replace the leaking hose assembly.

## 2.3 Electronic Components

- ❑ **Check for loose or frayed wires** - Carefully inspect all input and output connections to ensure all wires are seated properly in the terminal blocks. A loose or frayed wire can create different “phantom” problems.

- ❑ **Check gate input devices for proper operation** - These devices include push buttons, keypads, loops, etc. An improperly functioning input device could give the impression the gate operator is malfunctioning.
  
- ❑ **Test all safety devices for proper operation** - Test the inherent safety to ensure the gate reverses after coming in contact with an obstruction. Adjust the hydraulic pressure by following step 12 in the *Installation and Programming* section of this manual.

# 11. Appendix

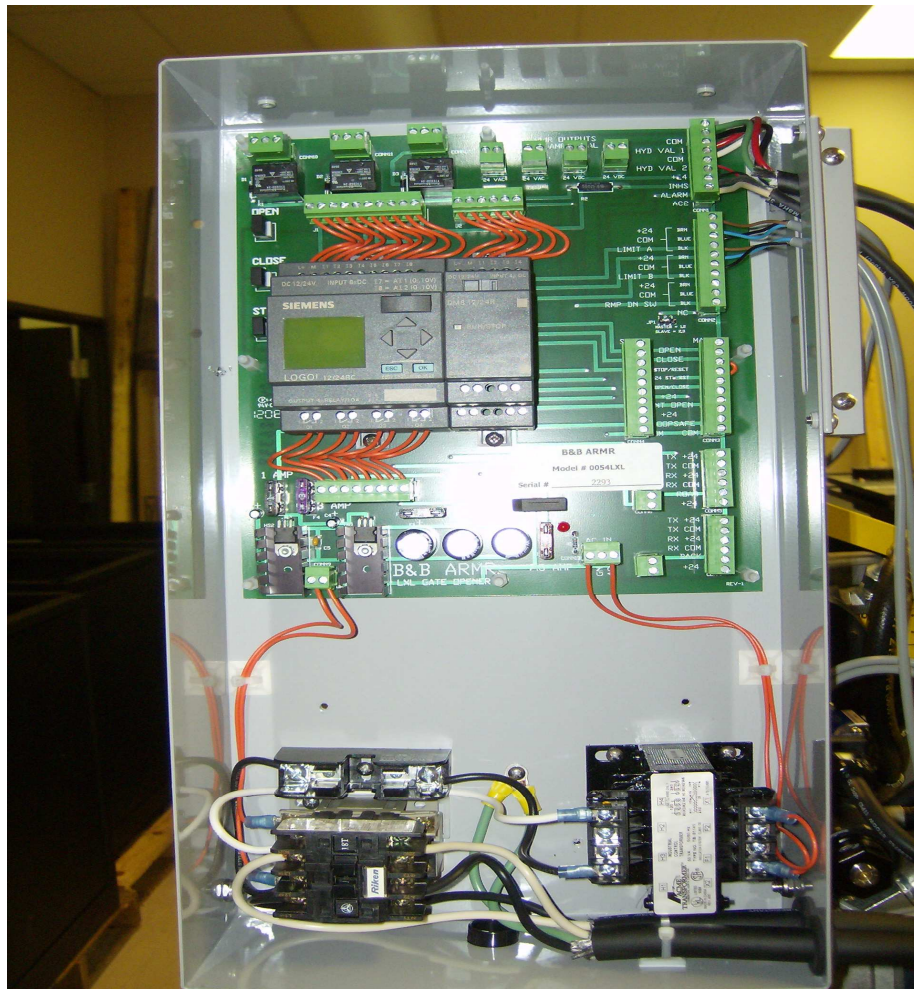
\*\* Note: There are some changes in the drawing below. Standard speed setup is shown. For high speed and rack and pinion users please note that these item numbers are different:

Number 31 will be XHYD-103-1572 for standard and high speed units

Number 31 will be 0050-RS-1001010 for rack and pinion units

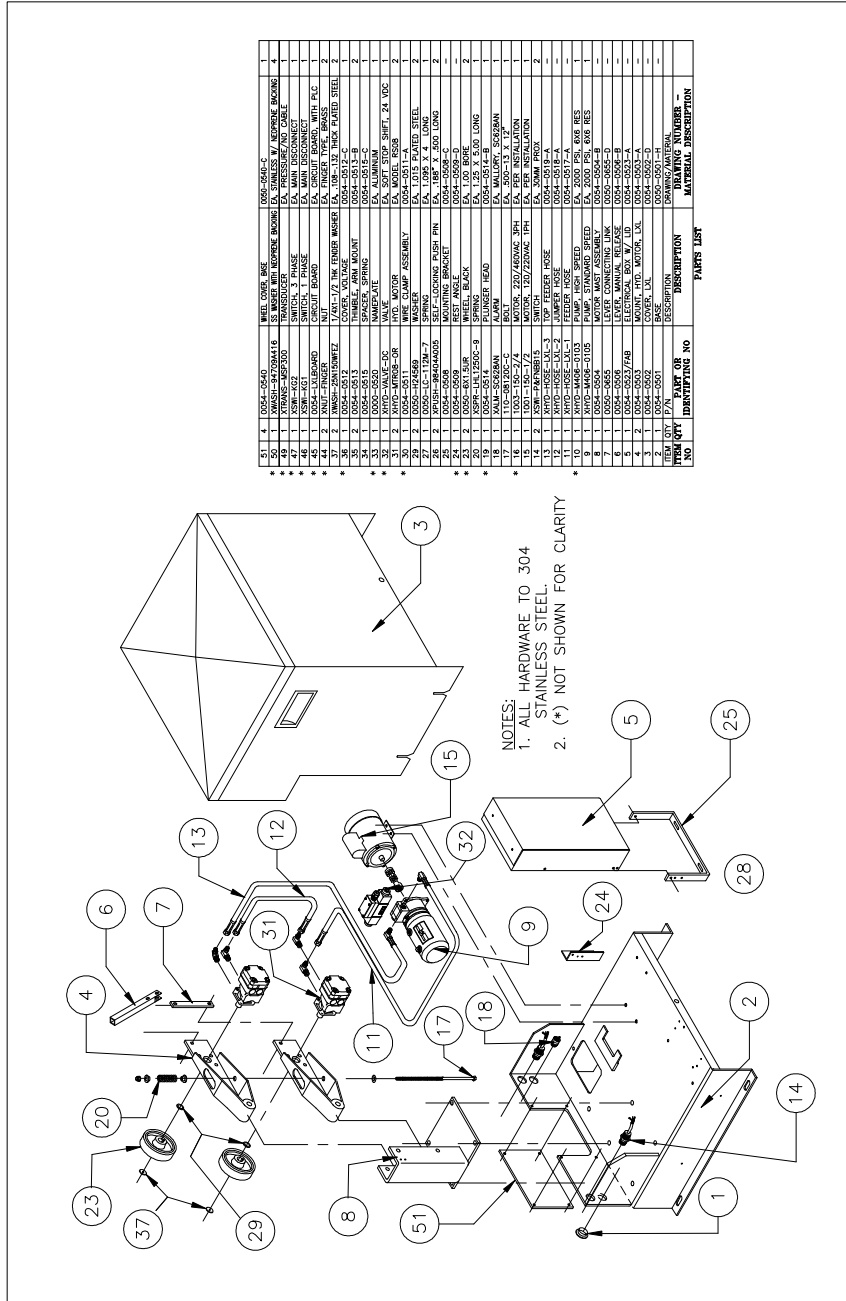
Number 9 will be XHYD-M406-0103 for high speed units

