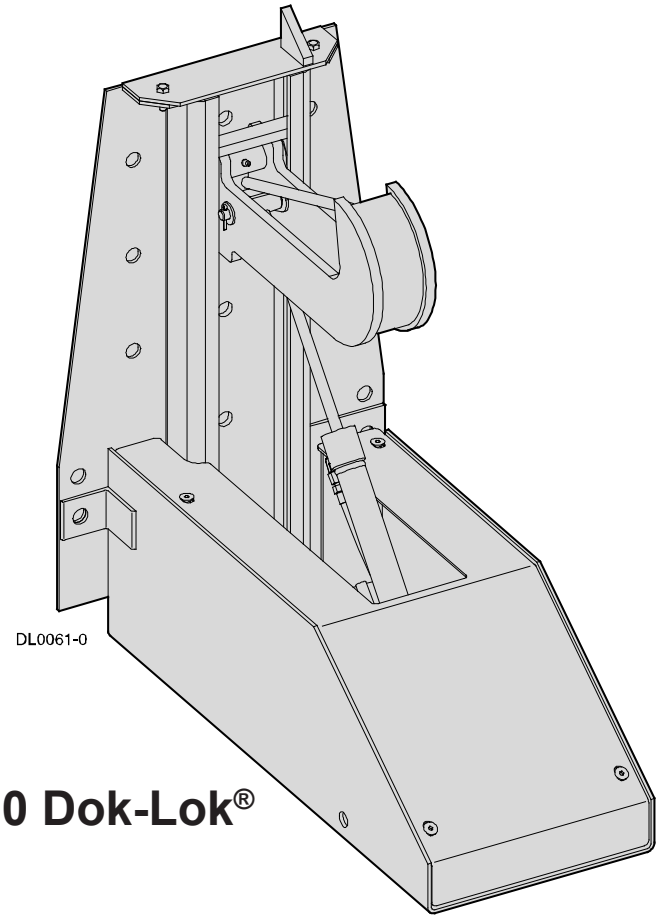
THE ORIGINAL DOK-LOK VEHICLE RESTRAINT BY RITE-HITE

Vehicle Restraint Owner's Manual



VBR-300 Dok-Lok®

RITE-HITE® ALWAYS LOOKING AHEAD

MADE IN U.S.A.

This Manual Covers Restraints Built After Serial Numbers:
4510850001 and up

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INTRODUCTION

Read and understand this manual before attempting to install or operate any DOK-LOK vehicle restraint. For best results, have this product serviced by your authorized Rite-Hite® representative. The SHR DOK-LOK vehicle restraint by Rite-Hite® is intended to provide a safer workplace for workers in shipping and receiving dock areas. The SHR DOK-LOK vehicle restraint is an electro-mechanical restraint device that, when properly installed and operated, retains a secure connection between the truck and dock. Signal lights, warning horn and signs provide instructions to the truck driver and DOK-LOK vehicle restraint operator that a safe condition exists. The DOK-LOK vehicle restraint is operated by pressing push buttons on an inside control panel.

PRODUCT SPECIFIC WARRANTY

RITE-HITE Company, LLC and its affiliates (collectively "RITE-HITE") warrants to the owner ("Owner") that the VBR-300 Dok-Lok® Vehicle Restraints by Rite-Hite® sold to the Owner will be free of defects in design, materials and workmanship (ordinary wear and tear excepted) for a period of 1 year parts and labor.

IMPORTANT

Read and understand contents of this manual prior to installation or operation of this equipment.
For best results, have this product serviced by your authorized Rite-Hite® representative.

NOTICE TO USER

Your local Rite-Hite® representative provides a Planned Maintenance Program (P.M.P.) which can be fitted to your specific operation. Call your local representative or Rite-Hite® at 414-355-2600.

SAFETY WARNINGS

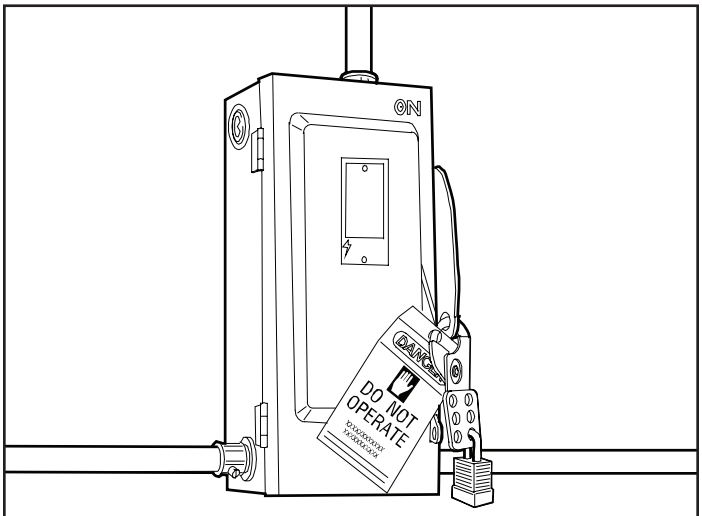


FIGURE 1 - LOCKOUT/TAGOUT

⚠ WARNING

When working with electrical or electronic controls, make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

LOCKOUT/TAGOUT PROCEDURES

The Occupational Safety and Health Administration requires that, in addition to posting safety warnings and barricading the work area, the power supply has been locked in the OFF position or disconnected. It is mandatory that an approved lockout device is utilized. An example of a lockout device is illustrated. The proper lockout procedure requires that the person responsible for the repairs is the only person who has the ability to remove the lockout device.

In addition to the lockout device, it is also a requirement to tag the power control in a manner that will clearly note that repairs are under way and state who is responsible for the lockout condition. Tagout devices have to be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or become unreadable.

RITE-HITE® Corporation does not recommend any particular lockout device, but recommends the utilization of an OSHA approved device (refer to OSHA regulation 1910.147). RITE-HITE® Corporation also recommends the review and implementation of an entire safety program for the Control of Hazardous Energy (Lockout/Tagout). These regulations are available through OSHA publication 3120.

⚠ DANGER

This is the highest level statement. Failure to follow the listed instructions will most likely result in severe injury or death.

⚠ CAUTION

The statements used with this level of warning deal with a safe operating procedure. If the procedure is ignored, the possibility of personal injury may exist.

⚠ WARNING

This is a statement of serious hazard. Failure to follow the listed instructions could place the individual at risk of serious injury or death.

IMPORTANT

IMPORTANT is used to draw attention to a procedure that needs to be followed to prevent machine or property damage.

FCC COMPLIANCE

FCC COMPLIANCE

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

NOTE: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following to conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

OWNER RESPONSIBILITY

1. The owner should recognize the inherent danger of the interface between dock and transport vehicle. The owner should, therefore, train and instruct operators in the safe use of dock equipment in accordance with the information provided below. The manufacturer shall publish, provide to the initial purchaser, and make the following information readily available to owners:
   - Installation instructions
   - Recommended initial and periodic inspections procedures
   - Maintenance procedures
   - Operating instructions
   - Descriptions or specifications for replaceable or repairable parts
   - Tables identifying the grade (slope) for all variations of length or configuration of the dock equipment, and
   - Information identifying the maximum uncontrolled drop encountered upon sudden removal of support while within the working range of the equipment.

   It shall be the responsibility of the owner to verify that the material listed in this section has been received and that it is made available for the instruction and training of presonnel entrusted with the use or maintenance of the dock equipment.

2. When a transport vehicle is parked at a loading dock, it is important that the vehicle is relatively perpendicular to the dock face and in close contact with at least one of the dock bumpers.

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

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

5. As with any piece of machinery, dock equipment requires routine maintenance, lubrication, and adjustments. Your local Rite-Hite representative offers owners the option of a Planned Maintenance Program (P.M.P.). As part of this service, your local Rite-Hite representative will do all routine maintenance, lubrication, and adjustments.

6. Dock equipment that is structurally damaged shall be removed from service, inspected by a manufacturer's authorized representative, and repaired as needed before being placed back in service.

7. The manufacturer shall make available replacement nameplates, caution/instruction labels, and operating/maintenance manuals upon request of the owner. The owner shall see that all nameplates, caution/instruction markings or labels are in place and legible, and that the appropriate operating/maintenance manuals are provided to users.

8. Modifications or alterations of dock equipment shall be made only with written permission of the original manufacturer. These changes shall also satisfy all safety recommendations of the original equipment manufacturer for the particular application of the dock equipment.

9. In order to be entitled to the benefits of the standard product warranty, the dock equipment must have been properly installed, maintained and operated within its rated capacities and/or specific design parameters, and not otherwise abused.

10. It is recommended that trailers equipped with air ride suspensions should remove the air from the suspension to minimize trailer bed drop, prior to loading or unloading.

11. When industrial trucks are driven on and off transport vehicles during the loading and unloading operation, the brakes on the transport vehicle shall be applied and wheel chocks or a positive restraining device shall be engaged.

12. It is recommended that an adequate stabilizing device or devices be employed at the front of the trailer in all cases where a trailer is being loaded or unloaded with the trailer resting on its support legs (landing gear) rather than a tractor fifth wheel or a converter dolly.

13. In selecting dock equipment, it is important to consider not only present requirements but also future plans or adverse environments.

DEFINITION AND FUNCTION

The VBR-300 DOK-LOK vehicle restraint is a hydraulic, ground stored restraint device used to secure trucks and semitrailers with an intact Rear Impact Guard (R.I.G.) to the face of a loading dock. This is achieved by securing the R.I.G. with a hydraulically powered steel barrier. This prevents forward movement of the truck/trailer that may create an unsafe void between the face of the dock and the rear end of the truck/ trailer as a forklift travels from the loading dock onto the trailer; or to create an obstruction noticeable to the truck driver, should the driver accidentally try to pull the truck/trailer away while it is being serviced.
The proper or improper activation of the barrier is monitored by:

- **VISUAL CONTROL**
  — One set of flashing green or red lights located at the inside of the building for the forklift operator, and one set located outside of the building for the truck driver. In addition to the lights, there are three instruction signs.

- **AUDIO CONTROL**
  — A horn will sound at the inside of the building, warning the forklift operator if there is no R.I.G. present, or if the engagement is improper. In this case, the trailer must be secured by other means (wheel chocks, etc.) prior to servicing trailer.

Prerequisite for proper barrier engagement is that the trailer is parked firmly against a 4" (trade standard) thick dock bumper. The activation/deactivation is solely controlled from the inside of the building by momentarily depressing either the Lock (raise) button or the Unlock (lower) button.

The normal mode of the barrier is in the lower STORED position, showing a flashing red light (trailer not secured) at the inside of the building and a flashing green light (trailer free to move to or away from the loading dock) at the outside of the building.

Once the trailer is parked, the dock attendant will depress the Lock button. This will raise the barrier to engage the R.I.G. As soon as the R.I.G. is properly locked, there will be simultaneous light change — the inside will change from red to green flashing (trailer secured) and the outside will change from green to red flashing (do not move trailer). After the service is completed, the dock attendant will have to depress the Unlock button which then will return the barrier to its lower STORED position.

A proper barrier engagement is achieved when the barrier raises unobstructed to secure the horizontal cross member of the R.I.G. Assembly. An improper barrier engagement is if the horizontal cross member of the R.I.G. is missing, obstructed or it is bent or located so far toward the rear axle of the trailer that it will prevent the free passage of the barrier. In either case, the lights will stay in a non-serviceable mode and a horn will sound. At this point, the trailer must be secured by other means (example: wheel chocks) in order to become serviceable.

FEATURES

Refer to Figure 2, page 8 for locations of these features:

R.I.G.
Acronym used for the Federally mandated rear impact guard located on the rear of over the road trailers to prevent accidental underride by automobiles.

ROLLER TRACK ASSEMBLY
Mounted to the loading dock wall to guide the barrier assembly in a vertical plane and transmit the creep or pull out force from a trailer to the loading dock wall.

BARRIER ROLLER ASSEMBLY
Comprised of a steel roller housing, a pre-lubricated needle bearing to allow easy movement of the barrier assembly.

FLOAT MECHANISM
Allows barrier to move downward once engaged to maintain contact with the R.I.G. while servicing a trailer.

R.I.G. SENSOR
Detects when the barrier is secured to the R.I.G.

BARRIER ASSEMBLY
Secures R.I.G. to prevent trailer from rolling/creeping away from the dock.