\*Also, note for electrical components such as transformers or motors your voltage and phase may change the part number required



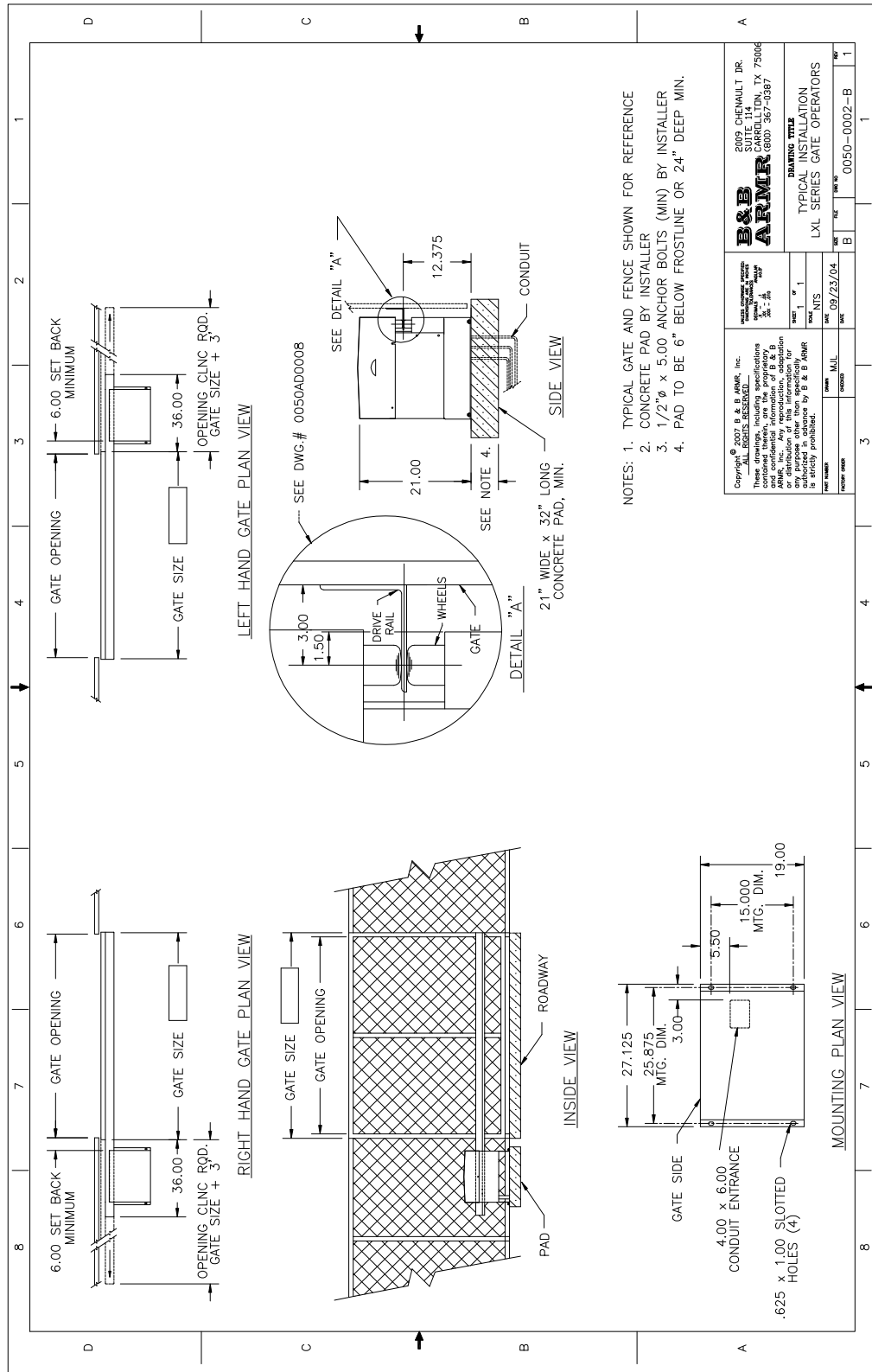
**LXL electrical cubical**

## 2.4 General Parts Breakdown

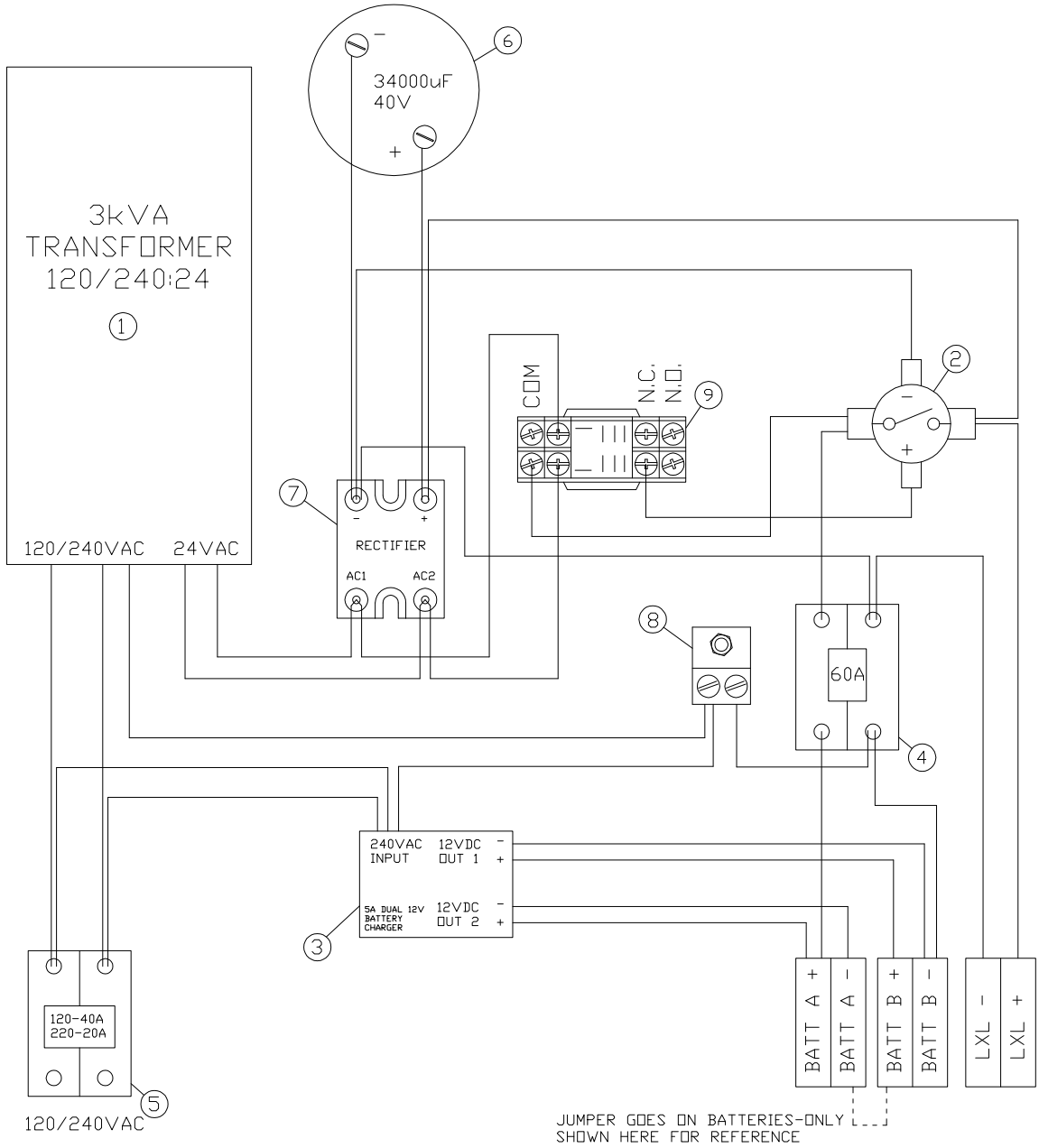


ITEM NO	QTY	PART OR IDENTIFICATION NO	DESCRIPTION	DRAWING NUMBER	MATERIAL	DESCRIPTION
51	4	0054-0540	WHEEL OVER RISE	0054-0540-C		W/ KROHNE BRACKS
49	1	0054-0540-015	TRANSDUCER	0054-0540-015		EA. PRESSURE/AIR CABLE
48	1	0054-0540-016	SWITCH	0054-0540-016		EA. W/MT DISCONNECT
47	1	0054-0540-017	SWITCH	0054-0540-017		EA. W/MT DISCONNECT
45	1	0054-0540-018	CIRCUIT BOARD	0054-0540-018		EA. CIRCUIT BOARD, W/MT PLC
44	1	0054-0540-019	CIRCUIT BOARD	0054-0540-019		EA. CIRCUIT BOARD, W/MT PLC
37	2	0054-0540-020	COVER, VOLTAGE	0054-0540-020		EA. 108 X 132 X 163 PLATED STEEL
36	1	0054-0540-021	COVER, VOLTAGE	0054-0540-021		EA. 108 X 132 X 163 PLATED STEEL
35	1	0054-0540-022	COVER, VOLTAGE	0054-0540-022		EA. 108 X 132 X 163 PLATED STEEL
34	1	0054-0540-023	COVER, VOLTAGE	0054-0540-023		EA. 108 X 132 X 163 PLATED STEEL
33	1	0054-0540-024	COVER, VOLTAGE	0054-0540-024		EA. 108 X 132 X 163 PLATED STEEL
32	1	0054-0540-025	COVER, VOLTAGE	0054-0540-025		EA. 108 X 132 X 163 PLATED STEEL
31	2	0054-0540-026	COVER, VOLTAGE	0054-0540-026		EA. 108 X 132 X 163 PLATED STEEL
30	2	0054-0540-027	COVER, VOLTAGE	0054-0540-027		EA. 108 X 132 X 163 PLATED STEEL
29	2	0054-0540-028	COVER, VOLTAGE	0054-0540-028		EA. 108 X 132 X 163 PLATED STEEL
28	1	0054-0540-029	COVER, VOLTAGE	0054-0540-029		EA. 108 X 132 X 163 PLATED STEEL
27	1	0054-0540-030	COVER, VOLTAGE	0054-0540-030		EA. 108 X 132 X 163 PLATED STEEL
26	1	0054-0540-031	COVER, VOLTAGE	0054-0540-031		EA. 108 X 132 X 163 PLATED STEEL
25	1	0054-0540-032	COVER, VOLTAGE	0054-0540-032		EA. 108 X 132 X 163 PLATED STEEL
24	1	0054-0540-033	COVER, VOLTAGE	0054-0540-033		EA. 108 X 132 X 163 PLATED STEEL
23	1	0054-0540-034	COVER, VOLTAGE	0054-0540-034		EA. 108 X 132 X 163 PLATED STEEL
22	1	0054-0540-035	COVER, VOLTAGE	0054-0540-035		EA. 108 X 132 X 163 PLATED STEEL
21	1	0054-0540-036	COVER, VOLTAGE	0054-0540-036		EA. 108 X 132 X 163 PLATED STEEL
20	1	0054-0540-037	COVER, VOLTAGE	0054-0540-037		EA. 108 X 132 X 163 PLATED STEEL
19	1	0054-0540-038	COVER, VOLTAGE	0054-0540-038		EA. 108 X 132 X 163 PLATED STEEL
18	1	0054-0540-039	COVER, VOLTAGE	0054-0540-039		EA. 108 X 132 X 163 PLATED STEEL
17	1	0054-0540-040	COVER, VOLTAGE	0054-0540-040		EA. 108 X 132 X 163 PLATED STEEL
16	1	0054-0540-041	COVER, VOLTAGE	0054-0540-041		EA. 108 X 132 X 163 PLATED STEEL
15	1	0054-0540-042	COVER, VOLTAGE	0054-0540-042		EA. 108 X 132 X 163 PLATED STEEL
14	2	0054-0540-043	COVER, VOLTAGE	0054-0540-043		EA. 108 X 132 X 163 PLATED STEEL
13	1	0054-0540-044	COVER, VOLTAGE	0054-0540-044		EA. 108 X 132 X 163 PLATED STEEL
12	1	0054-0540-045	COVER, VOLTAGE	0054-0540-045		EA. 108 X 132 X 163 PLATED STEEL
11	1	0054-0540-046	COVER, VOLTAGE	0054-0540-046		EA. 108 X 132 X 163 PLATED STEEL
10	1	0054-0540-047	COVER, VOLTAGE	0054-0540-047		EA. 108 X 132 X 163 PLATED STEEL
9	1	0054-0540-048	COVER, VOLTAGE	0054-0540-048		EA. 108 X 132 X 163 PLATED STEEL
8	1	0054-0540-049	COVER, VOLTAGE	0054-0540-049		EA. 108 X 132 X 163 PLATED STEEL
7	1	0054-0540-050	COVER, VOLTAGE	0054-0540-050		EA. 108 X 132 X 163 PLATED STEEL
6	1	0054-0540-051	COVER, VOLTAGE	0054-0540-051		EA. 108 X 132 X 163 PLATED STEEL
5	1	0054-0540-052	COVER, VOLTAGE	0054-0540-052		EA. 108 X 132 X 163 PLATED STEEL
4	1	0054-0540-053	COVER, VOLTAGE	0054-0540-053		EA. 108 X 132 X 163 PLATED STEEL
3	1	0054-0540-054	COVER, VOLTAGE	0054-0540-054		EA. 108 X 132 X 163 PLATED STEEL
2	1	0054-0540-055	COVER, VOLTAGE	0054-0540-055		EA. 108 X 132 X 163 PLATED STEEL
1	1	0054-0540-056	COVER, VOLTAGE	0054-0540-056		EA. 108 X 132 X 163 PLATED STEEL