HYDRAULIC ASSEMBLY
Provides means of moving the barrier between its stored and active positions.

BASE COVER
Protects the barrier assembly, float mechanism, hydraulic hoses and lift cylinder from debris.

TRACK COVER WITH INTEGRAL LIP GUIDE
Keeps debris out of the roller track. Integral lip guide is used to guide the lip past the roller track assembly in a below dock end load condition.

SENSING SWITCHES, CONTROL BOX, OUTSIDE LIGHT BOX AND SIGNAGE
Combination of these components is used to control the VBR-300 DOK-LOK vehicle restraint and provide audio/visual communications to the dock attendant and trailer driver.

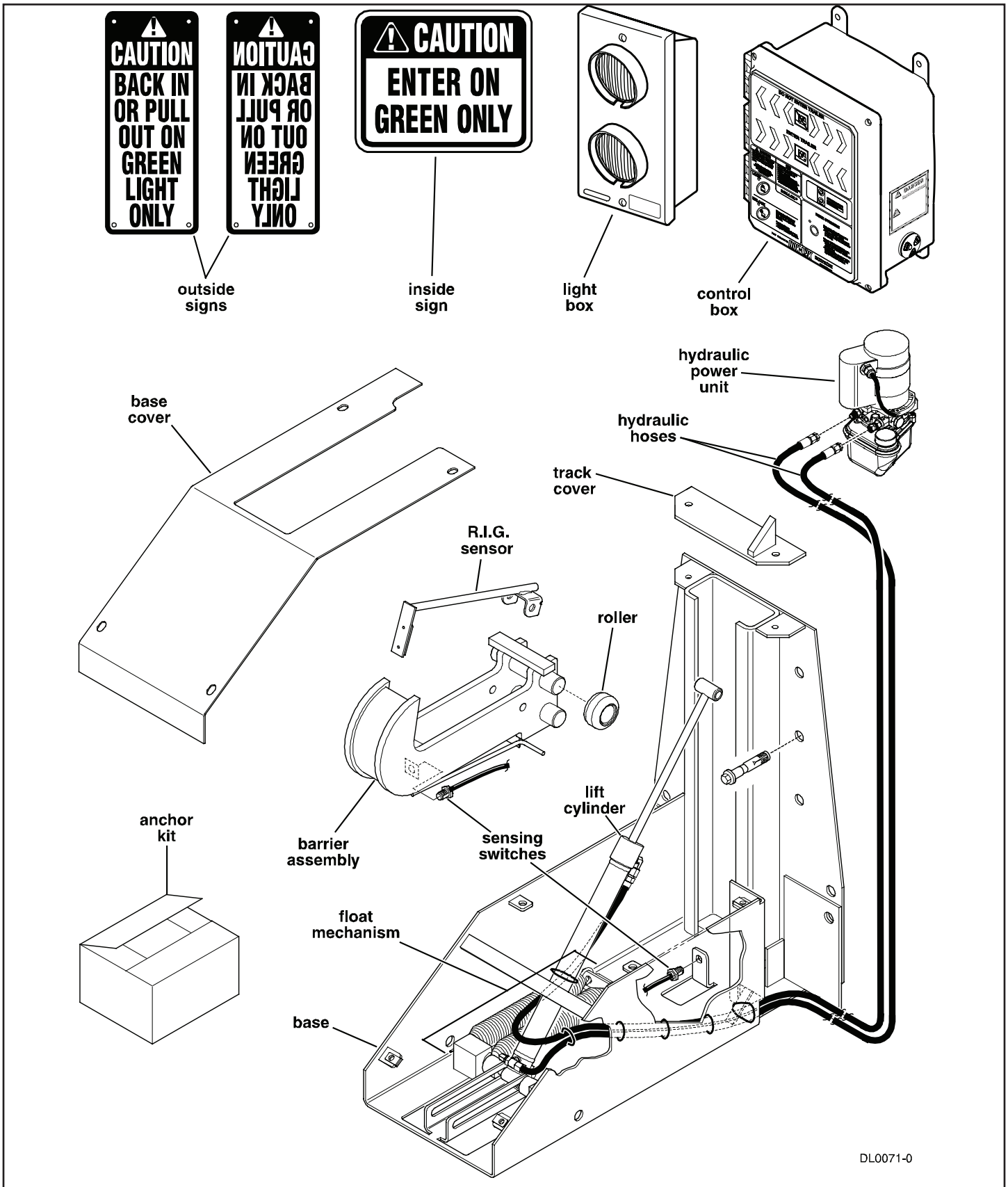


FIGURE 2 - VBR-300 DOK-LOK VEHICLE RESTRAINT FEATURES

OPERATING PROCEDURES

⚠ WARNING

- **Before loading or unloading a vehicle at your loading dock while using a DOK-LOK vehicle restraint, always visually inspect to be sure that the barrier blocks the R.I.G. assembly. If a condition occurs that cannot be remedied by backing the trailer firmly against the dock bumpers, secure the trailer by other means.**
- **Be sure that the area around the R.I.G. assembly is free of plates or other obstructions.**
- **Always operate the DOK-LOK vehicle restraint from the top of the dock.**
- **Inspect all restraint lights daily to make certain they work properly.**
- **Perform maintenance on restraints in accordance with Maintenance section in this manual.**
- **DOK-LOK vehicle restraints should be operated only by authorized personnel who have read and understand the Owner's Manual.**
- **Call your local representative or Rite-Hite at (800) 456-0600 with any questions.**

FAILURE TO FOLLOW THESE PROCEDURES COULD ALLOW UNEXPECTED TRAILER / LOADING DOCK SEPERATION RESULTING IN DEATH OR SERIOUS INJURY!

Stored Position / Restraint UNLOCKED

Barrier is in the STORED position. Inside light is flashing red alerting forklift operator unsafe condition exists. Outside light is flashing green alerting truck driver it is safe to back in.

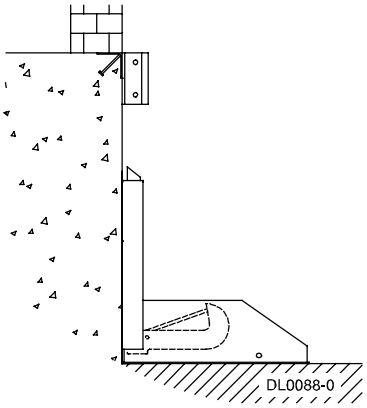
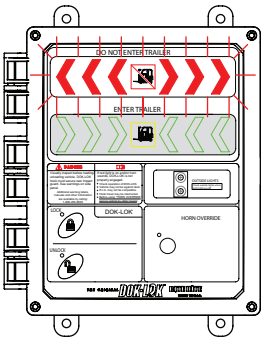
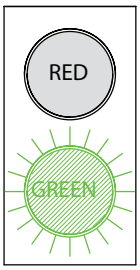
RESTRAINT POSITION	CONTROL BOX STATUS	OUTSIDE LIGHT STATUS
	 Inside Lights	 Outside Lights

FIGURE 3 - STORED POSITION

Restraint Locking, LOCK Button Pressed

Trailer has backed into loading dock and is parked firmly against dock bumpers. Barrier raises from STORED position to obstruct R.I.G. Inside light is steady red alerting the operator that an unsafe condition exists and barrier is in transit. Outside light is flashing red alerting truck driver not to move. If horn sounds, go to FAULT state, otherwise go to Restraint LOCKED.

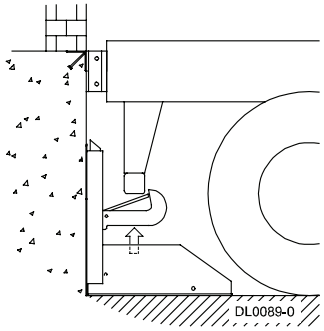
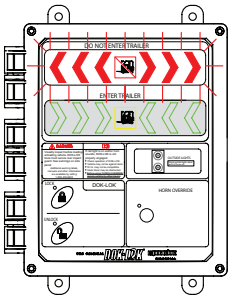
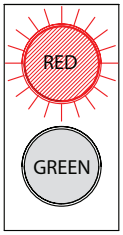
RESTRAINT POSITION	CONTROL BOX STATUS	OUTSIDE LIGHT STATUS
	 Inside Lights	 Outside Lights

FIGURE 4 - RESTRAINT LOCKING

Restraint LOCKED

Once the R.I.G. is obstructed by the barrier, a LOCKED condition exists. Inside light is flashing green alerting the forklift operator a safe condition exists. Outside light is flashing red alerting truck driver not to move.
If during loading/unloading the inside light turns red and the horn sounds, press LOCK button to secure the R.I.G.

⚠ WARNING

Visually inspect to ensure that the DOK-LOK barrier obstructs the R.I.G. of the trailer being serviced before operating the dock leveler.

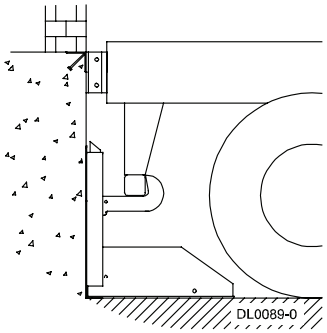
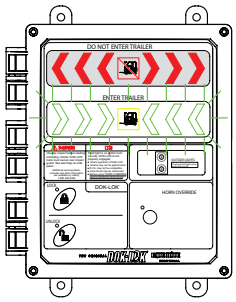
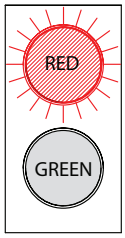
RESTRAINT POSITION	CONTROL BOX STATUS	OUTSIDE LIGHT STATUS
	 Inside Lights	 Outside Lights

FIGURE 5 - RESTRAINT LOCKED

Restraint UNLOCKING, UNLOCK Button Pressed

Barrier travels from the LOCKED position to the STORED position. Inside light is steady red alerting the operator that an unsafe condition exists and hook is in transit. Outside light is flashing red alerting truck driver not to move. If horn sounds go to FAULT state, otherwise go to STORED.

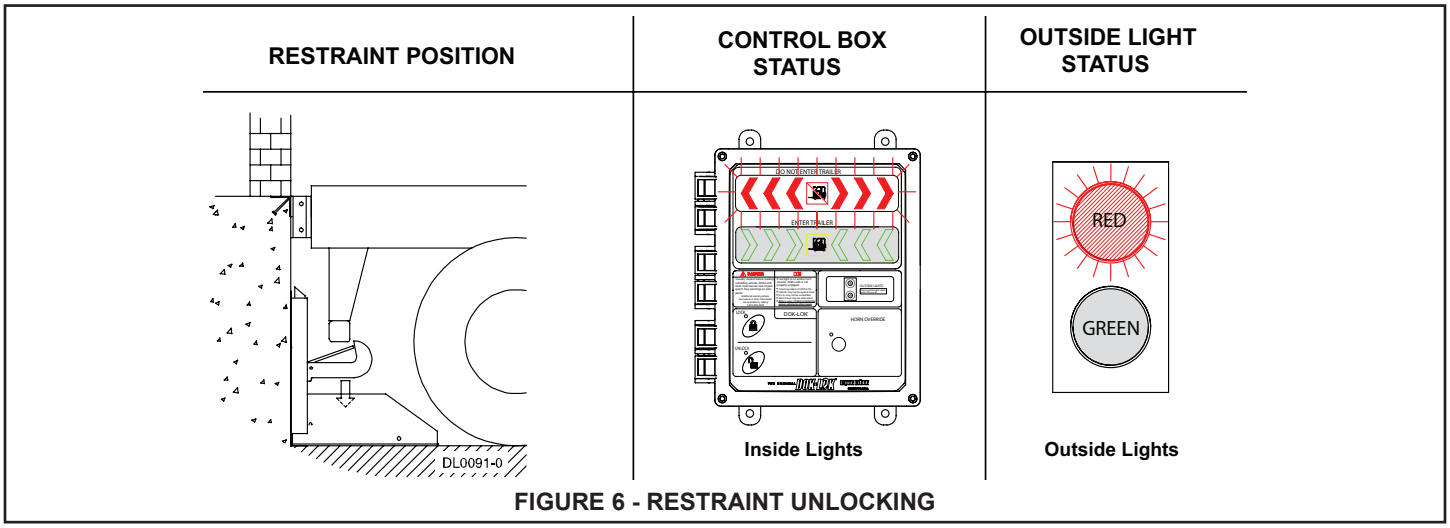


FIGURE 6 - RESTRAINT UNLOCKING

FAULT State From LOCKING State

Barrier cannot obstruct the R.I.G. This could be due to a R.I.G. that is located too far toward the rear axle, bent, obstructed or missing. Inside light is flashing red and horn is pulsing, alerting the forklift operator that the trailer is not locked. Outside light is flashing red alerting the truck driver not to move.