Typical Installation



## 2.5 Battery Backup Schematic



NOTES:

1. ONLY BATT B (-) TERMINAL IS TIED TO EARTH GROUND (NOT BATT A)
2. JUMPER BETWEEN 2-12V BATTERIES IS ON BATTERIES

Battery backup Parts List

ITEM	QTY	B&B ARMR #	DESCRIPTION
1	1	XTRAN-416-1181	3KVA TRANSFORMER
2	1	XSOL-124-114111	24VDC
3	1	XCHGR-CT500-3	SOLENOID 230V 3A BATTERY
4	1	XBRKR-Q0U260	CHARGER 60A CIRCUIT BREAKER
5	1	XBRKR-Q0U220 XBRKR-Q0U240	20A CIRCUIT BREAKER (FOR 240V) 40A CIRCUIT BREAKER (FOR 120V)
6	1	XCAP-34000/40	34000µF CAPACITOR
7	1	YR838-M50100SB	100A RECTIFIER
8	1	XLUG-LAM2A1/0	GROUND LUG
9	1	XRLY-2W929	24vac RELAY

DRAWING: ± 0.5  015	DRWN: M. Heuer	Sept. 19 2006	<b>B&amp;B ARMR</b>		
	ENGR:				
	PART: 0054-2019	BATTERY BACKUP UNIT LXLB, PXLB, NXLB			
	©COPYRIGHT 06-Jun-06 B&B ARMR ALL RIGHTS RESERVED		SIZE: <b>B</b>	FSCM NO.	DWG NO: XLBBU-CT-MAN
THIS DOCUMENT AND THE INFORMATION IT CONTAINS SHALL NOT BE COPIED IN WHOLE OR PART WITHOUT THE EXPRESSED WRITTEN CONSENT OF B&B ARMR.		SCALE: ———	DO NOT SCALE PRINT	SHEET 1 OF 1	

Battery Backup Input (1 ?)						
HP	Voltage Amps	Wire Gage	mm <sup>2</sup>	Single Operator	Dual Operators	
0.4	115 V	12	3.309	120	60	
	4.6 A.A.C	10	5.261	200	100	
	22.04 A.D.C	8	8.366	320	160	
0.4	208 V	12	3.309	430	215	
	2.5 A.A.C	10	5.261	680	340	
	21.67 A.D.C	8	8.366	1090	545	
0.4	230 V	12	3.309	510	255	
	2.3 A.A.C	10	5.261	820	410	
	22.04 A.D.C	8	8.366	1310	655	
0.75	115 V	12	3.309	90	45	
	6.9 A.A.C	10	5.261	140	70	
	33.06 A.D.C	8	8.366	230	115	
0.75	208 V	12	3.309	250	145	
	3.8 A.A.C	10	5.261	470	235	
	32.83 A.D.C	8	8.366	750	375	
0.75	230 V	12	3.309	370	185	
	3.4 A.A.C	10	5.261	600	290	
	32.58 A.D.C	8	8.366	900	465	
1.3	115 V	12	3.309	50	25	
	13 A.A.C	10	5.261	80	40	
	62.29 A.D.C	8	8.366	120	60	
1.3	208 V	12	3.309	160	80	
	7.2 A.A.C	10	5.261	260	130	
	62.40 A.D.C	8	8.366	420	210	
1.3	230 V	12	3.309	190	95	
	6.7 A.A.C	10	5.261	310	155	
	64.21 A.D.C	8	8.366	500	250	

AWG Stranded Wire Resistance			
Size	mm <sup>2</sup>	Diameter	R @ 77°F Ohms /1000'
28	0.081	14.6	66.14
26	0.129	0.468	41.76
24	0.205	0.59	26.18
22	0.326	0.744	16.46
20	0.518	0.938	10.36
18	0.823	1.182	6.52
16	1.309	1.491	4.08
14	2.081	1.88	2.58
12	3.309	2.371	1.62
10	5.261	2.989	1.02
8	8.366	3.77	0.64
6	13.3	4.753	0.402

3 ? Power Wiring (Continued)						
HP	Voltage Amps	Wire Gage	mm <sup>2</sup>	Single Operator	Dual Operators	
3	208 V	12	3.309	150	75	
	7.8 A.A.C	10	5.261	240	120	
		8	8.366	390	195	
3	230 V	12	3.309	180	90	
	7.4 A.A.C	10	5.261	280	140	
		8	8.366	450	225	
3	460 V	12	3.309	720	360	
	3.7 A.A.C	10	5.261	1150	575	
		8	8.366	1830	915	
5	208 V	12	3.309	90	45	
	15 A.A.C	10	5.261	140	70	
		8	8.366	230	115	
5	230 V	12	3.309	110	55	
	13.2 A.A.C	10	5.261	180	90	
		8	8.366	280	140	
5	460 V	12	3.309	150	75	
	6.6 A.A.C	10	5.261	230	115	
		8	8.366	370	185	

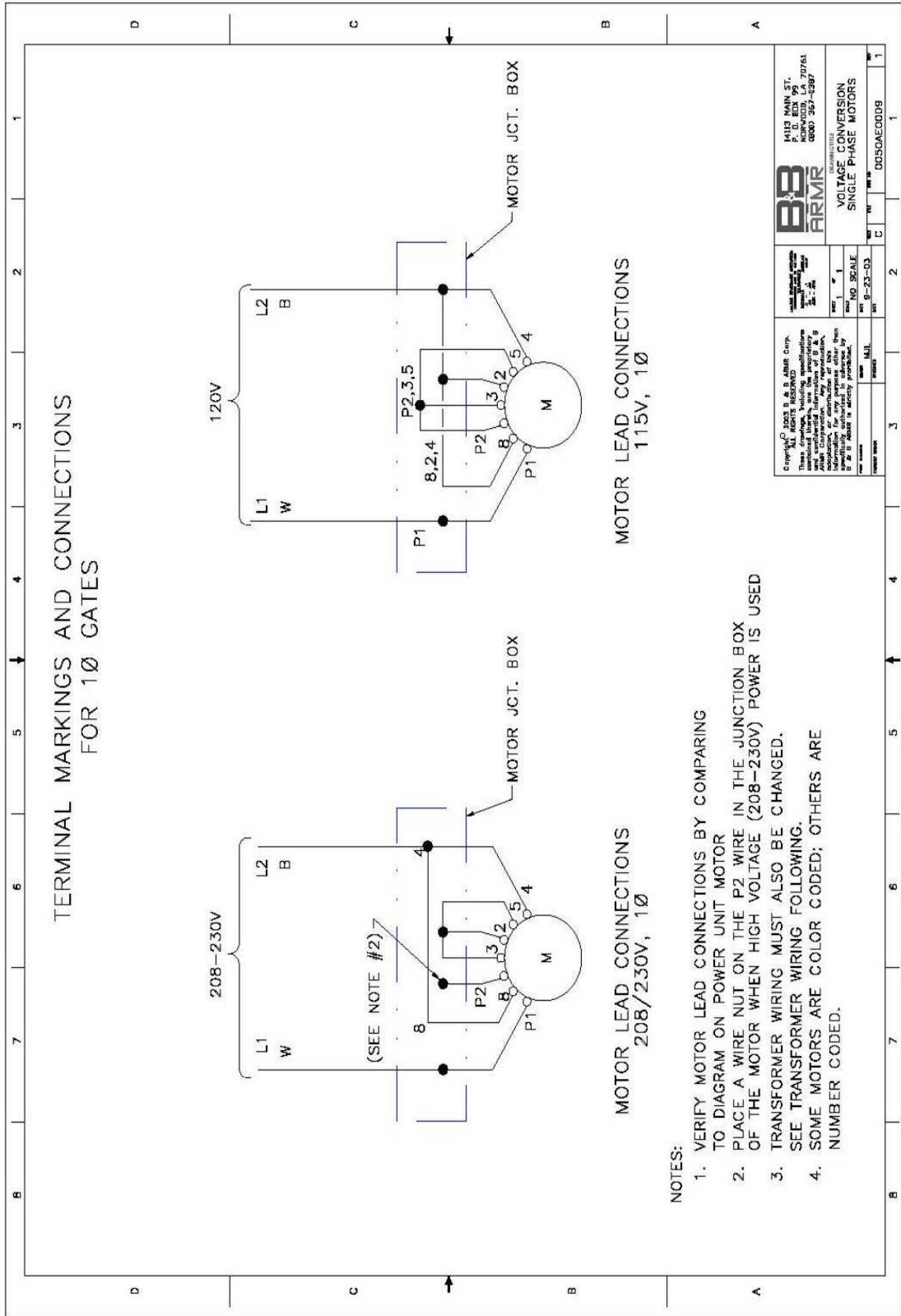
Control Wiring			
Voltage	Wire Gage	mm <sup>2</sup>	Distance (ft)
24 V	28	0.081	450
24 V	26	0.129	710
24 V	24	0.205	1140
24 V	20	0.518	2890
24 V	18	0.823	4600

- Notes**
- Maximum distance is measured from Power Source to Operator.
  - Maximum distance for controls is measured from Operator to Pushbutton or Other device.
  - If distance to power Source is greater than value shown use a higher voltage or three phase unit or contact utility company for a service feeder.
  - If distance to Remote Control device is greater than 2000ft use a range extender device.
  - Power Labels are based on stranded copper wires and allows up to 2% voltage drop.
  - Control Table is based on stranded copper wires and allows up to 25% Connect Power per local codes.
  - Connect Power per local codes.
  - Run Power and Control wiring separately.
  - Amperage rating is motor full load. Start-up current may be higher.
  - 100 VA Allowed for Controls & Heater.
  - Wire sizes and resistance is from Mogami.
  - 0.1 Amps for control current, these may vary for different models.

3 ? Power Wiring						
HP	Voltage Amps	Wire Gage	mm <sup>2</sup>	Single Operator	Dual Operators	
1/2	208 V	12	3.309	510	255	
	2 A.A.C	10	5.261	820	410	
		8	8.366	1310	655	
1/2	230 V	12	3.309	560	280	
	2 A.A.C	10	5.261	920	460	
		8	8.366	1470	735	
1/2	460 V	12	3.309	2330	1165	
	1 A.A.C	10	5.261	3700	1850	
		8	8.366	5900	2950	
1	208 V	12	3.309	920	460	
	3.5 A.A.C	10	5.261	1400	700	
		8	8.366	2200	1100	
1	230 V	12	3.309	990	495	
	3.2 A.A.C	10	5.261	1500	750	
		8	8.366	2400	1200	
1	460 V	12	3.309	1560	780	
	1.6 A.A.C	10	5.261	2400	1200	
		8	8.366	3900	1950	
1 1/2	208 V	12	3.309	190	95	
	6.2 A.A.C	10	5.261	300	150	
		8	8.366	480	240	
1 1/2	230 V	12	3.309	230	115	
	5.6 A.A.C	10	5.261	370	185	
		8	8.366	590	295	
1 1/2	460 V	12	3.309	940	470	
	2.8 A.A.C	10	5.261	1490	745	
		8	8.366	2380	1190	
2	208 V	12	3.309	370	185	
	6.2 A.A.C	10	5.261	600	300	
		8	8.366	930	465	
2	230 V	12	3.309	460	230	
	5.6 A.A.C	10	5.261	740	370	
		8	8.366	1160	580	
2	460 V	12	3.309	150	75	
	2.8 A.A.C	10	5.261	230	115	
		8	8.366	370	185	