If the trailer is parked firmly against the dock bumpers go to HORN OVERRIDE state. If not, press UNLOCK to clear the fault, have trailer back up and repeat Restraint LOCKING.

FAULT State From UNLOCKING State

Barrier cannot retract to the STORED position. The barrier could be caught on the R.I.G. or another part of the trailer. Inside light is flashing red and horn is pulsing, alerting the forklift operator that the trailer is not locked. Outside light is flashing red alerting the truck driver not to move.

Make sure trailer is parked firmly against the dock bumpers. If not, press LOCK to entrap R.I.G., have trailer back up and repeat Restraint UNLOCKING.

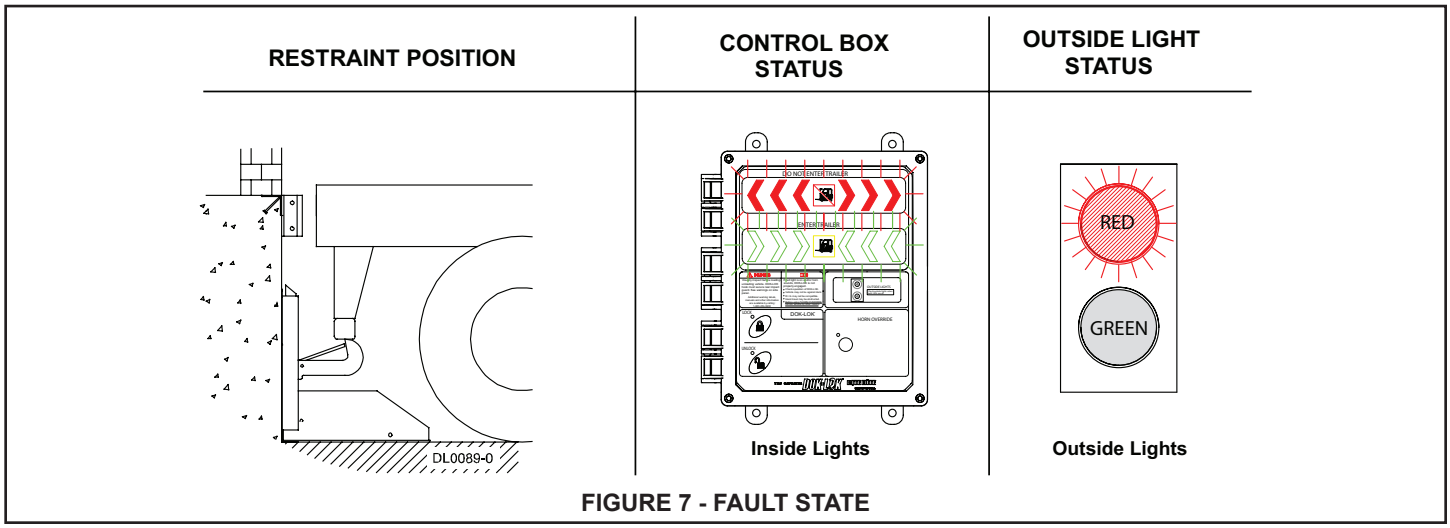


FIGURE 7 - FAULT STATE

HORN OVERRIDE State, HORN OVERRIDE Button Pressed after Securing Trailer by Alternate Means

An alternate means of securing the truck must be used (i.e. wheel chocks). Inside lights are flashing red and green alerting the forklift operator the trailer is secured by other means. Outside light is flashing red alerting the truck driver not to move.

To return to STORED, press the HORN OVERRIDE button followed by the UNLOCK button.

⚠ DANGER

Before operating "HORN OVERRIDE", secure trailer by other means.

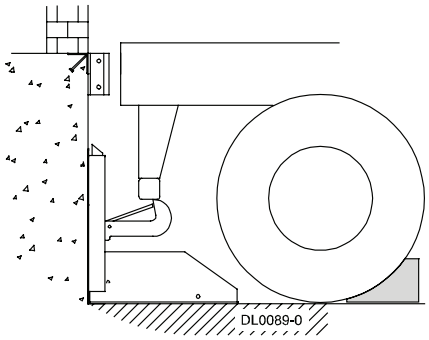
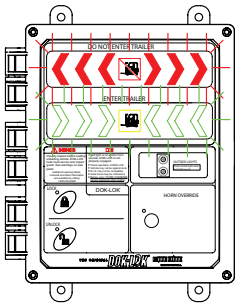
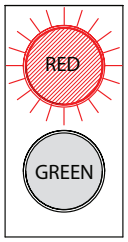
RESTRAINT POSITION	CONTROL BOX STATUS	OUTSIDE LIGHT STATUS
	 Inside Lights	 Outside Lights

FIGURE 8 - HORN OVERRIDE STATE

MAINTENANCE

⚠ DANGER

When working with electrical or electronic controls, make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

⚠ DANGER

Post safety warnings and barricade work area, at dock level and at ground level, to prevent unauthorized use of the dock position.

⚠ WARNING

A safe work place requires all lights and the horn to be working properly. DO NOT use DOK-LOK vehicle restraint if parts are broken or missing.

IMPORTANT

Maintenance may be required more frequently at loading docks exposed to harsh environments (extreme climates, corrosive chemicals, frequency of usage, etc.). Consult Rite-Hite if these conditions exist for accelerated maintenance requirements.

NOTE: If a leveler is installed at the VBR DOK-LOK vehicle restraint location, it may be necessary to raise the leveler before performing maintenance. Raise the leveler, insert and secure the SAFE-T-STRUT, and LOCKOUT/TAGOUT the power source.

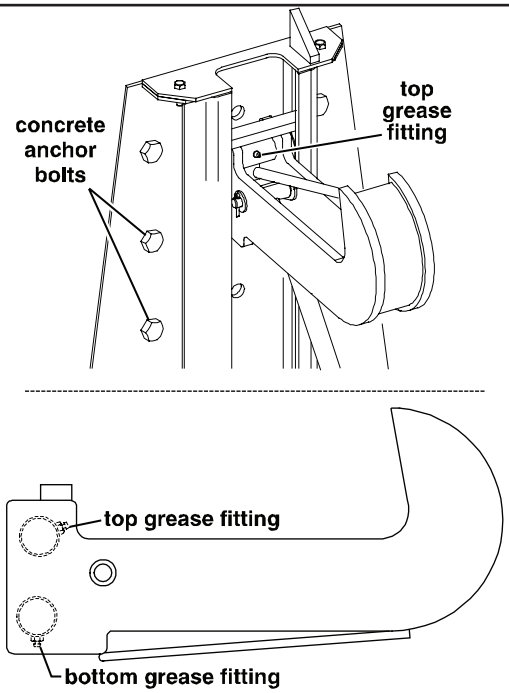
NOTE: Your local Rite-Hite representative provides a Planned Maintenance Program (P.M.P.) which can be fitted to your specific operation. Call your local representative.

DAILY

1. Remove debris around VBR-300 DOK-LOK vehicle restraint.
2. Verify inside, outside lights and horn are working.
3. Replace damaged or missing light bulbs and lenses.
4. Repair, remount, or replace outside and inside signs as required.
5. Inspect dock bumpers. Four inches (4") of protection is required. Worn, torn, loose or missing bumpers must be replaced.

180 Days

1. Perform all Daily maintenance.
2. Grease rollers at fitting located on the barrier. Use Mobilith SHC220 No. 2 grease (or equivalent temperature range lithium based grease). Seven (7) to eight (8) pumps should be used for first 180 Day maintenance. Two (2) to three (3) pumps at subsequent 180 Day maintenance intervals.



SIDE VIEW OF BARRIER

FIGURE 9 - MAINTENANCE AND LUBRICATION

3. Inspect hydraulic hoses and power unit for signs of leakage. Check oil fluid level.
4. Inspect outside junction and light box. They should be rigidly mounted. If loose or damaged, inspect all wires and wire connections.
5. Check that all concrete anchor bolts are torqued to 60 ft-lbs.
6. Inspect switch wires from vehicle restraint to junction box. Look for kinks, crushed areas, etc.
7. Perform operational test after all maintenance repairs and adjustments are complete.

COMPONENT TESTING

Vehicle Restraint Motor Test Procedure

1. BAD O/L: Little or infinite ohm reading (no needle movement) between lead 1 and 2, 1 and 3. Set multimeter to ohms.
2. OPEN WINDING: Infinite ohms (no needle movement) between lead 2 and 3. Check between leads 2 and 1 or 3 and 1 to determine which winding is open.
3. MECHANICAL BINDING: Motor hums. Motor leads show continuity between all windings. Shaft does not move.

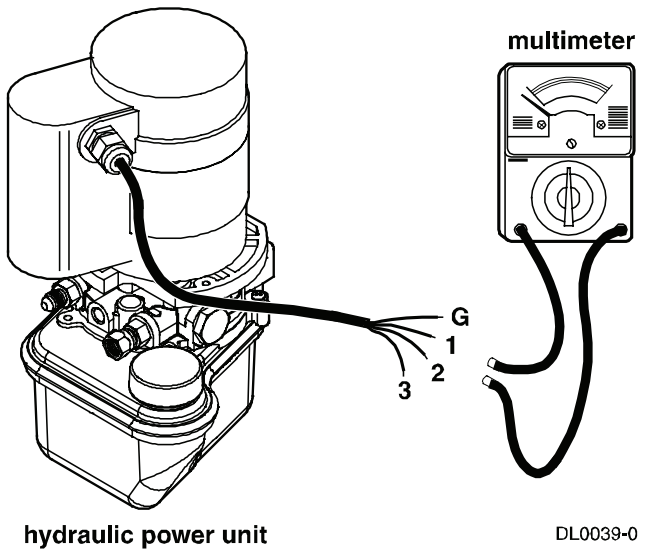
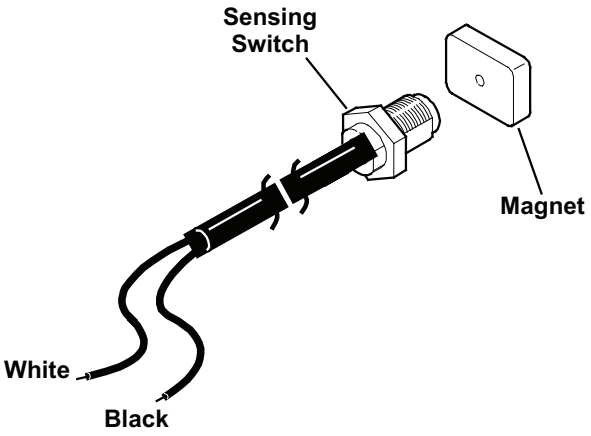


FIGURE 10 - HYDRAULIC POWER UNIT TEST



Barrier Position	SW1 Position	SW2 Position	Inside Light	Outside Light	Horn
1. Stored	Open No Mag	Closed Mag	Red	Green	Off
2. Fault	Open No Mag	Open No Mag	Red	Red	On
3. Locked	Closed Mag	Open No Mag	Green	Red	Off

DL0068-0

FIGURE 11 - LIMIT SWITCH AND HOOK POSITION CHART

Sensing Switch Test Procedure

1. Set multimeter to "RX1" scale for "Continuity Test".
2. Attach multimeter leads to white and black wires of mag. reed switch connector. You should have:

   — no magnet present - no meter reading.

   — magnet present - a "Full Scale" meter reading.