1 ? Power Wiring						
HP	Voltage Amps	Wire Gage	mm <sup>2</sup>	Single Operator	Dual Operators	
1/2	115 V	12	3.309	80	40	
	7.5 A.A.C	10	5.261	130	65	
		8	8.366	210	105	
1/2	208 V	12	3.309	290	145	
	3.9 A.A.C	10	5.261	460	230	
		8	8.366	740	370	
1/2	230 V	12	3.309	340	170	
	3.7 A.A.C	10	5.261	540	270	
		8	8.366	860	430	
1	115 V	12	3.309	50	25	
	12 A.A.C	10	5.261	80	40	
		8	8.366	130	65	
1	208 V	12	3.309	180	90	
	6.4 A.A.C	10	5.261	290	145	
		8	8.366	470	235	
1	230 V	12	3.309	220	110	
	6 A.A.C	10	5.261	350	175	
		8	8.366	550	275	
1 1/2	115 V	12	3.309	80	40	
	15 A.A.C	10	5.261	110	55	
		8	8.366	180	90	
1 1/2	208 V	12	3.309	140	70	
	8.3 A.A.C	10	5.261	230	115	
		8	8.366	370	185	
1 1/2	230 V	12	3.309	170	85	
	7.5 A.A.C	10	5.261	280	140	
		8	8.366	450	225	
2	208 V	12	3.309	90	45	
	13.2 A.A.C	10	5.261	140	70	
		8	8.366	230	115	
2	230 V	12	3.309	110	55	
	12 A.A.C	10	5.261	180	90	
		8	8.366	280	140	
3	208 V	12	3.309	60	30	
	16.7 A.A.C	10	5.261	100	50	
		8	8.366	160	80	
3	230 V	12	3.309	80	40	
	17 A.A.C	10	5.261	120	60	
		8	8.366	200	100	