LED STATUS CHART

VBR-300 VERTICAL BARRIER RESTRAINT		MICRO CONTROL BOARD																POWER BOARD		
		INPUTS						OUTPUTS										OUTPUTS		
		FIELD		PUSH BUTTONS				12VDC								RELAY		115/230VAC		
		DOK-LOK LIMIT SWITCH 1 [SW1]	DOK-LOK LIMIT SWITCH 2 [SW2]	UNLOCK INTERLOCK [UNLK ITL]	LOCK PUSH BUTTON	UNLOCK PUSH BUTTON	HORN SILENCE PUSH BUTTONS (1/2/3)	INSIDE RED LIGHT [ISR]	INSIDE GREEN LIGHT [ISG]	CORNER-VU RED LIGHT [CVU RD]	CORNER-VU GREEN LIGHT [CVU GRN]	LEVELER-VU RED LIGHT [LVU RD]	LEVELER-VU GREEN LIGHT [L-VU GRN]	OUTSIDE RED LIGHT [OSR]	OUTSIDE GREEN LIGHT [OSG]	DOK-LOK HORN [HORN]	RESTRAINT OVERLOAD LED [YELLOW]	K1 - GREEN LIGHT INTERLOCK	K2 - SECURITY SYSTEM INTERFACE [IF EQUIPPED]	MOTOR OUPTUT #1 [M1/LOCK]	MOTOR OUPTUT #2 (M2/UNLOCK)	12VDC POWER SUPPLY OK
TERMINAL BLOCK NO.		J13.1	J13.2	J14.3	MEMBRANE		J7.16	J7.17	J12.1	J12.2	J12.3	J12.4	J11.2	J11.1	J7.19	N/A	J9.3	J10.3	J5.4	J5.3	J2.1-6
POWER BOARD LEDs		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	LD2	LD1	LD7
MICRO CONTROL BOARD LEDs		LD20	LD23	LD30	LD52		LD17	LD19	LD11	LD13	LD18	LD12	LD49	LD48	LD15	LD50	LD9	LD10	LD1	LD3	-
01.01.00	LOCKED STATE	T	F	?	-	-	-	F	P	F	P	F	P	F	F	F	T	T	F	F	T
01.01.01	LOCKING SEQUENCE	F	F	?	M	-	-	T	F	P	F	P	P	F	F	F	F	T	T	F	T
01.02.00	UNLOCKED STATE	F	T	?	-	-	-	P	F	P	F	P	F	P	F	F	F	T	F	F	T
01.02.01	UNLOCKING SEQUENCE	F	F	ITL	-	M	-	T	F	P	F	P	P	F	F	F	F	T	F	T	T
01.04.00	FAULT STATE	?	?	?	-	-	-	P	F	P	F	P	P	F	P	F	F	F	F	F	T
01.04.01	FAULT SILENCED STATE	?	?	?	-	-	M	A	A		A		P	F	F	F	T	T	F	F	T
01.11.00	OVERLOAD FAULT STATE	?	?	?	-	-	-	P	F	P	P	F	P	F	K	T	F	F	F	F	T
NO.	STATE / SEQUENCE NO.																				

KEY

? - VARYS DEPENDING ON OPERATION	K - CONTINUOUS CHIRP
A - ALTERNATING	M - LIGHTS WHEN BUTTON PRESSED
F - OFF	P - PULSING / FLASHING [SET TO STEADY USING DIP SWITCHES]
ITL - INTERLOCK INPUT ON	T - STEADY ON

MOTOR OVERLOAD RESET PROCEDURE

If Yellow LED LD50 is illuminated and the Dok-Lok Horn is Chirping, system is in an Overload Fault State.

To reset the motor overload:

1) Press and Hold Horn Silence Button (3-Button System) until Horn Chirps (Approximately 5 Seconds). OR
2) Press and Release Restraint O/L Button on Micro Controller Board.

When the motor overload has been reset, the Yellow LD50 LED will turn off and normal operation resumes

If Dok-Lok motor still does not run after resettting the overload, check Motor Fuse 10FU1.

FILL MODE

ENTER HYDRAULIC FILL MODE

1. Press and hold DIAGNOSTIC button until the horn chirps (approximately 5 seconds).
2. Press the HORN OVERRIDE button (horn will chirp).
3. System is now in FILL MODE. Press and hold the LOCK and UNLOCK buttons to run the unit Up or Down, respectively.
4. Cycle the Dok-Lok up and down to remove air from the system. Add hydraulic fluid, if necessary. Stop cycling once the Dok-Lok barrier travels up and down without hesitation.
5. Exit FILL MODE using one of the following steps:
   a. Press DIAGNOSTIC button.
   b. Press no buttons for 5 minutes.
   c. Cycle Power.

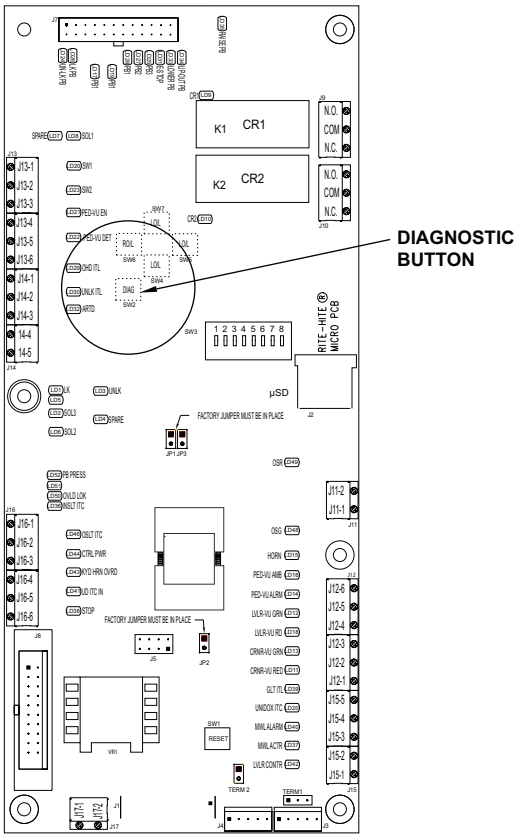


FIGURE 12 - DIAGNOSTIC BUTTON

VBR-300 VERTICAL BARRIER RESTRAINT FILL MODE		MICRO CONTROL BOARD													POWER BOARD		
		INPUTS			OUTPUTS										OUTPUTS		
		PUSH BUTTONS			12VDC										115/230VAC		
		LOCK PUSH BUTTON	UNLOCK PUSH BUTTON	HORN SILENCE PUSH BUTTON	INSIDE RED	INSIDE GREEN	CORNER-VU RED	CORNER-VU GREEN	LEVELER-VU RED	LEVELER-VU GREEN	OUTSIDE RED	OUTSIDE GREEN	RESTRAINT ALARM	MOTOR OUPTUT #1 [M1/LOCK]	MOTOR OUPTUT #2 (M2/UNLOCK)	12VDC POWER SUPPLY OK
TERMINAL BLOCK NO.		MEMBRANE			J7.16	J7.17	J12.1	J12.2	J12.3	J12.4	J11.2	J11.1	J7.19	J5.4	J5.3	J2.1-6
POWER BOARD LEDs		-	-	-	-	-	-	-	-	-	-	-	-	LD2	LD1	LD7
MICRO CONTROL BOARD LEDs		LD52			LD17	LD19	LD11	LD13	LD18	LD12	LD49	LD48	LD15	LD1	LD3	-
01.15.14	FILL MODE SEQUENCE	-	-	-	T	F	T	F	T	F	P	F	C	F	F	T
01.15.15	SERVICE MOTOR UP	M	-	-	T	F	T	F	T	F	P	F	C	T	F	T
01.15.16	SERVICE MOTOR DOWN	-	M	-	T	F	T	F	T	F	P	F	C	F	T	T
NO.	STATE / SEQUENCE NO.															

KEY	
C - CHIRP ON STATE ENTRY	P - PULSING / FLASHING
F - OFF	T - STEADY ON

DIAGNOSTICS CHART

VBR-300
DIAGNOSTIC I/O WALK THRU SEQUENCE [IF EQUIPPED]

		BASE MICRO CONTROLLER BOARD																POWER BOARD		
		OUTPUTS																OUTPUTS		
		12VDC														RELAY		115/230VAC		
STEP		INSIDE RED LIGHT [ISR]	INSIDE GREEN LIGHT [ISG]	CORNER-VU RED LIGHT [CVU RD]	CORNER-VU GREEN LIGHT [CVU GRN]	LEVELER-VU RED LIGHT [LVU RD]	LEVELER-VU GREEN LIGHT [L-VU GRN]	PEDESTRIAN-VU AMBER [PVU LT]	PEDESTRIAN-VU ALARM [PVU ALM]	OUTSIDE RED LIGHT [OSR]	OUTSIDE GREEN LIGHT [OSG]	DOK-LOK HORN [HORN]	MWL ACTUATOR [MWL ACTR]	OUTSIDE ALARM [MWL ALM]	UNIDOX ITC [UD ITC OUT]	GREEN LIGH INTERLOCK [GLT ITL]	K1 - GREEN LIGHT INTERLOCK	K2 - SECURITY SYSTEM INTERFACE [IF EQUIPPED]	MOTOR OUPTUT #1 [M1/LOCK]	MOTOR OUPTUT #2 (M2/UNLOCK)	12VDC POWER SUPPLY OK
	TERMINAL BLOCK NO.	J7.16	J7.17	J12.1	J12.2	J12.3	J12.4	J12.6	J12.5	J11.2	J11.1	J7.19	J15.2	J15.3	J15.4	J15.5	J9.3	J10.3	J5.4	J5.3	J2.1-6
	POWER BOARD LEDs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LD2	LD1	LD7
	MICRO CONTROL BOARD LEDs	LD17	LD19	LD11	LD13	LD18	LD12	LD16	LD14	LD49	LD48	LD15	LD37	LD40	LD20	LD39	LD9	LD10	LD1	LD3	-
1	DIAGNOSTICS ENTERED	F	F	F	F	F	F	F	F	P	F	C	F	F	F	F	F	F	F	F	T
2	CHECK INSIDE RED	T	F	F	F	F	F	F	F	P	F	F	F	F	F	F	F	F	F	F	T
3	CHECK INSIDE GREEN	F	T	F	F	F	F	F	F	P	F	F	F	F	F	F	F	F	F	F	T
4	CHECK CORNER-VU RED	F	F	T	F	F	F	F	F	P	F	F	F	F	F	F	F	F	F	F	T
5	CHECK CORNER-VU GREEN	F	F	F	T	F	F	F	F	P	F	F	F	F	F	F	F	F	F	F	T
6	CHECK LEVELER-VU RED	F	F	F	F	T	F	F	F	P	F	F	F	F	F	F	F	F	F	F	T
7	CHECK LEVELER-VU GREEN	F	F	F	F	F	T	F	F	P	F	F	F	F	F	F	F	F	F	F	T
8	CHECK PEDESTRIAN-VU AMBER	F	F	F	F	F	F	T	F	P	F	F	F	F	F	F	F	F	F	F	T
9	CHECK PEDESTRIAN-VU ALARM	F	F	F	F	F	F	F	T	P	F	F	F	F	F	F	F	F	F	F	T
10	CHECK OUTSIDE RED LIGHT	F	F	F	F	F	F	F	F	T	F	F	F	F	F	F	F	F	F	F	T
11	CHECK OUTSIDE GREEN LIGHT	F	F	F	F	F	F	F	F	P	T	F	F	F	F	F	F	F	F	F	T
12	CHECK DOK-LOK HORN	F	F	F	F	F	F	F	F	P	F	T	F	T	F	F	F	F	F	F	T
13	CHECK MWL ACTUATOR AND UNIDOX OUTPUTS	F	F	F	F	F	F	F	F	P	F	F	T	F	T	F	F	F	F	F	T
14	CHECK GREEN LIGHT INTERLOCK OUTPUTS	F	F	F	F	F	F	F	F	P	F	F	F	F	F	T	T	F	F	F	T
15	CHECK K2 RELAY	F	F	F	F	F	F	F	F	P	F	F	F	F	F	F	F	T	F	F	T
16	HORN CHIRPS SIGNALING END OF SEQUENCE	F	F	F	F	F	F	F	F	P	F	C	F	F	F	F	F	F	F	F	T

PRESS LOCK TO ADVANCE, UNLOCK TO REVERSE
(REFER TO TROUBLESHOOTING GUIDE IF OUTPUT DOESN'T MATCH)

KEY
C - HORN CHIRP
F - OFF
P - PULSING / FLASHING
T - STEADY ON

TROUBLESHOOTING GUIDE	
STEPS	**ACTIONS**
2-3, 12	CHECK POWER SUPPLY LED & POWER SUPPLY FUSE ON POWER CIRCUIT BOARD
	CHECK CONTROL HARNESS CONNECTION AT CHEVRON AND MICRO CONTROLLER BOARDS
4-11	CHECK POWER SUPPLY LED & POWER SUPPLY FUSE ON POWER CIRCUIT BOARD
	CHECK LIGHT BULB, WIRING AND TERMINAL BLOCK CONNECTIONS
13-15	CHECK POWER SUPPLY LED & POWER SUPPLY FUSE ON POWER CIRCUIT BOARD
	CHECK TERMINAL BLOCK CONNECTIONS

ELECTRICAL SCHEMATIC

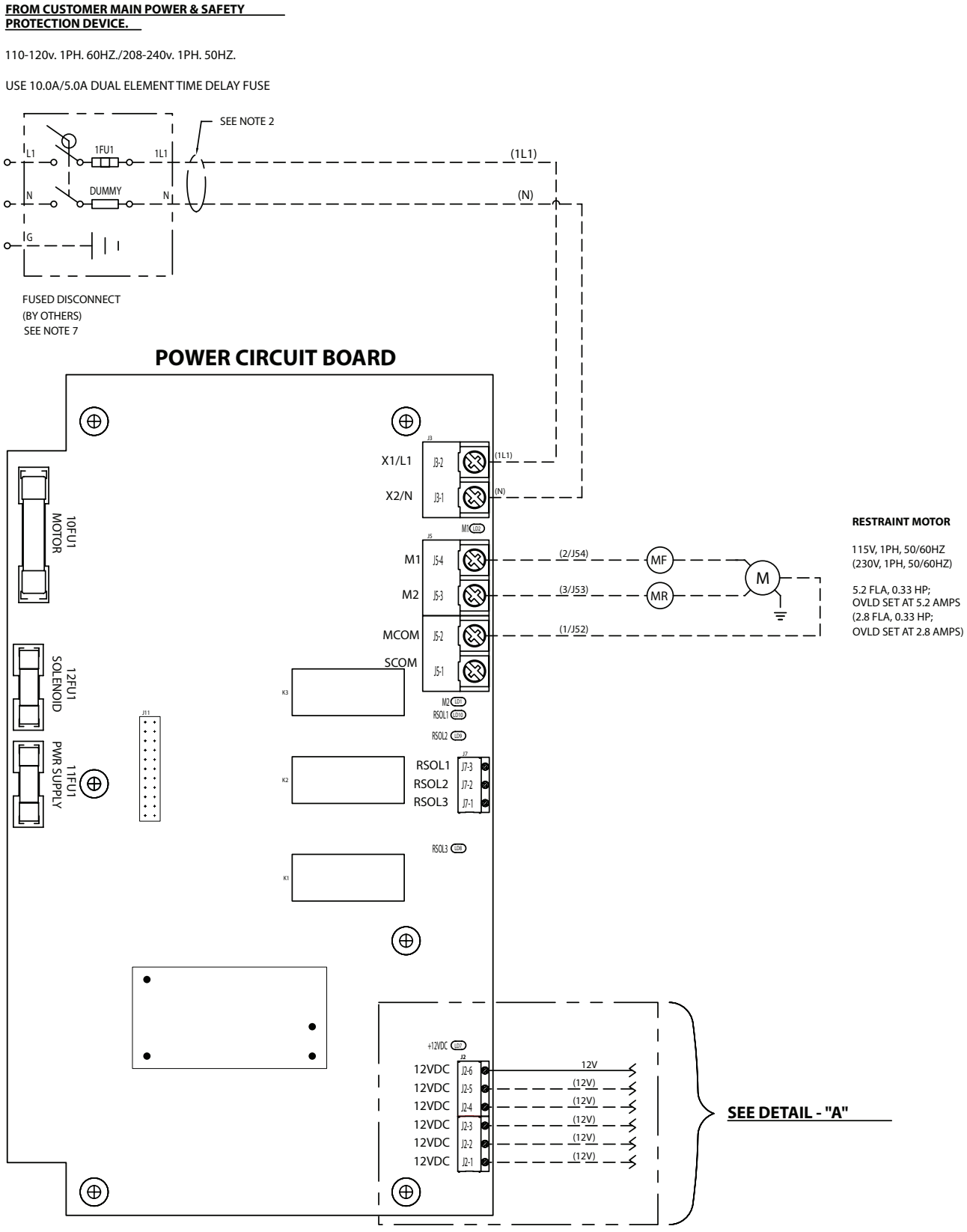


FIGURE 13 - ELECTICAL SCHEMATIC - SECTION 1

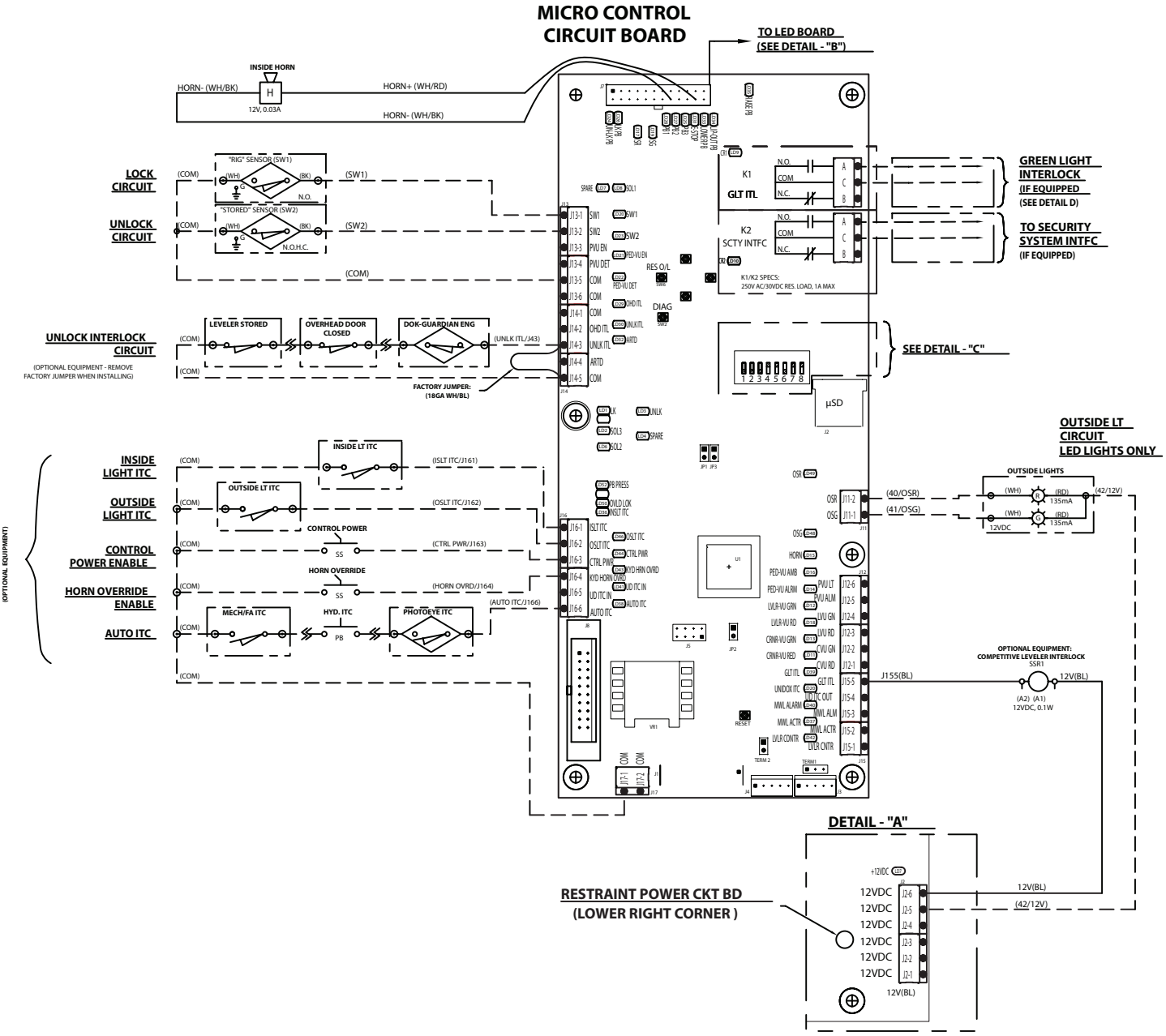
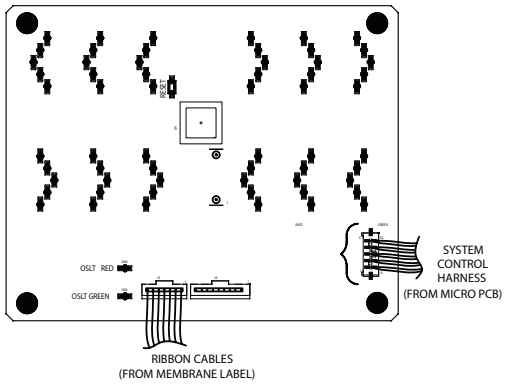


FIGURE 14 - ELECTICAL SCHEMATIC - SECTION 2

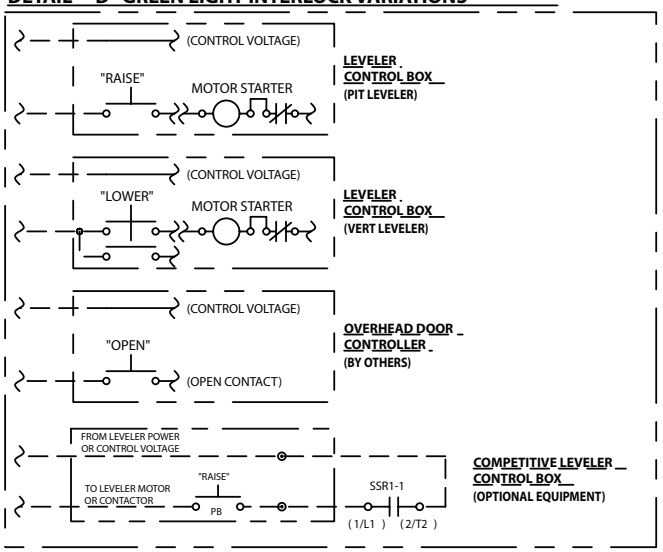
DETAIL B - BACK OF COVER



System Control Harness - MEMBRANE

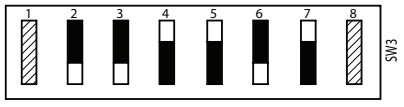
uControl Board		LED Board		
J7	Description	J1	Description	Wire Color
1	USART2_RX	1	MICROPCB_RX	BLUE
2	USART2_TX	2	MICROPCB_TX	GRAY
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13	12V [Vext]	5	12V [Vext]	RED
14	OSG INDICATOR	9	OSG INDICATOR	WHITE/GREEN
15	OSR INDICATOR	10	OSR INDICATOR	WHITE/ORANGE
16	ISR	8	ISR	ORANGE
17	ISG	7	ISG	GREEN
18				
19	HORN [-]			WHITE/BLACK
20	GND	4	DIGITAL_GND	WHITE/BLUE
21	RESERVED	6	RESERVED	BLACK
22	USART2_RTS	3	MICROPCB_RTS	WHITE
23	12V [HORN +]			WHITE/RED
24				

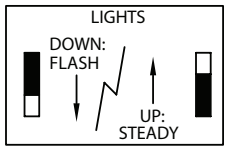
DETAIL - "D" GREEN LIGHT INTERLOCK VARIATIONS



DETAIL - "C" MICRO CONTROL BOARD DIP SWITCH SETTINGS

DIP SWITCH	FACTORY SETTING	OPTION/FUNCTION
1	DOWN	FACTORY USE
2	DOWN	INSIDE RED LIGHT
3	DOWN	INSIDE GREEN LIGHT
4	UP	CORNER & LEVELER-VU RED
5	UP	CORNER & LEVELER-VU GREEN
6	DOWN	OUTSIDE LIGHTS - RED/GREEN
7	UP	PEDESTRIAN-VU
8	UP	CODED HORN OVERRIDE
	DOWN	STANDARD HORN OVERRIDE