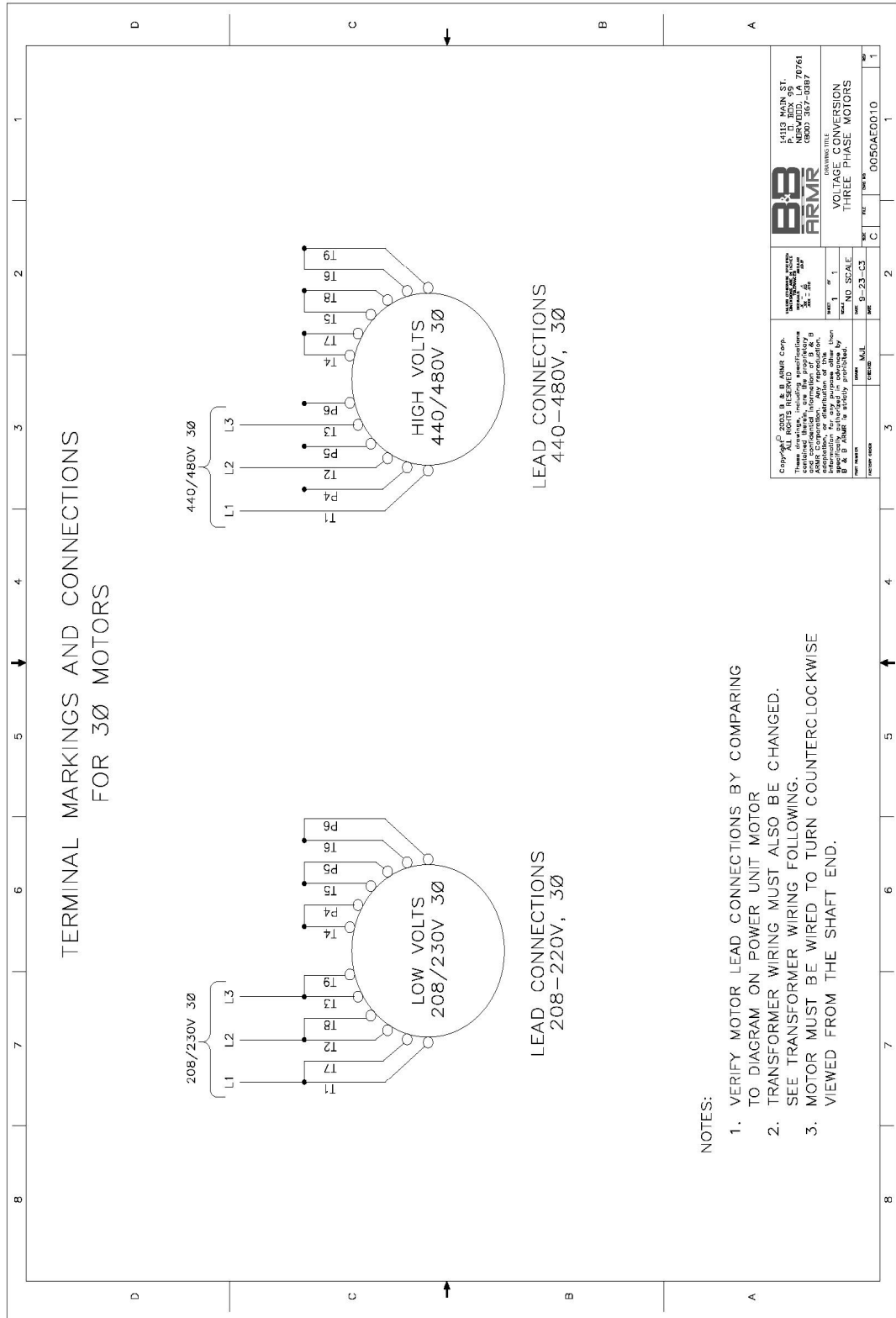
TERMINAL MARKINGS AND CONNECTIONS FOR 1Ø GATES

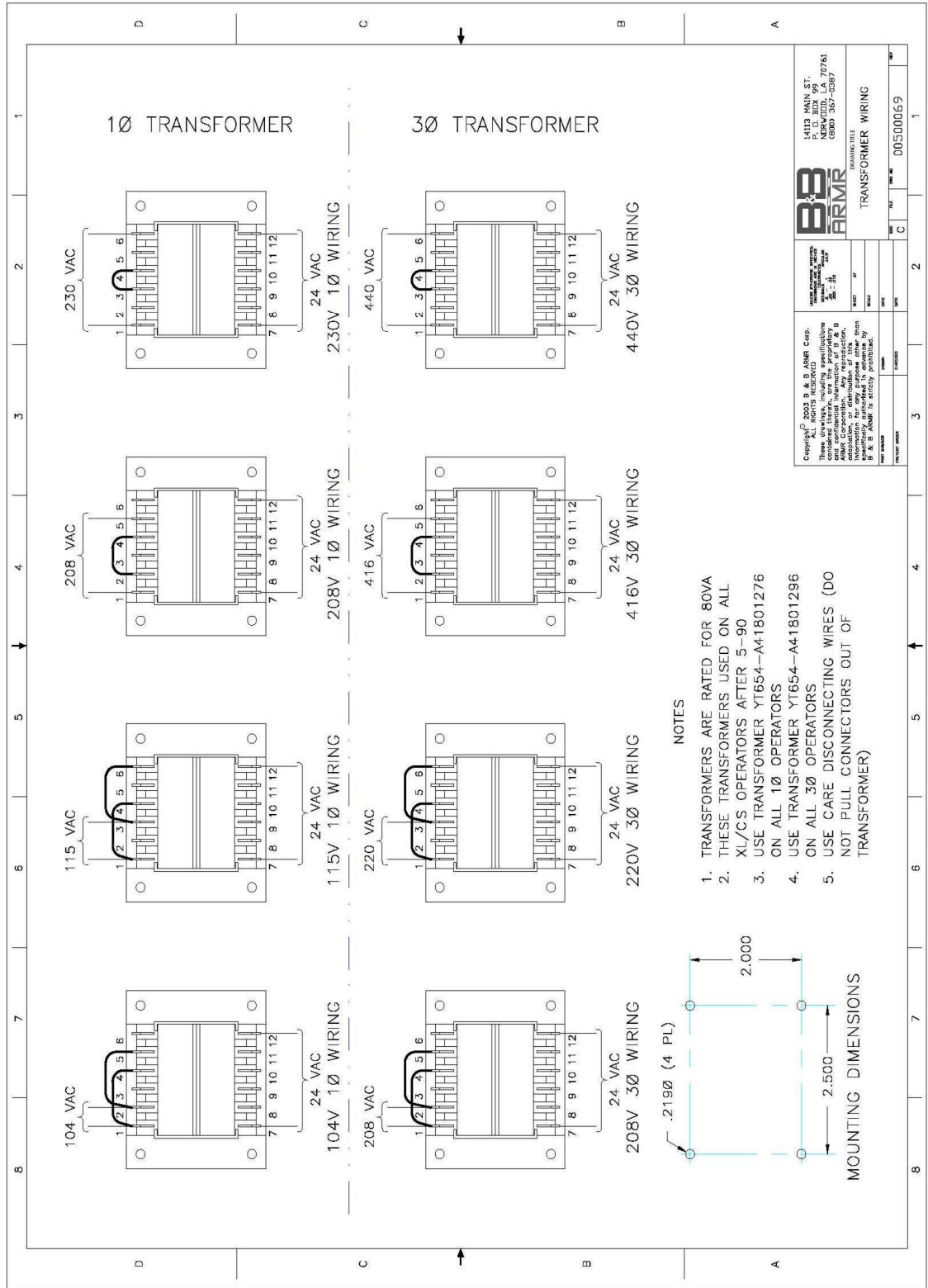


NOTES:

1. VERIFY MOTOR LEAD CONNECTIONS BY COMPARING TO DIAGRAM ON POWER UNIT MOTOR
2. PLACE A WIRE NUT ON THE P2 WIRE IN THE JUNCTION BOX OF THE MOTOR WHEN HIGH VOLTAGE (208-230V) POWER IS USED
3. TRANSFORMER WIRING MUST ALSO BE CHANGED. SEE TRANSFORMER WIRING FOLLOWING.
4. SOME MOTORS ARE COLOR CODED; OTHERS ARE NUMBER CODED.

		P.O. BOX 111 FLD 200 ST. NORFOLK, LA 70761 (800) 367-1387	
		VOLTAGE CONVERSION SINGLE PHASE MOTORS	
Copyright © 2013 B&B ARMOR Corp. All Rights Reserved. These drawings, including modifications and supplemental information of B & B Corporation, or derivative of any such information, are the property of B & B Corporation and shall remain the property of B & B Corporation in all circumstances.	Scale: 1" = 1' No. 9-23-03	Date: M/J Drawn: M/J Checked: M/J	Part No. D050A0009









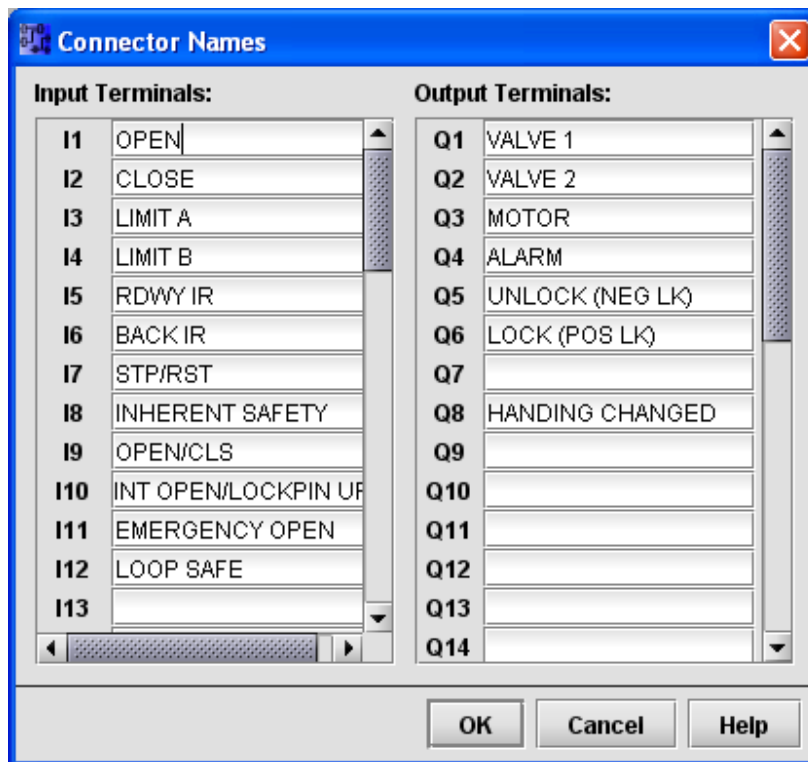
# 12. Troubleshooting

The table below provides a general guidance on identifying and correcting any problems with your LXL Series gate operator. If you encounter problems that you cannot fix, contact B&B ARMR and we will gladly work with you to correct them.