1. INSTALL PER LOCAL ELECTRICAL CODES. REFER ALL INSTALLATION AND SERVICE TO QUALIFIED PERSONNEL.
2. ALL INCOMING POWER (FROM DISCONNECT TO CONTROL BOX) AND MOTOR FIELD WIRING TO BE MINIMUM #14GA. 60°/75°C COPPER WIRE, INSULATED SUFFICIENTLY FOR INCOMING VOLTAGE.
3. ALL CONTROL FIELD WIRING TO BE MINIMUM #14GA. 60°/75°C COPPER WIRE ONLY, INSULATED SUFFICIENTLY FOR INCOMING VOLTAGE.
4. ALL INTERNAL WIRING TO BE #14GA. MINIMUM FOR POWER CIRCUITS AND CIRCUIT BOARD POWER, #16GA MINIMUM FOR CONTROL CIRCUITS, 90°C, RED COPPER WIRE UNLESS OTHERWISE NOTED, INSULATED SUFFICIENTLY FOR INCOMING VOLTAGE.
5. TORQUE REQUIREMENTS:
   -PCB TERMINAL BLOCK POWER (J3/J5): 7.0 LB-IN
   -PCB TERMINAL BLOCK ALL OTHER: 4.0 LB-IN
   -GROUND TERMINAL: 35 LB-IN
6. LS1 & LS2 PROVIDED BY RITE-HITE WITH VEHICLE RESTRAINT. OTHER FIELD DEVICES ARE OPTIONAL. SEE SPECIFIC ELECTRICAL SCHEMATIC.
7. FUSED DISCONNECT NOTES:
   -FUSED DISCONNECT IS NOT PROVIDED BY RITE-HITE PRODUCTS CORPORATION. DISCONNECT MUST BE PROVIDED BY OTHERS AND INSTALLED PER LATEST EDITION OF UL508A AND NEC REQUIREMENTS.
   -A BRANCH CIRCUIT DISCONNECT SHALL BE LOCATED WITHIN A 50 FT. RADUIS AND BE VISIBLE FROM THE CONTROL BOX LOCATION. [REFERENCE LATEST EDITION OF NEC, SECTION 430]
8. CLASS 1 CONTROL CIRCUIT.

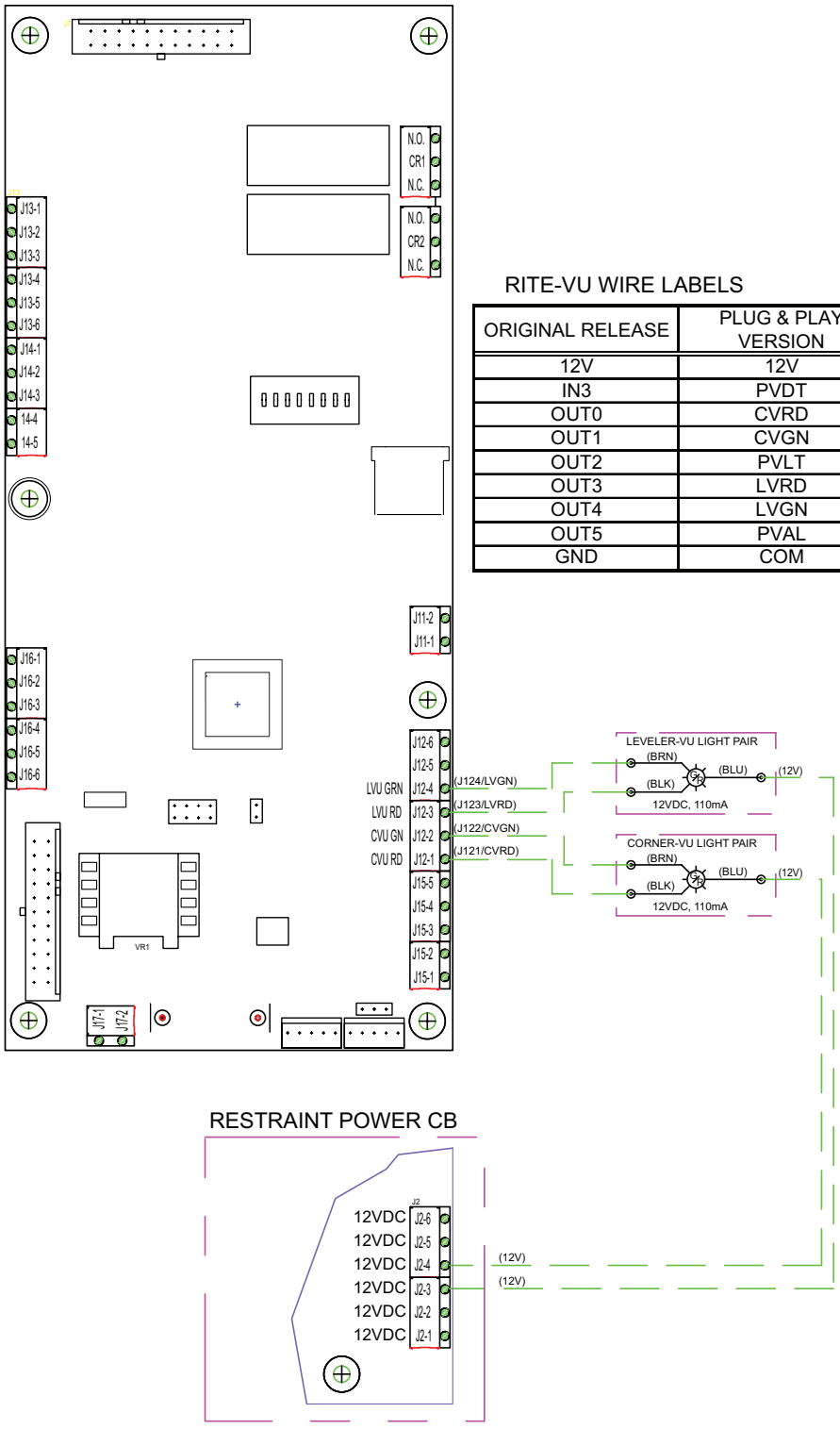
LEGEND:

- DENOTES WIRE CONNECTIONS THRU TERMINAL BLOCK.
- DENOTES FIELD WIRES.
- DENOTES WIRE NUT CONNECTION.
- DENOTES MALE/FEMALE PLUG CONNECTOR.

FIGURE 15 - ELECTICAL SCHEMATIC - SECTION 3

CORNER/LEVELER-VU WIRING

MICRO CONTROL
CIRCUIT BOARD



RITE-VU WIRE LABELS

ORIGINAL RELEASE	PLUG & PLAY VERSION
12V	12V
IN3	PVDT
OUT0	CVRD
OUT1	CVGN
OUT2	PVLT
OUT3	LVRD
OUT4	LVGN
OUT5	PVAL
GND	COM

FIGURE 16 - ELECTICAL SCHEMATIC - SECTION 4

OUTSIDE LIGHT BOX WIRING

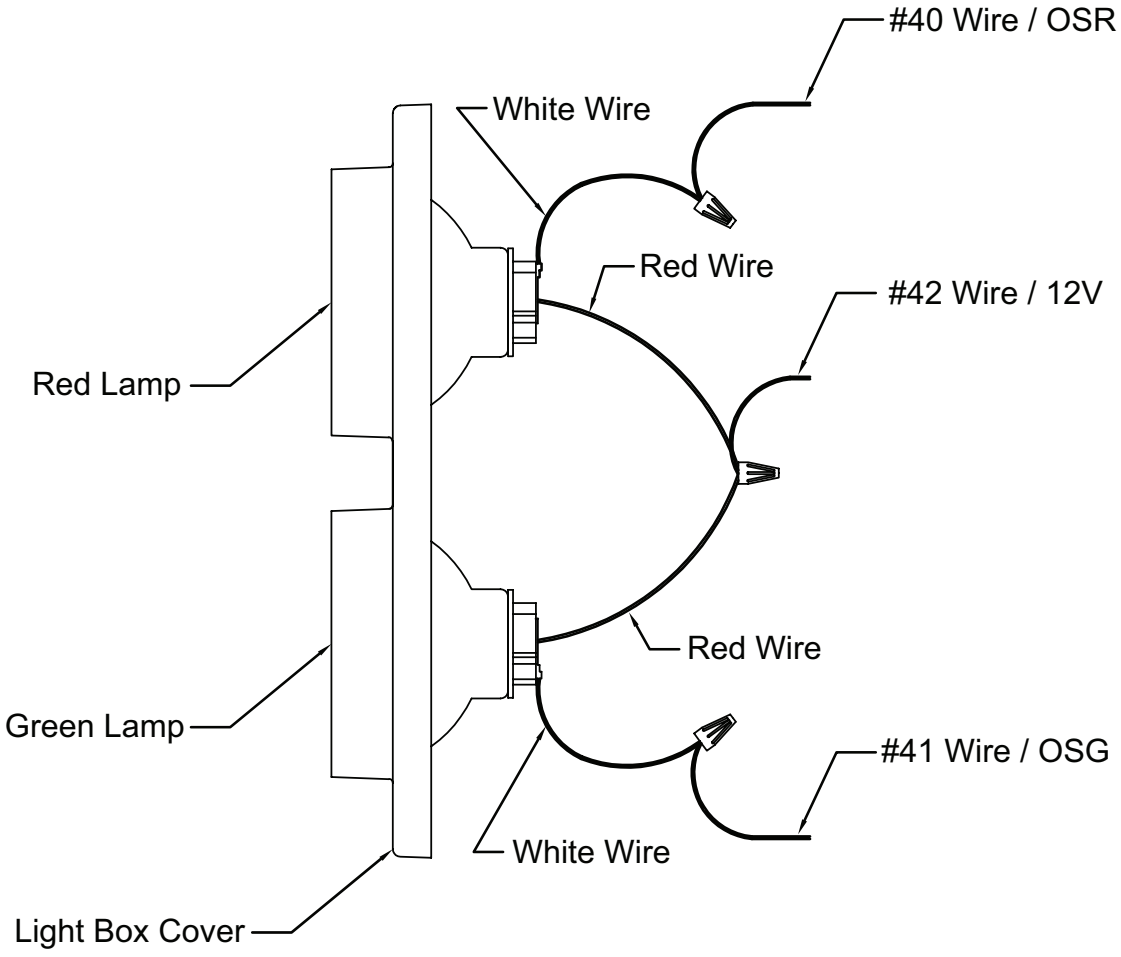
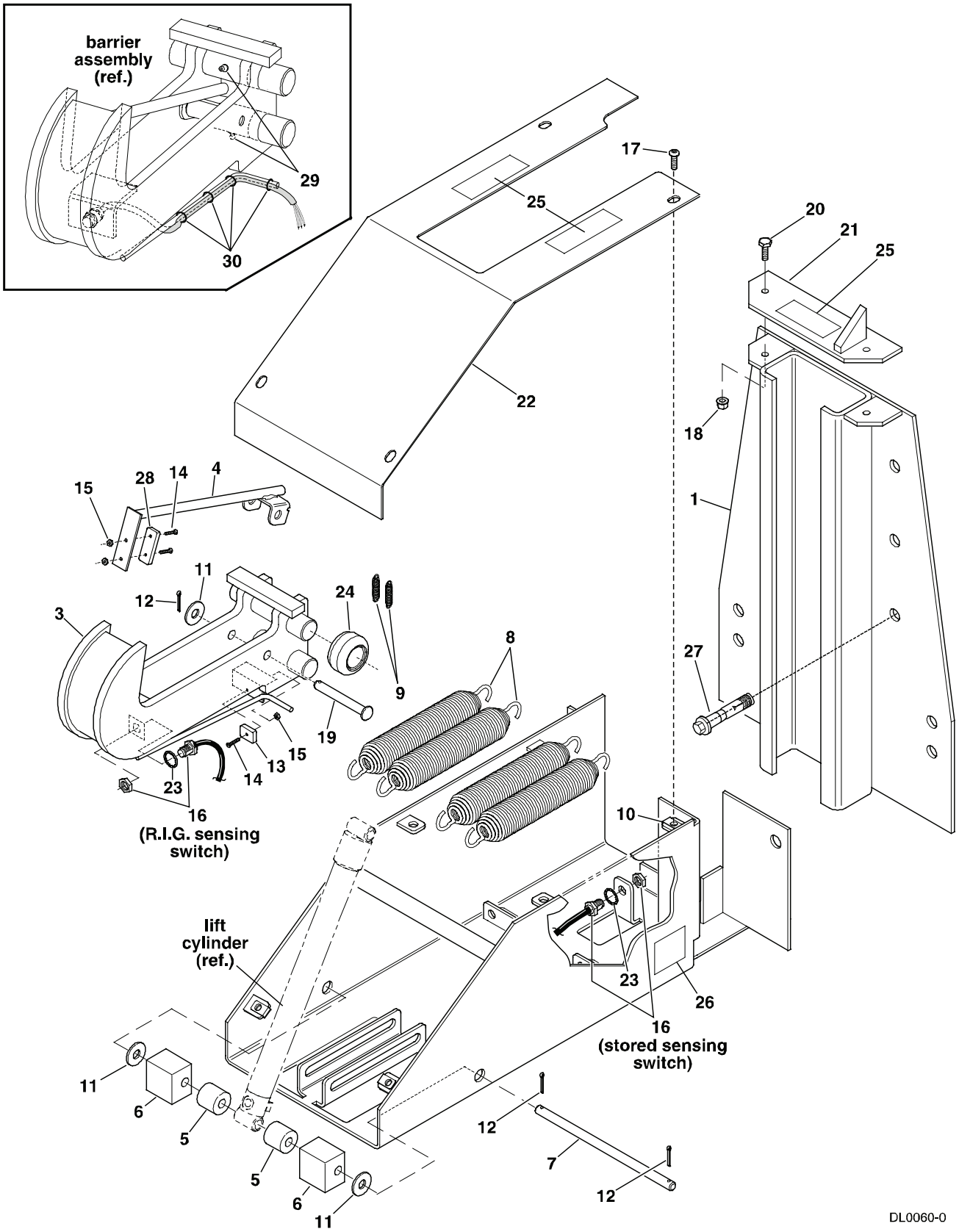


FIGURE 17 - OUTSIDE LIGHT BOX WIRING

NOTE: Must use LED Outside Lights.