## 2.6 Alarm Definitions –

- Continuous solid beep – Gate is moving or a Stop command is active
- 5sec On, 1sec Off – MaxRun Time Error
- 1sec On, 1sec Off – Forward and/or Reverse Safety
- 0.25sec On, 0.5sec Off – Inherent Safety Error

## 2.7 PLC Input/Output Definitions –



Symptom	Actions
Gate operator does not respond when commanded.	<ol style="list-style-type: none"> <li>1. Check CONN 9 for power when command is given.</li> <li>2. Check overload protector</li> <li>3. Check PLC output.</li> <li>4. Check that safeties are clear, and that IR Beams are aligned.</li> <li>5. Check PLC input.</li> <li>6. Check the +24VDC at CONN3 pins 8 and 10</li> </ol>
Gate operator drives the gate in the incorrect direction.	<ol style="list-style-type: none"> <li>1. Refer to step 4.10 of Installing and Programming the LXL Operator for setting the handing.</li> <li>2. Refer to step 4.5 of Installing and Programming the LXL Operator to check for correct installation of the Limit Switch Plates.</li> </ol>
Operator drives gate too slowly.	<ol style="list-style-type: none"> <li>1. Check for any binding of the gate.</li> <li>2. Check for slippage of the drive wheels.</li> <li>3. Check the fluid level in the reservoir.</li> <li>4. Check the quality of the hydraulic fluid. Old fluid will become sludgy and clogging of internal filter is possible.</li> </ol>
MAX Runtime Error	<ol style="list-style-type: none"> <li>1. Check for any binding of the gate.</li> <li>2. Check for slippage of the drive wheels.</li> <li>3. Check the fluid level in the reservoir.</li> <li>4. Check the MAX RUN TIME setting in Parameters to insure sufficient time is set for the gate size.</li> <li>5. REMEMBER – Gate only may only move 1 ft/sec</li> </ol>
Date and time flash on the PLC.	<ol style="list-style-type: none"> <li>1. Refer to step 4.11 of Installing and Programming the LXL Operator for setting the date and time. (Optional, not required to be set)</li> </ol>
Gate does not stop automatically when encountering an obstacle.	<ol style="list-style-type: none"> <li>1. Refer to step 4.15 of Installing and Programming the LXL Operator for setting the Inherent Safety.</li> <li>2. Check for system pressure on Inherent Safety screen of the PLC, if no reading is evident while gate is running suspect a faulty pressure transducer.</li> <li>3. Check the functionality of the safety devices.</li> <li>4. Check safety device wiring, refer to sections 6 and/or 8</li> </ol>
Operator drive wheels slip on gate and gate does not move.	<ol style="list-style-type: none"> <li>1. Check for binding by disengaging the drive wheels, and ensuring that the gate rides smoothly manually.</li> <li>2. Check the tension of the drive wheels, adjust as needed.</li> <li>3. Check for any water or precipitation on the drive rail.</li> </ol>
Fuses are blowing.	<ol style="list-style-type: none"> <li>1. Check for incorrect incoming power to the LXL board.</li> <li>2. Ensure all external devices are sending the correct voltage to the LXL board, and that there are no shorts.</li> </ol>
PLC says Stop/Reset activated.	<ol style="list-style-type: none"> <li>1. If using an external push button, ensure that the stop button is a normally closed contact.</li> <li>2. If not using an external push button, ensure there is a jumper wire between stop/reset and +24 stp/rst on CONN 3.</li> <li>3. Check the connection of the wire between the J1Pin 9</li> </ol>

Symptom	Actions
	<p>connector and I7 of the PLC.</p> <ol style="list-style-type: none"> <li>4. Verify shunt is present on JP1 between pins 1 and 2.</li> <li>5. Check F3.</li> </ol>
Electric Motor turns but gate does not move.	<ol style="list-style-type: none"> <li>1. Check the fluid level in the reservoir.</li> <li>2. Check PLC outputs to see if Q1 turns on for an OPEN and/or Q2 turns on for a CLOSE.</li> <li>3. Disengage drive wheels and check to see if they move.</li> <li>4. If drive wheels move, check for binding in the gate.</li> <li>5. If drive wheels do not move, check for loose coupling between the electric motor and pump assembly.</li> <li>6. Check for voltage between COM and HYD VAL 1 and 2 on CONN 1 of LXL board, and ensure wires connections are tight.</li> <li>7. If voltage is correct, manually shift the detent in the center of the solenoid on either side of the hydraulic valve, if wheels move suspect hydraulic valve.</li> <li>8. If wheels do not move after manually shifting the detent, suspect pump assembly.</li> <li>9. If unit is a 3 phase unit and a new installation, reverse two of the incoming power leads.</li> </ol>



# Equipment Maintenance Log Form

Product Type: \_\_\_\_\_

Location: \_\_\_\_\_

	Date	Performed By	Checklist Complete	Anomalies	Notes
Jan			Yes No		
Feb			Yes No		
Mar			Yes No		
Apr			Yes No		
May			Yes No		
Jun			Yes No		
Jul			Yes No		
Aug			Yes No		
Sep			Yes No		
Oct			Yes No		
Nov			Yes No		
Year			Yes No		

	Date	Performed By	Checklist Complete	Anomalies	Notes
Jan			Yes No		
Feb			Yes No		
Mar			Yes No		
Apr			Yes No		
May			Yes No		
Jun			Yes No		
Jul			Yes No		
Aug			Yes No		
Sep			Yes No		
Oct			Yes No		
Nov			Yes No		
Year			Yes No		

## 13. Warranty Information

B&B-ARMR CORPORATION warranties for a period of five (5) years, after delivery F.O.B. plant, unless otherwise specified by Supplier, from failure of operation in ordinary use and against defects due to faulty material or workmanship. Any defective equipment in the Barrier shall be returned to the factory, at Supplier's option, for repair or replacement, and Supplier assumes no responsibility for service at any consumer site. Supplier is in no event responsible for any labor costs under the warranty. Subject to the above limitation, all service, parts, and replacements necessary to maintain the equipment as warranted shall be furnished by the end user. Supplier shall not have any liability under these specifications, other than for repair or replacement as described above for equipment malfunction or equipment failure of any kind, caused for any reason, including, but not limited to unauthorized repairs, improper installation, installation not performed by Supplier personnel, nor by Supplier authorized personnel, failure to perform manufacturer's suggested routine maintenance, modifications, misuse, accident, catastrophe, neglect, natural disaster, act of God or if at any time the power supplied to any part of the Security Barrier falls short or exceeds the rate of tolerance for the equipment.

Replacement parts shipped from B&B ARM R, are warranted for 90 days after shipment. Replacement parts are subject to the same warranty terms as stated above.

Drive wheels are considered normal wear parts and are not covered under this warranty except in cases of manufacturer defects.

The exclusive remedy for breach of any warranty by Supplier shall be the repair or replacement at supplier's option, of any defects in the equipment. **IN NO EVENT SHALL THE SUPPLIER OF SECURITY BARRIER BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES OR ANY KIND OF DAMAGES TO ANYONE.** Except as provided herein, Supplier makes no warranties or representations to consumer or to anyone else and consumer hereby waives all liability against Supplier as well as any other person for the design, manufacture, sale, installation, and/or servicing of the Security Barrier.

**THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO OTHER WARRANTIES EXIST.**

Any modification or alteration by anyone other than B&B-ARMR will render the warranty herein as null and void.