NOTES

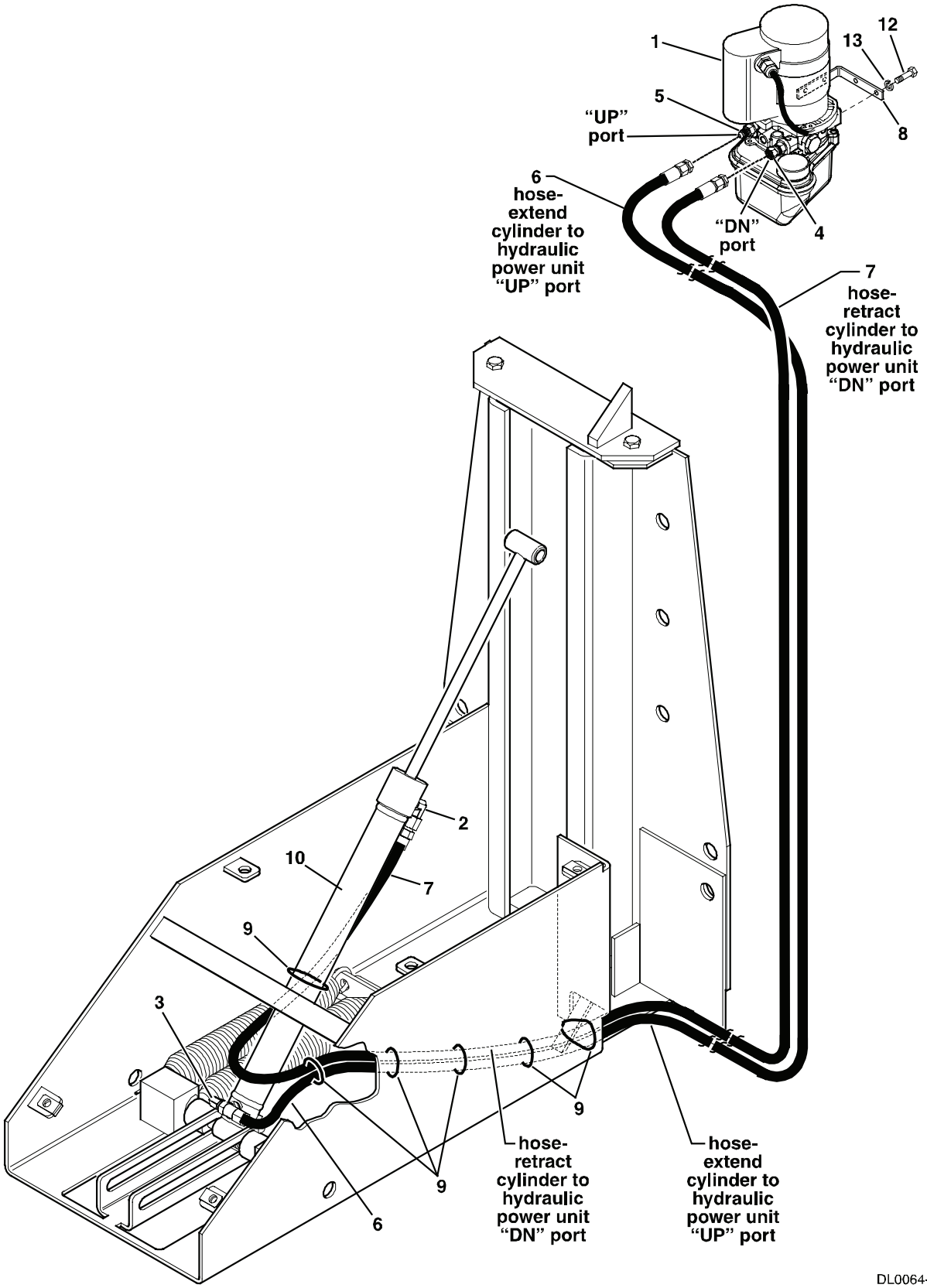
MECHANICAL PARTS



MECHANICAL PARTS LIST

Item	Qty	Description	Part Number
1	1	Track weldment	106690
2	1	Base weldment	107612
3	1	Barrier weldment	106676
4	1	R.I.G. sensor weldment	106683
5	2	Spacer (9/16 ID x 1-1/4 OD x 1-1/16" Lg) UHMW	107637
6	2	Spacer (2 x 1-1/2 x 2" Lg) UHMW	107118
7	1	Clevispin	107119
8	4	Spring1-7/8" O.D.	52129
9	2	Spring 3/8" O.D.	107120
10	4	Caged nut 5/16-18	56540
11	3	Flat washer	51706
12	3	Cotter pin (1/8 x 1" long)	51901
13	1	Magnet (1") high energy rubber	18344
14	3	Screw - slotted flange head #6-32 x 5/8" long (stainless steel)	109130
15	3	Nut #6-32 (stainless steel)	58814
16	2	Magnetic reed switch	134087
17	4	Bolt - flanged head (5/16-18 x 1" long)	18210
18	2	Nut - serrated (5/16-18)	51535
19	1	Clevis pin (1/2 x 3-3/4" long)	52525
20	2	Bolt - hex head 5/16-18 x 1" long (Grade 5)	51627
21	1	Track cover – includes one warning decal (item 25)	108500
22	1	Base cover – includes two warning decals (item 25)	108501
23	2	Lockwasher - internal tooth 1/2"	51808
24	4	Roller assembly	15782
25	3	Decal - WARNING pinch point	107041
26	1	Decal - patent	18391
27	8	Concrete anchor (5/8" x 4" hex head) – includes bolt and washer	53150
28	1	Magnet (3") - high energy rubber	107121
29	2	Grease fitting	51169
30	4	Wire tie 6-3/4" long	55592

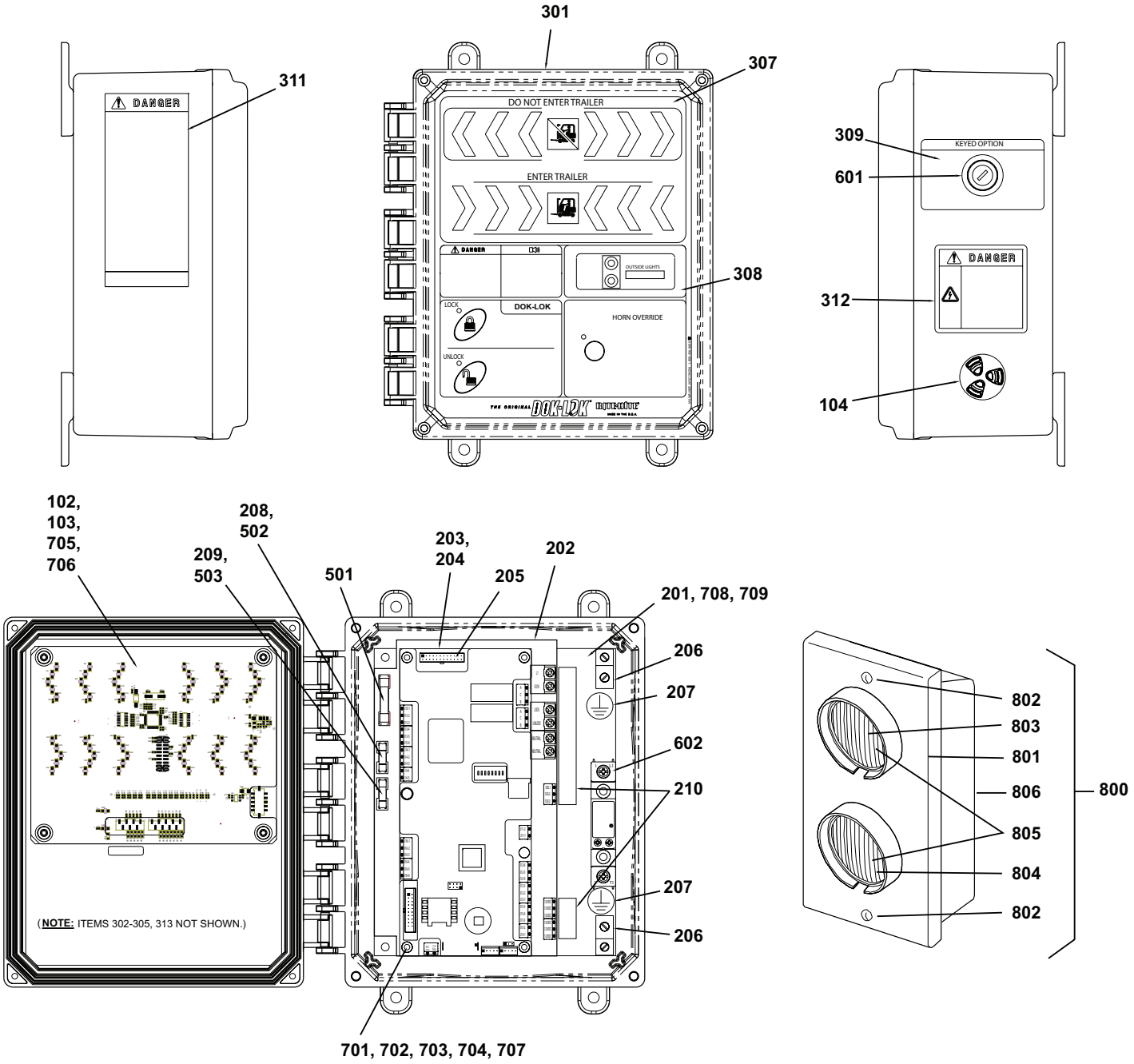
HYDRAULIC PARTS



HYDRAULIC PARTS LIST

Item	Qty	Description	Part Number
1	1	Hydraulic Power Unit – includes items 4 & 5	107127
2	1	Fitting 90°L #4 o-ring (M) - #4 JIC (F)	107113
3	1	Fitting 90°XL #4 o-ring (M) - #4 JIC(M)	107114
4	1	Fitting #4 o-ring (M) - # 4 JIC(F)	107129
5	1	Fitting #4 o-ring (M) - # 4 JIC(M)	107130
6	1	Hose - 228" long – includes six wire ties (item 9)	107115
7	1	Hose - 244" long – includes six wire ties (item 9)	107116
8	1	Mounting bracket - hydraulic power unit	107131
9	6	Wiretie6-3/4" long	55592
10	1	Hydraulic Lift Cylinder – includes two fittings (items 2&3)	107112
11	1	Hydraulic oil - 40 oz. (MIL-H-5606) - not shown	108303
12	2	Bolt (3/8 x 3/4" long)	58108
13	2	Lockwasher (3/8")	51833

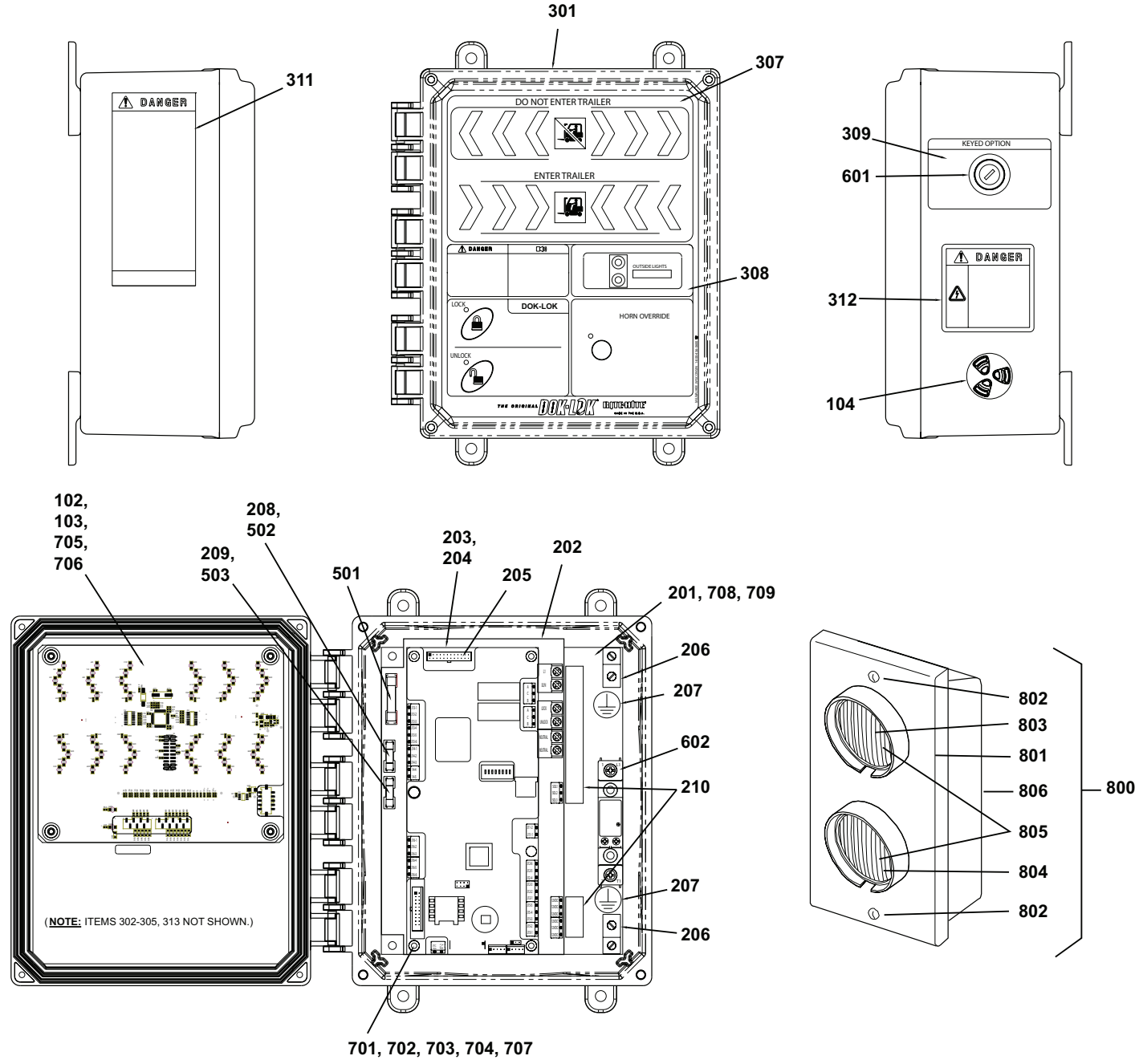
ELECTRICAL PARTS



ELECTRICAL PARTS LIST

Item	Qty	Description	Part Number
1	1	Control box assembly, Complete (Consult Rite-Hite for specific part number)	863.xxx
102	1	LED chevron/outside light monitor circuit board	141579
103	1	LED chevron/outside light monitor circuit board cover	144835
104	1	Horn, 12VDC, N4X	141573
201	1	Pre-drilled control box sub panel	144757
202	1	Power circuit board, Blank	141580
	1	Power circuit board, Including Fuses (115 Volt Power)	142126-04
203	1	Standard Micro Control Board	141578-861D103
	1	Micro Control Board with Program Options (Consult Rite-Hite for specific part number)	141578-xxx
204	1	Micro circuit board cover	144802
205	1	Control wiring harness	144864-01
206	2	Ground lug	55902
207	2	Ground lug decal	105454
208	1	Fuse cover, 5mm x 20mm	144544
209	1	Fuse cover, 5mm x 20mm	144544
210	1	Panel decals	146324
301	1	Standard Enclosure with decals, English	865.103
	1	Enclosure with decals other than above (Consult Rite-Hite for specific part number)	865.xxx
302	1	Electrical schematic decal (Consult Rite-Hite for specific part number)	870.xxx
303	1	Fuse replacement decal	144849
304	1	Full load amperage and voltage/phase decal (Consult Rite-Hite for specific part number)	872.xxx
305	1	Program configuration decal (Consult Rite-Hite for specific part number)	862.xxx
307	1	Cover decal with membrane push buttons	141499
308	1	DOK-LOK inlay decal, 3button horn override	144803
309	1	Horn override enable decal (If equipped)	144831
	1	Control power ON/OFF decal (If equipped)	144829
	1	Unlock enable decal (If equipped)	144830
310	1	Danger/warning decal	144842
311	1	Lockout/tagout/multiple disconnect warning decal	114331
313	1	Circuit board UL rating decal	144859
501	1	5A fuse, 0.25" x 1.25" (115V control box)	57419
502	1	1A fuse, 5mm x 20mm (115V control box)	142092
503	1	0.5A fuse, 5mm x 20mm	145216
601	1	Selector switch, keyed (If equipped)	125194
602	1	Solid state relay, 12VDC, 75A, with hardware (If equipped)	144877
701	6	Standoff, Male/Female, #6-32, 0.75" length	142100
702	6	Standoff, Male/Female, #6-32, 1.625" length	142101
703	6	Screw, round head, #6-32, 0.25" length	133366
704	6	Lock washer, #6	51826
705	4	Rubber grommet	142102

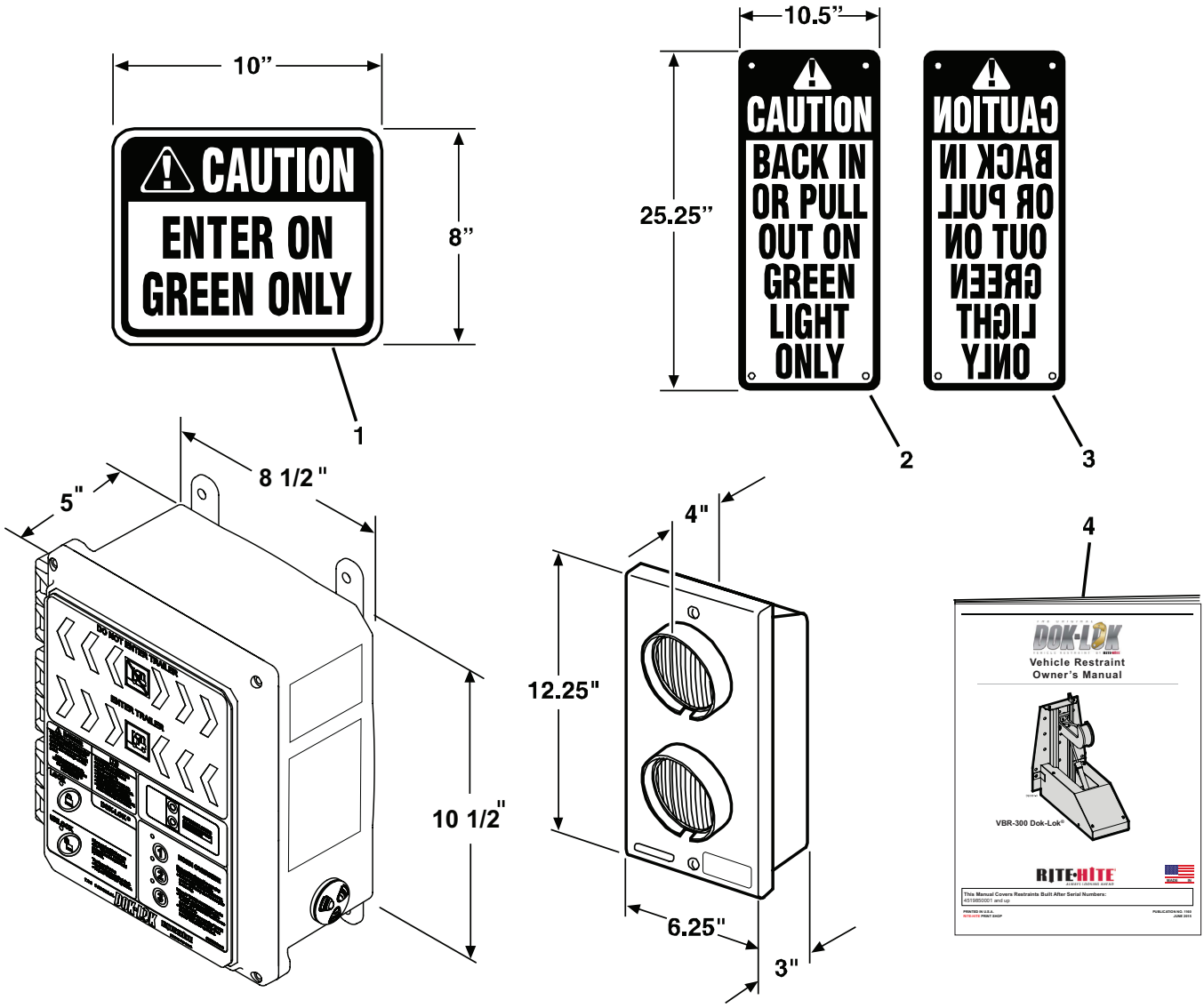
ELECTRICAL PARTS - CONTINUED



ELECTRICAL PARTS LIST - CONTINUED

Item	Qty	Description	Part Number
706	4	Screw, black trim washer, #8-32, 0.5" length	146031
707	4	Standoff, Male/Female, #6-32, 0.875" length	115871
708	4	Screw, Round Head, #10-32, 0.5" length	51629
709	4	Lock Washer, #10	51762
800	1	LED Outside Light Assembly, Complete	115798
801	1	LED Oustide Light Assembly, Doesn't Include Base	128458
802	2	Screw, round head #6-32, 0.75" length	18364
803	1	LED Outside Light Bulb, Red	128448
804	1	LED Outside Light Bulb, Green	128449
805	2	LED Light Socket	116894
806	1	Outside Light Enclosure Base	18277

MISC PARTS



Item	Qty	Description	Part Number
1	1	Interior Warning Sign	56095
2	1	Narrow Sign (normal letters)	56112
3	1	Narrow Sign (mirror letters)	56113
4	1	VBR-300 Owners Manual	Pub. 1160

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RITE-HITE STANDARD WARRANTY

Rite-Hite warrants that its products will be free from defects in design, materials, and workmanship for a period of 365 days from the date of shipment. All claims for breach of this warranty must be made within 30 days after the defect is or can, with reasonable care, be detected and in no event no more than 30 days after the warranty has expired. In order to be entitled to the benefits of this warranty, the products must have been properly installed, maintained, and operated within their rated capacities and/or specified design parameters, and not otherwise abused. Periodic lubrication and adjustment is the sole responsibility of the owner. This warranty is Rite-Hite's® exclusive warranty. RITE-HITE EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. Non-standard warranties, if any, must be specified by Rite-Hite in writing.

In the event of any defects covered by this warranty, Rite-Hite will remedy such defects by repairing or replacing any defective equipment or parts, bearing all the costs for parts, labor, and transportation. This shall be the exclusive remedy for all claims whether based on contract, negligence, or strict liability.

LIMITATION OF LIABILITY

RITE-HITE SHALL NOT IN ANY EVENT BE LIABLE FOR ANY LOSS OF USE OF ANY EQUIPMENT OR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

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